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Guide to Radioactive Waste Management Literature

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GUIDE TO RADIOACTIVE WASTE MANAGEMENT LITERATURE

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ABSTRACT

The safe, economical, and conservative use of fossil and uranium fuels becomes increasingly acute each year. Important decisions and steps are needed now, because of long lead times required for solutions to the energy crisis. Both types of fuel have had, and will have, their social costs, including impacts upon safety, health, and environment.

Increased public concern about radioactive waste management has called attention to this aspect of the nuclear fuel cycle. Socioeconomic planning and technical development are being undertaken to assure that such wastes will be managed safely. This Guide to Radioactive Waste Management Literature has been compiled to serve scientists, engineers, administrators, legislators, and private citizens by directing them to sources of information on various aspects of the subject.

To accomplish this task we have selected some references as being the most important from about 6000 documents on waste management referenced in the computerized information centers in Oak Ridge. The documents were selected, examined, indexed, and abstracted between 1966-1976 by several knowledgeable indexers, principally at the Nuclear Safety Information Center. We have further indexed the selected references and classified them into 12 categories. Each category is discussed in enough detail to give some understanding of present technology in various phases of waste management and some appreciation of the attendant issues and problems. The 12 categories are:

1. MANAGEMENT - General
2. TREATMENT
3. STORAGE
4. DISPOSAL
5. TRANSPORTATION & HANDLING
6. ALTERNATIVES
7. HIGH-LEVEL WASTE
8. INTERMEDIATE-LEVEL WASTE
9. LOW-LEVEL WASTE
10. FUEL REPROCESSING
11. TRITIUM
12. BIBLIOGRAPHIES

The bibliographic part of this guide exists in computerized form in the Health Physics Information System and is available through the Oak Ridge Information Center Complex for searching from remote terminals.

ACRONYMS

ACRS	Advisory Committee on Reactor Safeguards
ALAP	As Low As Practicable
ALARA	As Low As Reasonably Achievable
ANL	Argonne National Laboratory
ARH	Atlantic Richfield Hanford
ARHCO	Atlantic Richfield Hanford Company
ASA	American Standards Association
BNL	Brookhaven National Laboratory
BWR	Boiling Water Reactor
CEN	Centre d'Etudes Nucleaires
CRBRP	Clinch River Breeder Reactor Project
CRL	Central Research Library, ORNL
CNRL	Chalk River Nuclear Laboratories
DWLS	Derived Working Limits
EBR-1	Experimental Breeder Reactor, NRTS, Idaho Power Reactor 1.4 MW(th)
EBR-2	Experimental Breeder Reactor, NRTS, Idaho Power Reactor 62.5 MW(th)
EEI	Edison Electric Institute
ENEA	European Nuclear Energy Agency
FBVP	Fluidized-Bed Volatility Process
FFTF	Fast Flux Test Facility
FORATOM	Forum Atomique (European Association of Euratom Nuclear Industries)
FSAR	Final Safety Analysis Report
GCR	Gas Cooled Reactor
GESMO	Generic Environmental Statement on Mixed Oxide Fuel
GETR	General Electric Test Reactor
GPO	Government Printing Office, USA
HAPO	Hanford Atomic Products Operations
HEPA	High Efficiency Particulate Air
HLW	High-Level Waste
HNL	Holifield National Laboratory (see ORNL)
HPIS	Health Physics Information System

HTGR	High Temperature Gas Reactor
IAEA	International Atomic Energy Agency
ICPP	Idaho Chemical Processing Plant
ICRP	International Commission on Radiological Protection
ILW	Intermediate-Level Waste
KAPL	Knolls Atomic Power Laboratory
LASL	Los Alamos Scientific Laboratory
LLW	Low-Level Waste
LMCR	Liquid Metal Cooled Reactor
LMFBR	Liquid Metal Fast Breeder Reactor
LMR	Liquid Metal Reactor
LRL	Lawrence Radiation Laboratory
LWR	Light Water Reactor
MPBB	Maximum Permissible Body Burden
MPC	Maximum Permissible Concentration
MPD	Maximum Permissible Dose
NAK	Sodium-Potassium Alloy Reactor Coolant
NASA	National Aeronautics & Space Administration
NCRP	National Council on Radiation Protection and Measurements
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NFS	Nuclear Fuel Services
NPR	New Production Reactor at Hanford
NRC	National Research Council
NRC	Nuclear Regulatory Commission
NRTS	National Reactor Testing Station
NTIS	National Technical Information Service
NUS	Nuclear Utilities Services
OECD	Organization for Economic Cooperation & Development
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
OWI	Office of Waste Isolation
PNL	Pacific Northwest Laboratory
PSAR	Preliminary Safety Analysis Report

PSV	Project Salt Vault
PWR	Pressurized Water Reactor
RWM	Radioactive Waste Management
SAR	Safety Analysis Report
SLA	Stanford Linear Accelerator
SOD	Superintendent of Documents
SRO	Savannah River Operations
TVA	Tennessee Valley Authority
UKAEA	United Kingdom Atomic Energy Authority
USAEC	United States Atomic Energy Commission
WSEP	Waste Solidification Engineering Prototypes

INTRODUCTION

The purpose of this Guide to Radioactive Waste Management Literature is to provide scientists, engineers, administrators, and other interested persons with major sources of information on various aspects of radioactive waste disposal as developed prior to 1977. This document identifies references to the historic development of waste management and related practices for the nuclear fuel cycle (Fig. 1). Health, safety, environmental, economic, and social questions are included.

Storage can be temporary or permanent, retrievable or irretrievable. Indefiniteness of time scale arises because some radionuclides decay within milliseconds or less, while others require hundreds or thousands of years.

The retrievable-versus-irretrievable aspect of waste management is important. Whereas biodegradable, nonradioactive waste and short-lived radioactive waste can become innocuous within a fraction of a human lifetime, long-lived radionuclide waste exists for many generations, thus posing a question of ultimate disposition. Sir John Hill of the United Kingdom Atomic Energy Authority expressed one philosophy, namely, that fallible humans should make retrievable errors. If waste can be disposed of permanently, by transmutation, for example, then mankind need no longer worry about long-term radioactivity. Instances have arisen, however, where unwanted waste has become useful. For example, tailings from the mining and processing of vanadium ore became valuable when it was realized that they were an economical source of uranium. Today, there are recognized trade-offs in waste management to balance technology, safety, health, cost, and other factors. As with waste

Fig. 1. Waste management of the nuclear fuel cycle.

storage of any kind, if containment is breached or treatment inadequate, then the public may be exposed to a manmade hazard. The close correlation between radioactive waste standards and needs of the producing and consuming members of society may not be immediately obvious, yet it is fundamental to waste management.

We address primarily the problem of identifying technical documents dealing with questions of how to handle, treat, and isolate the major categories of waste produced by the present generation of light-water power reactors. Some literature identified in the Keyword and Permuted Title Indexes, under such terms as BENEFIT VS RISK, COST-BENEFIT ANALYSIS, HAZARD ANALYSIS, attempts to assess standards in terms of such needs. Keywords are given in capitalized form.

The selected literature contained in this Guide has been organized into the twelve categories shown in Table 1.

Table 1. Waste management categories used in this guide

Category No.	Category	No. of documents
1	MANAGEMENT - General	419
2	TREATMENT	245
3	STORAGE	104
4	DISPOSAL	311
5	TRANSPORTATION & HANDLING	27
6	ALTERNATIVE	13
7	HIGH-LEVEL WASTE	125
8	INTERMEDIATE-LEVEL WASTE	38
9	LOW-LEVEL WASTE	62
10	FUEL REPROCESSING	45
11	TRITIUM	38
12	BIBLIOGRAPHIES	26

CATEGORY 1: RADIOACTIVE WASTE MANAGEMENT - General

In this category the papers are of a general nature or they cover two or more of the categories of Table 1.

CATEGORY 2: RADIOACTIVE WASTE TREATMENT

This category includes papers concerned with the processing of waste "streams" (gases, liquids, slurries) generated and carried through the various unit operations of a reprocessing plant. These steps lead to a final solid form for encapsulation, preparatory to transportation or storage.

CATEGORY 3: RADIOACTIVE WASTE STORAGE

Herein fall papers relating to storage of high- or intermediate-level waste in forms which may or may not be suitable for final isolation. Manmade surface structures and underground cavities, natural or engineered, for retrievable storage, are required.

CATEGORY 4: RADIOACTIVE WASTE DISPOSAL

Listings here include references on disposal of low-, intermediate-, and high-level wastes. True disposal methods, transmutation and extra-terrestrial, are not currently feasible, though the latter is technically possible. Rather, the references are to irretrievable "storage," or more properly, isolation from the biosphere.

Available methods for high-level waste isolation involve deep dryland isolation, deep seabed isolation, and isolation in basement rock

under polar ice. Intermediate-level waste can be deposited as thin grout (cement) in shale several hundred meters below ground, or stored as drums of solid in a salt mine. Surface storage tanks of liquid intermediate-level waste are being converted slowly to more suitable solid form preparatory to deep disposal. Included in this category are references to low-level waste depositories in shallow land-burial grounds (see also Category 9). In some cases tanks and burial grounds have leaked. This Guide does not emphasize the health aspects of radioactive waste management. However, some guidance can be found under the keywords HEALTH PHYSICS, PUBLIC HEALTH, ENVIRONMENTAL PROTECTION AGENCY, and STANDARDS.

CATEGORY 5: TRANSPORTATION & HANDLING OF RADIOACTIVE WASTE

Category 5 includes references to the transportation and handling of low-, intermediate-, and high-level wastes. These documents provide information on regulations, packaging, personnel and population exposure, containment design test procedures, and other safety aspects.

CATEGORY 6: ALTERNATIVE METHODS OF RADIOACTIVE WASTE MANAGEMENT

This section emphasizes comparative studies of more specific nature than the general Category 1. The importance of a comparative treatment of the options is highlighted by grouping the few documents concerned with alternatives in this separate category.

CATEGORY 7: HIGH-LEVEL RADIOACTIVE WASTE

Radioactive waste is categorized in different ways, the most common in general use being three ill-defined classifications known as "high," "intermediate," and "low" level. High-level waste is commonly characterized by dose rates in the range of rads per hour at the surface of unshielded material and heat generation in the range of kilowatts per cubic meter, sufficient to melt rock or other material. Spent fuel elements stored at power reactor sites constitute high-level waste for disposal, if they are not to be processed for recovery of unused uranium-235, uranium-238, and plutonium. At a fuel reprocessing plant, high-level waste may be in liquid form for extraction or in processed solid form for final shipment to a central repository.

Some fission products from spent reactor fuel are short-lived (seconds to years). After decay of the medium-lived (decades to centuries) nuclides, the longer lived ones finally become dominant. Separation of long-lived actinides from fission products and fission products from unused uranium can be carried out to facilitate handling and disposal and to conserve uranium. However, separation of plutonium from high-level waste produces a potential security problem. Some civil defense references can be identified through such keywords as EMERGENCY, ACCIDENT, and MILITARY.

Deep geologic isolation has been advocated as the most practical method of high-level waste storage in the absence of suitable transmutation technology.

CATEGORY 3: INTERMEDIATE-LEVEL RADIOACTIVE WASTE

The International Atomic Energy Agency (IAEA), the European Nuclear Energy Agency (ENEA), the European Association of Euratom Nuclear Industries (FORATOM), the U.S. Nuclear Regulatory Commission (NRC), the Energy Research and Development Administration (ERDA), the American Standards Association (ASA), and individual specialists in waste management have attempted classifications of waste ranging from 2 to 12 categories. Three categories are commonly used. The three used by this Guide are those of the individual authors cited, and are therefore dependent in meaning on how the authors define the terms. European Association of Euratom Nuclear Industries characterized IAEA Liquid Waste Category 4 as "medium level" if the liquid contained between 0.1 and 10,000 curies of radioactivity per cubic meter. The ASA defined a Category D of liquid waste with total concentration of radionuclides between 10,000 and 100,000,000 times the occupational maximum permissible concentration in water, $(MPC)_w$, as defined by the International Commission on Radiological Protection (ICRP) in 1959, using the most restrictive $(MPC)_w$ radionuclide in the mixture. "Intermediate" level in the Soviet Union is defined as being between 0.00001 and 1 curie per liter; anything above is "high-level" and anything below, "low-level." Since the dividing line between "intermediate" and "high" level is not sharp, authors tend to mention both levels, leaving it to the reader to make the distinction.

As mentioned in Category 4, intermediate-level waste disposal can be effected by hydraulic fracturing of shale, injecting under pressure a cement-waste slurry, or by storing drums of the solidified waste in a

salt mine, as is done at the Asse mine in Germany. The existence of salt beds laid down millions of years ago gives reasonable assurance of post-tectonic stability and isolation from naturally-occurring water. See, for example, PROJECT SALT VAULT in the Keyword Index.

CATEGORY 9: LOW-LEVEL RADIOACTIVE WASTE

Low-level waste disposal involves potential contamination of land, water, or air. Shallow land-burial operations have recently been of increasing concern to the public and to regulatory agencies. Burial grounds, power plants, and reprocessing facilities are potential sources of water contamination. Such operations, as well as incineration plants, research facilities, and other laboratories may contribute to contamination of the air. If containment is breached, the surrounding environment can be contaminated. Some radionuclides are environmentally mobile; others are not. See, for example, the keyword SOIL, RADIONUCLIDE MOVEMENT THROUGH, or GROUND TRANSPORT. Whereas high- and intermediate-level wastes are most likely to present occupational hazards, inadequacies in low-level waste management are more likely to result in a population hazard.

Commercial low-level, shallow land-burial sites have been in operation at West Valley, New York; Morehead, Kentucky; Barnwell, South Carolina; Sheffield, Illinois; Beatty, Nevada; and Richland, Washington. Energy Research and Development Administration sites are located in Idaho, New Mexico, South Carolina, Tennessee, and Washington State. See, for example, the keyword WEST VALLEY.

CATEGORY 10: RADIOACTIVE FUEL REPROCESSING

If uranium resources are to be extended, unused uranium-235 needs to be recovered and cycled back to LWR's (Light Water Reactors); unused uranium-235 needs to be recovered and converted to fissile plutonium in LMFBR's (Liquid Metal Fast Breeder Reactors). Although the quantity of plutonium produced from uranium-235 in light-water reactors is small compared to breeders, it is not insignificant. Serious thought is being given to the pros and cons of whether to reprocess spent fuel elements. The risk of exhausting the world's uranium supplies before proven alternatives are securely in place must be balanced against the risk of nuclear proliferation. Most of the references cited in this category have to do with technical aspects of fuel reprocessing.

CATEGORY 11: TRITIUM WASTE MANAGEMENT

Although bibliographies and reviews exist for tritium, the authors felt that a guide to waste management literature should include some coverage. Considerable amounts of tritium are produced in the LWR cycle. The future impact of tritium (along with krypton, carbon dioxide, and other radioactive gases produced in an LWR economy) is under study. Most of the tritium would be released when spent fuel elements are chopped and leached at the reprocessing plant.

CATEGORY 12: BIBLIOGRAPHIES ON RADIOACTIVE WASTE MANAGEMENT

Waste bibliographies have been compiled from time to time, and for those who desire a more exhaustive coverage than the 1030 records

contained in the present Guide, a Category 12 on waste bibliographies for several thousand documents has been included. For example, there is a waste bibliography (TID-3340, 1973) of 1098 references to the Hanford site, and for tritium a bibliography (ORNL-5057, 1975) of 1291 abstracts.

DISCUSSION

A tabulation of the documents contained in this Guide by year is given in Table 2. The distribution of documents according to various disposal terms is shown in Table 3.

Table 2. Selected waste management references by year (this Guide)

Year	References	Year	References	Year	References
1955	1	1960	8	1970	100
1956	1	1961	12	1971	85
1957	2	1962	16	1972	140
1958	3	1963	21	1973	69
1959	5	1964	44	1974	101
		1965	46	1975	73
		1966	48	1976	29
		1967	80		
		1968	87		
		1969	66		

When considering WASTE DISPOSAL, the properties of the material to be disposed are of crucial importance. WASTE TREATMENT determines the form and physicochemical properties such as leachability, mechanical strength, and heat conduction. The numbers of documents in these various classifications are shown in Table 4. In some cases, numbers in

Table 3. Waste disposal documents

Waste disposal term	No. of documents
Atmospheric	34
Bedrock	24
Deep well	23
Economics	135
Extra-terrestrial	8
Gas	86
Hydraulic fracturing	58
Ice sheet	8
Lake	7
Liquid	147
Ocean	82
River	62
Salt	136
Seabed	5
Solid	165
Terrestrial	87

tables represent keywords combined. For example, the keyword CALCINATION also includes subsets of the term such as POT CALCINATION and FLUIDIZED BED.

It is desirable to use as many entry points into the records of this Guide as are available (Category; Keywords; Permuted Title; Corporate Author; etc.). These 1030 records selected from a combined base of about 6000 were indexed over a period of about ten years (1966-1976) by several specialists concerned with health physics aspects of radioactive waste management. Concepts change with time, especially for a rapidly-developing technology. Although the present Keyword Index has been reworked extensively for uniformity and introduction of new keywords, complete integration of this diverse and changing subject cannot be guaranteed.

Table 4. Number of documents on waste treatment, form, and disposal

Waste	No. of documents 245 ^a	Form	No. of documents 212 ^a	Disposal	No. of documents 311 ^a
				Method	Geologic composition
Evaporation	39	Liquid	38	Salt mine	Salt 136
Solidification	17	Concrete	35	Hydraul. fract.	Shale 11
Incineration	31	Asphalt	30	Deep rock	Granite 25
Calcination	66	Glass	93	Deep well	Limestone, etc. 26
Vitrification	22	Ceramic	8		
		Plastic	6		

^aThis number is not a total number of all documents for the sub entries, but is the number of documents for the corresponding keyword.

Papers on ice sheet and seabed disposal have been few. The problems of cost, transportation, working conditions, and environmental fluidity connected with ice and water are more formidable than for dry land. A separate category on PLUTONIUM as a waste management problem was not established, since some waste management aspects of plutonium are included in a series of documents entitled Environmental Aspects of the Transuranics, the latest of which is ORNL/EIS-91(7), 1976. The seven Environmental Information System (EIS) documents contain about 130 waste references, some of which deal with plutonium. The present Guide gives 65 references under the keyword PLUTONIUM.

Though prime emphasis of this Guide is on waste management in the nuclear fuel cycle, some papers of an auxiliary nature are included. To illustrate, paper, gloves, and other materials contaminated with low levels of radioactivity coming from hospital, research, educational, and industrial laboratories are sent to designated sites for shallow land burial. It should not be necessary to retrieve such waste, if site selection takes into proper account the terrain, water movements, earthquake activity, population distribution, and other factors likely to affect containment. Land burial references will be found in Category 9, and in connection with such keywords as BURIAL GROUND and ENVIRONMENTAL PROTECTION AGENCY.

A few radionuclides, such as the noble gases, are allowed to escape into the biosphere. Krypton-85 releases from power and fuel reprocessing plants have not elevated the global air inventory to unacceptable levels based on present ICRP standards. Technology and economics increasingly support the goal of retaining and storing

radioactive noble gases until they have decayed to stable form. For example, improved methods are under study for trapping the inert gases as clathrates in organic and inorganic crystalline materials, or by storing in pressurized cylinders under noncorroding conditions. For krypton literature see the keyword KRYPTON and the more general term NOBLE GAS. Carbon-14 dioxide, iodine-129 and iodine-131 vapors, and tritiated hydrogen gas and water are other radioactive gases for which stack treatment is required.

Reader questions and problems can be converted into keywords. For example, the TRANSPORTATION of reactor-generated wastes to FUEL REPROCESSING plants and to BURIAL GROUNDS involve CONTAINER questions. Category 5 considers TRANSPORTATION AND HANDLING. The generation of high-level waste in power reactors involves RADIATION SAFETY & CONTROL, and OPERATING EXPERIENCES for specific reactors such as the DRESDEN I (BWR), a boiling water reactor, and YANKEE ROW (PWR), a pressurized water reactor. Such reactors produce AIRBORNE RELEASES of gases like KRYPTON, necessitating control through REGULATIONS, which evolve from STANDARDS recommended by bodies such as ICRP, NCRP, and IAEA.

The abstracts and indexes of this Guide exist in a computerized file available for searching from any terminal having access to the ORNL computer complex. Also available at ORNL is another computerized file of over 5000 references on radioactive waste management. Both files are available through the ORLOOK search program.

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PERSONNEL INVOLVED IN THE DEVELOPMENT OF NUCLEAR STANDARDS IN THE UNITED STATES 1975 210

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RADIOACTIVE WASTE MANAGEMENT. A BIBLIOGRAPHY OF PUBLICLY AVAILABLE LITERATURE PERTAINING TO THE USARC'S RADFORD, WASH. PROD. 1029

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RADIOACTIVE WASTE PROCESSING AND DISPOSAL - AN ANNOTATED BIBLIOGRAPHY 1021

URANIUM TAILINGS BIBLIOGRAPHY 970

<1>

PUB DATE: 1967
AUTHOR: AMERICAN STANDARDS ASSOCIATION

TITLE: PROPOSED DEFINITION OF RADIOACTIVE WASTE CATEGORIES

CORPORATE AUTHOR: AMERICAN STANDARDS ASSOCIATION, COMMITTEE B-5

ABSTRACT: THE TERMS LOW LEVEL, INTERMEDIATE LEVEL, AND HIGH LEVEL HAVE BEEN WIDELY USED TO DESCRIBE DIFFERENT CONCENTRATIONS OF RADIOACTIVE MATERIALS IN WASTES. UNFORTUNATELY, THESE TERMS DO NOT HAVE QUANTITATIVE DEFINITIONS. IN THE INTEREST OF BETTER COMMUNICATION AMONG WORKERS WITHIN THE NUCLEAR ENERGY INDUSTRY AND BETWEEN THE INDUSTRY AND THE PUBLIC, IT IS DESIRABLE TO ASSIGN DEFINITE MEANINGS TO TERMS USED TO DESCRIBE BROAD CATEGORIES OF RADIOACTIVE WASTES. THIS STANDARD IS CONCERNED PRIMARILY WITH POTENTIAL HAZARDS TO PEOPLE, AND THEREFORE THE TERMS USED TO CATEGORIZE THE WASTES SHOULD BE READILY COMPARABLE WITH THE VALUES RECOMMENDED BY THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP), WHICH ARE ACCEPTED AS A BASIS OF SAFETY EVALUATION. SAFETY EVALUATION INVOLVES THE RELATIONSHIP OF POTENTIAL RADIATION EXPOSURES TO THE RECOMMENDED MAXIMUM PERMISSIBLE VALUES FOR SPECIFIC RADIOISOTOPES OVER LONG PERIODS OF TIME. (NOB. ABST.)

PUB DESC: NSO, 1967 7 PP., 1 TABLE, 7 REFS., 3 APPEND. 1967.

KEYWORDS: RADIOACTIVE WASTE; CLASSIFICATION; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); DESCRIPTION; HIGH-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; ENERGY LEVEL; CONCENTRATION; REGULATION (SEE ALSO STANDARDS, RADIATION); STANDARDS, RADIATION (SEE ALSO REGULATION); AMERICAN STANDARDS ASSOCIATION (ASA); ICRP; MAXIMUM PERMISSIBLE CONCENTRATION (MPC)

<2>

PUB DATE: 1974
AUTHOR: ANDERSON, J.D.

TITLE: SPECIFICATIONS AND STANDARDS FOR THE PACKAGING, STORAGE, AND DISPOSAL OF RICHLAND OPERATIONS SOLID WASTES

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CO., RICHLAND, WASHINGTON

ABSTRACT: PROVIDES SPECIFICATIONS AND STANDARDS WHICH WILL ASSURE THAT ALL SOLID WASTE HANDLED BY ARCO ARE PACKAGED AND STORED OR DISPOSED OF IN ACCORDANCE WITH: (1) ARCO WASTE MANAGEMENT PROGRAM OBJECTIVES; (2) AEC-220, JULY 1, 1972, 'RADIATION PROTECTION STANDARDS AND CONTROLS'; (3) AEC MANUAL CHAPTER 0510, MARCH 7, 1968, 'WASTE DISPOSAL,' ITS RICHLAND OPERATIONS OFFICE (RL) SUPPLEMENT AND APPENDIX; AND (4) AEC MANUAL CHAPTER 0511, SEPTEMBER 19, 1973, 'RADIOACTIVE WASTE MANAGEMENT.'

PUB DESC: ARH-3032, 19 PAGES, 5 REFERENCES, APRIL 25, 1974

KEYWORDS: STANDARDS, RADIATION (SEE ALSO REGULATION); PACKAGING; COVER; WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE

<3>

PUB DATE: 1972
AUTHOR: ANDERSON, R.J.

TITLE: ATLANTIC RICHFIELD HANFORD COMPANY COMPACTION FACILITIES

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD COMPANY

ABSTRACT: THE ATLANTIC RICHFIELD HANFORD COMPANY IS INSTALLING FACILITIES FOR THE COMPACTION OF BOTH CONTAMINATED AND NONCONTAMINATED COMBUSTIBLE WASTES. THE FACILITY FOR CONTAMINATED SERVICE OF TRANSURANIC WASTES COMPRIZES A 10-TON PRESS FOR COMPACTION DIRECTLY INTO 55-GALLON DRUMS FOR 20-YEAR RETRIEVABLE BURIAL IN COMPLIANCE WITH IMMEDIATE ACTION DIRECTIVE

0511-21. THE COMPACTOR INCORPORATES HAULT FEATURES FOR WORKER SAFETY AND CONTAMINATION CONTROL.

PUB DESC: CCMF-721030, 2 TABLES, 1 FIGURE, PP. 153-166, PAPER PRESENTED AT THE AEC POLLUTION CONTROL CONFERENCE, HELD IN OAK RIDGE, TENN. ON OCTOBER 25, 1972

KEYWORDS: DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); FLUTATION; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; DALLING; WASTE MANAGEMENT; COMPACTION; CONTAMINATION; TRANSURANIC ELEMENT; SOLID; ARHCO

<4>

PUB DATE: 1972
AUTHOR: AUGIMO, R.E.; BAYNE, C.K.; BALEPASKA, J.

TITLE: PRELIMINARY GEOLOGICAL INVESTIGATIONS OF SUPPLEMENTAL RADIOACTIVE WASTE REPOSITORY AREAS IN THE STATE OF KANSAS

CORPORATE AUTHOR: UNIVERSITY OF KANSAS, CENTER FOR RESEARCH, INC.

ABSTRACT: THE STATE GEOLOGICAL SURVEY OF KANSAS IN COOPERATION WITH GEOLOGICAL CONSULTANTS MADE A PRELIMINARY STUDY OF THE SURFACE GEOLOGY AND HYDROLOGY AND SUBSURFACE GEOLOGY OF CENTRAL AND WESTERN KANSAS WITH THE PURPOSE OF FOCUSING ON AREAS OTHER THAN LYONS, KANSAS, WHICH MAY BE CONSIDERED AS SUPPLEMENTAL WASTE REPOSITORY SITES. CRITERIA CONSIDERED IN ADDITION TO THOSE ORIGINALLY PROPOSED (AUGIMO AND HAMILTON, 1971) FOR THE LYONS, KANSAS SITE ARE GIVEN.

PUB DESC: OMO-693; USA 26:36643, 95 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1972

KEYWORDS: GEOLOGY; PUBLIC RESPONSE (SEE ALSO OPINION, PROGRESS, AND POPULATION RESPONSE); KANSAS; SITING; WASTE DISPOSAL; CALCINATION; WASTE DISPOSAL, SOLID; POPULATION EXPOSURE; HYDROLOGY; POPULATION DISTRIBUTION; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; FUEL REPROCESSING; POPULATION RESPONSE; BENEFICIAL USE, COMMERCIAL

<5>

PUB DATE: 1972
AUTHOR: ANTHONY, T.R.; CLINE, V.E.

TITLE: THE EFFECT OF THERMAL AND CAPILLARY GRADIENTS ON THE MOVEMENT OF LIQUIDS AND GASES IN BEDDED SALT

CORPORATE AUTHOR: GENERAL ELECTRIC COMPANY

ABSTRACT: A PROBLEM ARISES FROM THE HIGH TEMPERATURES GENERATED IN THE SALT MINE REPOSITORIES BY THE SELF-HEATING OF THE HIGHLY RADIOACTIVE WASTES FOR A PERIOD OF 20 TO 40 YEARS AFTER BURIAL. INITIALLY, THESE HIGH TEMPERATURES MAY CAUSE VAPORIZATION OF BRINE INCLUSIONS IN THE SURROUNDING SALT WITH AN ACCOMPANYING RELEASE OF WATER VAPOR IN THE MINE. THEORY AND EXPERIMENT SHOW THAT INCLUSION VAPORIZATION CAN BE AVOIDED BY KEEPING TEMPERATURES IN THE SALT MINE BELOW 300 C BY SUITABLY DISTRIBUTING THE NUCLEAR WASTE.

PUB DESC: AMERICAN NUCLEAR SOCIETY, 15(1), PP. 90-91 (JUNE 1972)

KEYWORDS: WATER; THERMAL CONDUCTION; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); ROCK MECHANICS; GAS; TEMPERATURE

<6>

PUB DATE: 1974
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: INTERIM LICENSING POLICY ON AS LOW AS PRACTICABLE FOR GASEOUS RADIOIODINE RELEASES FROM LIGHT-WATER-COOLED NUCLEAR POWER REACTORS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

<6> CONF.
ABSTRACT: PROVIDES INTERIM GUIDANCE TO AID APPLICANTS IN IMPLEMENTING PARAGRAPHS 20.1(C), 50.36A, AND 50.36A OF THE COMMISSION'S REGULATIONS WITH RESPECT TO HANDLING RADIOACTIVE IODINE RELEASES IN GASEOUS EFFLUENTS FROM THE PLANTS AS LOW AS PRACTICABLE. THE REVISION OF THIS GUIDE REFLECTS THE POSITION OF THE REGULATORY STAFF WITH RESPECT TO RADIOACTIVE RELEASES IN GASEOUS EFFLUENTS AS PRESENTED IN ITS CONCLUDING STATEMENT OF POSITION IN THE RULE MAKING PROCEEDING.

PUB DESC: AEC REGULATORY GUIDE 1.42, 34 PAGES, 75 REFERENCES, MARCH 1974 (REV. 1)

KEYWORDS: AIRBORNE RELEASE; REACTOR, BWR; EFFLUENT; FISSION PRODUCT, IODINE; IODINE; REACTOR, PWR; WASTE DISPOSAL, GAS; AEC REGULATORY GUIDE

<7>

PUB DATE: 1974
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: WASTE MANAGEMENT OPERATIONS, HANFORD RESERVATION, RICHLAND, WASHINGTON: ENVIRONMENTAL STATEMENT - VOL. 1

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE PURPOSE OF THIS STATEMENT IS TO ASSESS THE ENVIRONMENTAL IMPACT OF THE HANFORD WASTE MANAGEMENT OPERATIONS PROGRAM IN ORDER TO ASSURE THAT FUTURE HANFORD ACTIONS WOULD NOT HAVE ADVERSE ENVIRONMENTAL CONSEQUENCES AND TO ACCOUNT FOR THESE ENVIRONMENTAL CONSEQUENCES THAT MAY NOT HAVE BEEN FULLY EVALUATED AT THE OUTSET OR AT EACH STAGE OF THE WASTE MANAGEMENT PROGRAM. THE STATEMENT WILL SERVE AS A BASE FOR EVALUATING THE ENVIRONMENTAL IMPACT OF FUTURE ACTIONS IN RELATION TO THE EXISTING ENVIRONMENT AT HANFORD.

PUB DESC: WASH-1530 (DRAFT) (VOL. 1), 645 PAGES, FIGURES, SEPTEMBER 1974

KEYWORDS: WASTE MANAGEMENT; ENVIRONMENT; HANFORD SITE; COST BENEFIT; STATEMENT, ENVIRONMENTAL

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PUB DATE: 1974
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: ENVIRONMENTAL STATEMENT RADIOACTIVE WASTE FACILITIES, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THIS ENVIRONMENTAL STATEMENT WAS PREPARED IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 IN SUPPORT OF THE ATOMIC ENERGY COMMISSION'S PROPOSAL FOR LEGISLATIVE AUTHORIZATION AND APPROPRIATIONS FOR THE PROJECT. THE PURPOSE OF THE PROPOSED PROJECT IS TO PROVIDE NEW FACILITIES TO SUPPLEMENT AND UPGRADE EXISTING FACILITIES FOR HANDLING INTERMEDIATE LEVEL LIQUID WASTES (ILW) GENERATED BY OAK RIDGE NATIONAL LABORATORY (ORNL) OPERATIONS. THESE FACILITIES WILL INCLUDE A WASTE EVAPORATOR AND ITS ASSOCIATED TANKS TO BE LOCATED IN BETHLEHEM VALLEY IN THE APPROXIMATE CENTER OF THE ORNL SITE; WASTE COLLECTION AND STORAGE TANKS TO BE LOCATED IN BELTON VALLEY, APPROXIMATELY A MILE FROM THE WASTE EVAPORATOR FACILITY; AND A WASTE TRANSFER LINE CONNECTING THE TWO FACILITIES. THE WASTE EVAPORATOR WILL BE SIMILAR IN DESIGN TO THE EXISTING WASTE EVAPORATOR, WITH A CAPACITY OF 600 GALLONS PER HOUR, AND WILL SERVE AS BACKUP TO THE EXISTING EVAPORATOR. THE NEW TANKS WILL BE SIMILAR IN DESIGN TO THOSE CURRENTLY BEING BUILT AT OTHER AEC SITES AND WILL PERMIT OPERATION OF THE ORNL WASTE HANDLING SYSTEM WITHOUT USE OF THE EXISTING TANKS. (DOE. ADVIS)

PUB DESC: WASH-1532, (1974)

KEYWORDS: WASTE TREATMENT; ORNL; INTERMEDIATE-LEVEL WASTE; ENVIRONMENT; WASTE STORAGE; WASTE DISPOSAL; STORAGE TANKS; HYDRAULIC FRACTURING (SEE ALSO WASTE

DISPOSAL, HYDRAULIC FRACTURING); EVAPORATION; INTERMEDIATE-LEVEL WASTE

<9>

PUB DATE: 1973
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: WHAT ABOUT RADIOACTIVE WASTES?

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: REPORTS ON PROBLEMS AND ANSWERS ASSOCIATED WITH SAFE MANAGEMENT OF THE COMMERCIAL HIGH-LEVEL RADIOACTIVE WASTE FROM THE SPENT FUEL FROM NUCLEAR POWER PLANTS.

PUB DESC: AEC NEWS FEATURE NO. 3216, 4 PAGES, 1 FIGURE, JUNE 21, 1973

KEYWORDS: WASTE STORAGE; WASTE TREATMENT; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; STORAGE CONTAINERS; WASTE DISPOSAL, SALT; FUEL REPROCESSING; AGENCY, AEC (SEE ALSO USARC); RETRIEVABLE SURFACE STORAGE

<10>

PUB DATE: 1973
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: REPORT ON RELEASES OF RADIOACTIVITY IN EFFLUENTS AND SOLID WASTE FROM NUCLEAR POWER PLANTS FOR 1972

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: PRESENTS TABULATIONS OF RADIOACTIVITY IN EFFLUENTS AND SOLID WASTE FROM NUCLEAR POWER PLANTS IN 1973. TABLES INCLUDE (1) THE FISSION AND ACTIVATION PRODUCTS AND OF TRITIUM RELEASED IN LIQUID EFFLUENTS, (2) THE QUANTITY OF NOBLE GASES AND OF HALOGENS AND PARTICULATES RELEASED IN EFFLUENTS TO THE ATMOSPHERE, (3) COMPARISON OF THESE RELEASES WITH THE PREVIOUS TWO YEARS, (4) THE GROSS THERMAL AND NET ELECTRICAL POWER PRODUCED, (5) THE TOTAL VOLUMES AND QUANTITIES OF RADIOACTIVITY IN SOLID WASTE, AND (6) SUMMARY DATA FOR EACH POWER REACTOR.

PUB DESC: TID-26465; USA 31-07734, 64 PAGES, 30 TABLES, AUGUST 1973

KEYWORDS: AIRBORNE RELEASE; INVENTORY; REACTOR, BWR; EFFLUENT; REACTOR, GCR; REACTOR, LWR; REACTOR, PWR; WASTE DISPOSAL; REACTOR, POWER; RADIOACTIVITY RELEASE; DATA COLLECTION; AGENCY, AEC (SEE ALSO USARC);

<11>

PUB DATE: 1973
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: SUMMARIES OF USARC ENVIRONMENTAL RESEARCH AND DEVELOPMENT

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, TECHNICAL INFORMATION CENTER

ABSTRACT: THE INDIVIDUAL PROJECTS OF THE ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM ARE PRESENTED BY CATEGORY IN THE FORM OF SUMMARIES FURNISHED BY THE INVESTIGATORS. CATEGORIES INCLUDED ARE: TRANSPORT AND PATH; MEASURING AND MONITORING; EVALUATION OF EFFECTS (BOTH HUMAN HEALTH AND SAFETY AND NATURAL POPULATIONS AND SPECIES); AND PREVENTION AND CONTROL TECHNOLOGY. AEC DIVISIONS CONTRIBUTING TO THIS PUBLICATION ARE BIOLOGICAL AND ENVIRONMENTAL RESEARCH, APPLYING TECHNOLOGY, MILITARY APPLICATION, OPERATIONAL SAFETY, PRODUCTION AND MATERIALS MANAGEMENT, AND REACTOR DEVELOPMENT & TECHNOLOGY. (MODIFIED AUTH ABST.)

PUB DESC: TID-0065-11, (1973)

KEYWORDS: SUMMARY REPORT; ABSTRACTS; ENVIRONMENT; TECHNICAL INFORMATION; TRANSPORT; TREATMENT; SAFETY EVALUATION; EFFECT; TREATMENT; CONTROL TECHNOLOGY;

<11> CONF.
WASTE MANAGEMENT; USAC (SEE ALSO AGENCY, AEC);
MILITARY; REACTOR DEVELOPMENT

<12>

PUB DATE: 1972
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: AEC ANNOUNCES PLANS FOR MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE USAC SAID TODAY IT PROPOSES TO DESIGN AND BUILD ENGINEERED SURFACE FACILITIES CAPABLE OF STORING THE SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTES PRODUCED BY THE NUCLEAR POWER INDUSTRY. AT THE SAME TIME THE AEC'S RESEARCH AND DEVELOPMENT PROGRAM ON STORAGE OF WASTES IN SALT BEDS SEVERAL HUNDRED FEET UNDERGROUND, OR IN OTHER SELECTED GEOLOGIC FORMATIONS, IS BEING MODIFIED TOWARD CONSTRUCTION OF A PILOT PLANT TO VERIFY THE INFORMATION GENERATED BY TESTS OF LABORATORY AND FIELD EXPERIMENT WORK. IN ADDITION, THE AEC WILL EVALUATE OTHER WASTE-MANAGEMENT OPTIONS THAT ARE NOT TECHNICALLY FEASIBLE AT THIS TIME BUT OFFER POTENTIAL ADVANTAGES FOR LATER USE.

FOR DESC: AEC PRESS RELEASE P-103, 1 PAGE, MAY 10, 1972

KEYWORDS: CONCRETE; HIGH-LEVEL WASTE; WASTE DISPOSAL; WASTE STORAGE; WASTE MANAGEMENT; SHIELDING; WASTE DISPOSAL, DEEP WELL; AGENCY, AEC (SEE ALSO USAC);

<13>

PUB DATE: 1972
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: RADIOACTIVE WASTE EVAPORATOR AND AUXILIARIES, RICHMOND, WASHINGTON

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: SUMMARIZES THE NEED AND PURPOSE FOR THE EVAPORATOR. THE ENVIRONMENTAL IMPACT RESULTING FROM ITS OPERATION, INCLUDING CO-INCIDENTAL ADVERSE EFFECTS AND ALTERNATES, IS GIVEN. A COST-BENEFIT ANALYSIS LEADS TO CONCLUSION THAT CONSTRUCTION AND OPERATION OF THE EVAPORATOR SHOULD PROCEED.

FOR DESC: WASH-1521(OR.), 46 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1972

KEYWORDS: CONCRETE; WASTE STORAGE; CALCINATION; WASTE TREATMENT, LIQUID; WASTE MANAGEMENT; EVAPORATION; SHIELDING; WASTE DISPOSAL, SALT; DEEPWELL VS BULK

<14>

PUB DATE: 1972
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DRAFT ENVIRONMENTAL STATEMENT FOR LOS ALAMOS SCIENTIFIC LABORATORY - SOLID RADIOACTIVE WASTE VOLUME REDUCTION FACILITY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THIS ENVIRONMENTAL STATEMENT IS PREPARED IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT AND IN SUPPORT OF AN ATOMIC ENERGY COMMISSION PROPOSAL TO DESIGN, CONSTRUCT, AND OPERATE AN ENGINEERING DEMONSTRATION FACILITY FOR REDUCTION OF SOLID RADIOACTIVE WASTE VOLUMES AT LOS ALAMOS SCIENTIFIC LABORATORY (LASL). THE FACILITY WOULD BE USED TO STUDY AND DEVELOP SAFE AND EFFECTIVE SORTING, COMPACTING, AND INCINERATION OF RADIOACTIVE MATERIAL, PARTICULARLY PLUTONIUM AS FOUND IN TYPICAL LASL WASTES.

FOR DESC: WASH-1515(OR.), 42 PAGES, 3 FIGURES, 1 TABLE, 8 REFERENCES, JANUARY 1972

KEYWORDS: REGULATION (SEE ALSO STANDARDS, RADIATION); ENVIRONMENT; LASL; WASTE MANAGEMENT; COMPACTING; CONTAMINATION; INCINERATION; ENVIRONMENTAL CONTROL MEASURE; REPORT, ENVIRONMENTAL; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH)

<15>

PUB DATE: 1972
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: ENVIRONMENTAL SURVEY OF THE NUCLEAR FUEL CYCLE.

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, FUELS AND MATERIALS, DIRECTORATE OF LICENSING

ABSTRACT: THIS SURVEY ASSESSES THE ENVIRONMENTAL CONSIDERATIONS RELATED TO THE CURRENTLY PREDOMINANT NUCLEAR FUEL CYCLE FOR URANIUM BIOXIDE (UO₂) FUELED, LIGHT-WATER MODERATED AND COOLED NUCLEAR POWER PLANTS (LWR). IN THE UNITED STATES, ABOUT 99% OF THE ELECTRIC POWER GENERATED FROM NUCLEAR FUEL INCORPORATES THIS FUEL CYCLE AND A LARGE PERCENTAGE OF THE PLANTS THAT ARE UNDER CONSIDERATION FOR CONSTRUCTION PERMITS OR OPERATING LICENSES WILL UTILIZE THIS FUEL CYCLE. IN ADDITION, ESTIMATES OF THE NUCLEAR GENERATION OF ELECTRIC POWER INDICATE THAT THIS PREDOMINANCE OF LWR USE WILL PREVAIL THROUGH MOST OF THE PRESENT DECADE. (MOD. AUTH. ABST.)

FOR DESC: WASH-1237, NOV. 1972. 337 P, 7 FIG, 51 TAB, 245 REF.

KEYWORDS: REACTOR; FORECAST; FUEL FABRICATION (SEE ALSO FABRICATING); FUEL; FUEL CYCLE; URANIUM MINING; MILLING; HEXAFLUORIDE; ENRICHMENT; AEC (SEE ALSO AGENCY); FUEL DEPLETION; WASTE MANAGEMENT; TRANSPORTATION; SURVEY; ENVIRONMENT; LWR (SEE ALSO REACTOR, LWR); LICENSING

<16>

PUB DATE: 1971
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: AEC PROPOSES FURTHER GUIDANCE TO KEEP RADIOACTIVITY IN LIGHT-WATER-COOLED NUCLEAR POWER REACTOR EFFLUENTS AS LOW AS PRACTICABLE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: NUCLEAR POWER PLANTS WOULD BE DESIGNED TO LIMIT RADIOACTIVITY IN EFFLUENTS TO LEVELS THAT WOULD KEEP RADIATION EXPOSURES OF PERSONS LIVING NEAR THE PLANTS TO LESS THAN 1% ABOVE AVERAGE NATURAL BACKGROUND RADIATION UNDER PROPOSED GUIDELINES ANNOUNCED TODAY BY THE USAC. SUCH EXPOSURES WOULD BE ABOUT 1% OR LESS OF THE FEDERAL RADIATION PROTECTION GUIDES FOR INDIVIDUAL MEMBERS OF THE PUBLIC.

FOR DESC: USAC NEWS RELEASE NO. 0-87, 1A PAGES, JUNE 7, 1971

KEYWORDS: ADMINISTRATIVE CONTROL; REACTOR, BWR; STANDARDS, RADIATION (SEE ALSO REGULATION); DESIGN CRITERIA; FISSION PRODUCT RELEASE; REACTOR, PWR; WASTE DISPOSAL; REACTOR, POWER; REGULATION, AEC; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIOACTIVITY RELEASE; ENVIRONMENTAL CONTROL MEASURE; CONCENTRATION

<17>

PUB DATE: 1971
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: ALTERNATIVE SITES SOUGHT FOR RADIOACTIVE WASTE DEPOSITORY

ABSTRACT: AEC HAS ENTERED INTO A CONTRACT WITH KANSAS GEOLOGICAL SURVEY TO SEARCH FOR POTENTIAL SALT LOCATIONS IN KANSAS OTHER THAN CARNEY SALT MINE AT LYONS. ACTION RESULTED FROM IDENTIFICATION OF 2 POTENTIAL PROBLEMS WITH REGARD TO LATTER MINE. AMER. SALT CO.'S EXTENSIVE USE OF SOLUTION MINING COULD HAVE ADVERSE EFFECT - COULD RESULT IN COLLAPSE OF SURFACE

<17> CONC.
LARS, OR COULD SPREAD WATER THROUGH SALT DENS IN
VICINITY. ALSO, THERE IS PROBLEM OF PLACING 3 OF
EACH 29 ABANDONED EXPLOSION GAS AND "EL WELL HOLES
IN VICINITY OF CARRY HINE, I.R., TO PREVENT
INTRODUCTION OF WATER INTO THE HINE. PENDING FURTHER
EVALUATION, FURTHER SITE-ORIENTED WORK WILL BE HELD IN
ADVANCE.

PUB DESC: ATOMIC ENERGY CLEARING HOUSE, 17(48),
PAGE 3-5, OCTOBER 4, 1971

KEYWORDS: GEOLOGY; PROJECT SALT MOUNT; KANSAS;
SINKING, WASTE DISPOSAL; ORE; WASTE DISPOSAL, SALT;
GEOLOGY, SALT STRUCTURE; GENE, STATE; INDUSTRY,
MINING; AGENCY, AEC (SEE ALSO USARC); SPOKESMAN, AEC

<18>

PUB DATE: 1971
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: AEC PLANS TO AMEND REGULATIONS TO PREVENT
DISPOSAL OF RADIOACTIVE WASTE AT SEA

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THE U.S. ATOMIC ENERGY COMMISSION IS
AMENDING PART 20 OF ITS REGULATIONS WITH RESPECT TO
THE DISPOSAL OF RADIOACTIVE WASTE AT SEA. THE
AMENDMENT PROVIDES THAT THE COMMISSION WILL NOT
APPROVE ANY APPLICATION FOR A LICENSE FOR DISPOSAL OF
LICENSED MATERIAL AT SEA UNLESS THE APPLICANT SHOWS
THAT SEA DISPOSAL OFFERS LESS HARM TO MAN OR THE
ENVIRONMENT THAN OTHER PRACTICAL ALTERNATIVE METHODS
OF DISPOSAL.

PUB DESC: AEC PRESS RELEASE NO. 0-253, 1 PAGE,
DECEMBER 3, 1971

KEYWORDS: ADMINISTRATIVE CONTROL; REGULATION (SEE
ALSO STANDARDS, RADIATION); WASTE DISPOSAL, OCEAN;
POPULATION EXPOSURE; LICENSE APPLICATION; ENVIRONMENT;
CONCENTRATION; AGENCY, AEC (SEE ALSO USARC);

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PUB DATE: 1971
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: ENVIRONMENTAL STATEMENT RADIOACTIVE WASTE
RECSITON, LYONS, KANSAS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THE WASTES OF PRIMARY COPPER -
DESIGNATED HIGH-LEVEL AND ALPHA WASTES - CONTAIN
RADIOACTIVE NUCLEI THAT DECAY SO SLOWLY AS TO
REQUIRE THAT THEY BE ISOLATED FROM THE BIOSPHERE FOR
THOUSANDS OF YEARS. THIS STATEMENT DESCRIBES THE
INITIAL MEASURES TO BE TAKEN AS A PART OF THE
COMMISSION'S OVERALL WASTE-MANAGEMENT POLICY AND
PROGRAM FOR THE PERMANENT DISPOSAL OF THESE WASTES.
THE PROPOSED FACILITY WILL SAFELY CONTAIN THE WASTES
FOR THE REQUIRED PERIOD OF TIME WITHOUT ANY
SIGNIFICANT IMPACT ON THE ENVIRONMENT.

PUB DESC: PB-202, 120-P, 302 PAGES, FIGURES, TABLES,
REFERENCES, JUNE 1971

KEYWORDS: GEOLOGY; PROJECT SALT MOUNT; KANSAS;
GEOLOGY; SINKING, WASTE DISPOSAL; THERMAL MECHANICAL
EFFECT; WASTE STORAGE; WASTE TREATMENT; CALCINATION;
THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE
MANAGEMENT; HYDROLOGY; ENVIRONMENT; WASTE DISPOSAL,
SALT; GEOLOGY, SALT STRUCTURE; SALT (SEE ALSO SODDED
SALT AND WASTE DISPOSAL, SALT); SOLID; ENVIRONMENTAL
CONTROL MEASURE; RADIATION EFFECT; REPORT,
ENVIRONMENTAL

<20>

PUB DATE: 1971
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: REPORT ON RELEASES OF RADIOACTIVITY IN
EFFLUENTS FROM NUCLEAR POWER PLANT IN 1971

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
DIRECTORATE OF REGULATORY OPERATIONS

ABSTRACT: A TABULATION OF RADIOACTIVITY RELEASES IN
EFFLUENTS FROM NUCLEAR POWER PLANTS FOR CALENDAR YEAR
1971 WAS MADE BY THE DIRECTORATE OF REGULATORY
OPERATIONS AND IS PRESENTED IN TABLES I THROUGH IV.
THE DATA ARE THOSE REPORTED BY THE LICENSEES, EXCEPT AS
DISCUSSED BELOW. SIMILAR DATA FOR 1967 THROUGH 1970
WERE RELEASED IN A REPORT PUBLISHED IN OCTOBER 1971.
THIS REPORT SHOWS THAT THE RADIOACTIVITY IN EFFLUENTS
FROM LICENSED NUCLEAR POWER PLANTS HAS GENERALLY BEEN
LOW IN COMPARISON WITH THE PERMISSIBLE LIMITS SET
FORTH IN PART 20 OF TITLE 10.

PUB DESC: RELEASES OF RADIOACTIVITY IN EFFLUENTS
FROM NUCLEAR POWER PLANTS FOR 1971, 12 PAGES,, DEC.
31, 1971

KEYWORDS: AIRBORNE RELEASE; INVENTORY; REACTOR,
BWR; FISSION GAS RELEASE; FISSION PRODUCT RELEASE;
REACTOR, PWR; WASTE DISPOSAL, GAS; WASTE DISPOSAL,
LIQUID; RADIOACTIVITY RELEASE; REACTOR, OTHER; REACTOR,
LWR (SEE ALSO LWRB)

<21>

PUB DATE: 1970
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: COMPACTION OF RADIOACTIVE SOLID WASTE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: RECENT DECISIONS HAVE BEEN MADE WHICH
REQUIRE THAT PLUTONIUM OR TRANSURANIC NUCLEI
CONTAMINATED RADIOACTIVE SOLID WASTE BE STORED
SEPARATELY AND BE RETRIEVABLE FOR POSSIBLE RELOCATION
OR REPROCESSING AT A FUTURE DATE. TO MEET THE
RETRIEVABILITY REQUIREMENT, STORAGE OF THIS WASTE WILL
HAVE TO BE IN DRUMS, CONCRETE CASKS, OR OTHER
SUBSTANTIAL CONTAINERS. THESE ARE MODERATELY
EXPENSIVE BY COMPARISON WITH THE LIGHT-WEIGHT PLASTIC
BAGS AND CARDBOARD BOXES NOW BEING USED FOR SOME
ON-SITE BURIAL. A STUDY HAS BEEN MADE OF COMPACTION
AS A MEANS OF REDUCING THE WASTE VOLUME TO BE STORED
AND FACILITATING RETRIEVABILITY. THE CONCLUSIONS AND
RECOMMENDATIONS OF THAT STUDY ARE GIVEN.

PUB DESC: WASH-1167, 81 PAGES, JUNE 1970

KEYWORDS: WASTE HANDLING; WASTE STORAGE; WASTE
DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE
MANAGEMENT; COMPACTION

<22>

PUB DATE: 1971
AUTHOR: ATOMIC INDUSTRIAL FORUM (U.S.A.)

TITLE: NUCLEAR POWER WASTE MANAGEMENT

CORPORATE AUTHOR: ATOMIC INDUSTRIAL FORUM, INC.

ABSTRACT: DEALS WITH THE HANDLING AND DISPOSAL OF
RADIOACTIVE MATERIALS THAT ARE ROUTINELY FORMED IN THE
OPERATION OF NUCLEAR REACTORS. IT IS DIVIDED INTO
THREE PRINCIPAL PARTS - THE ON-SITE HANDLING OF WASTES
AND EFFLUENTS, THE SHIPMENT OF RADIOACTIVE MATERIALS
FROM THE POWER PLANT, AND THE PROCESSING OF SPENT FUEL
AND ULTIMATE STORAGE OF RADIOACTIVE WASTES.

PUB DESC: ATOMIC INDUSTRIAL FORUM BOOKLET, 87
PAGES, MARCH 1971

KEYWORDS: WASTE DISPOSAL; WASTE HANDLING; WASTE
STORAGE; REACTOR, POWER; WASTE SOURCE AND TYPE; WASTE
TRANSPORTATION; WASTE MANAGEMENT; FUEL REPROCESSING

<23>

PUB DATE: 1969
AUTHOR: AUSTRALIAN PATENT OFFICE

TITLE: METHOD OF STORING LIQUIDS UNDERGROUND

ABSTRACT: PROVIDES A METHOD OF UNDERGROUND STORAGE

<13> COST.

OF LIQUIDS WHICH WILL OVERCOME THE PROBLEM OF UNDERGROUND WATER LEAKAGE. THE SYSTEM COMPRISES FORMING A CAVERN, FILLING THE CAVERN WITH A BULK LIQUID WHICH IS IMMISCIBLE WITH THE LIQUID TO BE STORED AND IS OF DIFFERENT DENSITY, PRESSURIZING THE BULK LIQUID TO THE EXTENT NECESSARY TO PREVENT THE INFILTRATION OF UNDERGROUND WATER INTO THE CAVERN, TRANSPORTING THE LIQUID TO BE STORED INTO THE CAVERN AND SIMULTANEOUSLY REMOVING AN EQUAL VOLUME OF BULK LIQUID.

PUB DESC: AUSTRALIAN PATENT 929,550 +. MAY 5, 1969

KEYWORDS: CONFINEMENT, UNDERGROUND; GROUND WATER; WASTE STORAGE; AUSTRALIA; STORAGE CONTAINER; PATENT; LIQUID

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AUTHOR: AVARGUES, R. PUB DATE: 1971

TITLE: STUDY OF A MARITIME SITE WITH THE VIEW OF DISPOSAL OF RADIOACTIVE WASTE

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, FORT-DE-BOIS, FRANCE

ABSTRACT: THE CONSTRUCTION OF A PLANT FOR THE PROCESSING OF IRRADIATED FUEL ELEMENTS ON THE CAPE OF LA HAGUE NECESSITATED A DETAILED STUDY OF THE EFFECTS OF THE RELEASE OF LCU RADIOACTIVE WASTES TO THE SEA. IN ADDITION TO TECHNICAL, ECONOMIC, AND SOCIAL EVALUATIONS, HYDROGRAPHIC STUDIES WERE MADE. THESE INCLUDED THEORETICAL TESTS WITH A ROTATING MODEL MADE IN CONJUNCTION WITH ON-SITE EXPERIMENTS. A DYNAMOMETER WAS USED TO CONFIRM THE EXISTENCE OF A CURRENT TOWARD THE NORTHEAST. THE RESULTS OBTAINED WITH THE DYE PERMITTED THE ESTABLISHMENT OF THE DIFFERENT TIDAL COEFFICIENTS UNDER DIFFERENT METEOROLOGICAL CONDITIONS AND OF THE DISPERSION GRADIENTS. A SYSTEMATIC STUDY WAS MADE OF THE NATURAL AND ARTIFICIAL RADIOACTIVITY OF THE MARINE ORGANISMS, ANIMALS, AND VEGETABLES.

PUB DESC: CEA-COMP-1076, 6 PAGES, 1971 (IN FRENCH)

KEYWORDS: CESIUM; PUBLIC RESPONSE (SEE ALSO OPINION, MOVEMENT, AND POPULATION RESPONSE); LCU-LEVEL WASTE; CESIUM; DISTRIBUTION; SITING, CHEMICAL PROCESS PLANT; SITING, WASTE DISPOSAL; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, ECONOMICS; POPULATION EXPOSURE; HYDROLOGY; RADIOACTIVITY RELEASE; RADIOACTIVE UPTAKE; ANIMAL; POPULATION RESPONSE; VEGETATION; AQUATIC ORGANISM; RADIATION EFFECT; FUEL ELEMENTS

<25>

AUTHOR: BAKER, G.E.; JERNAN, P.C.; ROBERTS, B.E.; VANDERBEEK, J.W. PUB DATE: 1963

TITLE: BURIAL OF HANFORD RADIOACTIVE WASTES

CORPORATE AUTHOR: HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON

ABSTRACT: SOLID RADIOACTIVE WASTES AT HANFORD ARE ACCOMMODATED BY LOCAL BURIAL. TREATMENT SUCH AS COMPACTING OR INCINERATION IS NOT CONSIDERED PRACTICAL. THE HANFORD POLICY IS TO LIMIT THE BURIAL SITES TO THE LOWEST BURIED CONSISTENT WITH GOOD RADIATION CONTROL AND SOUND ECONOMIC PRACTICES. IT DOES NOT APPEAR FEASIBLE TO REDUCE THE PRESENT NUMBER OF ACTIVE BURIAL SITES SIGNIFICANTLY IN THE NEAR FUTURE. HOWEVER, ANY PLAN OR PROGRAM WHICH APPEARS TO HAVE APPLICATION FOR REDUCING VOLUME AND/OR THE NUMBER OF BURIAL SITES WILL BE GIVEN CLOSE SCOUTING AND ADOPTED IF FOUND PRACTICAL.

PUB DESC: HW-77270 13 PAGES- APRIL 15, 1963

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID

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AUTHOR: BARREAU, A.; BARLET, G.; ESCALIER, P. PUB DATE: 1970

D.; JOURDE, P.; SCHRIENAUER, J.; SOUSSILLIER, Y.

TITLE: INDUSTRIAL EXPERIENCE WITH RADIOACTIVE WASTE STORAGE AT THE HAGUE

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE

ABSTRACT: DESCRIBES THE VARIOUS PROBLEMS OF WASTE MANAGEMENT WITH RESPECT TO KINDS AND SOURCES OF WASTE. THE GEOLOGY OF THE CENTER AND THE WASTE DISPOSAL SITES ARE DISCUSSED.

PUB DESC: SN-137/40, STI/PUB-264, COMP-700905, 19 PAGES, 6 FIGURES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, Aix-en-Provence, France, September 7-11, 1970

KEYWORDS: FRANCE; INTERMEDIATE-LEVEL WASTE; GEOLOGY; IAEA; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; HYDROLOGY

<27>

AUTHOR: BARREAU, A.; BARCAILLON, J.; BERT, J.; PIVTO, D.; BARCON, D. PUB DATE: 1970

TITLE: DEVELOPMENT OF THE MANAGEMENT OF WASTES OF LOW AND INTERMEDIATE ACTIVITY AT THE CADARACHE LABORATORY

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, CADARACHE, FRANCE

ABSTRACT: THE VARIOUS ASPECTS OF COLLECTION, HANDLING, TREATMENT AND DISPOSAL OF WASTES ARE DISCUSSED. THE PROBLEMS OF RETENTION OF NUCLEIDES IN THE SOIL AND THEIR MOVEMENTS ARE POINTED OUT. A TIME-TABLE OF MOVEMENT IS GIVEN FOR STOPOUT. DISCUSSES ECONOMIC CONSIDERATION.

PUB DESC: SN-137/16, STI/PUB-264, COMP-700905, 30 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, Aix-en-Provence, France, September 7-11, 1970 (IN FRENCH)

KEYWORDS: FRANCE; INTERMEDIATE-LEVEL WASTE; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; WASTE DISPOSAL; WASTE HANDLING; WASTE TREATMENT; WASTE MANAGEMENT

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AUTHOR: BARDES, R.G. PUB DATE: 1970

TITLE: NUCLEAR POWER REACTOR WASTES AND OUR ENVIRONMENT

CORPORATE AUTHOR: GENERAL ELECTRIC COMPANY

ABSTRACT: THE FUEL REPROCESSING PLANT RECEIVES NEARLY ALL THE RADIOACTIVITY LEAVING A POWER REACTOR AND REDUCES ESSENTIALLY ALL OF THIS MATERIAL FOR PERMANENT ISOLATION FROM THE BIOSPHERE. RELEASE OF THE SPILL FRACTION NOT READILY INCUBILIZED (THAT IS, KR-85 AND IODINE) CAN BE CONTROLLED FOR AT LEAST THE NEXT TWO DECADES TO LEVELS THAT RESULT IN INSIGNIFICANT IMPACT ON THE ENVIRONMENT. THE POSSIBLE NEED FOR LIMITING RELEASES OF THESE ISOTOPES BY THE END OF THE CENTURY HAS BEEN RECOGNIZED, AND RESEARCH AND DEVELOPMENT EFFORT DIRECTED AT EVALUATING AND IMPROVING THIS NEED IS NOW IN PROGRESS.

PUB DESC: CENP-700000-1, 23 PAGES, PAPER PRESENTED AT THE 3RD ANNUAL NATIONAL POLLUTION CONTROL CONFERENCE, HELD IN SAN FRANCISCO, APRIL 3, 1970

KEYWORDS: WASTE TREATMENT; ENVIRONMENT; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; RADIOACTIVITY RELEASE; SYSTEM DESCRIPTION; REVIEW; FUEL REPROCESSING; PIVOT (VPP)

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PUB DATE: 1966

<29> CONT.

AUTHOR: BARBARCLOUGH, J.T.; TAYSEALE, R.E.; ROBERTSON, J.E.; JENSEN, R.C.

TITLE: HYDROLOGY OF THE NATIONAL REACTOR TESTING STATION, IDAHO, 1966

CORPORATE AUTHOR: GEOLOGICAL SURVEY, IDAHO FALLS, IDAHO

ABSTRACT: THIS ANNUAL REPORT DESCRIBES STUDIES BY THE U.S. GEOLOGICAL SURVEY, SPONSORED BY THE USARF, TO DETERMINE THE HYDROLOGIC EFFECTS OF DISPOSAL OF RADIOACTIVE WASTE TO THE GROUND AT THE NATIONAL REACTOR TESTING STATION. THE PROJECT HAS INVOLVED THE COLLECTION AND ANALYSIS OF GROUND- AND SURFACE-WATER SAMPLES FOR RADIOACTIVE AND CHEMICAL CHANGES. RESULTS HAVE BEEN EVALUATED AND REPORTED. GROUND-WATER LEVELS HAVE ALSO BEEN MONITORED OVER THE STATION. THE NET GROUND-WATER CONSUMPTION AFTER PURCHASE WAS WASTE INJECTION HAS BEEN DETERMINED. TWO BILLION GALLONS OF WATER WERE PUMPED DURING 1966, OF WHICH 90% WAS RETURNED AND RETURNED TO THE SHALE FLAIN AQUIFER.

PUB DESC: IDO-22049, 95 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1967

KEYWORDS: CESIUM; GROUND WATER; GEOLOGY; IODINE; RADIUM; RUTS; STRUCTURE; TITANIUM; WASTE DISPOSAL; WATER; ZINC; ZINC; HYDROLOGY

<30>

PUB DATE: 1975

AUTHOR: BARTLETT, J.W.

TITLE: ALTERNATIVES FOR RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: PETTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: EMPHASIZES THE SAFETY ASPECTS OF WASTE MANAGEMENT ALTERNATIVES, AND OUTLINES THE OPTIONS FOR WASTE MANAGEMENT, THEIR SAFETY CHARACTERISTICS, AND THE METHODS THAT MIGHT BE USED TO EVALUATE THE OPTIONS AND THEIR SAFETY. THERE ARE TWO TYPES OF SAFETY CONSIDERATIONS FOR ALL WASTE MANAGEMENT ALTERNATIVES. ONE IS SHORT-TERM SAFETY, WHICH IS CONCERNED WITH WASTE MANAGEMENT OPERATIONS PRIOR TO DISPOSAL. THE OTHER IS LONG-TERM SAFETY, WHICH IS CONCERNED WITH WHAT MIGHT HAPPEN TO THE WASTE AFTER DISPOSAL.

PUB DESC: AMERICAN NUCLEAR SOCIETY, TOPICAL MEETING OF NUCLEAR SAFETY, TUCSON, ARIZONA, 4 PPS., OCT. 5-8, 1975

KEYWORDS: WASTE MANAGEMENT; SAFETY; WASTE DISPOSAL; FUEL CYCLE; FUEL REPROCESSING; ENVIRONMENT

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PUB DATE: 1973

AUTHOR: BARTLETT, J.W.; BRAY, C.V.; BUNGER, L.L.; BURBS, R.E.; HYAN, J.L.

TITLE: FEASIBILITY EVALUATION AND R&D PROGRAM PLAN FOR TRANSURANIC PARTITIONING OF HIGH-LEVEL REPROCESSING WASTE

CORPORATE AUTHOR: PETTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: AN APPROACH TO MANAGING HIGH-LEVEL RADIOACTIVE WASTE IS TO SEPARATE IT INTO FRACTIONS OF DIFFERENT HALF-LIVES. THE OBJECTIVES FOR THIS STUDY WERE TO REVIEW EXISTING SEPARATION TECHNOLOGIES AND ASSESS THEIR POTENTIAL FOR THIS APPLICATION. THE REVIEW CONCLUDED THAT, OF ALL OF THE ALTERNATIVES AVAILABLE, SOLVENT EXTRACTION AND ION EXCHANGE SEPARATIONS OF THE TYPES ALREADY WIDELY USED IN THE NUCLEAR INDUSTRY OFFER THE BEST PROSPECTS FOR A COST EFFECTIVE PROCESS. PARTITIONING USING THESE TECHNOLOGIES TO ACHIEVE TRANSURANIC ELEMENT DECONTAMINATION FACTORS OF THE ORDER OF 100 IS EXPECTED TO BE FEASIBLE. THE R&D PROGRAM TO SELECT AND DEVELOP A PARTITIONING PROCESS IS EXPECTED TO DURATION FIVE YEARS FOR COMPLETION. TOTAL ESTIMATED FUNDING REQUIRED IS APPROXIMATELY 1.0 BILLION DOLLARS.

PUB DESC: IDO-1776, 72 PAGES, 6 FIGURES, 135 REFERENCES, NOVEMBER 1973

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE; REVIEW; PARTITIONING (SEE ALSO SEPARATION, FRACTIONATION, AND WASTE PARTITIONING); ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE STORAGE; FISSION PRODUCT; SEPARATION; WASTE MANAGEMENT; RADIOCHEMICAL PROCESSING; ECOLOGICAL STUDY; A AND B PROGRAM; HALP-LIFE;

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PUB DATE: 1975

AUTHOR: BARTON, J.E.; SELLER, A.

TITLE: UNEXPECTED RADIUM-226 BUILT-UP IN PYRITE-MINERALS SULFURIC ACID PLANTS

ABSTRACT: DURING A RADIATION SURVEY OF A MUNICIPAL REFUSE CURF, RADIOACTIVE RESIDUES WERE DISCOVERED, WHOSE ORIGIN WAS TRACED BACK TO WASTE FROM A SULFURIC ACID PLANT AND IDENTIFIED AS RADIUM. THE IRON PYRITE USED FOR THE PRODUCTION OF SULFURIC ACID, IS OBTAINED FROM COAL-URANIUM MINES MAINLY BY A FLOTATION PROCESS AND WAS FOUND TO CONTAIN RADIOACTIVE DAUGHTER PRODUCTS OF URANIUM WHICH OCCURS IN SOUTH AFRICAN COAL BEDS. RADIUM IS THEN LEACHED FROM THE IRON OXIDE IN THE GAS CLEANING PROCESSES AND DEPOSITED AS RADIO SULPHATE SCALE INSIDE PIPEWORK AND OTHER PARTS OF THE GAS PURIFICATION AND COOLING SECTIONS OF THE PLANT. RADIATION SURVEYS AND RESULTS OF SAMPLE ANALYSIS, INDICATED THAT EMPLOYEES AT THE PLANTS ARE EXPOSED TO BOTH EXTERNAL AND INTERNAL RADIATION HAZARDS AND THAT PRECAUTIONARY MEASURES ARE ESSENTIAL. HOWEVER, THE PROTECTIVE MEASURES FORMALLY TAKEN AGAINST THE CHEMICAL HAZARDS PROVE TO BE EFFECTIVE IN THIS RESPECT. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 20(2), S. 123 (1975)

KEYWORDS: HEALTH PHYSICS; INCINERATION; PYRITE; ACID; SURVEY; AFRICA; GOLD; ONE PROCESSING; SAFETY; CONTROL; RADIUM; RAIL TAILINGS (SEE ALSO TAILINGS); LEACHING; OCCUPATION EXPOSURE (SEE ALSO PERSONNEL EXPOSURE, RADIATION);

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PUB DATE: 1967

AUTHOR: BEARD, S.J.; GOSWAMY, N.L.

TITLE: WASTE DISPOSAL INTO THE GROUND AT MANFORD

CORPORATE AUTHOR: ISOCHEM INC., RICHLAND, WASHINGTON

ABSTRACT: LARGE VOLUMES OF LIQUID WASTE ARE ECONOMICALLY DISPOSED OF VIA ARTIFICIAL SWAMPS UNDER ACTIVITY LEVELS ARE FAVORABLE. AS THE ACTIVITY LEVELS INCREASED THE COMPATIBILITY OF WASTE WITH SOIL DECREASES, OTHER DISPOSAL METHODS SUCH AS CHIPS OR TRENCHES ARE USED, WITH A CORRESPONDING INCREASE IN DISPOSAL COSTS. TYPICAL DISPOSAL COSTS ARE \$1.00, \$700, AND \$7000 PER MILLION LITERS FOR SWAMP, CHIP, AND TRENCH DISPOSAL, RESPECTIVELY. SOLID WASTES ARE DISPOSED OF IN SEVERAL WAYS, DEPENDING ON THEIR SIZE, WEIGHT, AND ACTIVITY LEVEL. COSTS VARY FROM \$15 TO \$3000 PER CUBIC METER, DEPENDING ON THE DIFFICULTY IN PERFORMING THE BURIAL. IN NO CASE HAVE SOLIDS BURIALS AFFECTED THE GROUND WATER.

PUB DESC: ISO-SA-31, CONF-670512-1, 15 PAGES, REFERENCES, 1967, PRESENTED AT JOINT IAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; WATER; WASTE DISPOSAL, ECONOMIC; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; ISOCHEM, INC.

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PUB DATE: 1964

AUTHOR: BEARD, S.J.; KOPPEL, E.J.; SHAFER, J.J.; SMITH, F.D.

TITLE: WASTE MANAGEMENT PROGRAM-CHEMICAL PROCESSING DEPARTMENT

<34> CONT.
CORPORATE AUTHOR: HANFORD ATOMIC PRODUCTS
OPERATION, RICHLAND, WASHINGTON

ABSTRACT: DURING THE NINETEEN YEARS OF HANFORD OPERATION, WASTE MANAGEMENT PRACTICES HAVE INCLUDED THE DISPOSAL OF GASEOUS WASTES IN THE ATMOSPHERE, THE BURIAL OF SOLID WASTES IN THE GROUND, THE DISCHARGE OF LIQUID WASTES OF LOW AND INTERMEDIATE RADIOACTIVITY LEVEL TO THE GROUND, AND THE ACCUMULATION AND CONFINEMENT OF LIQUID WASTES OF HIGH RADIOACTIVITY LEVEL IN THE UNDERGROUND TANKS. THE CHEMICAL PROCESSING DEPARTMENT HAS FORMULATED A PROGRAM TO ACHIEVE SIGNIFICANT IMPROVEMENTS IN THE HANDLING OF HIGH ACTIVITY LEVEL RADIOACTIVE WASTES. THIS PROGRAM HAS THE OBJECTIVES OF ASSURING THE SAFE CONFINEMENT OF THE RADIOACTIVE MATERIALS FOR CENTURIES, MINIMIZING THE LONG-TERM COST OF THE STORAGE AND SURVEILLANCE OPERATIONS, AND MAKING SELECTED FISSION PRODUCTS AVAILABLE FOR BENEFICIAL USE.

PUB DESC: HW-01001 59 PAGES- MARCH 24, 1964

KEYWORDS: DESIGN; SYMPTOM; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; FIXATION; FISSION PRODUCT; SEPARATION

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PUB DATE: 1970
AUTHOR: BELTED, W.C.

TITLE: THE MANAGEMENT OF RADIOACTIVE WASTES FROM REACTOR FUEL REPROCESSING

CORPORATE AUTHOR: U.S. AEC, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY

ABSTRACT: RADIOACTIVE WASTE MANAGEMENT CONTINUES TO BE A SUBJECT OF INCREASING PUBLIC INTEREST AND CONCERN. IN GENERAL, THE RESULTS OF TECHNICAL ASSESSMENTS AND MORE THAN 20 YEARS OF OPERATING EXPERIENCE SHOW THAT RADIOACTIVE WASTE MANAGEMENT OPERATIONS ARE BEING CARRIED OUT IN A SAFE AND ECONOMIC MANNER, WITHOUT HARMFUL EFFECT ON THE AMERICAN PUBLIC, ENVIRONMENT, OR RESOURCES.

PUB DESC: PUBLIC AFFAIRS WORKSHOP ON RADIATION AND HAZARD ENVIRONMENT, ROCK HILL FALLS, PENNSYLVANIA, APRIL 19-22, 1970, 24 PAGES, 3 FIGURES, 10 REFERENCES

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); TRANSPORTATION AND HANDLING; WASTE STORAGE; CALCINATION; PHOSPHATE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); FIXATION SAFETY AND CONTROL; RADIATION, PUBLIC EDUCATION; WASTE DISPOSAL, SALT; SOLVENT EXTRACTION; FUEL REPROCESSING; SOLIDS; OPERATING EXPERIENCE; AGENCY, AEC (SEE ALSO USAEC);

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PUB DATE: 1970
AUTHOR: BELTED, W.C.

TITLE: CURRENT STATUS OF U.S. RADIOACTIVE WASTE MANAGEMENT PROGRAMS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: SUMMARIZES THE CURRENT STATUS OF SOME OF THE MAJOR PROGRAMS AND ACTIVITIES IN THE OVERALL U.S. RADIOACTIVE WASTE MANAGEMENT PROGRAM. THESE DEVELOPMENTS CAN BE SEPARATED INTO FIVE GENERAL AREAS - AEC POLICY ON HIGH LEVEL WASTE MANAGEMENT; STATUS OF TECHNOLOGY IN SUPPORT OF POLICY; AEC PRODUCTION SITE HIGH-LEVEL WASTE MANAGEMENT PROGRAMS; POWER REACTOR WASTE MANAGEMENT EXPERIENCE; PROPOSED MODIFICATIONS TO AEC REGULATIONS AND INDUSTRIAL DEVELOPMENTS; AND UPGRADING OF AEC RADIOACTIVE WASTE MANAGEMENT OPERATIONS.

PUB DESC: AMERICAN NUCLEAR SOCIETY, 13(2), PP. 480-481 (NOVEMBER 1970)

KEYWORDS: ADMINISTRATIVE CONTROL; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); REGULATION (SEE ALSO STANDARDS, RADIATION); REACTOR, POWER; WASTE MANAGEMENT; RADIATION SAFETY AND

CONTROL; ENVIRONMENT; R AND D PROGRAM; POPULATION RESPONSE; AGENCY, AEC (SEE ALSO USAEC);

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PUB DATE: 1970
AUTHOR: BELTED, W.C.

TITLE: RECENT DEVELOPMENTS IN THE U.S. LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT PROGRAM - AN OVERVIEW FOR THE 1970S

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: SUMMARIZES SOME OF THE MORE RECENT U.S. EXPERIENCE IN FUEL-REACTOR WASTE MANAGEMENT AND ALSO OTHER DEVELOPMENTS WHICH HAVE OCCURRED SINCE THE 1965 SYMPOSIUM IN THE AREAS OF LAND BURIAL, DEEP WELL INJECTION, AND SEA DISPOSAL, AS THEY RELATE TO PRESENT TRENDS IN WASTE MANAGEMENT POLICY.

PUB DESC: SN-117/61, SYL/PUB-260, CONF-700905, 22 PAGES, 4 FIGURES, 6 TABLES, 24 REFERENCES, PAPER PRESENTED AT THE 1970 SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, ATX-24, BOVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); LAND BURIAL (SEE ALSO BURIAL GROUND); LOW-LEVEL WASTE; LIGNITE; RHYTHM (SEE ALSO MOBILE GAS); TITANIUM; WASTE DISPOSAL; REACTOR; WASTE MANAGEMENT; ENVIRONMENT; THERMAL POLLUTION; POPULATION RESPONSE; POLLUTION

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PUB DATE: 1966
AUTHOR: BELTED, W.C.; FRANCE, D.W.

TITLE: RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY; BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS REVIEW PRESENTS HIGHLIGHTS IN RECENT WASTE-MANAGEMENT EXPERIENCE IN THE UNITED STATES AND ABROAD AND SUMMARIZES ADVANCES IN TECHNOLOGY THAT HAVE OCCURRED DURING THE PAST THREE TO FOUR YEARS. SECTIONS ARE INCLUDED OF TREATMENT, STORAGE AND DISPOSAL, ENVIRONMENTAL STUDIES, AND EVALUATION AND ECONOMICS.

PUB DESC: TID-0541, 100 PAGES, 19 TABLES, 24 FIGURES, 41 REFERENCES, PP. 149-249 OF REACTOR TECHNOLOGY, SELECTED REVIEWS--1965, I.E. LIND, EDITOR, ARGONNE NATIONAL LABORATORY, JANUARY 1966

KEYWORDS: GEOLOGY; REVIEW; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); UNITED KINGDOM; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; RIVER, OTTAWA; SAMPLING; SURFACE WATER, NUCLEAR OCCURRENCE; SURFACE WATER, SUSPENDED MATERIAL; WASTE DISPOSAL, RIVER; WASTE TREATMENT, GAS; GROUND WATER, NUCLEAR OCCURRENCE; ORE; RIVER, INCH; RIVER, COLUMBIA; RIVER, SAVANNAH; SAVANNAH RIVER PLANT; SURFACE WATER, SEDIMENT; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; RIVER, CHALK; BATTELLE NORTHWEST; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; WASTE TREATMENT, EQUIPMENT; WASTE DISPOSAL, REDDOCK; GEOLOGY, SALT STRUCTURE; RIVER, BRUCE; RIVER, THAMES

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PUB DATE: 1966
AUTHOR: BELTED, W.C.

TITLE: ADVANCES IN RADIOACTIVE WASTE MANAGEMENT TECHNOLOGY--ITS EFFECT ON THE FUTURE U.S. NUCLEAR FUEL INDUSTRY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

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ABSTRACT: A DISCUSSION IS PRESENTED ON THE ADVANCES IN TREATMENT AND DISPOSAL OF LOW- AND HIGH-LEVEL WASTES, AND THEIR PROBABLY EFFECTS ON THE FUTURE NUCLEAR POWER INDUSTRY. ION EXCHANGE AND POAN SEPARATION TECHNIQUES ARE BEING APPLIED TO LOW-LEVEL WASTES ON AN ENGINEERING PILOT PLANT SCALE. THE DISPOSAL OF INTERMEDIATE-LEVEL WASTES INTO SHALE BY HYDRAULIC FRACTURING IS BEING INVESTIGATED. CALCINATION AND FIXATION OF HIGH-LEVEL WASTES ARE DISCUSSED. THE FEASIBILITY OF STORING HIGH-LEVEL WASTES IN SALT MINES AND BEDROCK CAVERNS IS BEING STUDIED. ENGINEERING EVALUATION STUDIES RELATIVE TO THE NUCLEAR POWER ECONOMY IN THE FUTURE, INDICATE WASTE TREATMENT AND ULTIMATE STORAGE COSTS OF APPROXIMATELY 0.3 MILLION, LESS THAN 1% OF THE COST OF NUCLEAR POWER IN A 4 MILLION ECONOMY.

PUB DESC: UNITED NATIONS THIRD INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, AUGUST 31-SEPTEMBER 9, 1964 - A/CONF. 28/8/640

KEYWORDS: WASTE DISPOSAL; TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID

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PUB DATE: 1964

AUTHOR: BELTER, D.C.

TITLE: U. S. OPERATIONAL EXPERIENCE IN RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: U.S. ATOM. ENERGY COMMISSION, WASHINGTON

ABSTRACT: HIGHLIGHTS OF U. S. WASTE MANAGEMENT EXPERIENCE IN THE PAST SIX YEARS ARE SUMMARIZED. THE EXPERIENCES INCLUDE THOSE OF RESEARCH LABORATORIES, NUCLEAR REACTION FACILITIES, AND NUCLEAR POWER PLANTS. AMONG THE METHODS OF WASTE DISPOSAL DISCUSSED ARE TANK STORAGE, LAND BURIAL, AND SEA DISPOSAL. THE COSTS OF RADIOACTIVE WASTE MANAGEMENT ARE DESCRIBED.

PUB DESC: UNITED NATIONS THIRD INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, AUGUST 31-SEPTEMBER 9, 1964 - A/CONF. 28/8/640

KEYWORDS: WASTE DISPOSAL, OCEAN; DEEP SEA BED (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, ECONOMICS

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PUB DATE: 1964

AUTHOR: BELTER, D.C.; PERUSSON, C.R.; COLLIER, F.L.

TITLE: WASTE MANAGEMENT- TECHNOLOGICAL ADVANCES AND ATTITUDES OF SAFETY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE FOUR MAJOR PRODUCERS OF RADIOACTIVE WASTE (UNITED STATES, UNITED KINGDOM, FRANCE, RUSSIA) HAVING SERIOUSLY ATTACKED THE PROBLEM OF ULTIMATE DISPOSAL ALONG THE SAME LINE- FIXATION OF HIGH-LEVEL WASTES INTO AN INSOLUBLE SOLID FORM. FOR INTERMEDIATE AND LOW-ACTIVITY WASTES THE GENERAL TENDENCY HAS BEEN TOWARD SEPARATIONS PROCESS IMPROVEMENT TO CHANNEL MOST OF THE ACTIVE MATERIALS INTO THE HIGH-LEVEL WASTE FOR PERMANENT STORAGE, AND THUS TO DELAY FURTHER THE ACTIVITY RELEASED TO THE ENVIRONMENT. IN THIS REPORT WE REVIEW THE WASTE MANAGEMENT DISCUSSIONS AT GENEVA IN TWO PARTS- THE TECHNOLOGICAL ADVANCES THAT WERE REPORTED, AND CHANGES IN SAFETY ATTITUDES THAT HAVE OCCURRED.

PUB DESC: NUCLEAR NEWS 7(10) - 94-97, 4 PAGES, 3 FIGURES- (OCTOBER 1964)

KEYWORDS: EFFLUENT; TECHNOLOGY; REVIEW; SAFETY EVALUATION; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, DEEP; WASTE SOURCE AND TYPE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; ATMOSPHERIC

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PUB DATE: 1962

AUTHOR: BELTER, D.C.

TITLE: RADIOACTIVE EFFLUENT CONTROL IN A FUTURE NUCLEAR ENERGY INDUSTRY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY

ABSTRACT: THIS DISCUSSION IS FOCUSED ON FUTURE REQUIREMENTS FOR MORE EFFICIENT WASTE MANAGEMENT SYSTEMS AND THE DEVELOPMENT OF METHODS THAT MINIMIZE RELEASE OF RADIOACTIVITY TO OUR ENVIRONMENT. PRESENT RADIOACTIVE WASTE HANDLING PRACTICES AND EXPERIENCE IN THE UNITED STATES FOR DIFFERENT TYPES OF WASTE ARE SUMMARIZED. THE EFFECTIVENESS OF VARIOUS TREATMENT SYSTEMS FOR LARGE-VOLUME, LOW-ACTIVITY WASTES FROM LABORATORY AND REACTOR OPERATIONS IS ANALYZED. TANK STORAGE OF SMALLER-VOLUME, HIGH-ACTIVITY WASTE IS BRIEFLY DISCUSSED. NEW DEVELOPMENTS IN ION EXCHANGE, SYNTHETIC MINERAL EXCHANGE MATERIALS, AND HYDROFRACTURING ARE DISCUSSED AS POTENTIAL FUTURE METHODS FOR CONTROL OF LOW AND INTERMEDIATE LEVEL WASTE. THE POSSIBILITIES OF RECYCLING AND/OR REUSING PROCESSED WASTE STREAMS IN LABORATORY OR REACTOR SYSTEMS IS ALSO DISCUSSED. THE PRESENT STATUS OF CALCINATION AND/OR FIXATION OF HIGH ACTIVITY WASTE FROM CHERICAL REPROCESSING OF IRRADIATED REACTOR FUEL IS BRIEFLY DESCRIBED. BRIEF REFERENCE IS MADE TO ECONOMIC CONSIDERATIONS INVOLVED IN THE HANDLING AND DISPOSAL OF RADIOACTIVE WASTES.

PUB DESC: INTER-AMERICAN SYMPOSIUM ON THE PEACEFUL APPLICATION OF NUCLEAR ENERGY, MEXICO CITY, APRIL 9-13, 1962, VOL. 1, PUBLISHED BY INTER-AMERICAN NUCLEAR ENERGY COMMISSION

KEYWORDS: WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, DEEP; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; ION EXCHANGE; MINERAL EXCHANGE; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT

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PUB DATE: 1969

AUTHOR: BENEFIC, S.; COOKE, J.B.; LEEDE, D.W.; CAMPBELL, D.B.; GRABER, J.B.; WELMAN, A.

TITLE: A REPORT ON THE PROPOSAL OF E. I. DUPONT DE NEMOURS & CO. FOR THE PERMANENT STORAGE OF RADIOACTIVE SEPARATIONS PROCESS WASTE IN BEDROCK ON THE SAVANNAH RIVER PLANT

ABSTRACT: PRESENTS AN APPRAISAL OF THE PROPOSAL BY E. I. DUPONT DE NEMOURS AND COMPANY THAT RADIOACTIVE SEPARATIONS PROCESS WASTES FROM THE SAVANNAH RIVER PLANT OF THE HEAC BE STORED PERMANENTLY IN CAVERNS TO BE EXCAVATED IN BEDROCK ON THE SAVANNAH RIVER PLANT SITE. ALTHOUGH ATTENTION WAS DIRECTED TO A SPECIFIC WASTE STORAGE PROJECT TO FACILITATE QUANTITATIVE EVALUATION, THE CONCLUSIONS OF THE REPORT ARE APPLICABLE GENERALLY TO THE BEDROCK STORAGE CONCEPT.

PUB DESC: DPST-69-000, PP. 1723-1702 OF THE HEARINGS REPORT THE SUBCOMMITTEE ON ASH AND WASTE POLLUTION OF THE COMMITTEE ON PUBLIC WORKS, U. S. SENATE, 91ST CONGRESS, AUGUST 5, 1970

KEYWORDS: CONFINEMENT, UNDERGROUND; DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); GEOLOGY; SEISMOLOGY; WASTE STORAGE; SAVANNAH RIVER PLANT; WASTE DISPOSAL, LIQUID; HYDROLOGY; WASTE DISPOSAL, BEDROCK; GEOLOGY, GEOCHEMICAL; SAFETY EVALUATION; COMPARISON

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PUB DATE: 1965

AUTHOR: BEVELLY, D.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTE FROM THE

<44> CONT.
GENERATION OF URANIUM WILLS AND RIDS

CORPORATE AUTHOR: UNION CARBIDE, GRAND JUNCTION, COLORADOC

ABSTRACT: A SUMMARY IS PRESENTED OF THE CURRENT PRACTICES EMPLOYED IN THE DISPOSAL OF RADIOACTIVE WASTE FROM THE OPERATION OF URANIUM WILLS AND RIDS.

PUB DESC: NUCLEAR SAFETY 6(3)- 200-202 SPRING 1965)

KEYWORDS: AIRBORNE RELEASE; MINING; MILLING; MILL TAILINGS (SEE ALSO TAILINGS); DILUTION; EFFLUENT; PLUTONIUM PERMISSIBLE CONCENTRATION (MPC); URANIUM; WASTE DISPOSAL, TERRESTRIAL; MORTAR, AIR; WASTE SOURCE AND TYPE; URANIUM; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID

<45> PUB DATE: 1968

AUTHOR: BJERRE, T.

TITLE: RADIOACTIVE WASTE FROM ATOMIC POWER STATIONS

CORPORATE AUTHOR: DANISH ATOMIC ENERGY COMMISSION, BISC

ABSTRACT: THE HIGHLY RADIOACTIVE WASTE FROM ATOMIC POWER STATIONS IS AT PRESENT IN GENERAL STORED IN LIQUID FORM IN STAINLESS STEEL CONTAINERS. IT SEEMS POSSIBLE TO FURTHER CONCENTRATE THE WASTES BY SOLIDIFICATION IN THE FORM OF GLASS. EVEN WITH AN ATOMIC POWER PRODUCTION LEVEL WHICH IS EXCESS OF THE PRESENT TOTAL POWER PRODUCTION LEVEL, THE STORAGE FOR A THOUSAND YEARS OR MORE WILL NOT CONSTITUTE A SERIOUS SPACE-CONSUMING PROBLEM. THE QUESTIONS OF KRYPTON-85 AND TRITIUM ARE ALSO TOUCHED UPON. THESE DO NOT CONSTITUTE ANY SERIOUS PROBLEMS.

PUB DESC: DISO-W-735, 6 PAGES, 1 TABLE, APRIL 1969

KEYWORDS: KRYPTON (SEE ALSO NOBLE GAS); GLASS (SEE ALSO VITRIFICATION); TRITIUM; WASTE STORAGE; WASTE TREATMENT, FIXATION; REACTOR POOL; SINTERING

<46> PUB DATE: 1966

AUTHOR: PLANCO, B.E.; BICHERE, J.O.; ROBERTS, J.T.

TITLE: FUTURE ATTITUDE AND PROPOSED SOLUTIONS OF THE WASTE DISPOSAL PROBLEM

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: AT THE PRESENT TIME, HIGH LEVEL RADIOACTIVE WASTES PRODUCED IN ALL COUNTRIES ARE STORED IN TANKS AND THIS PRACTICE WILL CONTINUE FOR AN INDEFINITE PERIOD UNTIL DEVELOPMENT OF A SAFER OR MORE ECONOMICAL DISPOSAL METHOD IS COMPLETED. THE RELATIVE ADVANTAGES OF THE SOLIDIFICATION OF THESE WASTES AND THEIR PERMANENT STORAGE IN EARTH OR UNDERGROUND MEDIA AS A PERMANENT DISPOSAL METHOD AS OPPOSED TO TANK STORAGE IS DISCUSSED EXTENSIVELY. BOTH METHODS APPEAR TO BE APPLICABLE IN MOST COUNTRIES.

PUB DESC: SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, PICHARD, WASHINGTON, FEBRUARY 16-18, 1966 12 PAGES, 2 TABLES, 1 FIGURE, 16 REFERENCES, FEBRUARY 1966

KEYWORDS: WASTE STORAGE; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); PROJECTION (SEE ALSO FORECAST); FORECAST; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT

<47> PUB DATE: 1974

AUTHOR: BLOHME, J.C.; FFE, C.W.; BICHOLES, J.P.

TITLE: PROJECTIONS OF RADIOACTIVE WASTES TO BE GENERATED BY THE U.S. NUCLEAR POWER INDUSTRY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROJECTIONS OF INDUSTRIAL RADIOACTIVE WASTES FROM THE NUCLEAR FUEL CYCLE ARE USEFUL IN PLAN AND DESIGN OF METHODS AND FACILITIES FOR THEIR FUTURE MANAGEMENT, AND FOR ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS. THE PRESENT STUDY WAS MADE TO FULFILL THIS NEED. TEN TYPES OF RADIOACTIVE WASTES TO BE GENERATED WITHIN THE FUEL CYCLE OPERATIONS OF THE U.S. NUCLEAR FUEL INDUSTRY ARE DEFINED, AND PROJECTIONS ARE PRESENTED OF THEIR ANNUAL GENERATION RATES, SHIPPING REQUIREMENTS, AND ACCUMULATED CHARACTERISTICS OVER THE REMAINDER OF THIS CENTURY. THE POWER REACTOR COMPLEX IS ASSUMED TO CONSIST OF URANIUM- AND PLUTONIUM-FUELED LRS, HTGRS, AND LWRs, AND THE INSTALLED NUCLEAR ELECTRIC CAPACITY OF THE U.S. IS TAKEN AS 134, 504, AND 1200 GW AT THE ENDS OF CALENDAR YEARS 1980, 1990, AND 2000. (AUTH)

PUB DESC: COUL-TH-3565, FEBRUARY 1974. 115P, 3 FIG., 76 TAB., 26 REF., 2 APPEND.

KEYWORDS: RADIOACTIVE WASTE; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); LWR (SEE ALSO REACTOR, LWR); NUCLEAR WASTES; PROJECTION (SEE ALSO FORECAST); FORECAST; URANIUM; PLUTONIUM; NUCLEAR FUEL; FUEL REPROCESSING; INFUS (SEE ALSO REACTOR, LWR); EFFLUENT; REACTOR; POWER PLANT; NOBLE GAS; IODINE; TRITIUM; ALPHA EMITTER; BETA EMITTER; GAMMA EMITTER; TAILINGS (SEE ALSO MILL TAILINGS); HIGH-LEVEL WASTE; WASTE CHARACTERISTICS; CLADDING; SHIPPING

<48> PUB DATE: 1974

AUTHOR: BICHERE, J.O.; FFE, C.W.

TITLE: PROJECTIONS OF RADIOACTIVE WASTES FROM THE NUCLEAR FUEL CYCLE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: ESTIMATES OF THE PROPERTIES AND QUANTITIES OF RADIOACTIVE WASTE MATERIALS THAT WILL BE GENERATED IN COMMERCIAL NUCLEAR FUEL CYCLE OPERATIONS ARE USEFUL IN ESTABLISHING A BASIS FOR PLANNING AND DEVELOPMENT OF SAFE AND ENVIRONMENTALLY ACCEPTABLE METHODS FOR MANAGEMENT OF THESE WASTES. WE HAVE MADE A COMPREHENSIVE SET OF PROJECTIONS OF RADIOACTIVE WASTES TO BE GENERATED OVER THE REMAINDER OF THIS CENTURY BASED ON THE MOST RECENT FORECAST OF NUCLEAR POWER GROWTH IN THE UNITED STATES. TEN TYPES OF RADIOACTIVE WASTES ARE IDENTIFIED ON THE BASIS OF THEIR PACKAGING, SHIPPING, AND PROBABLE DISPOSAL REQUIREMENTS, AND THE ANNUAL RATES OF GENERATION, ANNUAL VOLUMES OF SHIPMENTS, AND ACCUMULATION OF EACH TYPE OF WASTE ARE ESTIMATED. IN ADDITION, A MEASURE OF THE RELATIVE TOXICITY OF EACH WASTE ON AN ANNUAL AND ACCUMULATIVE BASIS IS TABULATED. THE MEASURE OF TOXICITY IS DEFINED AS THE CUBIC METERS OF AIR OR WATER THAT WOULD BE REQUIRED TO DILUTE ALL THE RADIOACTIVE CONSTITUENTS OF THE WASTE TO THE CONCENTRATIONS SPECIFIED IN THE AEC'S RADIATION CONCENTRATION GUIDE AS BEING THE MAXIMUM ALLOWABLE FOR UNRESTRICTED USE. (AUTH)

PUB DESC: CNRP-741010, SYMPOSIUM ON POPULATION EXPOSURES. PROCEEDINGS OF THE EIGHTH BIENNIAL TOPICAL SYMPOSIUM OF THE HEALTH PHYSICS SOCIETY, P. 215-222, 10 TAB, 5 REF. (1974)

KEYWORDS: RADIOACTIVE WASTE; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); PROJECTION (SEE ALSO FORECAST); FORECAST; NUCLEAR FUEL CYCLE; PROPERTIES; WASTE MANAGEMENT; PLANNING; ENVIRONMENT; TOXICITY; UNITED STATES; PACKAGING; TRANSPORTATION; WASTE DISPOSAL; GUIDE; CONCENTRATION; NOBLE GAS; IODINE; TRITIUM; PLUTONIUM; URANIUM

<49> PUB DATE: 1972

AUTHOR: BICHERE, J.O.; PERONA, J.J.

TITLE: STORAGE, SHIPMENT, AND DISPOSAL OF SPENT FUEL CLADDING

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

<49> CONT.

ABSTRACT: SEVERAL HUNDRETHS OF A PERCENT OF THE PLUTONIUM IN SPENT REACTOR FUELS WILL BE ASSOCIATED WITH THE METAL CLADDING, AND THIS WILL PROBABLY NECESSITATE THE FUTURE STORAGE OF THIS WASTE MATERIAL IN A SPECIAL REPOSITORY. A STUDY OF THE DESIGN PARAMETERS FOR PACKAGING, INTERIM STORAGE, SHIPMENT, AND DISPOSAL OF CLADDING IN THE PROPOSED SALT MINE REPOSITORY INDICATES THAT ECONOMICS FAVOR COMPACTING THE FUELS AS MUCH AS POSSIBLE, PACKAGING THEM IN 9-IN.-DIAM CYLINDRICAL CONTAINERS, AND SHIPPING THEM TO THE REPOSITORY WITHOUT INTERIM STORAGE AT THE REPROCESSOR PLANT.

PUB DESC: ORNL-TH-3650, 20 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1972

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); SPENT FUEL; CLADDING; PLUTONIUM; SHIPPING CONTAINER; WASTE DISPOSAL, SALT

<50>

PUB DATE: 1971

AUTHOR: BLOEMER, J.C.; SCHERER, F.; NICHOLS, J.F.; LINDBERGH, S.; KILLER, B.S.; FURDOL, E.D.; SOARD, B.F.

TITLE: AN ANALYSIS OF ENERGY STORAGE AND ITS EFFECT IN THE PROPOSED NATIONAL RADIOACTIVE WASTE REPOSITORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: ENERGY STORED IN SOLIDS AS A CONSEQUENCE OF RADIATION DAMAGE WITHIN CRYSTAL LATTICES MAY BE RELEASED AS THIS DAMAGE IS APPRAISED AT HIGHER TEMPERATURES. BASIC DATA ON THERMOTIC CONSIDERATIONS AND EXPERIMENTAL RESEARCH REPORTS, THE QUANTITY OF ENERGY WHICH COULD BE STORED IN THE PROPOSED SALT MINE REPOSITORY IS SMALL. ANALYSES BASED ON UPPER-LIMIT VALUES OF STORED ENERGY SHOW THAT ITS RELEASE UNDER THE MOST PESSIMISTIC CONDITIONS WOULD HAVE NO SERIOUS CONSEQUENCES. SOME ADDITIONAL WORK IS REQUIRED, HOWEVER, TO ESTABLISH ACTUAL VALUES FOR ENERGY STORAGE IN THE SALT AND SOLIDIFIED WASTES UNDER THE TRANSIENT THERMAL AND RADIATION CONDITIONS THAT WILL PREVAIL IN THE REPOSITORY.

PUB DESC: ORNL-TH-3603, 39 PAGES, FIGURES, TABLES, JUNE 1971

KEYWORDS: RADIATION DAMAGE; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; THERMAL ANALYSIS; WASTE STORAGE; ENERGY PREDICTION; HIGH TEMPERATURE; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; SAFETY EVALUATION; THERMAL TRANSIENT

<51>

PUB DATE: 1968

AUTHOR: BLOEMER, J.C.; HARRINGTON, F.E.

TITLE: MANAGEMENT OF RADIOACTIVE WASTES AT NUCLEAR POWER STATIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: AS A PRELIMINARY STEP IN ASSESSING WASTE-DISPOSAL OPERATIONS IN THE EXPANDING NUCLEAR POWER INDUSTRY, THE OPERATING EXPERIENCE IN WASTE MANAGEMENT AT THE DOWNSIDE-1, BIG ROCK POINT, HUMBOLDT BAY, ELE BIVER, INDIAN POINT-1, AND YAMKEE POWER STATIONS IS REVIEWED. ALL THESE PLANTS HAVE OPERATED WITHIN AUTHORIZED LIMITS AT COSTS ESTIMATED TO RANGE BETWEEN 2 AND 10% OF ANNUAL OPERATING COSTS. GASEOUS FUELS BURNING RATES HAVE RANGED FROM AS LOW AS 10 TO THE RANGE 5% TO 30% OF ALLOWABLE, AND LIQUID WASTES FROM 0.0002% TO 9.9%. TRITIUM RELEASES HAVE BEEN BELOW 1% OF ALLOWABLE IN ALL CASES. IT IS CONCLUDED THAT WASTE-MANAGEMENT PRACTICES HAVE BEEN ADEQUATE AND THAT NO PROBLEMS ARE ANTICIPATED.

PUB DESC: ORNL-4070, 101 PAGES, FIGURES, TABLES, 44 REFERENCES, JAN. 1969

KEYWORDS: BIG ROCK POINT (BWP); MAXIMUM PERMISSIBLE CONCENTRATION (MPC); REACTOR, BWP; DOWNSIDE 1 (DOW); BIVER, ELE (BWP); HUMBOLDT BAY (HUB); INDIAN POINT

(PWP); REACTOR, PWP; TRITIUM; WASTE DISPOSAL, ATMOSPHERIC; YAMKEE BWP (YWP); WASTE DISPOSAL, ECONOMICS; REACTOR, POWER; WASTE DISPOSAL, RIVER; WASTE SOURCE AND TYPE; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; RADIOACTIVE, ISSUES; OPERATING EXPERIENCE

<52>

PUB DATE: 1968

AUTHOR: BLOEMER, J.C.; HARRINGTON, F.E.

TITLE: WASTE MANAGEMENT AT NUCLEAR POWER STATIONS

ABSTRACT: THE MANAGEMENT OF WASTES PRODUCED AT NUCLEAR POWER PLANTS MAY BECOME AN INCREASINGLY SIGNIFICANT PROBLEM IN AN ECONOMY EXPECTED TO GROW TO 50 TIMES ITS PRESENT SIZE WITH THE YEAR 13 YEARS. AS PRELIMINARY STEP IN ASSESSING FUTURE IMPLICATIONS, REVIEWS WERE MADE OF THE OPERATING EXPERIENCE IN WASTE MANAGEMENT AT THE ARBITRARILY SELECTED DOWNSIDE 1, BIG ROCK POINT, HUMBOLDT BAY, ELE BIVER, INDIAN POINT 1, AND YAMKEE POWER STATIONS. WASTE-MANAGEMENT PRACTICES AT LIGHT-WATER POWER-REACTOR STATIONS HAVE BEEN QUITE ADEQUATE IN THE PAST, AND THAT THERE ARE NO FUTURE PROBLEMS ANTICIPATED IN THIS AREA THAT WILL NOT BE RESOLVED IN THE NORMAL COURSE OF AN EXPANDING INDUSTRIAL TECHNOLOGY.

PUB DESC: NUCLEAR SAFETY, 9, PAGES 239-240 (MAY-JUNE 1968)

KEYWORDS: MAXIMUM PERMISSIBLE CONCENTRATION (MPC); DOWNSIDE 1 (DOW); INDIAN POINT 1 (IP1); HUMBOLDT BAY (HUB); LIGHT WATER REACTORS (LWR); TRITIUM; REACTOR, POWER; WASTE MANAGEMENT; MONITORING (SEE ALSO SUBJECT); RADIATION SAFETY AND CONTROL; OPERATING EXPERIENCE

<53>

PUB DATE: 1966

AUTHOR: BLOEMER, J.C.; SALMON, A.; DOHERTY, J.T.; FRASER, B.L.; PERONA, J.J.

TITLE: ESTIMATED COSTS OF HIGH-LEVEL WASTE MANAGEMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE COSTS OF PERPETUAL TANK STORAGE OF BOTH ACID AND ALKALINE WASTES WERE ESTIMATED AS A FUNCTION OF TANK SIZE, TANK LIFE, AND FISSION PRODUCT CONCENTRATION IN THE WASTE FOR THREE REPRESENTATIVE TYPES OF FINANCING. FOR ACID WASTES, THE OPTIMUM TANK CAPACITY IS ABOUT A MILLION GALLONS, AND MINIMUM TOTAL COSTS RANGE FROM 0.0165 TO 0.0272 \$/GAL/YR. FOR ALKALINE WASTES, THE OPTIMUM TANK CAPACITY IS 2.1 MILLION GALLONS, AND MINIMUM TOTAL COSTS RANGE FROM 0.0177 TO 0.0296 \$/GAL/YR. REDUCING THE VOLUME OF WASTES, AS STORED, BY DOUBLING THE CONCENTRATION OF FISSION PRODUCTS REDUCES THE TOTAL COSTS BETWEEN 15 AND 30%. THE MINIMUM TOTAL COSTS FOR MANAGEMENT BY THE SERIES OF OPERATIONS CONSISTING OF INTERIM LIQUID STORAGE, POT CALCINATION, INTERIM SOLID STORAGE, SHIPMENT, AND DISPOSAL IN SALT MINE, ARE ESTIMATED TO RANGE FROM 0.017 TO 0.020 \$/GAL/YR WHEN CARRIED OUT OVER A 30-YEAR PERIOD.

PUB DESC: ORNL-P-1926 + CONF-660200-1 +. 19 PAGES, 8 FIGURES, 5 TABLES. A PAPER FOR PRESENTATION AT THE SYMPOSIUM ON THE SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, BICLAW, WASHINGTON, FEBRUARY 10-18, 1966

KEYWORDS: WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; STORAGE CONTAINER; ECONOMIC STUDY

<54>

PUB DATE: 1965

AUTHOR: BLOEMER, J.C.; GRUBBELL, L.

TITLE: ECONOMICS OF RADIOACTIVE WASTE MANAGEMENT AT OAK RIDGE NATIONAL LABORATORY, ARGONNE NATIONAL LABORATORY, AND BROOKHAVEN NATIONAL LABORATORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE; BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

<54> CONT.

ABSTRACT: THIS MATERIAL WAS PREPARED FOR CONSIDERATION BY THE PANEL ON ECONOMICS OF RADIOACTIVE WASTE MANAGEMENT, SPONSORED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, DECEMBER 13-18, 1965. THE INFORMATION IS PRESENTED SEPARATELY FOR OAK RIDGE NATIONAL LABORATORY, ARGONNE NATIONAL LABORATORY, AND BROOKHAVEN NATIONAL LABORATORY, AND IS ORGANIZED FOR EACH SITE TO COMPLY AS NEARLY AS POSSIBLE TO THE OUTLINE OF THE I.A.E.A. QUESTIONNAIRE.

PUB DESC: TID-25794, 59 PAGES, DECEMBER 1965

KEYWORDS: ARI; DRI; ORNL; WASTE MANAGEMENT; ECONOMIC STUDY

<55>

PUB DATE: 1963

AUTHOR: BLOWER, J.O.; PEDRA, J.J.; BRADSHAW, B.L.; ROBERTS, J.T.

TITLE: ESTIMATED COSTS FOR MANAGEMENT OF HIGH-ACTIVITY POWER REACTOR PROCESSING WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: ECONOMIC AND SAFETY EVALUATIONS OF ALTERNATIVE METHODS FOR MANAGEMENT OF HIGH-ACTIVITY WASTES FROM POWER REACTOR FUEL PROCESSING PROVIDE A BASIS FOR DERIVING THE OPTIMUM COMBINATION OF OPERATIONS AND CAN INDICATE THE BEST PROMISING METHODS TO BE DEVELOPED FOR A COMPETITIVE NUCLEAR POWER ECONOMY. ALTHOUGH THE COST OF LONG-TERM STORAGE OF THESE WASTES AS LIQUIDS IS ACCEPTABLE, THE SAFETY AS A PERMANENT DISPOSAL METHOD IS CONSIDERED INADEQUATE. A SCHEME BELIEVED TO BE ACCEPTABLY SAFE CONSISTS OF: INTERIM STORAGE AS LIQUIDS IN TANKS, FOLLOWED BY POT CALCINATION OF THE WASTES TO PRODUCE RELATIVELY SMALL VOLUMES OF STABLE SOLIDS, INTERIM STORAGE OF THE POTS, AND, FINALLY, SPIRITING OF THE POTS TO SALT WASTES FOR PERMANENT DISPOSAL. TOTAL COSTS ARE ESTIMATED TO RANGE FROM 2.6 X 10 DOLLARS TO 4.0 X 10 DOLLARS PER KILLOWATT HOUR AND ARE BELIEVED TO REPRESENT AN ACCEPTABLE CONTRIBUTION TO THE COST OF NUCLEAR POWER.

PUB DESC: ORNL-TN-559- 23 PAGES, 4 FIGURES, 6 TABLES, 5 REFERENCES- MAY 13, 1963, PRESENTED AT NINTH ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SALT LAKE CITY, JUNE 17-19, 1963

KEYWORDS: FUEL BURNUP; WASTE STORAGE; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; RADIOCHEMICAL PROCESSING

<56>

PUB DATE: 1961

AUTHOR: BLOWERS, J.O.

TITLE: SOME RECENT CONCEPTS IN NUCLEAR WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: RECENT CONCEPTS IN NUCLEAR WASTE DISPOSAL ARE DISCUSSED. REDUCTION OF COSTS OF WASTE DISPOSAL THROUGH USE OF FISSILE PRODUCTS AS A HEAT SOURCE IS NOT ECONOMICALLY FEASIBLE. DISPOSAL OF LOW-ACTIVITY SOLID WASTES PRESENTS A PROBLEM BECAUSE OF THEIR QUANTITY AND DIVERSITY. IN ENGLAND A VOLUME REDUCTION OF SOLID WASTE OF ABOUT 10 IS ATTAINED BY BAKING PAPER, GLASSWARE, AND TRIM-BALLS BY HEATING. A FACTOR OF ABOUT 80 IS OBTAINED BY INCINERATION OF COMPOSTIBLES AND HEATING OF SCRAP METAL IN VACUO. NEW SEWAGE PITS IN ORNL WILL REPLY COPPER COMPOUNDS IN AN ATTEMPT TO REDUCE MOVEMENT OF BETHENING.

PUB DESC: NUCLEAR SAFETY, 2(3)- 3 PAGES, 7 REFERENCES- 50-52 (MAY 1961)

KEYWORDS: EFFLUENT; INCINERATION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT; FISSION PRODUCT, SEPARATION

<57>

PUB DATE: 1969

AUTHOR: BLOCH, E.W.

TITLE: PREFABRICATED EMERGENCY INCINERATOR FOR RADIOACTIVE WASTES

CORPORATE AUTHOR: ARMY NUCLEAR DEFENSE LABORATORY

ABSTRACT: THE FEASIBILITY OF USING A PREFABRICATED INCINERATOR TO CONCENTRATE CONTAMINATED COMBUSTIBLE MATERIALS FROM AN EMERGENCY SITUATION IS EVALUATED. THE AIRBORNE BIOLOGICAL HAZARD RESULTING FROM THE COMBUSTION PROCESS IS ANALYZED.

PUB DESC: CCMF-600021, 6 PAGES, PG. 362-367, 1969

KEYWORDS: BURTON; EMERGENCY SYSTEM; RADIATION IN PERSPECTIVE; WASTE DISPOSAL, ATMOSPHERIC; HAZARDOUS ANALYSIS; BUILDING; INCINERATION; WASTE TREATMENT, EQUIPMENT; RADIATION EXPOSURE

<58>

PUB DATE: 1972

AUTHOR: BOCH, A.L.; BLOWER, J.O.; MCCLAIN, W.C.

TITLE: RADIOACTIVE WASTE REPOSITORY PROJECT ANNUAL PROGRESS REPORT FOR PERIOD ENDING SEPT. 30, 1972

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: SUMMARIZES THE RESULTS OF GEOLOGICAL INVESTIGATIONS AT LYONS AND THE ATTENDANT INVESTIGATIONS OF ALTERNATIVE SITES. OTHER TOPICS INCLUDED ARE - PROGRESS ON THE EXPERIMENTAL PHASES OF THE PROGRAM THAT ARE CONCERNED WITH STRUCTURAL ANALYSES OF THE GEOLOGIC FORMATION WITHIN WHICH THE REPOSITORY MAY BE LOCATED; STUDIES OF ISOTOPE TRANSPORT BY VARIOUS MECHANISMS WITHIN THE REPOSITORY; CONSIDERATIONS OF THE CHEMICAL AND RADIATION EFFECTS NEAR THE BURIED WASTES; CALCULATIONS OF THE THERMAL CONDITIONS TO BE IMPOSED AS A CONSEQUENCE OF WASTE BURIAL; POTENTIAL ECOLOGICAL EFFECTS; CONCEPTUAL DESIGN STUDIES OF THE PILOT PLANT; AND A DESCRIPTION OF THE PROPOSED PILOT PLANT EXPERIMENTAL PROGRAM.

PUB DESC: ORNL-5520, 242 PAGES, TABLES, FIGURES, SEPTEMBER 30, 1972

KEYWORDS: ECOLOGY; KANSAS; DESIGN CRITERIA; SITING; WASTE DISPOSAL; TRANSPORTATION AND HANDLING; THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; SAFETY EVALUATION; RADIATION EFFECT

<59>

PUB DATE: 1971

AUTHOR: BOCH, W.B.; HARTLEY, J.B.; REMOLD, J.E.; MCLEOD, J.L.; THOMPSON, B.J.

TITLE: WASTE SOLIDIFICATION PROGRAM, VOL. 4. SEVEN SOLIDIFICATION PERFORMANCE DURING FINAL RADIOACTIVITY TESTS IN WASTE SOLIDIFICATION ENGINEERING PROTOTYPES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: TESTING OF HIGH-LEVEL RADIOACTIVE WASTE SOLIDIFICATION BY THE GRAY-SOLIDIFICATION PROCESS WAS SUCCESSFULLY COMPLETED BY BATTILLE-NORTHWEST. MORE THAN 17 MILLION CUBIC INCHES OF RADIOACTIVES WERE PROCESSED AND COLLECTED IN 8-INCH-DIAMETER CONTAINERS DURING THE FINAL SEVEN ENGINEERING-SCALE DEMONSTRATION RUNS IN USEP AT THE PACIFIC NORTHWEST LABORATORY. RADIOACTIVITY PROCESSED RANGED FROM 1.4 TO 3.4 MILLION CUBIC INCHES DURING THE SEVEN RUNS. A MAXIMUM SELF-GENERATING HEAT-RATE OF 12.7 KW (204 W/LITER) WAS ATTAINED IN AN 8-INCH-DIAMETER POT. THE SOLIDIFIED WASTE WITHIN A FULL 8-INCH-DIAMETER POT REPRESENTED 0.90 TONNES OF PU-239 WASTE REPRESENTATIVE OF POWER REACTOR FUEL (IRRADIATED AT 45,000 MW/TONNE AT A POWER LEVEL OF 30 MW/TONNE) AND 0.54 TONNE FOR A WASTE REPRESENTATIVE OF LWR CORE FUEL IRRADIATED TO 100,000 MW/TONNE AT 200 MW/TONNE.

PUB DESC: BNWL-1501, 200 PAGES, FIGURES, TABLES,

<59> CONT.
REFERENCES, JUNE 1971

KEYWORDS: DECAY RATE; SPRAY SOLIDIFICATION;
FACILITIES DOWNGRADE; REACTOR; DECONTAMINATION;
EFFLUENT; WASTE TREATMENT; FIXATION; REGULATION, AND;
WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; RADIATION
SAFETY AND CONTROL; SPRAY; WASTE DISPOSAL, SALT; FUEL
REPROCESSING; GAS; LIQUID; SOLID; CONCENTRATION

<60>

PUB DATE: 1975
AUTHOR: BOOTH, B.S.

TITLE: A CONSIDERATION OF RADIOISOTOPES FOUND IN
LIQUID EFFLUENTS OF NUCLEAR POWER STATIONS

COMPONENT AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: RADIOISOTOPES RELEASED IN LIQUID
EFFLUENTS FROM POWER REACTORS IN QUANTITIES HIGH
ENOUGH TO SUGGEST ASSESSING THEIR ENVIRONMENTAL
IMPACT MUST TABULATE AND THEIR EXPECTED ANNUAL
RELEASES DETERMINED FROM FUELISOTOP MEASUREMENTS AND
OPERATING EXPERIENCE WITH 24 LIGHT-WATER REACTORS
THROUGH 1972. THIS STANDARD LIST OF 63 RADIOISOTOPES
WAS USED FOR PREPARATION OF ENVIRONMENTAL IMPACT
STATEMENTS FOR NUCLEAR POWER STATIONS. USE OF THIS
LIST HELPS ENSURE COMPLETENESS IN ESTIMATING THE
CONSEQUENCES OF RADIOISOTOPE RELEASES FROM EACH
REACTOR WITHOUT HAVING TO CONSIDER SEPARATELY THE
SEVERAL DIFFERENT RADIOISOTOPES WHICH COULD BE RELEASED.
THE EXPECTED RELEASES AND THEIR VARIATIONS TABULATED
HERE WERE USED TO VERIFY THEORETICAL RELEASES ENCLOSED
IN THE IMPACT STATEMENTS FOR SPECIFIC REACTORS.

FOR DESC: OROU-TN-3001, 22 PAGES, 5 TABLES, 36
REFERENCES, MARCH 1975

KEYWORDS: EFFLUENT; INVENTORY; WASTE DISPOSAL,
LIQUID; RADIOACTIVITY RELEASE; ENVIRONMENT; LIQUID;
OPERATING EXPERIENCE; EFFECT; DATA COLLECTION;
RADIOISOTOPE TRANSFER

<61>

PUB DATE: 1973
AUTHOR: BOFF, C.E.; JEFFS, G.E.

TITLE: ENERGY STORAGE IN HIGH LEVEL RADIOACTIVE
WASTE AND SIMULATION AND MEASUREMENT OF STORED ENERGY
WITH SYNTHETIC WASTES

COMPONENT AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: ENERGY STORAGE OF SOLID WASTES, STORED
ENERGY IN THE FORM OF LATENT DEFECTS IS PRODUCED BY
ATOMS DETACHING FROM ALPHA DECAY. FOR HAZARDOUS
ANALYSIS OF WASTE-STORAGE FACILITIES, DATA IS REQUIRED
ON AVERAGE BEHAVIOR BECAUSE THE GROWING OF AVERAGE
MAY RESULT IN A SUDDED RISE IN TEMPERATURE. PREVIOUS
STUDIES OF DEFECT AVERAGE IN SILICATES AND OTHER
OXIDES ARE REVIEWED, AND A ROOM-TO-HIGH-TEMPERATURE
CALORIMETER IS DESCRIBED WHICH WAS DEVELOPED FOR SUCH
STUDIES. FAST-NEUTRON IRRADIATION PROVIDES A MORE
CONVENIENT MEANS FOR SIMULATING ALPHA-DECAY DAMAGE
THAN IRRADIATION BY A BEAM OF CHARGED PARTICLES, SINCE
LARGE SPECIMENS MAY BE IRRADIATED AT LOWER FLUXES.

FOR DESC: OROU-TN-3701, 50 PAGES, 5 FIGURES,
JANUARY 1973

KEYWORDS: RADIATION DAMAGE; HIGH-LEVEL WASTE; WASTE
HANDLING; WASTE STORAGE; WASTE DISPOSAL, SOLID;
WASTES ANALYSIS; WASTE DISPOSAL, SALT; WASTE
GENERATION, INTERNAL; REVIEW; SALT (SEE ALSO DENSED
SALT AND WASTE DISPOSAL, SALT); INSTRUMENTS, MISC.

<62>

PUB DATE: 1973
AUTHOR: BRANCA, C.; BREUER, F.; CIGNA, A.A.;

TITLE: APPLICATION OF A DERIVED FORMULA FOR THE
DISCHARGE OF RADIOACTIVE LIQUID WASTES

COMPONENT AUTHOR: COMITATO NAZIONALE PER L'ENERGIA
NUCLEARE, ROMA

ABSTRACT: THE DISCHARGE OF RADIOACTIVE WASTE IN THE
ENVIRONMENT IS A SOURCE OF ENVIRONMENTAL POLLUTION.
FOR PUBLIC HEALTH PROTECTION, IT IS ESSENTIAL TO KNOW
THE BEHAVIOR OF EACH RADIOISOTOPE IN DIFFERENT MEDIA.
THIS BEHAVIOR CAN BE EVALUATED BY A PROVISIONAL
MATHEMATICAL MODEL, SUCH AS HAS BEEN DEVELOPED IN A
PREVIOUS PUBLICATION (RNO 96362). IN THIS REPORT, SOME
EXAMPLES OF APPLICATION OF THIS DEVELOPED MODEL ARE
GIVEN FOR THE FOLLOWING PRACTICAL PROBLEMS -
DISCHARGE INTO A WATERCOURSE USED FOR DRINKING
PURPOSES; DISCHARGE INTO A WATERCOURSE USED FOR
IRRIGATION; DISCHARGE INTO A LAKE USED FOR FISHING
AND THE SUPPLY OF DRINKING WATER; DISCHARGE FROM
DIFFERENT NUCLEAR INSTALLATIONS INTO THE SAME
HYDROLOGICAL SYSTEM; DISCHARGE OF GASEOUS WASTES INTO
THE ATMOSPHERE. AN APPLICATION OF THIS MODEL IS ALSO
PROPOSED TO DECONTAMINATE POLLUTED PROBLEMS.

FOR DESC: RNO-00972, 36 PAGES, FIGURES, JANUARY
1973

KEYWORDS: MEASUREMENT; WASTE, DRINKING; ATMOSPHERIC
POLLUTION; MONITOR, ENVIRONMENTAL; SOIL, NUCLEAR
OCCURRENCE; WASTE MANAGEMENT; RADIATION SAFETY AND
CONTROL; ENVIRONMENT; WATER POLLUTION; SAFETY
EVALUATION; MATHEMATICAL TREATMENT; MODEL;
CONCENTRATION

<63>

PUB DATE: 1972
AUTHOR: BRANCA, C.; CIGNA, F.; NERONE, M.; VELONA, P.

TITLE: RADIOACTIVE WASTE MANAGEMENT IN ITALY

COMPONENT AUTHOR: COMITATO NAZIONALE PER L'ENERGIA
NUCLEARE, ROMA; ENTE NAZIONALE PER L'ENERGIA
ELETTRICA, ROMA

ABSTRACT: DESCRIBES CURRENT PRACTICES OF
RADIOACTIVE WASTE MANAGEMENT IN ITALY. AMOUNTS OF
WASTE PRODUCED BY THE NUCLEAR POWER INDUSTRY, NUCLEAR
RESEARCH CENTERS AND RADIOISOTOPE APPLICATIONS ARE
ESTIMATED. THE VARIOUS METHODS OF TREATMENT FOR
GASEOUS, LIQUID, AND SOLID WASTE ARE REVIEWED. THE
WASTE-DISPOSAL FACILITIES IN ITALY INCLUDE RELEASE OF
GASEOUS AND LIQUID EFFLUENTS TO THE ENVIRONMENT AND
ON-SITE DRIAL OR SEA DUMPING OF SOLID WASTE. CHANGES
IN WASTE-TREATMENT PRACTICES ARE LIKELY TO INCLUDE
SOLIDIFICATION OF HIGH-LEVEL LIQUID WASTE AND ADVANCED
DECONTAMINATION TECHNIQUES FOR GASEOUS AND LIQUID
EFFLUENTS. IN RELATION TO SOLID WASTE DISPOSAL, THE
EVOLUTION OF PRESENT MANAGEMENT SCHEMES WILL PROBABLY
INCLUDE THE DEVELOPMENT OF CENTRALIZED DRIAL CIRCLES.

FOR DESC: ENERGIA NUCLEARE, 19(1), PP. 17-25, 6
TABLES, 6 REFERENCES

KEYWORDS: WASTE STORAGE; INVENTORY; DEPOSITORY;
REVIEW; WASTE TREATMENT, LIQUID; WASTE TREATMENT, GAS;
WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE
TREATMENT, SOLID; WASTE MANAGEMENT; ITALY

<64>

PUB DATE: 1971
AUTHOR: BRANCA, C.; BREUER, F.; CIGNA, A.A.; ANAVIS, B.

TITLE: PRINCIPLES AND METHODS FOR THE DERIVATION
OF A FORMULA FOR THE DISCHARGE OF RADIOACTIVE WASTES IN
SURFACE WATERS

COMPONENT AUTHOR: COMITATO NAZIONALE PER L'ENERGIA
NUCLEARE, ROMA

ABSTRACT: IN ANY NUCLEAR PROJECT, IT IS ESSENTIAL
TO KNOW EXACTLY THE MAXIMUM QUANTITY OF RADIOACTIVE
SUBSTANCES WHICH MAY BE DISPOSED OF IN A SPECIFIED
ENVIRONMENT. MANY DIFFICULT PROBLEMS ARE INVOLVED IN
THE DETERMINATION OF A DISCHARGE FORMULA -
CHARACTERISTICS OF RADIOACTIVE WASTES, CHARACTERISTICS
OF ENVIRONMENTAL MEDIA, VARIOUS PHENOMENA WHICH MAY
MODIFY THE DISTRIBUTION OF RADIOACTIVITY, AND ALL
FACTORS WHICH INFLUENCE THE EXPOSURE TO RADIATION FOR
MAN. *** IN THIS REPORT, A MATHEMATICAL SOLUTION IS
GIVEN FOR THE PROBLEM OF THE DISTRIBUTION OF

<64> CONT.
BASIC PRINCIPLES IN THE ENVIRONMENTS WHICH ARE ASSOCIATED WITH SURFACE WATERS.

PUB DESC: BWR-4636, 43 PAGES, APRIL 1971

KEYWORDS: DIFFUSION; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); WASTE DISPOSAL; SURFACE WATER; OCCURRENCE; POPULATION EXPOSURE; ENVIRONMENT; MATHEMATICAL TREATMENT; ; R&D; DISCHARGE

<65>

PUB DATE: 1970
AUTHOR: BRANCA, G.; POLVARI, C.

TITLE: SOME OBSERVATIONS ON THE MANAGEMENT OF LIQUID AND SOLID RADIOACTIVE WASTES OF LOW AND INTERMEDIATE ACTIVITY IN ITALY

CORPORATE AUTHOR: CISE, LABORATORIES DE CHIMIE, SPINALE, CSE-CASACCIA, ITALY; CISE, DIVISION DE PROTECTION SANITAIRE ET ECOTOLOGIE, NORE, ITALY

ABSTRACT: DISCUSSES EVOLUTION OF BASIC CRITERIA TO A MODERN CONCEPT OF RADIOLOGICAL CAPACITY AS DETERMINED BY ECOLOGICAL SUBJECTS. THE EMPLOYMENT SUCH CRITERIA MAY AND MIGHT HAVE ON THE MANAGEMENT OF RADIOACTIVE LIQUID WASTES IS BRIEFLY DISCUSSED. THE PRESENT POSSIBILITIES AND THE FUTURE PERSPECTIVES CONCERNING THE ULTIMATE FATE OF SOLID RADIOACTIVE WASTES HAVING A LOW OR INTERMEDIATE ACTIVITY IN ITALY ARE DISCUSSED.

PUB DESC: SN-137/30, STI/PUB-264, CONF-700905, 10 PAGES, 7 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-LES-BAINS, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECOLOGY; INTERMEDIATE-LEVEL WASTE; IAEA; WASTE MANAGEMENT; ITALY

<66>

PUB DATE: 1964
AUTHOR: BRAY, L.A.; HASTED, R.C.

TITLE: METHOD OF TREATING RADIOACTIVE WASTE

ABSTRACT: THE INVENTION RELATES TO A NOVEL METHOD OF TREATING RADIOACTIVE WASTE SOLUTIONS PRODUCED IN THE REPROCESSING OF SPENT FUEL ELEMENTS FROM NUCLEAR REACTORS, MORE PARTICULARLY TO A METHOD OF REDUCING THE NITRIC ACID, NITROUS AND NITRATE ION CONTENT OF SUCH SOLUTIONS. SUGAR, WHEN INTRODUCED INTO RADIOACTIVE WASTE SOLUTIONS AT TEMPERATURES ABOVE 60 DEGREES C AND HELD BOILING, MAKES AN EFFECTIVE AGENT FOR REMOVING NITRIC ACID, NITROUS AND NITRATE IONS. IT IS IMPORTANT THAT THE TEMPERATURE BE MAINTAINED FOR A TIME SUCH THAT THE SUGAR IS SUBSTANTIALLY DESTROYED.

PUB DESC: U.S. PATENT 3,150,577 3 PAGES, 3 TABLES-DECEMBER 24, 1964

KEYWORDS: WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; THERMAL CONSIDERATION

<67>

PUB DATE: 1967
AUTHOR: BROWN, D.J.; GARRID, J.R.

TITLE: LAND REQUIREMENTS AND WASTE MANAGEMENT POLICY AT HAMPDEN

CORPORATE AUTHOR: ATLANTIC RICHFIELD HAMPDEN COMPANY, RICHLAND, WASHINGTON

ABSTRACT: IN 1967 A SPECIAL STUDY WAS MADE TO DETERMINE MINIMUM SPECIFIC LAND REQUIREMENTS IN SUPPORT OF ALL OPERATIONS IN THE 260 AREAS. THIS PAPER DISCUSSES THESE ASPECTS OF THE 1967 STUDY RELATED TO EVALUATING LAND REQUIREMENTS FOR DISPOSAL OF LOW AND INTERMEDIATE LEVEL LIQUID EFFLUENTS AND SOLID REFUSE TO GROUND. ALSO DISCUSSED ARE THE GENERAL LIQUID EFFLUENT TREATMENT METHODS INCORPORATED IN THE WASTE MANAGEMENT PROGRAM TO REDUCE THE AMOUNT OF LAND NEEDED FOR GROUND DISPOSAL PRACTICES. DATA

ARE PRESENTED SHOWING THE RESULTS ACHIEVED THROUGH 1969.

PUB DESC: ABB-5A-65, SN-137/40, CONF-700905-1, 14 PAGES, FROM SYMPOSIUM ON DEVELOPMENTS IN THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES, AIX-LES-BAINS, FRANCE, 1967

KEYWORDS: EFFLUENT; LAND POLICY; LAND BURIAL (SEE ALSO BURIAL GROUND); WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; HAMPDEN SITE

<68>

PUB DATE: 1968
AUTHOR: BROWN, D.V.

TITLE: EVALUATION OF SOLIDIFIED WASTE PRODUCTS. STUDY OF THE HIGH TEMPERATURE STORAGE OF SOLIDIFIED WASTE PRODUCTS CONTAINING SULFATE

CORPORATE AUTHOR: BATELL NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS EXPERIMENT IS DESIGNED TO DETERMINE WHETHER THE SULFATE IN SOLIDIFIED WASTE PRODUCTS CONTAINING SULFATE WILL DECOMPOSE UNDER CONDITIONS OF HIGH TEMPERATURE STORAGE AND RESULT IN EXCESSIVE VESSEL PRESSURIZATION. EXPERIMENT WAS INCONCLUSIVE.

PUB DESC: BNWL-926, 9 PAGES, 9 FIGURES, DECEMBER 1968

KEYWORDS: DECAY HEAT; PRESSURE VESSELS; WASTE STORAGE; CALCULATION; HIGH TEMPERATURE; R AND D PROGRAM

<69>

PUB DATE: 1971
AUTHOR: BRYANT, P.H.; ROBLEY, P.

TITLE: DISPOSAL OF RADIOACTIVE WASTES ARISING IN THE UNITED KINGDOM FROM THE PEACEFUL USES OF ATOMIC ENERGY

CORPORATE AUTHOR: NATIONAL RADIOLOGICAL PROTECTION BOARD, HADDON, ENGLAND

ABSTRACT: DESCRIBES UNITED KINGDOM POLICY IN RELATION TO RADIOACTIVE WASTE AND SUMMARIZES THE RELEVANT LEGISLATION AND METHODS OF CONTROL. DATA ARE GIVEN ON THE AMOUNTS OF RADIOACTIVITY DISCHARGED AS WASTE FROM ESTABLISHMENTS OF THE UKAEA, THE NUCLEAR POWER STATIONS OPERATED BY THE ELECTRICITY GENERATING BOARDS, AND OTHER USERS OF RADIOACTIVE MATERIALS. STUDIES OF THE BEHAVIOUR OF RADIOACTIVITY IN THE ENVIRONMENT ARE REPORTED WITH PARTICULAR REFERENCE TO FOOD CHAINS AND OTHER POTENTIAL SOURCES OF IRRADIATION OF THE PUBLIC. THE RESULTS OF ENVIRONMENTAL MONITORING ARE PRESENTED, AND ESTIMATES ARE MADE OF RADIATION DOSES RECEIVED BY INDIVIDUAL MEMBERS OF THE PUBLIC AND LARGER POPULATION GROUPS AS A RESULT OF WASTE DISPOSAL.

PUB DESC: BNWL-B-1, 16 PAGES, APRIL 1971

KEYWORDS: ADMINISTRATIVE CONTROL; DOSIMETRY; UNITED KINGDOM; WASTE DISPOSAL; POPULATION EXPOSURE; ICRP; RADIATION SAFETY AND CONTROL; RADIOACTIVITY RELEASE; FOOD CHAIN; LEGISLATION; DISCHARGE

<70>

PUB DATE: 1972
AUTHOR: BURNS, R.H.

TITLE: RADIOACTIVE WASTE MANAGEMENT AND CONSERVATION OF THE ENVIRONMENT

CORPORATE AUTHOR: ATOMIC ENERGY RESEARCH ESTABLISHMENT, HADDON, ENGLAND

ABSTRACT: DISPOSAL OF WASTE IS CONTROLLED ACCORDING TO THE RADIOACTIVE SUBSTANCE ACT, 1960, AND IT IS APPLIED WHEN THERE IS NO INTENTION TO RECOVER SOME MATERIAL. LOW-LEVEL LIQUID WASTES ARISE FROM THE PURIFICATION PROCESSES FOR URANIUM AND PLUTONIUM, WASHING OF SOLVENT USED, CONTROL LABORATORIES,

(70) COPY.
EQUIPMENT ENCLOSURE, AND ACTIVE LIQUID. IN CASE OF CASUAL DISCHARGE TO THE ATMOSPHERE, NO QUANTITATIVE LIMIT IS SPECIFIED, BUT IT IS REQUIRED TO REGULATE THE DISCHARGE SO THAT PUBLIC HEALTH IS NOT ENDANGERED AND TO USE BEST PRACTICABLE MEANS TO REDUCE SUCH DISCHARGE. SOLID RADIOACTIVE WASTES FROM AUTHORITY ESTABLISHMENTS ARE FORCED AT TWO SITES IN SOUTHERN SWEDEN OR SHIPPED BY SEA. GREATEST DIFFICULTY AND DIFFICULTIES HAVE ARISEN IN CASE OF THE DISCHARGE OF LIQUID EFFLUENT TO THE RIVER THAMES.

PUB DESC: RT. JAN., 21 PAGES, 10(5), PP. 59000 (MAY 1972)

KEYWORDS: REGULATION (SEE ALSO STANDARDS, FACILITIES); ENVIRONMENT; UNITED KINGDOM; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, RIVER; WASTE MANAGEMENT; RIVER, THAMES

(71)

PUB DATE: 1970

AUTHOR: BURNS, B.D.

TITLE: WASTE MANAGEMENT - PAST, PRESENT AND FUTURE

ABSTRACT: DISCUSSES WASTE MANAGEMENT HIGH POINTS OF THE PAST AND CONSIDERS THE FORTHCOMING ROLE OF WASTE MANAGEMENT. CONSIDERS THE LEGAL AND MORAL RESPONSIBILITIES FOR ESTABLISHING A SAFE WASTE MANAGEMENT POLICY.

PUB DESC: SA-137/05, STL/PUB-260, COMP-700905, 8 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON THE MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, SIXTH-POWDER, FRANCE, SEPTEMBER 11, 1970

KEYWORDS: ADMINISTRATIVE CONTROL; IAEA; UNITED KINGDOM; EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); WASTE MANAGEMENT; ICRP; RADIATION SAFETY AND CONTROL

(72)

PUB DATE: 1964

AUTHOR: JAMES, B.D.; CLARK, G.V.; CLARK, J.H.

TITLE: RADIOACTIVE WASTE CONTROL AT THE UNITED KINGDOM ATOMIC RESEARCH ESTABLISHMENT, HARWELL

COORDINATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY

ABSTRACT: THE FACILITIES AT HARWELL ARE ADEQUATE FOR THE CONTROL AND TREATMENT OF THE RADIOACTIVE WASTES ARISING. OF THESE ONE IT IS POSSIBLE TO INSURE THAT DISCHARGES TO THE RIVER THAMES ARE MAINTAINED WELL WITHIN THE AUTHORIZED AMOUNT. IN ADDITION TO THE USUAL CONTROL EXERCISED, RESEARCH AND DEVELOPMENT WORK IS CARRIED OUT WITH THE AIM OF FINDING CHEAPER AND/OR MORE EFFICIENT TREATMENT METHODS.

PUB DESC: RESE-B-5900, 49 PAGES, 34 FIGURES, 11 REFERENCES, SEPTEMBER 1964

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); UNITED KINGDOM; EFFLUENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, OCEAN; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, RIVER; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE TREATMENT, ECONOMICS; EVAPORATION; ION EXCHANGE; RIVER, THAMES; RADIOL LEVEL

(73)

PUB DATE: 1964

AUTHOR: BURNS, B.D.

TITLE: RADIOACTIVE WASTE CONTROL AT THE UNITED KINGDOM ATOMIC RESEARCH ESTABLISHMENT, HARWELL

COORDINATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL

ABSTRACT: OUTLINES THE CONTROL PROCEDURES EMPLOYED IN ADDRESSING NEW EFFLUENTS, SUBSTITUTING THE LOW-, MEDIUM-, AND HIGH-LEVEL EFFLUENTS AT SOURCE, TREATING LOW-LEVEL WASTES, DITCHING AND TREATING HIGH-LEVEL

WASTE WASTES USING THE FERROCYANIDE-PROSPHATE PROCESS, SUBJECTING CHEMICALLY-TREATED EFFLUENT TO ION EXCHANGE OR CRYSTAL VERMICULITE IN A BASKET CENTRIFUGE, OR TO EVAPORATION, TREATING SLUDGE BY FREEZING AND TREATING EFFLUENT VACUUM FILTRATION, DISCHARGING EFFLUENT TO THE RIVER THAMES (INCLUDING DATA ON THE MAXIMAL PERMISSIBLE DISCHARGE), AND DISPOSING OF SOLID WASTES BY INCINERATION AND DUMPING AT SEA. PHOTOGRAPHS AND FLOW DIAGRAMS OF THE PLANT ARE INCLUDED.

PUB DESC: RESE-B-1335, 30 PAGES, 1964

KEYWORDS: EFFLUENT; UNITED KINGDOM; WASTE DISPOSAL, OCEAN; WASTE TREATMENT; ION; PHOSPHATE; SEPARATION TECHNIQUES; EVAPORATION; FILTRATION; INCINERATION; ION EXCHANGE; RADIOACTIVITY RELEASE; RIVER, THAMES; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; HIGH-LEVEL WASTE

(74)

PUB DATE: 1971

AUTHOR: BUTTON, J.C.E.

TITLE: RADIOLOGICAL HEALTH AND SAFETY ASPECTS OF URANIUM MINING AND ORE TREATMENT

COORDINATE AUTHOR: AUSTRALIAN ATOMIC ENERGY COMMISSION, LUCAS HEIGHTS

ABSTRACT: TWO HUNDRED AND FORTY-FOUR REFERENCES ARE LISTED ALPHABETICALLY UNDER THE HEADINGS - ENVIRONMENTAL FACTORS; EXTERNAL RADIATION MEASUREMENT; GENERAL RADIOLOGICAL HEALTH AND SAFETY ASPECTS; HISTORICAL ASPECTS; INTERNAL CONTAMINATION HAZARDS; MEASUREMENTS AND PROTECTION; MEDICAL ASPECTS; MONITORING PROGRAMS; RADIOACTIVITY FUNDAMENTALS; RADIOLOGICAL EXPOSURE LIMITS; STANDARDS AND REGULATIONS; VENTILATION; AND WASTE MANAGEMENT.

PUB DESC: IRI5-MF-230, 5 PAGES, DECEMBER 1971

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); BILLING; MEDICAL; STANDARDS; RADIATION (SEE ALSO REGULATION); MEASUREMENT; MINING; REGULATION (SEE ALSO STANDARDS, RADIATION); URANIUM; VENTILATION SYSTEM; MINING, ENVIRONMENTAL; SURVEY, RADIATION; WASTE MANAGEMENT; ROSE MEASUREMENT, INTERNAL; RADIATION SAFETY AND CONTROL; ENVIRONMENT; RADIOLOGICAL ASSISTANCE; INDUSTRY, MINING

(75)

PUB DATE: 1967

AUTHOR: CARLSSON, G.

TITLE: HIGH LEVEL RADIOACTIVE WASTES

COORDINATE AUTHOR: ACTINOLAGET A'OMERGI, SWEDEN

ABSTRACT: SURVEYS THE RESEARCH AND DEVELOPMENT WORK PERFORMED AT THE SWEDISH ATOMIC ENERGY COMMISSION FOR THE HANDLING, SEPARATION, CONCENTRATION, AND ULTIMATE DISPOSAL OF HIGH AND HIGH ACTIVITY WASTES WHICH ARE OBTAINED AT A RESEARCH STATION, A REACTOR SITE, OR A REPROCESSING FACILITY. MOST OF THE DEVELOPMENT WORK HAS BEEN DIRECTED TO STUDIES OF WAYS FOR THE CONCENTRATION OF WASTES BY ION EXCHANGE OR FREEZING TECHNIQUES WHICH ARE PRESENTED MORE IN DETAIL.

PUB DESC: SWEDISH RES TIDS 79(2) PAGES 146-161, 3 FIGURES, 19 REFERENCES

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE; WASTE MANAGEMENT; SWEDEN; PUL REPROCESSING

(76)

PUB DATE: 1968

AUTHOR: CARLIS, B.L.

TITLE: USE OF SYNTHETIC POLYMERS IN SOIL WASTE DISPOSAL SYSTEMS

COORDINATE AUTHOR: BUTTELL MONTWENT LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: EXTENSIVE RESEARCH AND DEVELOPMENT

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REPORTS IN GEOLOGY, HYDROLOGY, HYDRAULICS, SOIL CHEMISTRY AND PROCESS ENGINEERING HAVE BEEN APPLIED TO PROBLEMS OF DISPOSAL OF NUCLEAR WASTES SOLUTION TO THE PROBLEMS AT THE SANDHORN PROJECT, RICHLAND, WASH. RESULTS OF THESE STUDIES ARE MONITORING OF LARGE-SCALE DISPOSAL FACILITIES HAVE SHOWN THAT CONTROLLED GROUND DISPOSAL OF NUCLEAR WASTES MAY BE CONDUCTED SAFELY AND ECONOMICALLY IN THIS ENVIRONMENT. IT APPEARS THAT TREATMENT WITH LOW CONCENTRATIONS OF ALUM OR SODIUM SULFATE ALONG WITH .1 PPM OF SOME CATIONIC POLYMERS WOULD BE EFFECTIVE IN REDUCING PARTICLE AND RADIOACTIVITY MIGRATION IN A WASTE DISPOSAL FACILITY.

PUB DESC: DUEL-SA-2016, 7 PAGES, NOVEMBER 5, 1968

KEYWORDS: ADSORPTION; PLASTIC; ALUMINUM; CESIUM; CHEMICAL REACTION; DIFFUSION; EFFLUENT; GEOLOGY; SOIL; RADIOISOTOPE REMOVAL THROUGH; SINKING; WASTE TREATMENT; WASTE DISPOSAL; ECONOMICS; WASTE DISPOSAL, LIQUID; HYDROLOGY; ION EXCHANGE; IONIAL EXCHANGE; PARTICLE, RADIOACTIVE

<77>

PUB DATE: 1973

AUTHOR: CAROLINA POWER AND LIGHT CO. (U.S.A.)

TITLE: RESPONSE TO QUESTION 12.2 - TRANSPORTATION OF SOLID RADIOACTIVE WASTE

CORPORATE AUTHOR: CAROLINA POWER AND LIGHT CO.

ABSTRACT: DESCRIBES SUCH MATTERS AS LOCATION OF BURIAL SITE, DISTANCE OF SITE FROM PLANT, NOSE OF SUSPENT (THICK OR BAIL), NUMBER OF SHIPMENTS (THICK OR BAIL) PER YEAR.

PUB DESC: Docket-50261-137, 1 PAGE, P. 512.8-1, SUPPLEMENT 1 TO ENVIRONMENTAL REPORT FOR U.S. DEPARTMENT, UNIT 2, JAN. 75, 1973, DOCKET 50-261, TYPE-PUB, WFO-BEST., AE-REASCO

KEYWORDS: REACTOR, PWR; SITING; TRANSPORTATION AND MODELING; WASTE DISPOSAL; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; RESPONSE TO DOE QUESTION; ROBINSON 2 (PWR); DATA COLLECTION; DEFCY, ENVIRONMENTAL

<78>

PUB DATE: 1969

AUTHOR: CENET, P.; BERTER, E.

TITLE: THE TREATMENT AND COMPLETION OF SOLID RADIOACTIVE WASTES

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, SECLAT, FRANCE

ABSTRACT: DISCUSSES THE NECESSITY TO (1) DEVELOP PROCEDURE TO ENSURE ABSOLUTE CONFIDENCE OF LONG DURATION OF CONTAMINATED ELEMENTS AND A BIOLOGICAL FIELD AGAINST RADIATION, AND (2) TO ADOPT A PROCEDURE TO COLLECT, HANDLE, AND TRANSPORT TO A DISPOSAL SITE.

PUB DESC: DUEL-TD-30 (CEA-2147), 17 PAGES, JUNE 10, 1969

KEYWORDS: FRANCE; WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE TRANSPORTATION; WASTE MANAGEMENT; SHELTERING; EQUIPMENT

<79>

PUB DATE: 1972

AUTHOR: CHOI, S.-E.; FAN, L.-T.; EICKSON, L.E.

TITLE: SIMULTANEOUS DISPERSION AND DECAY OF RADIOACTIVE WASTES

ABSTRACT: A RATE PROCESS GOVERNING THE TRANSPORT AND DECAY OF A RADIOACTIVE SUBSTANCE IN A SOLIDIFIED WASTE AND A SURROUNDING FLUID IS SIMULATED MATHEMATICALLY. THE SOLIDIFIED RADIOACTIVE WASTE IS OPEN DUE TO UNDERGROUND OR DISPOSAL OF IN THE SEA AND IS SUBJECT TO CONTACT WITH CARBOXYLATED OR SEA WATER. A CERTAIN RADIOACTIVE COMPONENT DISTRIBUTED IN THE SOLIDIFIED WASTE DISSOLVES IN THE WATER AND THEN DIFFUSES OUT OF THE SLAB TO THE SURROUNDING FLUID

BECAUSE OF THE CONCENTRATION DIFFERENCE. THE DECAY OF THE RADIOACTIVE SUBSTANCE IN BOTH THE SLAB AND THE SURROUNDING FLUID OF THE SYSTEM IS AN IRREVERSIBLE FIRST ORDER RATE PROCESS. THE ANALYTICAL EXPRESSIONS FOR THE CHANGE OF CONCENTRATION OF THE RADIOACTIVE SUBSTANCE ARE DERIVED THROUGH THE USE OF A LAPLACE TRANSFORMATION TECHNIQUE BOTH AS A FUNCTION OF TIME AND POSITION FOR THE POROUS BODY AND AS A FUNCTION OF TIME FOR THE SURROUNDING FLUID. THE MATHEMATICAL EXPRESSIONS ARE USEFUL IN PREDICTING CONCENTRATIONS IN THE SLAB AS WELL AS IN DETERMINING THE EFFECTIVE DIFFUSIVITY AND THE DECAY COEFFICIENT OF THE RADIOACTIVE SUBSTANCE. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 22(2), P. 177 (1972)

KEYWORDS: HEALTH PHYSICS; RADIOACTIVE WASTE; DECAY; SOLID; LIQUID; SIMULATION; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); GROUND WATER; DIFFUSION; DECAY COEFFICIENT; MATHEMATICAL TREATMENT; WATER; TRANSPORT; CONCENTRATION; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND)

<80>

PUB DATE: 1975

AUTHOR: CHRISTENSEN, E.L.

TITLE: PROGRESS TOWARD A POLICY FOR WASTE MANAGEMENT

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: THE CURRENT PROBLEMS OF RADIOACTIVE WASTE MANAGEMENT ARE AS COMPLEX AS THE COMPOSITION OF THE WASTE THEMSELVES. THESE PROBLEMS INCLUDE POLITICAL AND EMOTIONAL ASPECTS AS WELL AS THE TECHNICAL PROBLEMS. WASTE DISPOSAL PROGRAMS AROUND THE WORLD ALL SEEK TO HAVE USE OF THE GEOLOGICAL FEATURES AVAILABLE TO EACH COUNTRY. CURRENTLY, THE NETHERLANDS AND OTHERS ARE USING SALT MINES. ENGLAND PREFERS SEA DISPOSAL. THE UNITED STATES HAS NOT SETTLED ON ANY METHOD YET THOUGH IT HAS ALL THE GEOLOGICAL FEATURES AVAILABLE THAT OTHER COUNTRIES ARE USING.

PUB DESC: AMERICAN NUCLEAR SOCIETY, TOPICAL MEETING ON NUCLEAR SAFETY, TUCSON, ARIZONA, 4 PMS, OCT. 5-8, 1975

KEYWORDS: WASTE MANAGEMENT; WASTE DISPOSAL; FUEL CYCLE; FUEL REPROCESSING; ENVIRONMENT; REGULATION (SEE ALSO STANDARDS, RADIATION)

<81>

PUB DATE: 1975

AUTHOR: CHRISTENSEN, E.L.; GADDE, D.; VALENTINE, A.R.

TITLE: DEMOLITION OF BUILDING 12, AN OLD PLUTONIUM FILTER FACILITY

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: THIS REPORT DISCUSSES THE DECOMMISSIONING AND DISPOSAL OF A PLUTONIUM-CONTAMINATED AIR FILTER FACILITY THAT PROVIDED VENTILATION FOR THE MAIN PLUTONIUM PROCESSING PLANT AT LOS ALAMOS FROM 1945 UNTIL 1973. THE HEALTH PHYSICS, WASTE MANAGEMENT, AND ENVIRONMENTAL ASPECTS OF THE DEMOLITION ARE ALSO DISCUSSED.

PUB DESC: LA-5755, 20 PAGES, 5 TABLES, 30 FIGURES, JANUARY 1975

KEYWORDS: PLUTONIUM; DECOMMISSIONING; HEALTH PHYSICS; ENVIRONMENTAL EFFECT; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; VENTILATION SYSTEM; SAMPLING; WASTE MANAGEMENT; BUILDING; CONTAMINATION; SOIL; FILTERS

<82>

PUB DATE: 1968

AUTHOR: CHRISTENSEN, E.L.

TITLE: GROUND DISPOSAL OF LIQUIDS

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY,

<82> CONT.
DEU MEXICO

ABSTRACT: THE USE OF THE GROUND FOR DISPOSAL OPERATIONS IS BASED ON TWO FUNDAMENTAL PROPERTIES. FIRST, THE MINERALS FROM WHICH THE SUBSOLIDS ARE COMPOSED GENERALLY HAVE A HIGHER SORPTION CAPACITY FOR MOST URANIAN FISSION PRODUCTS AS WELL AS FOR MANY OTHER RADIOISOTOPES. SECONDLY, THE MASS OF SOIL COVERING A DISPOSAL PROVIDES GOOD RADIATION SHIELDING AND PERMANENT PHYSICAL PROTECTION TO PEOPLE ABOVE GROUND. GROUND DISPOSAL IS DISCUSSED RELATIVE TO ITS MOST IMPORTANT CRITERIA, I.E., SOIL TYPE, PROXIMITY TO STREAMS, VOLUME OF WASTE, SITING, HYDROLOGY, GEOLOGY, AND DEEP INJECTIONS.

PUB DESC: LA-DC-14994, OCTOBER 25, 1968, 11P.

KEYWORDS: CHEMICAL REACTION; EFFLUENT; GEOLOGY; IAEA; SITING; SOIL; RADIONUCLIDE RETENTION THROUGHOUT; SURFACE WATER; DISPOSAL MEDIA; WASTE DISPOSAL; LIQUID; WASTE MANAGEMENT; HYDROLOGY; ION EXCHANGE; SORPTION (SEE ALSO ABSORPTION); WASTE DISPOSAL, BEDROCK

<83>

PUB DATE: 1974

AUTHOR: CLAIRBORNE, H.C.; GERRA, P.

TITLE: POTENTIAL CONTAINMENT FAILURE MECHANISMS AND THEIR CONSEQUENCES AT A RADIOACTIVE WASTE DEPOSITORY IN BEDDED SALT IN NEW MEXICO.

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY
CHEMICAL TECHNOLOGY DIVISION

ABSTRACT: THIS REPORT EXAMINES POTENTIAL CONTAINMENT FAILURE MECHANISMS AND ESTIMATES THEIR PROBABILITIES AND CONSEQUENCES, WHEN POSSIBLE, FOR A HYPOTHETICAL WASTE DEPOSITORY LOCATED IN BEDDED SALT IN SOUTHEASTERN NEW MEXICO. THE PRIMARY CONCLUSION OF THIS STUDY IS THAT A SERIOUS BREACH OF CONTAINMENT FOR SUCH A DEPOSITORY, EITHER BY HUMAN ACTION OR NATURAL EVENTS, IS ONLY A VERY REMOTE POSSIBILITY AND FALLS INTO THE CATEGORY OF LEAST LIKELY OCCURRENCES WHICH AFFECT SOCIETY. A SEALED DEPOSITORY 600 M UNDERGROUND WOULD BE VIRTUALLY SABOTAGE PROOF; EVEN THE SURFACE BURST OF A 50-MEGATON NUCLEAR WEAPON COULD NOT BREACH THE CONTAINMENT. ACCIDENTAL DRILLING OF HOLES THROUGH THE DISPOSAL MEDIUM COULD CAUSE RELATIVELY RARE LOCAL CONTAMINATION. (MOD. AUTH. ABST.)

PUB DESC: ORNL-TN-4639, OCTOBER 1974, 84 P, 5 FIG, 13 TAB, 71 REF, 1 APPEND.

KEYWORDS: WASTE MANAGEMENT; NUCLEAR WASTES; CONTAINMENT; FAILURE; HAZARD ANALYSIS; WASTE DISPOSAL; DEPOSITORY; BEDDED SALT; NEW MEXICO; RADIATION EFFECT; ENVIRONMENTAL EFFECT; METEORITES; EARTHQUAKE; SABOTAGE; NUCLEAR DETECTION

<84>

PUB DATE: 1972

AUTHOR: CLAIRBORNE, H.C.

TITLE: NEUTRON-INDUCED TRANSFORMATION OF HIGH-LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: THE POSSIBILITY OF REDUCING THE POTENTIAL HAZARD OF HIGH-LEVEL RADIOACTIVE WASTE BY NEUTRON-INDUCED TRANSFORMATION HAS RECEIVED LITTLE STUDY. IN THIS REPORT THE AVAILABLE INFORMATION ON FISSION PRODUCT TRANSFORMATION IS REVIEWED AND DISCUSSED, THE COMBINATION OF INDIVIDUAL ACTINIDES TO THE POTENTIAL HAZARD OF THE WASTE IS CALCULATED, AND EXPECTED HAZARD REDUCTION FACTORS THAT WOULD RESULT FROM RECYCLE THROUGH A FBR ARE CALCULATED FOR THE ACTINIDE WASTE FROM CHEMICAL PROCESSING OF SPENT FUEL.

PUB DESC: ORNL-TN-3964, 87 PAGES, 28 TABLES, 5 FIGURES, DECEMBER 1972

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL ALTERNATIVES; TRANSFORMATION; REACTOR, POWER; HAZARD ANALYSIS; WASTE MANAGEMENT; RADIATION SAFETY AND

CONTROL; FUEL REPROCESSING; ACTINIDES (SEE ALSO TRANSFORMATION)

<85>

PUB DATE: 1972

AUTHOR: CLELLAND, D.W.

TITLE: HIGH LEVEL RADIOACTIVE WASTE MANAGEMENT IN THE UK

CORPORATE AUTHOR: BRITISH NUCLEAR FUELS, LTD.,
RISLEY

ABSTRACT: AN ESTIMATE IS MADE OF THE AMOUNT OF FUTURE HIGH LEVEL RADIOACTIVE LIQUID WASTE WHICH WILL ARISE FROM THE UK NUCLEAR POWER PROGRAM. THE PRESENT WASTE MANAGEMENT PHILOSOPHY IS OUTLINED AND THE EXISTING LIQUID STORAGE SYSTEM IS DESCRIBED. THE PROBLEMS OF INTRODUCING A SOLIDIFICATION SYSTEM AND MORE PERMANENT FORM OF STORAGE FOR THE LONGER TERM ARE DISCUSSED.

PUB DESC: CERN-721107, 21 PAGES, 3 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 21-DECEMBER 1, 1972

KEYWORDS: CONTAINMENT; EFFLUENT; UNITED KINGDOM; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; CALCULATION; HIGH-LEVEL WASTE; WASTE MANAGEMENT; EVAPORATION; STORAGE CONTAINER; SAFETY EVALUATION; FUEL REPROCESSING; LIQUID; SOLID; VITRIFICATION

<86>

PUB DATE: 1972

AUTHOR: CLELLAND, D.W.

TITLE: HIGH LEVEL RADIOACTIVE WASTE MANAGEMENT IN THE UNITED KINGDOM

CORPORATE AUTHOR: UNITED KINGDOM, BRITISH NUCLEAR
FUELS LIMITED

ABSTRACT: AN ESTIMATE IS MADE OF THE AMOUNT OF FUTURE HIGH-LEVEL RADIOACTIVE LIQUID WASTE WHICH WILL ARISE FROM THE UK NUCLEAR POWER PROGRAMME. THE PRESENT WASTE MANAGEMENT PHILOSOPHY IS OUTLINED AND THE EXISTING LIQUID STORAGE SYSTEM IS DESCRIBED. THE PROBLEMS OF INTRODUCING A SOLIDIFICATION SYSTEM AND A MORE PERMANENT FORM OF STORAGE FOR THE LONGER TERM ARE DISCUSSED. (AUTH)

PUB DESC: CERN-721107, 21 PAGES, 3 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 21-DECEMBER 1, 1972, PP 233-250

KEYWORDS: RADIOACTIVE WASTE; OECD (SEE ALSO OECD); WASTE MANAGEMENT; NUCLEAR POWER; HIGH-LEVEL WASTE; FORECAST; PRODUCTION; SOCIAL PHILOSOPHY; WASTE STORAGE; WASTE SOLIDIFICATION; LIQUID WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); UNITED KINGDOM

<87>

PUB DATE: 1968

AUTHOR: COMITATO NAZIONALE PER L'ENERGIA NUCLEARE
(ITALY)

TITLE: ARCS FLOW-SHARE PROGRAM - UNDERGROUND NUCLEAR BLASTS FOR WASTE DISPOSAL

ABSTRACT: CONSIDERATION IS BEING GIVEN TO THE USE OF UNDERGROUND NUCLEAR EXPLOSIVES TO CREATE CAVITIES FOR FINAL DISPOSAL OF WASTES FROM NUCLEAR INDUSTRIES

PUB DESC: (EN. NAT. ENRG. NUCL., NOTIZ 14(6),
PAGES 70-1 (JUNE 1968)

KEYWORDS: FLOW-SHARE; TESTING; WASTE DISPOSAL; NUCLEAR DETONATION; RADIATION SAFETY AND CONTROL; AGENCY, AEC (SEE ALSO USAREC)

<88>

PUB DATE: 1975

AUTHOR: COHNHAUER, J.C.; LEWIS, L.; HANSEN, B.

TITLE: DECONTAMINATION AND DECOMMISSIONING OF THE

<88> CONT.
 EEB-1 COMPLEX TOPICAL REPORT NO. 3 BAK DISPOSAL PILOT
 PLANT TEST

CORPORATE AUTHOR: AEROMET NUCLEAR COMPANY, IREAN
 NATIONAL ENG. LAB.

ABSTRACT: THIS REPORT CONCERNS PLANNING,
 ENGINEERING, FABRICATION, AND INSTALLATION OF THE BAK
 DISPOSAL PILOT TEST PLANT; AND OPERATION OF THE PILOT
 TEST PLANT TO OBTAIN PROCESSING DATA TO CONFIRM THE
 DESIGN CRITERIA BEING USED FOR DESIGN OF THE
 FULL-SCALE BAK PROCESSING SYSTEM. THE ACTIVITY WAS
 PERFORMED AS PART OF THE DECONTAMINATION AND
 DECOMMISSIONING OF EEB-1 AND WAS FUNDED BY 1090 I-215.
 (AUTH)

PUB DESC: AMCR-1170 (1975)

KEYWORDS: WASTE DISPOSAL; DECOMMISSIONING; EEB 1
 AND 2 (RE); DECONTAMINATION; BAK; PLANNING;
 ENGINEERING (SEE ALSO DESIGN CRITERIA AND SHIELDING);
 FABRICATION; PILOT PLANT; PROCESSING DATA; DESIGN
 CRITERIA

<89>

PUB DATE: 1972
 AUTHOR: COMMISSION OF EUROPEAN COMMUNITIES
 (LUXEMBOURG)

TITLE: RADIOACTIVE EFFLUENTS FROM NUCLEAR POWER
 STATION IN THE (EUROPEAN) COMMUNITY-DISCHARGE DATA
 RADIOLOGICAL ASPECTS

CORPORATE AUTHOR: COMMISSION OF THE EUROPEAN
 COMMUNITIES, LUXEMBOURG

ABSTRACT: ASSEMBLES LITERATURE DATA FOR 1969, 1970,
 1971 ON RADIOACTIVE WASTE DISCHARGES. IN THE CASE OF
 GASEOUS EFFLUENTS A DISTINCTION IS DRAWN BETWEEN PURE
 GASES, AEROSOLS, AND IODINE-131; AND IN THE CASE OF
 LIQUID EFFLUENTS, BETWEEN THE TOTAL ACTIVITY
 (EXCLUDING TRITIUM) AND THE IODINE ACTIVITY. THE DISCHARGE
 DATA ARE COMPARED WITH THE DISCHARGE LIMITS FOR THE
 VARIOUS POWER STATIONS. FOR THE LIQUID EFFLUENTS,
 THE AVERAGE YEARLY CONCENTRATIONS MEASURED IN THE
 RECEIVING WATERBODIES ARE SHOWN, EXPRESSED AS A
 PERCENTAGE OF THE MAXIMUM PERMISSIBLE CONCENTRATION
 IN DRINKING WATER. AN EVALUATION IS MADE OF THE
 MAXIMUM EXPOSURE AROUND EACH PLANT SITE AND THIS
 EXPOSURE IS COMPARED WITH THE RADIOLOGICAL PROTECTION
 STANDARDS IN FORCE AND WITH THE NATURAL RADIATION
 BACKGROUND. FOR EACH STATION THE RATIO OF ACTIVITY
 DISCHARGES TO ENERGY PRODUCTION IS GIVEN.

PUB DESC: ISI 33:11331, 33 PAGES, 12 TABLES, 20
 REFERENCES, APRIL (1974)

KEYWORDS: REACTOR, BWR; INVENTORY; EFFLUENT;
 FISSION PRODUCT RELEASE; FISSION PRODUCT, IODINE;
 FRANCE; REACTOR, GCR; IODINE; REACTOR, BWR; TRITIUM;
 REACTOR, POWER; WASTE DISPOSAL, GAS; WASTE DISPOSAL,
 LIQUID; GERMANY; ITALY; NETHERLANDS; RADIOACTIVITY
 RELEASE; DISCHARGE

<90>

PUB DATE: 1974
 AUTHOR: COMMISSION OF THE EUROPEAN COMMUNITIES

TITLE: RADIOACTIVE EFFLUENTS FROM NUCLEAR POWER
 STATION IN THE COMMUNITY - DISCHARGE DATA,
 RADIOLOGICAL ASPECTS

CORPORATE AUTHOR: COMMISSION OF THE EUROPEAN
 COMMUNITIES, LUXEMBOURG

ABSTRACT: SUMMARIZES FOR 1969, 1970, 1971 AND 1972
 THE ACTIVITIES OF GASEOUS AND LIQUID WASTE DISCHARGED
 FROM NUCLEAR POWER STATIONS IN THE EUROPEAN COMMUNITY
 OF SIX AND THOSE RUN BY THE CENTRAL ELECTRICITY
 GENERATING BOARD IN GREAT BRITAIN. IT ALSO GIVES THE
 TYPICAL COMPOSITION OF RADIOCLIDES IN THE GASEOUS
 WASTES DISCHARGED BY THE VARIOUS POWER STATIONS. ON
 THE BASIS OF THE DISCHARGES MADE, MAXIMUM EXPOSURE
 AROUND THE SITES IS ESTIMATED AND COMPARED WITH THE
 DOSE LIMITS FIXED BY RADIOLOGICAL PROTECTION STANDARDS
 AND WITH THE NATURAL LEVEL OF RADIATION. FINALLY, THE

RATIO OF ACTIVITY DISCHARGED TO THE ENERGY PRODUCTION IS
 GIVEN FOR EACH POWER STATION.

PUB DESC: EUROPEAN NUCLEAR ENERGY AGENCY, 41 PAGES,
 13 TABLES, APRIL 1974

KEYWORDS: EFFLUENT; INVENTORY; FISSION PRODUCT
 RELEASE; UNITED KINGDOM; REACTOR, POWER; WASTE
 MANAGEMENT; RADIOACTIVITY RELEASE; OPERATING
 EXPERIENCE; POWER PLANT, NUCLEAR

<91>

PUB DATE: 1971
 AUTHOR: COMMONWEALTH EDISON COMPANY (U.S.A.)

TITLE: RESPONSE TO QUESTION 9.2 - ISOTOPIC RELEASE
 DATA

CORPORATE AUTHOR: COMMONWEALTH EDISON COMPANY

ABSTRACT: PROVIDES A TABULATION OF THE TOTAL
 ANTICIPATED YEARLY DISCHARGE OF EACH SIGNIFICANT
 ISOTOPE WHICH IS TO BE RELEASED TO THE ENVIRONMENT AND
 COMPARE THEM WITH THE LIMITS OF 10CFR PART 20.
 DESCRIBES THE BASES FOR THESE ESTIMATES.

PUB DESC: DOCKET-50373-10 +. 3 PAGES, 2 TABLES, PG.
 Q 9.2-1 THRU Q 9.2-3 OF AMENDMENT 5 TO LASALLE 1 AND 2
 LICENSE APPLICATION, OCTOBER 8, 1971, DOCKETS
 50-373/374, TYPE--BWR, HPG--G.E., AE--SGT + LUNDY

KEYWORDS: REACTOR, BWR; INVENTORY; ELEMENTS AND
 ISOTOPES; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID;
 WASTE MANAGEMENT; RADIOACTIVITY RELEASE; RESPONSE TO
 NRC QUESTION; FORECAST; LA SALLE 1 (BWR);

<92>

PUB DATE: 1975
 AUTHOR: COOLEY, C.B.

TITLE: COMMERCIAL ALPHA WASTE PROGRAM QUARTERLY
 PROGRESS REPORT, OCTOBER-DECEMBER 1974

CORPORATE AUTHOR: HANFORD ENGINEERING DEVELOPMENT
 LABORATORY RICHLAND, WASHINGTON

ABSTRACT: DATA ON WASTE GENERATION DURING
 COMMERCIAL FABRICATION OF PPTP FUEL ARE DISCUSSED.
 EXPECTED VOLUMES AND ACTIVITY LEVELS OF WASTE
 GENERATED DURING COMMERCIAL FUEL REPROCESSING
 OPERATIONS ARE ALSO DISCUSSED. PROGRESS TO DATE ON
 DEVELOPMENT OF THE ACID DIGESTION PROCESS FOR TREATING
 COMBUSTIBLE WASTES IS DISCUSSED AS WELL AS WASTE
 PRODUCT STORAGE AND DISPOSAL OF WASTES. DATA ON
 CORROSION AND INCINERATION OF HEPA FILTERS ARE
 PRESENTED.

PUB DESC: HDL-TR 75-41, 40 PPS, 13 TABS, 9 FIGS,
 13 REFS, FEB. 1975

KEYWORDS: ADVISORY COMMITTEE ON REACTOR
 SAFEGUARDS; WASTE MANAGEMENT; FABRICATION; FUEL
 ELEMENTS; FAST FUEL TEST FACILITY (PFTF); FUEL
 REPROCESSING; WASTE TREATMENT; WASTE DISPOSAL; WASTE
 STORAGE; COMBUSTION; FILTERS

<93>

PUB DATE: 1974
 AUTHOR: CUTTRELL, W.B.

TITLE: CONTROL OF RADIOACTIVE WASTES IN OPERATING
 NUCLEAR FACILITIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
 TENN.

ABSTRACT: DESCRIBES THE VARIOUS GASEOUS AND LIQUID
 EFFLUENT TREATMENT TECHNIQUES INCLUDING FILTRATION,
 IODINE REMOVAL, REMOVAL OF NOBLE GASES, CRYOGENIC
 SYSTEMS, PERMEATIVE MEMBRANES, EVAPORATION AND ION
 EXCHANGE. ALSO DESCRIBES THE WASTE TREATMENT SYSTEMS
 IN USE IN BOILING WATER REACTORS, PRESSURIZED WATER
 REACTORS, AND THE NUCLEAR FUELS SERVICE FUEL
 REPROCESSING PLANT.

PUB DESC: HUMAN & ECOLOGIC EFFECTS OF NUCLEAR POWER

<93> CONT.
PLANTS, PP. 72-131, PUBLISHED BY CHARLES C. THOMAS,
1976

KEYWORDS: REVIEW; CHRONOLOGIC; WEST VALLEY; WASTE
TREATMENT; WASTE DISPOSAL; WASTE MANAGEMENT; SYSTEM
DESCRIPTION; REACTION, DRY; REACTION, WET; FUEL
REPROCESSING

<94>

PUB DATE: 1971
AUTHOR: COOPER, R.L.

TITLE: PUBLICATIONS OF THE RADIOACTIVE WASTE
DISPOSAL SECTION, HEALTH PHYSICS DIVISION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
HEALTH PHYSICS DIVISION

ABSTRACT: A LISTING OF PUBLICATIONS ORIGINATING IN
THE WASTE DISPOSAL SECTION OF THE HEALTH PHYSICS
DIVISION AT THE OAK RIDGE NAT'L. LAB. SOME MAJOR
ASPECTS OF DISPOSAL REPORTED ARE AS FOLLOWS: 1. WASTE
TREATMENT PROCESSES; 2. RADIOACTIVITY RELEASE TO THE
CLINTON RIVER AND SURVEILLANCE; 3. ENGINEERING AND
SAFETY EVALUATION OF THE VARIOUS ASPECTS OF WASTE
MANAGEMENT; 4. STUDIES OF RELATED GEOLOGICAL,
HYDROLOGICAL AND SEISMOLOGICAL INFLUENCES ON WASTE
DISPOSAL METHODS; 5. DISPOSAL BY DEEP WELL, HYDRAULIC
FRACTURING, AND SALT CAVITIES; 6. FET DISPOSAL AND
LIFE DURATION; 7. MINERAL EXCHANGE, MINERAL
CIVILIZATION, AND FIXATION OF WASTES BY SINTERING.

PUB DESC: ORNL-TN-3301, 43PP., 267 REF., FEB 1971

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); HEALTH
PHYSICS; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE
ALSO PUBLIC HEALTH); WASTE DISPOSAL; WASTE TREATMENT;
DIVER, CLINCH; WASTE DISPOSAL, DEEP WELL; SAFETY
EVALUATION; RADIOACTIVITY RELEASE; EFFLUENT; GAS;
LIQUID; GEOLOGY; SEISMOLOGY; HYDROLOGY; HYDRAULIC
FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC
FRACTURING); MINERAL EXCHANGE; FET DISPOSAL; LAND
DURATION (SEE ALSO DURATION GROUND); WASTE DISPOSAL, SALT;
FIXATION

<95>

PUB DATE: 1965
AUTHOR: COOPER, R.L.; LASHER, L.C.; GUNNELL,
L.; PEARSON, S.G.

TITLE: OPERATIONAL EXPERIENCE IN THE TREATMENT OF
RADIOACTIVE WASTE AT OAK RIDGE NATIONAL LABORATORY AND
BROOKHAVEN NATIONAL LABORATORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
OAK RIDGE, TN; BROOKHAVEN NATIONAL LABORATORY, UPTON,
NEW YORK

ABSTRACT: MANAGEMENT OF RADIOACTIVE LIQUID AND
SOLID WASTES (CATEGORIZED AS LOW-ACTIVITY LEVEL AND
INTERMEDIATE-ACTIVITY LEVEL AT THIS SYMPOSIUM) AT THE
OAK RIDGE NATIONAL LABORATORY AND THE BROOKHAVEN
NATIONAL LABORATORY ARE REVIEWED. MODIFICATIONS OF
THE ORIGINAL TREATMENT TECHNOLOGY HAVE RESULTED FROM
OPERATIONAL EXPERIENCE AND THE FINDINGS OF RESEARCH
STUDIES, AND THEY ARE DISCUSSED IN TERMS OF THEIR
EFFECT ON EFFLUENT QUALITY AND OPERATION COST.

PUB DESC: STI-PUB-116 (SD-71-23), 20 PAGES, 26
REFERENCES, 6 TABLES, 8 FIGURES, DECEMBER 10, 1965

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL,
ECONOMICS); INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE;
EFFLUENT; WASTE TREATMENT, LIQUID; WIL; ORNL; WASTE
TREATMENT, SOLID; WASTE MANAGEMENT; OPERATING
EXPERIENCE

<96>

PUB DATE: 1971
AUTHOR: CHILDS, F.L.; BLOMBERG, J.C.

TITLE: CURRENT DEVELOPMENTS IN LONG-TERM
RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,

OAK RIDGE, TENNESSEE; U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THIS PAPER FOCUSES ON THE WORK THAT HAS
BEEN DONE TO ESTABLISH THE SUITABILITY OF BEDDED SALT
FORMATIONS FOR CONTAINMENT OF SOLID RADIOACTIVE
WASTES, REVIEWS THE CHARACTERISTICS OF HIGH-LEVEL AND
ALPHA WASTES TO BE STORED IN THE BEDDED STRATIGRAPHIC SALT
MINE DEPOSITORY, AND DESCRIBES THE NATURE OF
ADDITIONAL STUDIES NOW UNDERWAY OR SCHEDULED TO BE
DONE.

PUB DESC: A/CORP-49/T-039, 16 PAGES, 3 FIGURES, 2
TABLES, 2 REFERENCES, PAPER PRESENTED AT THE FOURTH
UNITED NATIONS INTERNATIONAL CONFERENCE ON THE
PEACEFUL USES OF ATOMIC ENERGY, SEPTEMBER 16, 1971

KEYWORDS: GEOLOGY; PUBLIC RESPONSE (SEE ALSO
OPPOSITION, PROSECUTION, AND POPULATION RESPONSE); ALPHA
EMITTER; PLUTONIUM; SHIPPING CONTAINER; SINKING, WASTE
DISPOSAL; WASTE DISPOSAL, ECONOMICS; DECONTAMINATION;
THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE
TRANSPORTATION; HIGH-LEVEL WASTE; HYDROLOGY; WASTE
DISPOSAL, SALT; GAMMA EMITTER; GEOLOGY, SALT
STRUCTURE; FUEL REPROCESSING; DISSOLUTION; POPULATION
RESPONSE; TEMPERATURE; FUEL ELEMENTS

<97>

PUB DATE: 1973
AUTHOR: BABINAB, B.C.; TANAKA, Y.

TITLE: ECOLOGICAL-ENVIRONMENTAL ASSESSMENTS RELATED
TO THE FEDERAL DEPOSITORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: IN ECOLOGICAL ASSESSMENTS RELATED TO THE
PROPOSED FEDERAL DEPOSITORY AT LEON, KANSAS, THOSE
ENVIRONMENTAL FACTORS WHICH ARE EXPECTED TO BE
IMPORTANT IN RADIOACTIVE MOVEMENTS HAVE BEEN
IDENTIFIED FROM ON-SITE SURVEYS BY CONSULTANTS FROM
KANSAS STATE UNIVERSITY. BASED ON SYSTEMS-ANALYSIS
TECHNIQUES AND EXISTING LITERATURE INFORMATION ON
RADIOACTIVE BEHAVIOR IN ECOSYSTEMS, THE DYNAMICS OF
SR-90 WAS ESTIMATED FOR PLANT, LITTER, SOIL PATHWAYS
OF A GENERALIZED GRASSLAND ECOSYSTEM. CONTINUOUS,
LOW-LEVEL RELEASE OF SR-90 FROM DEPOSITORY OPERATIONS
WOULD LEAD TO THREE-FOLD INCREASES IN THE
CONCENTRATION IN LITTER ACCORDING TO THIS SIMULATION.
SUBSEQUENT REDISTRIBUTION OR CONCENTRATION THROUGH
ANIMAL FOOD CHAINS ARE TOPICS FOR FURTHER STUDY.
PRELIMINARY ASSESSMENT ALSO FOCUSED ON ENERGY BALANCE
IN THE BIOTIC ENVIRONMENT.

PUB DESC: ORNL-TN-3619, 53 PAGES, 10 TABLES, 9
FIGURES, 36 REFERENCES, JULY 1973

KEYWORDS: ECOLOGY; PROJECT SALT VAULT; KANSAS;
SYMPTOM; BIODIVERSITY; ENVIRONMENTAL; SURVEY,
RADIATION; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT;
CRITICAL NUCLEAR PATHWAY; RADIOACTIVITY RELEASE;
ENVIRONMENT; WASTE DISPOSAL, SALT; ECOSYSTEM,
GRASSLAND; SIMULATION; CONCENTRATION; FOOD CHAIN;
ECOSYSTEM; RADIATION EFFECT, ECOSYSTEM

<98>

PUB DATE: 1974
AUTHOR: DAV, G.J.

TITLE: NUCLEAR WASTE MANAGEMENT AND TRANSPORTATION
QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1974

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY,
RICHLAND, WASHINGTON

ABSTRACT: THIS DOCUMENT IS THE FIRST IN A SERIES OF
TECHNICAL PROGRESS REPORTS DESIGNED TO REPORT ON ALL
DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION FUNDED
PROGRAMS AT BATTELLE NORTHWEST WITH THE EXCEPTION OF
THE COMMERCIAL RADIOACTIVE WASTE FIXATION PROGRAM.
DISCUSSES (1) ADVANCED METHODS FOR MANAGEMENT AND
DISPOSAL OF RADIOACTIVE WASTES, (2) SEPARATION OF
ACTINIDE ELEMENTS FROM RADIOACTIVE WASTES, (3)
DECONTAMINATION AND DENSIFICATION OF CROP-LIACH
CLADDING DESIGNS, (4) WASTE TREATMENT AND HANDLING
PROCESS, (5) TITRATION SEPARATION AND FIXATION, (6)

<98> CONT.

CHARACTERIZATION OF 300 AREA AND NIE BURIAL CROWDS,
(7) DISPOSITION OF SITES, CONTAMINATED FACILITIES AT
HAMPFORD, (8) DEVELOPMENT OF PACKAGING TECHNOLOGY FOR
PLUTONIUM BIRTHDAY SHIPMENT, AND (9) TRANSPORTATION
SAFETY STUDIES.

PUB DESC: HWYL-1076, 92 PAGES, 20 FIGURES, NOVEMBER
1970

KEYWORDS: TRANSPORTATION AND HANDLING; TRITIUM;
COOL-LEACH PROCESS; ENCLOSURE; PARTITIONING (SEE
ALSO SEPARATION, FRACTIONATION, AND WASTE
PARTITIONING); ADVISORY COMMITTEE ON REACTOR
SAFEGUARDS; WASTE DISPOSAL, TERRESTRIAL; WASTE
TREATMENT; WASTE DISPOSAL, ECONOMIC; WASTE DISPOSAL,
LAND; WASTE MANAGEMENT; WASTE DISPOSAL, SALT; WASTE
DISPOSAL, BEDROCK; SAFETY ANALYSIS; ACTINIDES (SEE
ALSO TRANSURANIC); WASTE DISPOSAL, DEEP WELL;

<99>

PUB DATE: 1967

AUTHOR: CAVES, G.B.; FREDRICK, E.J.; GOMBER,
H.W.; HOLMES, J.E.

TITLE: CONCENTRATION AND CONTAINMENT OF
RADIOACTIVE FROM RADIOACTIVE WASTE SOLUTIONS IN
ASPHALT

ABSTRACT: THIS PATENT RELATES TO A METHOD OF
CONCENTRATING AND CONTAINING THE SOLID COMPONENT OF AN
INTERMEDIATE-LEVEL RADIOACTIVE SOLUTION WHICH
COMPRISES MIXING SAID SOLUTION WITH EMULSIFIED
ASPHALT, EVAPORATING NEARLY ALL THE WATER CONTENT OF
SAID MIXTURE AT A TEMPERATURE NO GREATER THAN 100 C,
AND THEN FLOWING THE RESULTANT ASPHALT COMPOSITION
INTO A CONTAINER TO SOLIDIFY IN A DESIRED
CONFIGURATION.

PUB DESC: U.S. PATENT 3,290,961. 3 PAGES,
REFERENCES, JANUARY 7, 1967

KEYWORDS: WASTE STORAGE; INTERMEDIATE-LEVEL WASTE;
ASPHALT; WASTE TREATMENT; WASTE TREATMENT, FIXATION;
WASTE TREATMENT, LIQUID; COOL; WASTE MANAGEMENT

<100>

PUB DATE: 1962

AUTHOR: DAVIS, T.P.

TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
DIVISION OF TECHNICAL INFORMATION

ABSTRACT: THIS LITERATURE SEARCH, CONSISTING OF 876
REFERENCES TO REPORT AND PUBLISHED LITERATURE, IS A
SUPPLEMENT TO THE BIBLIOGRAPHY TID-3311 AND THE
LITERATURE SEARCH TID-3555. THE SCOPE IS ESSENTIALLY
THAT OF TID-3311 AND TID-3555. THE REFERENCES WERE
TAKEN FROM NUCLEAR SCIENCE ABSTRACTS (NSA). THE
PERIOD COVERED IS JUNE 1960 THROUGH MAY 1962. THE
REFERENCES ARE ARRANGED ACCORDING TO SUBJECTS AS
INDICATED BY THE TABLE OF CONTENTS. CROSS REFERENCES
ARE SUPPLIED AT THE END OF THE SUBJECT GROUPS. AUTHOR
AND REPORT-NUMBER AVAILABILITY INDICES ARE INCLUDED.

PUB DESC: TID-3555 (SUPPL. 1), 152 PAGES, 1962

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ECOLOGY;
GEOLOGY; WASTE DISPOSAL; WASTE TREATMENT; ANALYTICAL
TECHNIQUE; MONITOR, ENVIRONMENTAL; HYDROLOGY;
RADIOACTIVITY RELEASE

<101>

PUB DATE: 1969

AUTHOR: DAVIS, W.; PITZGERALD, C.L.; SCARD, H.P.

TITLE: MAXIMUM TEMPERATURE RISE IN CYLINDERS
CONTAINING INTERMEDIATE-LEVEL AND HIGH-LEVEL
SOLIDIFIED RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: CALCULATED MAXIMUM TEMPERATURE RISE IN
CYLINDERS CONTAINING SOLIDIFIED INTERMEDIATE-LEVEL

AND HIGH-LEVEL RADIOACTIVE WASTES. THE STORAGE FORM
FOR INTERMEDIATE-LEVEL WASTE (ILW) WAS ASPHALT. THE
STORAGE FORMS CONSIDERED FOR THE HIGH-LEVEL
RADIOACTIVE WASTES WERE CALCINE, PHOSPHATE GLASSES,
AND CALCINE DISPENSED IN A GLASS MATRIX. THESE
MATERIALS HAVE A WIDE RANGE OF THERMAL CONDUCTIVITIES.
WITHOUT EXCEEDING A CENTERLINE TEMPERATURE OF 122 F
FOR A SURFACE TEMPERATURE OF 77 F. IF FUTURE
HIGH-LEVEL WASTES, SUCH AS THOSE FROM
LIQUID-METAL-COOLED FAST REACTORS OR HIGH FUEL ARE TO
BE SOLIDIFIED AFTER OUT-OF-REACTOR TIMES AS SHORT AS
1 YEAR OR LESS WITH A REQUIREMENT THAT THE
CENTERPOINT TEMPERATURE NOT EXCEED 900 C, THEN THEY
MUST BE EITHER DILUTED WITH INERT SOLIDS OR STORED AS
MATERIALS HAVING SIGNIFICANTLY HIGHER THERMAL
CONDUCTIVITIES THAN THOSE OF CALCINES.

PUB DESC: CNWL-8361, 34 PAGES, 8 FIGURES, 2 TABLES,
43 REFERENCES, MARCH 1969

KEYWORDS: COMPUTED PROGRAM; INTERMEDIATE-LEVEL
WASTE; PHOSPHATE GLASS; DECAY HEAT; FISSION PRODUCT
RELEASE; WASTE STORAGE; CALCINATION; WASTE TREATMENT,
FIXATION; COOL; THERMAL CONSIDERATION; WASTE DISPOSAL,
SOLID; HIGH-LEVEL WASTE; GLASS (SEE ALSO
VITRIFICATION); STORAGE CONTAINER; HEAT TRANSFER;
HAMPFORD SITE; MATHEMATICAL TREATMENT

<102>

PUB DATE: 1969

AUTHOR: DE LAGUNA, E.

TITLE: CONTROL OF POLLUTION FROM THE GENERATION OF
NUCLEAR POWER

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: DISCUSSES CONCERN OVER THE POTENTIAL
NUCLEAR-FISSION WASTE PRODUCTS AND THE CONTINUING
STUDY OF THE PROBLEM OF DISPOSING OF RADIOACTIVE
WASTE. PRESENT SOLUTIONS FOR THE MORE SERIOUS
PROBLEMS ARE FURNISHED. IT IS POINTED OUT THAT NO
SYSTEM HAS BEEN DEVELOPED FOR CONTAINING RADIOACTIVE
GASES. ALSO, COOLING WATER, WHEN DISCHARGED
INTO RIVERS OR LAKES MAY UPSET THE ECOLOGICAL
EQUILIBRIUM, MAKING IT NECESSARY TO GIVE CONSIDERATION
TO SITING WHEN LARGE POWER PLANTS ARE BUILT.

PUB DESC: GE 7:212-219:IEEE TRANSACTIONS GEOSCIENCE
ELECTRONICS, 7C PAGES, FIGURES, TABLES, REFERENCES,
APRIL 1969

KEYWORDS: NUCLE GAS; RIVER; SITING; SITING,
CHEMICAL PROCESS PLANT; ATMOSPHERIC POLLUTION;
REACTOR, POWER; WASTE DISPOSAL, GAS; WATER POLLUTION;
FUEL REPROCESSING; THERMAL POLLUTION; COOLING

<103>

PUB DATE: 1972

AUTHOR: DEROGHANNAN, G.D.

TITLE: ACTIVITIES OF THE GEOLOGICAL SURVEY, UNITED
STATES DEPT. OF THE INTERIOR, IN THE SEARCH FOR A
GEOLOGIC ENVIRONMENT SUITABLE FOR THE MANAGEMENT OF
HIGH-LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. GEOLOGICAL SURVEY,
WASHINGTON, D.C.

ABSTRACT: THE GEOLOGICAL SURVEY HAS COOPERATED WITH
THE USAEC IN EVALUATING THE POTENTIAL OF DIFFERENT
GEOLOGIC AND HYDROLOGIC ENVIRONMENTS FOR THE
MANAGEMENT OF RADIOACTIVE WASTE. STUDIES, DURING THE
PAST 20 YEARS, HAVE INCLUDED DEVELOPMENT OF TECHNIQUES
ON SUBSURFACE MONITORING OF PROPOSED WASTE MANAGEMENT
AREAS, GEOCHEMICAL AND GEOPHYSICAL PROBLEMS RELATED TO
THE COMPATIBILITY OF WASTE PRODUCTS TO THE
HYDROGEOLOGICAL ENVIRONMENT AND CONSIDERATION OF
CATASTROPHIC FORCES THAT COULD ADVERSELY EFFECT WASTE
CONTAINMENT.

PUB DESC: CONF-721107, 8 PAGES, 7 REFERENCES,
PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF
RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN
PARIS, NOVEMBER 27-DECEMBER 1, 1971

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KEYWORDS: CONTAINMENT; GEOLOGY; SURVEY, ENVIRONMENT; HIGH-LEVEL WASTE; WASTE MANAGEMENT; HYDROLOGY; ENVIRONMENT; WASTE DISPOSAL, SALT; GEOLOGY, GEOCHEMICAL; GEOLOGY, GEOPHYSICAL

<104>

PUB DATE: 1967

AUTHOR: DEJOURS, F.

TITLE: REVIEW OF RADIOACTIVE WASTE MANAGEMENT IN WESTERN EUROPE

CORPORATE AUTHOR: CERN, BEL, BELGIUM

ABSTRACT: SINCE THE ESTABLISHMENT IN WESTERN EUROPE OF A RESPECTABLE NUMBER OF NUCLEAR FACILITIES, A LARGE REPORT HAS BEEN DEVOTED TO DEVELOPING SPECIFIC METHODS FOR THE PURIFICATION AND CONDITIONING OF RADIOACTIVE WASTES. AT THE SAME TIME, METHODS FOR TREATING CONVENTIONAL WASTES HAVE BEEN ADOPTED BECAUSE OF THEIR APPLICATION IN RADIOACTIVE WASTE MANAGEMENT. THE AREAS OF DEVELOPMENT INCLUDE ALSO HANDLING OF SOLID COMBUSTIBLE AND NONCOMBUSTIBLE WASTES, PURIFICATION OF GASES, TREATMENT OF LIQUID EFFLUENTS AND CONDITIONING OF CONCENTRATES RESULTING FROM THE TREATMENT OF VARIOUS RADIOACTIVE WASTES. THE DIFFERENT TYPES AND STEPS OF TREATMENT ARE REVIEWED, WITH PARTICULAR ATTENTION TO POSSIBLE FUTURE DEVELOPMENTS.

PUB DESC: ATOMIC ENERGY REVIEW, 5(4), PAGES 149-180
5 FIGURES, 23 REFERENCES, (1967)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); REVIEW; EFFLUENT; FUEL; WASTE DISPOSAL, FUEL; WASTE MANAGEMENT; INCINERATION; PRECIPITATION; RADIATION SAFETY AND CONTROL; RADIATION PROTECTION, CHEMICAL

<105>

PUB DATE: 1973

AUTHOR: KERNAN, D.H.; PAPER, D.A.; SCLADY, J.E.; COOLEY, J.P.

TITLE: RADIOLOGICAL EVALUATIONS FOR ADVANCED WASTE MANAGEMENT STUDIES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE OVERALL RISK EVALUATION FOR VARIOUS RADIOACTIVE WASTE MANAGEMENT CONCEPTS INCLUDES CALCULATION OF RADIATION DOSES TO INDIVIDUALS AND LOCAL POPULATIONS. RADIATION DOSES ARE THE MOST APPROPRIATE MEASURE OF THE CONSEQUENCES OF UNPREDICTED RELEASES OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT AND DOSE CRITERIA ARE AVAILABLE BY WHICH THE SEVERITY MAY BE JUDGED. A COMPREHENSIVE DOSE COMPUTATIONAL MODEL, DEVELOPED AND USED FOR OTHER ATOMIC ENERGY COMMISSION STUDIES, HAS BEEN MODIFIED TO IMPROVE ITS FLEXIBILITY AND TO ASSIST IN EVALUATING ALTERNATIVE MEANS FOR DISPOSAL OF HIGH-LEVEL WASTE. TYPICAL INPUT TERMS FOR NORMAL USE INCLUDE SOURCE TERMS (RADIOISOTOPE RELEASE RATES TO AIR'S IMMEDIATE ENVIRONMENT) AND DILUTION FACTORS. OUTPUTS INCLUDE INDIVIDUAL PATHWAY DOSES AND TOTAL DOSES TO MAXIMUM INDIVIDUALS FOR BOTH AN URBAN AND A RURAL POPULATION. WHOLE-BODY DOSES PLUS DOSES TO OTHER CRITICAL ORGANS ARE OBTAINED, AS WELL AS THE FRACTIONAL DOSE CONTRIBUTIONS OF INDIVIDUAL NUCLIDES. DOSES FOR ONE YEAR OR TOTAL DOSES FOR FIFTY YEARS OF EXPOSURE ARE AVAILABLE. ALTHOUGH ALL OF THE MANY FACTORS AND ASSUMPTIONS USED CAN BE CHANGED IF DESIRED, LISTINGS OF THOSE CURRENTLY BEING USED ARE GIVEN. (AUTH).

PUB DESC: BNWL-1764, 79 PP., SEPT. 1973

KEYWORDS: WASTE MANAGEMENT; SAFETY EVALUATION; DOSE CALCULATION; EXTERNAL; DOSE CALCULATION, INTERNAL; POPULATION EXPOSURE; RADIOACTIVITY RELEASE; FRACTIONATION; ASSAY; DOSE; MODEL; COMPUTER PROGRAM; WASTE DISPOSAL; RELEASE RATE; DILUTION FACTOR; CRITICAL NUCLEIDE PATHWAY; RISK (SEE ALSO BENEFIT VS RISK)

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PUB DATE: 1970

AUTHOR: DES SARTOS, L.; BACHADO, T.C.B.

TITLE: DEVELOPMENT OF THE WASTE MANAGEMENT SYSTEM IN BRAZIL

CORPORATE AUTHOR: LABORATORIO DE DOSIMETRIA, RIO DE JANEIRO, BRAZIL

ABSTRACT: DEALS WITH GENERAL WASTE MANAGEMENT IN BRAZIL. REVIEWS THE DIFFERENT STEPS OF THE DEVELOPMENT OF THE WASTE-MANAGEMENT SYSTEM, AND THE EXPERIENCE GAINED THROUGH THE FACTORS WHICH CAUSE DIFFICULTIES DURING THE SELECTION OF GENERAL POLICY AND WASTE TREATMENT METHODS. GIVES PARTICULAR ATTENTION TO CURRENT PRACTICES AND TENDENCY FOR FUTURE DEVELOPMENT IN THIS SUBJECT.

PUB DESC: SN-137/6, STI/PUB-264, CONF-700905, 16 PAGES, 3 FIGURES, 7 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; WASTE MANAGEMENT; BRAZIL; OPERATING EXPERIENCE

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PUB DATE: 1971

AUTHOR: DILLON, R.S.; PERDUE, J.J.; BLOHMEYER, J.C.

TITLE: MODEL FOR THE ECONOMIC ANALYSIS OF HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: COMPUTER PROGRAM HAS BEEN WRITTEN TO ESTIMATE COSTS OF MANAGING HIGH-LEVEL RADIOACTIVE WASTE FROM REPROCESSING POWER REACTOR FUELS. THE ECONOMIC ANALYSIS ENCOMPASSES INTERIM LIQUID STORAGE OF THE HIGH-LEVEL FISSION PRODUCT WASTES, SOLIDIFICATION (POT OR FLUIDIZED-BED CALCINATION), INTERIM SOLID STORAGE, SHIPMENT, AND FINAL STORAGE IN SALT DUMPS.

PUB DESC: OBNL-4633, 79 PAGES, 11 FIGURES, 1 TABLE, 16 REFERENCES, NOVEMBER 1971

KEYWORDS: COMPUTER PROGRAM; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE STORAGE; CALCINATION; WASTE TRANSPORTATION; HIGH-LEVEL WASTE; WASTE MANAGEMENT; WASTE DISPOSAL, SALT; FUEL REPROCESSING; MODEL

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PUB DATE: 1970

AUTHOR: DOUGALL, I.; BEWELL, J.E.

TITLE: THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES AT THE NUCLEAR POWER STATIONS OF THE UNITED KINGDOM CENTRAL ELECTRICITY GENERATING BOARD

CORPORATE AUTHOR: CENTRAL ELECTRICITY GENERATING BOARD, ENGLAND

ABSTRACT: THE PAPER DESCRIBES THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL SOLID AND LIQUID RADIOACTIVE WASTES ARISING AT CEGB NUCLEAR POWER STATIONS. THE ARISING DO NOT INCLUDE WASTES FROM CHEMICAL PROCESSING OF IRRADIATED FUEL ELEMENTS AS THE ELEMENTS ARE RETURNED TO THE GRADE FOR PROCESSING. THE PAPER OUTLINES THE FACTORS DETERMINING THE ORIGINAL AND CONTINUING POLICIES OF LONG TERM ACCUMULATION OF SIGNIFICANTLY ACTIVE SOLID WASTES ON THE POWER STATION SITES, AND OF DISCHARGING LIQUID WASTES TO THE ENVIRONMENT AT LOW LEVEL, IF NECESSARY AFTER SUITABLE TREATMENT.

PUB DESC: SN-137/31, STI/PUB-264, CONF-700905, 25 PAGES, 5 FIGURES, 4 TABLES. PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; INTERMEDIATE-LEVEL WASTE; UNITED

<100> CONT.
KINCORP; WASTE DISPOSAL; WASTE TREATMENT; EUROPEAN
NUCLEAR ENERGY AGENCY (ENEA); OMNITON; ENVIRONMENTAL;
WASTE MANAGEMENT

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PUB DATE: 1975

AUTHOR: BOGARD, J.O.

TITLE: STATUS REPORT ON RADIOACTIVITY MOVEMENT FROM
BURIAL GROUNDS IN HILTON AND BETHEL VALLEYS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
ENVIRONMENTAL SCIENCES DIVISION

ABSTRACT: THE OFFSITE RADIOACTIVITY RELEASES IN THE
CLINCH RIVER ARE LESS THAN 1% OF THE AMOUNT ALLOWABLE
FOR UNRESTRICTED USE OF THE WATER BY A POPULATION.
HOWEVER, IN KEEPING WITH ENDA'S OBJECTIVE TO MAINTAIN
RELEASES TO "AS LOW AS PRACTICABLE," STUDIES DIRECTED
TOWARD LOCATING SOURCES OF RADIOACTIVITY RELEASE AND
TOWARD SEEKING METHODS FOR REDUCING OR ELIMINATING
THESE HAVE BEEN CONTINUED. THIS PARTICULAR STUDY,
INITIATED IN APRIL 1973, IS CONCERNED PRIMARILY WITH
DETERMINING THE RADIOACTIVITY CONTRIBUTIONS TO THE
CLINCH RIVER FROM THE DUFFLE WASTE AT OAK AND WITH
IMPLEMENTING CORRECTIVE MEASURES. STUDIES OF THE
GROUNDWATER TRANSPORT OF RADIOISOTOPES FROM BURIED
WASTE AT OAK RIDGE NATIONAL LABORATORY SHOW THAT
BURIAL GROUND #1 IS THE MAJOR CONTRIBUTOR OF SR 90 TO
THE GROUNDWATER. THE CONCENTRATION OF SR 90 IN THE
GWR WATER BELOW BURIAL GROUND #1 INCREASES THE AMOUNT
OF SR 90 IN WHITE OAK CREEK, WHICH DRAINS THE AREA AND
FLOWS INTO THE CLINCH RIVER. (MODIFIED AUTH. ABST.)

PUB DESC: OORL-5017, (1975)

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL,
ASSESSMENT (SEE ALSO ASSESSMENT); GWR; STRONTIUM;
WHITE OAK LAKE; ENVIRONMENTAL PROTECTION AGENCY (EPA)
(SEE ALSO PUBLIC HEALTH); WASTE BURIAL (SEE ALSO LAND
BURIAL); BURIAL GROUNDS (SEE ALSO COMMERCIAL BURIAL
GROUNDS); SURVEILLANCE; SAFETY EVALUATION; STATUS
REPORT; MOVEMENT, RADIOACTIVITY; CRR SITE; RIVER,
CLINCH; GROUND WATERS; TRANSPORT

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PUB DATE: 1975

AUTHOR: BYE, P.J.

TITLE: MANAGING NUCLEAR WASTES

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LIMITED

ABSTRACT: SPENT FUEL WILL BE KEPT IN ENGINEERED
SURFACE FACILITIES UNDER CONTINUOUS MONITORING AND
SURVEILLANCE. BECAUSE THE FUEL CONTAINS A POTENTIALLY
VALUABLE ENERGY RESOURCE WE MUST BE ABLE TO RETRIEVE
IT FROM THESE FACILITIES IF WE NEED IT. RADIOACTIVE
WASTES FROM REPROCESSING PLANTS WILL BE SOLIDIFIED AND
CAN BE STORED WITH CONTINUOUS MONITORING FOR A LONG
TIME. STORAGE UNDERGROUND, IN DEEP IMPENETRABLE
STRATA, WILL BE DEVELOPED TO PROVIDE ULTIMATE
ISOLATION FROM THE ENVIRONMENT WITH THE MINIMUM OF
SURVEILLANCE AND MAINTENANCE. (AUTH)

PUB DESC: AECL-5136, (1975)

KEYWORDS: WASTE MANAGEMENT; SPENT FUEL; RETRIEVABLE
SURFACE STORAGE; NUCLEAR FUEL CYCLE; WASTE DISPOSAL;
WASTE RESECTIONS; WASTE TREATMENT; FUEL REPROCESSING;
WASTE HANDLING; CANADA; WASTE STORAGE

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PUB DATE: 1971

AUTHOR: EDITORIAL, INFO, PACING THE ISSUES SERIES
(U.S.A.)

TITLE: RADIOACTIVE WASTE MANAGEMENT

ABSTRACT: AT TYPICAL CONFERENCE ON NUCLEAR PUBLIC
INFORMATION, BNL NACFOP, PL., MARCH 21-24, CHIEF OF
WASTE DEPOSITORY MANAGEMENT BRANCH, USARC, REVIEWED
NUCLEAR WASTE STORAGE SITUATION IN THE LIGHT OF
IMPETUS AND COMMERCIALIZATION OF NUCLEAR POWER
PLANTS. HE NOTES THAT ACTIONS TAKEN NOW WILL PREVENT

THAT HIGH-LEVEL WASTES NEVER BECOME A RISK TO THE
PUBLIC, MEANING THAT THE SALT-DOME DEMONSTRATION
PROJECT REPRESENTS LAST STEP IN FUEL CYCLE FOR
CIVILIAN NUCLEAR POWER PROGRAM. OF SEVEN SALT-DOME
SITES, HE GIVES REASONS FOR CHOICE OF LYONS, KANS.
SUMMARIZES TECHNICAL ASPECTS OF THE DEPOSITORY
(ILLUSTRATION). URGENTLY, BECAUSE OF NEW AEC POLICY --
SOLIDIFICATION OF LIQUID WASTES WITHIN 5 YR AND
TRANSFER TO DEPOSITORY WITHIN 10.

PUB DESC: INFO, PACING THE ISSUES SERIES, (MARCH
21, 1971)

KEYWORDS: SITING, WASTE DISPOSAL; PROJECT SALT
DOME; KANSAS; WASTE DISPOSAL; REGULATION, AEC; WASTE
MANAGEMENT; SAFETY PRINCIPLES AND PHILOSOPHY; WASTE
DISPOSAL, SALT; SYSTEM DESCRIPTION; AGENCY, AEC (SEE
ALSO USARC); SHOWSHOW, AEC

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PUB DATE: 1972

AUTHOR: EDITORIAL, NATURE (ENGLAND)

TITLE: NEW WORLD - AEC HEDGES ITS BET ON WASTE
DISPOSAL

ABSTRACT: REPORTS A GROWING PROBLEM OF HOW TO
DISPOSE OF HIGHLY RADIOACTIVE NUCLEAR MATERIAL FROM
POWER PLANTS AND TO KEEP IT ISOLATED FROM THE
ENVIRONMENT FOR SEVERAL THOUSANDS OF YEARS.

PUB DESC: NATURE, 237(5352), PP. 190-191 (MAY 26,
1972)

KEYWORDS: SITING, WASTE DISPOSAL; PUBLIC RESPONSE
(SEE ALSO COUNCIL, PROPOSAL, AEC REGULATION
RESPONSE); WASTE DISPOSAL, LIQUID; WASTE DISPOSAL,
SOLID; POPULATION EXPOSURE; HIGH TEMPERATURE;
HIGH-LEVEL WASTE; WASTE DISPOSAL, SALT; D AND D
PROGRAM; POPULATION RESPONSE

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PUB DATE: 1972

AUTHOR: EDITORIAL, NUCLEAR NEWS (U.S.A.)

TITLE: CONGRESS GETS PLAN FOR DISPOSAL STUDY

ABSTRACT: SEN. PEARSON (KANSAS) INTRODUCED INTO THE
SENATE A RESOLUTION (S.RES. 260) CALLING FOR AN
INTERNATIONAL CONFERENCE ON RADIOACTIVE WASTE
DEPOSITORIES TO BE SET OF UNITED INTERNATIONAL TREATY.
HE CALLS FOR ESTABLISHMENT OF AN INTERNATIONAL AGENCY
TO ADMINISTER SITES SELECTED BY STUDY, WITH ALL
COUNTRIES HAVING ACCESS TO THEM. (PROPOSED THAT U.S.
INCLUDE AS AGENDA ITEM AT 1972 ON CONF. ON HUMAN
ENVIRONMENT TO BE HELD IN JUNE IN STOCKHOLM.)
RESOLUTION ALSO INTRODUCED HOUSE (H. RES. 640) BY 22
REPRESENTATIVES. PEARSON'S PROPOSALS HAVE ALSO BEEN
ENDORSED BY NUCLEAR STALWART, SEN. PASTORE (R-I.) WHO,
HOWEVER, CONTINUES TO SUPPORT AEC WORK BY AEC ON
DEPOSITORY SITING. PEARSON'S FINAL PROPOSAL IS THAT
ALL AEC EFFORTS, EXCEPT RESEARCH, BE SUSPENDED ON
KANSAS DEPOSITORY UNTIL ALL GEOLOGICAL AND GEOGRAPHIC
MATTERS IN COOPERATING FOREIGN COUNTRIES CAN BE
REVIEWED FOR POSSIBLE DEPOSITORY SITING.

PUB DESC: NUCLEAR NEWS, 15(4), P. 47 (APRIL 1972)

KEYWORDS: CONGRESSIONAL ACTIVITY; KANSAS; SITING,
WASTE DISPOSAL; WASTE DISPOSAL; WASTE MANAGEMENT;
UNITED NATIONS; D AND D PROGRAM; INTERNATIONAL (SEE
ALSO ORGANIZATION); LEGISLATION; ORGANIZATION,
INTERNATIONAL

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PUB DATE: 1971

AUTHOR: EDITORIAL, NUCLEAR NEWS (U.S.A.)

TITLE: AEC LOWERING PLANT RADIOACTIVE EMISSIONS
CEILING A HUNDREDFOLD

ABSTRACT: THE AEC HAS AT LAST PUT A HURDLE TO ITS
AS LOW AS PRACTICABLE CRITERION FOR POWER-REACTOR
RADIOACTIVITY EMISSION - 5 HENR A YEAR AT THE SITE
BOUNDARY. THIS IS A HUNDREDFOLD REDUCTION IN THE
PRESENTLY PERMITTED MAXIMUM EMISSION RATE. A PLANT

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OPERATING AT 5 WHEN WOULD EXPOSE THE TOTAL POPULATION TO 1 WHEN A YEAR OR LESS, ABOUT 1% OF BACKGROUND RADIATION. HOWEVER, THE TOTAL-POPULATION EXPOSURE LIMIT HAS BEEN SET AT 170 RAD. AND STRESSES THAT THE PROPOSED GUIDES DO NOT REPLACE THE 500-MREM AND 170-MREM LIMITS PRESCRIBED BY U.S. AND INTERNATIONAL AGENCIES AND ESTABLISHED BY THE POWER RESEARCH AND DEVELOPMENT BOARD. THESE WILL STILL STAND, BUT SINCE REACTOR-TECHNOLOGY ADVANCES HAVE 5 WHEN AT 5% BACKGROUND (VERY PRACTICALLY) THEN THE LIMIT WILL BE SET AT THAT FIGURE. THE NEW GUIDES, WHICH WILL GO INTO EFFECT IN ABOUT 60 DAYS, HAVE HAD THE IMMEDIATE EFFECT OF INITIATING OF MODIFYING AIDING PLANS TO MODIFY THE PLANTS IN OPERATION GO UNDER CONSTRUCTION IN ORDER TO REDUCE RADIATION EXPOSURE. THESE ARE UNUSUAL. THE THREE REACTORS ARE TWO CIRCULAR UNITS.

PUB DESC: NUCLEONICS WEEK, 12(23), PAGE 3, (JUNE 10, 1971)

KEYWORDS: TOXIC; RADIATION; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); TRITIUM; DECONTAMINATION; WASTE DISPOSAL; GAS; WASTE DISPOSAL; LIQUID; POPULATION EXPOSURE; WASTE MANAGEMENT; PARTICLE; RADIOACTIVE

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PUB DATE: 1976
AUTHOR: EICHOLD, G.C.
TITLE: RADIOACTIVE WASTE DISPOSAL (CHAPTER 12)

CORPORATE AUTHOR: GEORGIA INSTITUTE OF TECHNOLOGY

ABSTRACT: THE SAFE ULTIMATE DISPOSAL OF THE HIGHLY RADIOACTIVE WASTES ACCUMULATING IN THE COURSE OF THE NUCLEAR FUEL CYCLE PRESENTS A MAJOR CHALLENGE TO THE INDUSTRY. IT WAS STATED IN CHAPTER 7 THAT THE LOW- AND INTERMEDIATE-LEVEL WASTES GENERATED AT A REACTOR SITE COULD BE STORED TEMPORARILY, SOLIDIFIED, AND SHIPPED TO A COMMERCIAL DISPOSAL SITE FOR BURIAL WITHOUT UNDER THEORETICAL, ALTHOUGH THE NUMBER OF DUMPS SHIPPED AND THE NUMBER OF SHIPMENTS TO DISPOSAL EACH YEAR MAY BE APPRECIABLE. HIGH-LEVEL WASTES ARE DEFINED AS "THOSE ACTIVES WASTES RESULTING FROM THE OPERATION OF THE FIRST CYCLE SOLVENT EXTRACTION SYSTEM, OR EQUIVALENT, AND THE CONCENTRATED WASTES FROM SUBSEQUENT EXTRACTION CYCLES, OR EQUIVALENT, IN A FACILITY FOR REPROCESSING IRRADIATED REACTOR FUELS". THESE WASTES CONTAIN VIRTUALLY ALL OF THE MOVABLE FISSION PRODUCTS, SEVERAL TENTHS OF ONE PERCENT OF THE URANIUM AND PLUTONIUM ORIGINALLY IN THE SPENT FUELS, AND A LARGE FRACTION OF THE OTHER ACTIVITIES FORMED BY TRANSFORMATION OF THE URANIUM AND PLUTONIUM IN REACTORS. THEY CAN BE CHARACTERIZED GENERALLY BY THEIR VERY INTENSE, PENETRATING RADIATION AND THEIR HIGH DECONTAMINATION RATES. U.S. NUCLEAR REGULATORY COMMISSION REGULATIONS CALL FOR THESE WASTES TO BE SOLIDIFIED WITHIN FIVE YEARS AFTER THEY ARE GENERATED AND FOR THE RESULTANT STABLE SOLIDS TO BE SHIPPED TO A FEDERAL DEPOSITORY WITHIN TEN YEARS AFTER THE LIQUIDS ARE GENERATED. TABLE 160 LISTS THE MAJOR FISSION PRODUCTS IN WASTES AFTER 1 AND 5 YEARS STORAGE (1), INCLUDING SOME STABLE ONES. CLADDING WASTES ARE THE RESIDUAL ZIRCONIUM AND STAINLESS STEEL CLADDING AND STRUCTURAL COMPONENTS OF THE FUEL ASSEMBLIES THAT REMAIN AFTER THE FUEL CORES HAVE BEEN DISSOLVED. ALTHOUGH THEIR RADIOACTIVITY EXISTS MAINLY FROM NEUTRON-INDUCED ISOTOPES, THE WASTES ARE SIMILAR IN SOME RESPECTS TO HIGH-LEVEL WASTE IN THAT THEY MAY CONTAIN UP TO 0.1% OF THE PLUTONIUM ORIGINALLY IN THE SPENT FUEL, REQUIRE BIOLOGICAL SHIELDING EQUIVALENT TO SEVERAL INCHES OF LEAD AND HAVE A DECONTAMINATION RATE OF 50 TO 100 D/PPH.

PUB DESC: ENVIRONMENTAL ASPECTS OF NUCLEAR POWER; 1955-620 1976. (AND ANNUAL SCIENCE PUB. INC.)

KEYWORDS: HIGH-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; WASTE CLASSIFICATION (SEE ALSO STANDARDS, RADIATION); CLADDING; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); SHIPPING; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); SOLVENT EXTRACTION;

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PUB DATE: 1973

AUTHOR: RISENBERG, R.

TITLE: MANAGEMENT OF RADIOACTIVE WASTES

CORPORATE AUTHOR: NEW YORK UNIVERSITY MEDICAL CENTER

ABSTRACT: DISCUSSES THE MORE GENERAL IMPLICATIONS OF RADIOACTIVE WASTE DISPOSAL AND IN PARTICULAR AN ATTEMPT IS MADE TO APPRAISE THE TOTAL MAGNITUDE OF THE WASTE DISPOSAL PROBLEMS FOR AND IN THE FUTURE. DETAIL IS GIVEN ON LOW-LEVEL AND HIGH-LEVEL WASTE MANAGEMENT. THE SPECIAL PROBLEMS OF TRITIUM AND DEUTERIUM-35 DISPOSAL ARE DISCUSSED. (MODIFIED ABSTRACT.)

PUB DESC: ENVIRONMENTAL RADIOACTIVITY, 1973, P. 299-315, ACADEMIC PRESS, N.Y.

KEYWORDS: WASTE MANAGEMENT; ASSESSMENT; WASTE DISPOSAL; SALT; ENERGY LEVEL; DECAY RATE; WASTE TREATMENT; WASTE STORAGE; STORAGE CONTAINER; WASTE DISPOSAL; SALT (SEE ALSO DECONTAMINATION AND WASTE DISPOSAL, SALT); TERRESTRIAL (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE SOLIDIFICATION; CALCINATION; VITRIFICATION; FUSIONCAST; FUEL REPROCESSING; REACTOR (SEE ALSO MOLE GAS); TRITIUM

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PUB DATE: 1976
AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.)

TITLE: ALTERNATIVES FOR MANAGING WASTES FROM REACTORS AND POST-FISSION OPERATIONS IN THE LWR FUEL CYCLE VOL. 1 PART 5

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: THIS REPORT DESCRIBES TECHNICAL ALTERNATIVES FOR MANAGING WASTES FROM THE BULK END OF THE COMMERCIAL LWR FUEL CYCLE. IT DESCRIBES WASTE TYPES, THE ALTERNATIVE TECHNOLOGIES THAT CAN BE USED TO MANAGE THE WASTES, AND THE STATE OF AVAILABILITY OF THOSE TECHNOLOGIES. THE REPORT DOES NOT SELECT PREFERRED WASTE MANAGEMENT TECHNOLOGIES OR MAKE COMPARATIVE ASSESSMENTS. ITS PURPOSE IS TO PROVIDE A COMPREHENSIVE LIST OF TECHNICAL INFORMATION EXPECTED TO SERVE AS A BASIS FOR FUTURE DECISIONS, ASSESSMENTS, AND ENVIRONMENTAL IMPACT STATEMENTS. THE TECHNOLOGY IS STILL EVOLVING, AND THIS REPORT WILL BE SUBJECT TO PUBLIC REVIEW AND COMMENT. ITS CONTENTS THEREFORE SERVE AS A BASELINE SUBJECT TO FUTURE SUPPLEMENTATION AND UPDATING. THERE ARE FOUR MAJOR WASTE MANAGEMENT FUNCTIONS: TREATMENT, INTERIM STORAGE, TRANSPORTATION, AND FINAL STORAGE OR DISPOSAL. THIS REPORT IS STRUCTURED IN FIVE VOLUMES THAT APPLY THESE FUNCTIONS. VOLUME 1 SUMMARIZES THE REPORT, DESCRIBES ALTERNATIVES FOR THE BULK END OF THE LWR CYCLE, AND PROVIDES BACKGROUND INFORMATION ON WASTE TYPES AND QUANTITIES. VOLUME 2 DESCRIBES ALTERNATIVES FOR WASTE TREATMENT. VOLUME 3 DESCRIBES INTERIM STORAGE AND TRANSPORTATION. ALTERNATIVES FOR FINAL STORAGE AND DISPOSAL ARE DESCRIBED IN VOLUME 4. THE APPENDICES, VOLUME 5, PROVIDE SUPPLEMENTARY INFORMATION, WITH EMPHASIS ON CHARACTERISTICS OF GEOLOGIC FORMATIONS THAT MIGHT BE USED FOR FINAL STORAGE OR DISPOSAL. PREPARATION OF THIS REPORT WAS STARTED IN AUGUST OF 1975, IN RESPONSE TO A DIRECTIVE FROM EMDA'S NUCLEAR FUEL CYCLE AND PRODUCTION DIVISION. THE REPORT WAS AUTHORED BY PERSONNEL OF EMDA'S CONTRIBUTIONS, OF INDUSTRY, AND OF UNIVERSITIES; COORDINATION WAS PROVIDED BY BATTELLE'S PACIFIC NORTHWEST LABORATORIES. THE REPORT WAS COMPLETED IN MARCH OF 1976. THE COST PER PAGE FOR CHARACTERIZING THE STATUS OF THE TECHNOLOGIES WAS SEPTEMBER 1, 1975.

PUB DESC: EMDA-76-43 1976

KEYWORDS: HEALTH PHYSICS; LWR (SEE ALSO REACTOR, LWR); SUMMARY REPORT; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); WASTE TREATMENT; WASTE STORAGE; WASTE TRANSPORTATION; WASTE DISPOSAL; TECHNOLOGY; WASTE TYPE (SEE ALSO CLASSIFICATION); ENVIRONMENTAL IMPACT; ASSESSMENT

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PUB DATE: 1976
 AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN.
 (U.S.A.)

TITLE: ALTERNATIVES FOR HANDLING WASTES FROM REACTORS AND FISSI-ION OPERATIONS IN THE LWR FUEL CYCLE. VOL. 1 THE BACK END OF THE LWR FUEL CYCLE WASTES, PROJECTION OF QUANTITIES AND A SELECTED GLOSSARY.

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: VOLUME 1 SUMMARIZES THE REPORT, DESCRIBES ALTERNATIVES FOR THE BACK END OF THE LWR CYCLE, AND PROVIDES BACKGROUND INFORMATION ON WASTE TYPES AND QUANTITIES. THIS INCLUDES REACTORS, SPENT FUEL STORAGE, FUEL REPROCESSING, DISEN-CRIBED FUEL FABRICATION, AND WASTE MANAGEMENT. PROJECTION OF TYPES AND QUANTITIES OF WASTES ARE GIVEN ALONG WITH A SELECTED GLOSSARY OF TERMS.

PUB DESC: EREA - 76-41 VOL. 1, 1976

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL ALTERNATIVES; ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); FUEL CYCLE; PROJECTION (SEE ALSO FORECAST); OPTIONS; DESIGN; LIGHT WATER REACTORS (LWR); SPENT FUEL; FUEL STORAGE; FUEL REPROCESSING; GLOSSARY

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PUB DATE: 1975
 AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN.
 (U.S.A.)

TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: REFERENCES TO 2100 PUBLICATIONS RELATED TO RADIOACTIVE WASTE, ANNOUNCED IN NUCLEAR SCIENCE ABSTRACTS (NSA) VOLUMES 20 (JULY-DEC. 1973), 21 (JAN.-JUNE 1974), AND 22 (JULY-DEC. 1974), ARE CONTAINED IN THIS BIBLIOGRAPHY. THE REFERENCES ARE ARRANGED BY THE ORIGINAL NSA ABSTRACT NUMBER, WHICH APPROXIMATELY PLACES THEM IN CHRONOLOGICAL ORDER. SEQUENCE NUMBERS APPEAR BESIDE EACH REFERENCE AND THE NSA VOLUME AND ABSTRACT NUMBERS APPEAR AT THE END OF THE CITATIONS. THREE INDEXES ARE PROVIDED: PERSONAL AUTHOR, SUBJECT, AND REPORT NUMBER. THESE INDEXES REFER TO THE SEQUENCE NUMBERS FOR THE REFERENCES.

PUB DESC: TID-3311-56, 289 PPS, JULY 1975

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT;

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PUB DATE: 1971
 AUTHOR: ENVIRONMENTAL PROTECTION AGENCY (U.S.A.)

TITLE: ENVIRONMENTAL ANALYSIS OF THE URANIUM FUEL CYCLE. PART II - NUCLEAR POWER REACTORS

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY

ABSTRACT: THIS REPORT IS ONE PART OF A THREE-PART ANALYSIS OF THE IMPACT OF THE VARIOUS OPERATIONS WITHIN THE URANIUM FUEL CYCLE. THE PRINCIPAL PURPOSES OF THE ANALYSIS ARE TO PROJECT WHAT EFFECTS THE TOTAL URANIUM FUEL CYCLE MAY HAVE ON PUBLIC HEALTH AND TO INDICATE WHERE, WHEN, AND HOW STANDARDS LIMITING ENVIRONMENTAL RELEASES COULD BE EFFECTIVELY APPLIED TO MITIGATE THESE EFFECTS. THE GROWTH OF NUCLEAR ENERGY HAS BEEN WARNED SO THAT ENVIRONMENTAL CONTAMINATION IS MINIMAL AT THE PRESENT TIME; HOWEVER, THE PROJECTED GROWTH OF THIS INDUSTRY AND ITS ANTICIPATED RELEASES OF RADIOACTIVITY TO THE ENVIRONMENT WARRANT A CAREFUL REEVALUATION OF POTENTIAL HEALTH EFFECTS. CONSIDERABLE EMPHASIS HAS BEEN PLACED ON THE LONG-TERM HEALTH CONSEQUENCES OF RADIOACTIVITY RELEASES FROM THE

VARIOUS OPERATIONS, ESPECIALLY IN TERMS OF EXPECTED PERSISTENCE IN THE ENVIRONMENT AND FOR ANY REGIONAL, NATIONAL OR WORLDWIDE MIGRATION THAT MAY OCCUR.

PUB DESC: EPA-520/9-73-003-C, 169 PAGES, FIGURES, 88 REFERENCES, NOVEMBER 1973

KEYWORDS: REACTOR, LWR; ENVIRONMENT; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); FISSION PRODUCT, IODINE; NUCLEIC ACID; REACTOR, PWR; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; POPULATION EXPOSURE; REACTOR, LWR (SEE ALSO LWR); RADIOACTIVITY RELEASE; RADIATION EXPOSURE; REPORT, ENVIRONMENTAL; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH);

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PUB DATE: 1972
 AUTHOR: ESCHERICH, H.; VAN CIEL, J.; STILLEWY, E.

TITLE: MANAGEMENT OF FUEL REPROCESSING WASTES AT EUROCHERMIC

CORPORATE AUTHOR: EUROCHERMIC, NCL, BELGIUM

ABSTRACT: THE PRESENT PRACTICES, CURRENT DEVELOPMENTS AND FUTURE ASPECTS OF THE TREATMENT AND STORAGE OF EUROCHERMIC'S FUEL REPROCESSING WASTES ARE REVIEWED. DATA ON THE PRODUCTION AND CHARACTERISTICS OF THE VARIOUS TYPES OF RADIOACTIVE EFFLUENTS, RESULTING FROM THE DIFFERENT STEPS OF THE CHEMICAL PROCESSING OF LOW AND HIGH ENRICHED URANIUM FUELS, ARE PRESENTED. RECENT DEVELOPMENTS ON A LOW TEMPERATURE PROCESS FOR THE SOLIDIFICATION OF HIGH LEVEL WASTES AND ON THE BITUMINIZATION PROCESS FOR MEDIUM LEVEL WASTES, ARE SUMMARIZED. NEW PROCEDURES ARE DESCRIBED WHICH ARE APPLICABLE TO THE TREATMENT OF SPENT TRISOBUTYL PHOSPHATE-HEXOSOLVING SOLVENTS. FINALLY THE FUTURE WASTE MANAGEMENT POLICY AT EUROCHERMIC IS OUTLINED.

PUB DESC: CCNP-721107, 32 PAGES, 7 TABLES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: EFFLUENT; EUROCHERMIC; URANIUM; WASTE STORAGE; WASTE TREATMENT; WASTE TREATMENT, PITTING; WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; SOLVENT EXTRACTION; FUEL REPROCESSING; FUEL ELEMENTS

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PUB DATE: 1972
 AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY

TITLE: RADIOACTIVE WASTE MANAGEMENT

ABSTRACT: THE LONG-TERM PROBLEM OF DEALING WITH MAN-MADE RADIOACTIVE WASTE IS BECOMING THE MOST PERSISTENT CAUSE OF CONCERN AMONGST THE MORE REASONABLE SECTIONS OF THE PUBLIC IN THEIR OPINION TOWARDS THE DEVELOPMENT OF NUCLEAR POWER AS A MAJOR SOURCE OF ENERGY. A REPORT JUST PUBLISHED BY ENEA REVIEWS IN SOME DEPTH THE VERY COMPLEX SUBJECT OF RADIOACTIVE-WASTE MANAGEMENT IN WESTERN EUROPE. CONCLUDES THAT THE PRACTICES BEING FOLLOWED ARE SOUNDLY BASED AND SHOW A PROPER RECOGNITION OF THE PROSPECTIVE INCREASE IN SCALE OF THE PROBLEMS TO BE DEALT WITH IN THE FUTURE. PUT IN ADDITION TO THIS REASSURING CONCLUSION, THE REPORT OFFERS A CLEARLY PRESENTED AND DETAILED REVIEW OF THE SUBJECT, WHICH WILL FORM AN EXCELLENT STARTING POINT FOR THE SORT OF PRESENTATION REQUIRED TO REASSURE THE PUBLIC.

PUB DESC: NUCLEAR ENGINEERING INTERNATIONAL, 17(191), PP. 296-298 (APRIL 1972)

KEYWORDS: EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); PUBLIC RESPONSE (SEE ALSO OPPOSITION, ENEMY, AND POPULATION RESPONSE); POPULATION EXPOSURE; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; ENVIRONMENT; REVIEW; POPULATION RESPONSE

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PUB DATE: 1974
 AUTHOR: PACHAR, R.

TITLE: TRITIUM ADSORPTION FACILITY

ABSTRACT: THIS PAPER DESCRIBES A FACILITY FOR THE TOTAL EXTRACTION OF TRITIUM FROM AIR AND WASTE GASES. THE FACILITY WORKS ON THE BASIS OF HYDROGEN OXIDATION. THE SYSTEM IS SO CONSTRUCTED THAT IT CAN BURN EQUALLY WELL TRITIUM CONTAMINATION IN THE FORM OF DUST, VAPOR AND GAS. EXPERIMENTAL MEASUREMENTS HAVE SHOWN THAT TRITIUM CAN BE EXTRACTION FROM AIR DOWN TO A RESIDUAL CONCENTRATION OF 10-6 CI/M CUBED.

PUB DESC: TECHNOLOGICAL, 16(2), PP. 63-66 3 FIGURES (JULY 1974)

KEYWORDS: ADSORPTION; TRITIUM; WASTE TREATMENT; GAS; ADSORPTION; RADIOISOTOPES

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PUB DATE: 1960
 AUTHOR: PACHINI, L.

TITLE: TREATMENT OF RADIOACTIVE EFFLUENTS AT THE ENRICO FERMI NUCLEAR RESEARCH CENTER OF THE ILLINOIS POLYTECHNIC INSTITUTE

ABSTRACT: THE RADIOACTIVE WASTE TREATMENT METHODS USED AT THE E. FERMI NUCLEAR CENTER OF THE ILLINOIS POLYTECHNIC ARE PRESENTED IN THIS PAPER. THE LIQUID WASTES ARE CONCENTRATED BY EVAPORATION IN AN EVAPORATOR WHICH IS DESCRIBED- THE COMBUSTIBLE SOLID WASTES ARE INCINERATED AND THE GAS IS FILTERED.

PUB DESC: ORNL-TR-143 22 PAGES- REPRINT FROM ACQUA INDUSTRIALE, NO. 7-8 (MAY-AUGUST, 1960)

KEYWORDS: WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; LIQUID; WASTE SOURCE AND TYPE; WASTE DISPOSAL; LIQUID; WASTE DISPOSAL; SOLID; WASTE TREATMENT; SOLID; INCINERATION; ITALY

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PUB DATE: 1969
 AUTHOR: PARAN, H.-Y.; ARDEL-GANDER, S.; KETBY, E.

TITLE: INVESTIGATION OF SORPTION OF STRONTIUM AND CESIUM BY SOILS OF DOG FL-ARAB DISTRICT

ABSTRACT: STUDIES WERE CARRIED OUT TO EVALUATE THE EFFECTIVENESS OF DOG FL-ARAB SOIL SAMPLES FOR THE CONCENTRATION OF FISSION PRODUCTS FROM LIQUID WASTES. THE SORPTION OF CESIUM AND STRONTIUM WAS INVESTIGATED. WITH EACH ISOTOPE THE EXCHANGE CAPACITY, DISTRIBUTION COEFFICIENT AND SELECTIVITY COEFFICIENT WAS DETERMINED. ALSO THE EFFECT OF OTHER FACTORS SUCH AS PH, THE CONCENTRATION OF CHEMICALLY SIMILAR ELEMENTS PRESENT IN SOLUTION AND HEAT TREATMENT OF THE SAMPLES WAS STUDIED. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 17(5), P. 711 (1969)

KEYWORDS: HEALTH PHYSICS; STRONTIUM; CESIUM; EFFECT; LIQUID; RADIOACTIVE WASTE; EXCHANGE CAPACITY; DISTRIBUTION COEFFICIENT; SELECTIVITY COEFFICIENT; EFFECT, PH; HEAT TREATMENT; SOIL; SORPTION (SEE ALSO ADSORPTION); FISSION PRODUCT;

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PUB DATE: 1969
 AUTHOR: FEDERAL REPUBLIC OF GERMANY

TITLE: METHODS FOR THE PROCESSING OF RADIOACTIVE WASTES

ABSTRACT: PRESENTS A BROAD SYNOPSIS OF THE PROCESSES OF WASTE MANAGEMENT - WASTE ACCUMULATION, RELATIVE QUANTITIES AS TO TYPE AND ENERGY LEVEL, AND A REVIEW OF COMMONLY USED METHODS OF TREATMENT, STORAGE, AND DISPOSAL.

PUB DESC: TECHNOLOGICAL II, JAHRGANG, 7, PG 390-396 3 FIGURES, 3 TABLES, 9 REFERENCES, (1969)

KEYWORDS: ADSORPTION; HYDROGEN; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; BAKING; REACTION; POWER; WASTE MANAGEMENT; EVAPORATION; INCINERATION; ION EXCHANGE; PRECIPITATION; PULP PROCESSING; GAS; LIQUID; SOLID; ADSORPTION (SEE ALSO ADSORPTION); PULP ELEMENTS

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PUB DATE: 1969
 AUTHOR: FEDERAL WATER POLLUTION CONTROL ADMINISTRATION (U.S.A.)

TITLE: A REVIEW OF THE LITERATURE OF 1968 ON WASTEWATER AND WATER POLLUTION CONTROL - INDUSTRIAL WASTE, RADIOACTIVE

ABSTRACT: PRESENTS A REVIEW OF THE FOLLOWING TOPICS RELATING TO INDUSTRIAL WASTE DISPOSAL - URANIUM RECOVERY, WASTE WATER TREATMENT BY PRECIPITATION OF RADIOISOTOPES, SOLVENT EXTRACTION, ION EXCHANGE, ADSORPTION, UPTAKE ON NATURAL MATERIALS, ELECTRODIALYSIS, AND FILTRATION. ALSO CONSIDERS COCURE DISPOSAL, DISPOSAL IN THE HYDROSPHERE

PUB DESC: JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION, VOL. 41, PG 1223-1251 (JUNE 1969)

KEYWORDS: WASTE DISPOSAL; OCEAN; ELECTRODIALYSIS; WASTE TREATMENT; ANALYTICAL TECHNIQUE; ION EXCHANGE; MONITORING (SEE ALSO SURVEY); PRECIPITATION; SORPTION (SEE ALSO ADSORPTION); REVIEW; SOLVENT EXTRACTION; RADIOISOTOPES; SEDIMENT

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PUB DATE: 1968
 AUTHOR: FEDERAL WATER POLLUTION CONTROL ADMINISTRATION (U.S.A.)

TITLE: INDUSTRIAL WASTES - RADIOACTIVE

ABSTRACT: A LITERATURE REVIEW (1967) OF INDUSTRIAL WASTES - RADIOACTIVE, PUBLISHED IN THE WATER POLLUTION CONTROL FEDERATION JOURNAL. DISCUSSES MOST PHASES OF AND CITES REFERENCES TO ADDRESS IN THE GENERAL AREA OF WASTE DISPOSAL AND ENVIRONMENTAL CONTROL.

PUB DESC: JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION, 40(6), PAGES-1199-1219 10 REFERENCES

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); REVIEW; STANDARDS; RADIATION (SEE ALSO REGULATION); POISON; WASTE DISPOSAL; ATMOSPHERIC; WASTE TREATMENT; FILTRATION; AIR; MONITOR, ENVIRONMENTAL; WASTE MANAGEMENT; CONTAMINATION; EVAPORATION; IONP; ION EXCHANGE; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL; HYDRAULIC FRACTURING; WATER POLLUTION; SOLVENT EXTRACTION; AQUATIC ORGANISM

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PUB DATE: 1966
 AUTHOR: FEDERAL WATER POLLUTION CONTROL ADMINISTRATION (U.S.A.)

TITLE: URANIUM-MILL TAILINGS POLLUTING COLORADO RIVER BASIN

CORPORATE AUTHOR: FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

ABSTRACT: FEDERAL WATER POLLUTION CONTROL ADMINISTRATION RECOMMENDS CONTROL OF TAILINGS, AS LOCAL LAND-USE AND FISH TRANSPORT IS BEGINNING. THIS IS NOT AN IMMEDIATE HAZARD, BUT WILL BE A SOURCE OF FUTURE REGIONAL POLLUTION AND BASIN 226 CONTAMINATION.

PUB DESC: ATOMIC ENERGY CLEARING HOUSE 12(170-17-16 (MARCH 20, 1966), 6 PAGES

KEYWORDS: MILLING; MILL TAILINGS (SEE ALSO TAILINGS); MINING; URANIUM; WATER; WASTE MANAGEMENT; CONTAMINATION

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PUB DATE: 1970

<130> COST.

AUTHOR: FELDS, R.

TITLE: RESEARCH ON THE BIOLOGY RADIOACTIVE WASTES OF SOME GERMAN RIVERS

ABSTRACT: THE MAXIMUM PERMISSIBLE RADIOACTIVE BURDEN OF A RIVER RESTRICTS THE BODIES OF NUCLEAR POWER STATIONS AND THEIR RELEASES OF ACTIVITY. THE PAPER DESCRIBES METHODS AND IDEAS USED TO GET RELEVANT INFORMATION BEFORE A NUCLEAR POWER STATION GOES INTO OPERATION. THE RESULTING DATA HAVE EFFECTIVE MONITORING POSSIBILITIES. THE CONCENTRATING FACTORS FOR FISHES AND AQUATIC PLANTS ARE GIVEN FOR THE ELEMENTS SR, CS, ND, ZR, CU, AND PU IN THE RIVERS EMS, ODER, AND ELBE. THE CHOICE OF CERTAIN BIOLOGICAL INDICATORS FOR MONITORING PURPOSES ARE INTERPRETED. MEASUREMENT MODELS ARE DISCUSSED FOR THE CASES OF ACCIDENTAL RELEASE OF HIGHLY ACTIVITIES.

PUB DESC: ZARA, PAPER NO. 58 106/29, PAGE 495-506, AUGUST 10, 1970

KEYWORDS: WATER; WASTE DISPOSAL; RIVER; GERMAN; RADIOACTIVITY RELEASE; MONITORING PROGRAM; ENVIRONMENTAL; ECOSYSTEM; AQUATIC; PLANNING; RIVER BASIN; BODY BURDEN

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PUB DATE: 1968

AUTHOR: FETTER, J.W.

TITLE: TRACING SOIL MOISTURE AND COORDINATED FLOW AT THE SAVANNAH RIVER PLANT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: RADIOACTIVE WASTE MANAGEMENT IS A PROBLEM ASSOCIATED WITH THE PRODUCTION OF NUCLEAR MATERIALS AT THE SAVANNAH RIVER PLANT. COORDINATED FLOW IS IMPORTANT IN THE MANAGEMENT OF THREE CATEGORIES OF THIS WASTE - MIXED SOLID WASTE, LOW-LEVEL LIQUID WASTE DISCHARGED TO SURFACE BASINS, AND HIGH-LEVEL LIQUID WASTE STORED IN CHEROKEE TANKS. TRITIUM TRACING METHODS ARE REPORTED FROM THE STANDPOINT OF STRATIGRAPHY, HYDROLOGY, FISSIONS, ELEVATION, TYPE OF SOIL, ETC., WITH RESPECT TO EACH OF THE THREE CATEGORIES OF WASTE.

PUB DESC: DP-85-68-23, CORP-600709-1, 25 PAGES, 10 FIGURES, 7 REFERENCES, MARC, 1968

KEYWORDS: GEOLOGY; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); GROUND WATER; STRATIGRAPHY (SEE ALSO GEOLOGY, STRATIGRAPHY); SOIL; RADIOACTIVE WASTE; TITRUM; TRITIUM; WASTE STORAGE; SURFACE WATER; TANKS; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; HYDROLOGY

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PUB DATE: 1965

AUTHOR: FETTER, J.

TITLE: WASTE DISPOSAL

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: REVIEWS OF RECENT PATTERNS AND PROGRESS REPORTS IN WASTE DISPOSAL RESEARCH AND DEVELOPMENT ARE PRESENTED. TOPIC COVERED INCLUDES MANAGEMENT OF TRITIUM, ION EXCHANGE, CONVERSION TO SOLIDS, AND RECOVERY OF STRONTIUM.

PUB DESC: REACTOR FUEL PROCESSING 8(7), PART IV, PP. 37044 7 FIGURES, 4 TABLES, 25 REFERENCES

KEYWORDS: RESEARCH; TRITIUM; TRITIUM; CALCINATION; WASTE TREATMENT; FISSION; FISSION PRODUCT; SEPARATION; GLASS (SEE ALSO VITRIFICATION); ION EXCHANGE; MINERAL EXCHANGE

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PUB DATE: 1975

AUTHOR: FINE, S.

TITLE: PROBLEMS OF THE FUEL CYCLE

ABSTRACT: PRESENTS INFORMATION ON THE RESEARCH PROGRAM AT EVANSTON JRC (ESPR) CONCERNING FISSION MATERIAL SAFEGUARDS AND RADIOACTIVE WASTE DISPOSAL. THE MOST RELEVANT FEATURES OF THE WASTE PROGRAM IS THE POSSIBILITY OF SEPARATING THE ACTIVITIES AND A STUDY OF THE POSSIBILITY OF BURNING THE ACTIVITIES IN THE REACTOR.

PUB DESC: ENERGIA NUCLEARE (MILAN), 22(6), PP. 326-36 (JUNE 1975) (IN ITALIAN)

KEYWORDS: ITALY; TRANSMUTATION; PARTITIONING (SEE ALSO SPARTITION, FRACTIONATION, AND WASTE PARTITIONING); FUEL CYCLE; D AND D PROGRAM; SAFEGUARDS, NUCLEAR MATERIAL; WASTE DISPOSAL; ACTIVITIES (SEE ALSO TRANSFORMATION)

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PUB DATE: 1970

AUTHOR: FISCHER, W.; BOWL, C.

TITLE: ECONOMIC OF THE DISPOSAL OF RADIOACTIVE WASTES FROM NUCLEAR POWER PLANTS AND THE REPROCESSING OF IRRADIATED NUCLEAR FUELS.

CORPORATE AUTHOR: STAATLICHE KERNKRAFTWERK STRAHLENSCHUTZ, BERLIN (EAST GERMANY)

ABSTRACT: THE PORTION OF CURRENT GENERATING COSTS CAUSED BY THE DISPOSAL OF RADIOACTIVE WASTES FROM NUCLEAR POWER PLANTS AND FUEL REPROCESSING INSTALLATIONS AS WELL AS THE MOST IMPORTANT FACTORS INFLUENCING THE SYSTEM OF WASTE DISPOSAL ARE OUTLINED. DIFFERENT VARIANTS ARE FORMULATED CONSIDERING THE QUANTITY OF WASTES OF A SUPPOSED NUCLEAR POWER APPLICATION WITH THE SUITABLE TECHNOLOGIES OF THE TREATMENT AND DISPOSAL OF RADIOACTIVE WASTES. THE BOUNDARY CONDITIONS AND THE EVALUATION CRITERIA AND THE RESULT OF THE EVALUATION OF TWO VARIANTS WITH ASSUMED INVESTMENT AND OPERATION COSTS ARE PRESENTED.

PUB DESC: SI5-2/70, 24 PAGES, 7 FIGURES, 10 REFERENCES, JANUARY 1970 (IN GERMAN)

KEYWORDS: WASTE DISPOSAL, ECONOMICS; REACTOR, POWER; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; REACTOR; FUEL REPROCESSING

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PUB DATE: 1969

AUTHOR: FISCHER, J.J.

TITLE: RADIOACTIVE-WASTE MANAGEMENT

ABSTRACT: MANY METHODS OF RADIOACTIVE-WASTE MANAGEMENT HAVE BEEN USED FOR HANDLING, STORAGE, AND DISPOSING OF RADIOACTIVE WASTE. IN GENERAL, THE SELECTION OF A GOOD METHOD WILL RESULT, IN PART, FROM AN EVALUATION OF THE SPECIAL CHARACTERISTICS OF THE LABORATORY SITE UNDER CONSIDERATION. THE FACILITIES AND SPACE AVAILABLE AT THE SITE OR THE PROXIMITY OF A SITE HAVING ADEQUATE FACILITIES AND SPACE MAY INFLUENCE THE METHOD OF WASTE MANAGEMENT THAT IS DEVELOPED. IN ADDITION, THE BEST METHOD OF RADIOACTIVE-WASTE MANAGEMENT WILL BE DETERMINED LARGELY BY THE QUALITY AND THE QUANTITY OF RADIOACTIVE-WASTE MATERIAL GENERATED TOGETHER WITH THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE WASTE.

PUB DESC: APPLIED RADIATION PROTECTION AND CONTROL, VOL. 2, PP. 747-810, PUBLISHED BY GORDON AND BREACH SCIENCE PUBLISHERS, 1969

KEYWORDS: CONTAINMENT; DILUTION; REGULATION (SEE ALSO STANDARDS, RADIATION); HAZARD, RELATIVE; WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; CALCINATION; WATER TREATMENT, FISSION; PHOSPHATE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); INCINERATION; MONITORING (SEE ALSO SURVEY); DISPERSION; ENVIRONMENT; ENERGY LEVEL; GAS; LIQUID; SOLID; CONCENTRATION

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PUB DATE: 1969

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AUTHOR: FITZGERALD, J.J.

TITLE: RADIOLOGICAL PROBLEMS ASSOCIATED WITH HIGH-LEVEL RADIOISOTOPE SOURCES

ABSTRACT: DISCUSSES PROBLEMS ASSOCIATED WITH HIGH-LEVEL RADIOISOTOPE SOURCES REGARDING THE PRINCIPLES OF APPLIED RADIATION PROTECTION AND CONTROL. THESE PROBLEMS COVER A BROAD SPECTRUM, INCLUDING DESIGN OF FACILITIES, RADIATION ANALYSIS AND EMERGENCY PLANNING, WASTE DISPOSAL, PREDICTION PROBLEMS, AND EXPOSURE PROBLEMS.

FOR DESC: APPLIED RADIATION PROTECTION AND CONTROL, VOL. 2, PP. 931-997, PUBLISHED BY GORDON AND BREACH SCIENCE PUBLISHERS, 1969

KEYWORDS: DESIGN CRITERIA; RADIOACTIVE FACILITY; SOURCE, RADIATION; WASTE DISPOSAL; RADIATION ANALYSIS; HIGH-LEVEL WASTE; EMERGENCY PROCEDURE; EMERGENCY SYSTEM; RADIATION SAFETY AND CONTROL; SAFETY PRINCIPLES AND PRINCIPLES; RADIOLOGICAL ASSISTANCE; EQUIPMENT; RADIATION EXPOSURE

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FOR DATE: 1970

AUTHOR: PONTAINE, C.; DESSERLANS, C.; VACCARIZZA, J.

TITLE: THE MANAGEMENT OF RADIOACTIVE WASTES OF LOW ACTIVITY AND INTERMEDIATE ACTIVITY AT ISRA

COMPANATE AUTHOR: TUNICO, ISPOB, ITALY

ABSTRACT: THE ESTABLISHMENT AT ISRA OF THE CERN CENTER OF RESEARCH OF THE EUROPEAN COMMUNITY TREATS RADIOACTIVE WASTES (SOLID AND LIQUID PRODUCTS) FROM ITS LABORATORIES AND REACTORS. FOR ECONOMIC REASONS, THE TREATED SOLID WASTES ARE STORED AT THE SAME SITE. THE METHODS OF TREATMENT, STORAGE, AND BURIAL ARE DESCRIBED FOR EACH CATEGORY OF WASTE.

FOR DESC: SN-137/32, SIX/PUB-244, CONF-700905, 25 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); INTERMEDIATE-LEVEL WASTE; IAEA; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; ITALY; OPERATING EXPERIENCE; WASTE DISPOSAL, LAND

(138)

FOR DATE: 1966

AUTHOR: POSTER, D.F.

TITLE: EVALUATION OF THE EXPOSURE RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE COLUMBIA RIVER.

FOR DESC: SN-72/43, CONF-640507, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS 6 PAGES 683-696 1966

KEYWORDS: RIVER; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, RIVER, COLUMBIA; RADIOISOTOPE; RADIOACTIVE SITE; AQUATIC ORGANISM; RADIATION EXPOSURE

(139)

FOR DATE: 1966

AUTHOR: POSTER, D.F.

TITLE: INCUBATION OF PLUTONIUM CONTAMINATED WASTE MATERIALS

COMPANATE AUTHOR: BOB CORNICAL COMPANY, GOLDEN, COLO.

ABSTRACT: PRESENT CONTAMINATED WASTE-INCUBATION DESIGN THINGS ARE PRESENTED ALONG WITH REFERENCES TO RECENT INCUBATION LITERATURE. CONSTANT HEAT RELEASE IS UNCOMMON AS A BASIS FOR DESIGN OF WASTE INCUBATORS. INCUBATION COSTS WERE FOUND TO BE ONLY A SMALL PORTION OF OVERALL COSTS ASSOCIATED WITH DISCOVERY OF PLUTONIUM FROM COMPOSITE WASTES.

FOR DESC: BPP-734, 27 PAGES, 1 FIGURE, 3 TABLES, 14 REFERENCES, MAY 9, 1966

KEYWORDS: PLUTONIUM; BUCKY PLATS; WASTE DISPOSAL, SOLID; INCUBATION

(140)

FOR DATE: 1974

AUTHOR: CAMPBELL, SHELTON, C.C.; WATFIELD, D.L.

TITLE: POPULATION EXPOSURES FROM REACTORS AND REACTION FUEL CYCLE

COMPANATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: POPULATION DOSE ESTIMATES DEFINE PART OF THE ENVIRONMENTAL IMPACT DUE TO THE OPERATION OF NUCLEAR FACILITIES INVOLVED IN THE PRODUCTION OF ELECTRICITY FROM THE REACTION FUEL CYCLE. THESE DOSE ESTIMATES ARE USED IN THE ENVIRONMENTAL IMPACT STATEMENTS PREPARED BY THE AEC FOR EACH LICENSED FACILITY IN RESPONSE TO THE REQUIREMENTS OF THE NATIONAL ENVIRONMENTAL POLICY ACT. POPULATION DOSE ESTIMATES CALCULATED FOR THE SOURCE TERMS OF RADIOACTIVE MATERIALS RELEASED FROM WASTE SYSTEMS OF VARYING DEGREES OF COMPLEXITY AND COST PROVIDE THE INPUTS NECESSARY TO DETERMINE THE COST-BENEFIT RELATIONSHIPS WHICH DEFINE "AS LOW AS PRACTICABLE" GUIDANCE FOR DESIGN OBJECTIVES TO BE USED IN SELECTING WASTE SYSTEMS IN NEW NUCLEAR FACILITIES. GENERAL CALCULATIONAL MODELS USED FOR ESTIMATING POPULATION DOSE, ALONG WITH THE NECESSARY ASSUMPTIONS AND SIMPLIFICATIONS ARE DESCRIBED AND THE RANGES OF RESULTS OBTAINED FOR VARIOUS TYPES OF FACILITIES ARE DISCUSSED. AT THE PRESENT TIME THE LARGEST POPULATION DOSES ARE EXPECTED FOR THE EMISSION OF ^{135}Xe FROM FUEL REPROCESSING PLANTS. THE DOSES TO THE IMMEDIATE POPULATION (WITHIN 50 MILES) ARE NOT LARGE BUT THE VERY LOW DOSES TO THE WHOLE WORLD'S POPULATION PROVIDE A LARGE TOTAL. THE LARGEST DOSES FROM THE EMISSIONS FROM REACTORS ARE DUE TO THE GASES FROM BUNS. HOWEVER, DOSE ESTIMATES FOR LIQUID RELEASES INDICATE A POTENTIAL FOR SIGNIFICANT POPULATION FOR EMISSIONS FROM REACTOR SITES UPSTREAM OF LARGE POPULATION CONCENTRATIONS. (AUTHOR)

FOR DESC: CONF-701010, SYMPOSIUM ON POPULATION EXPOSURES, PROCEEDINGS OF THE EIGHTH ANNUAL TOPICAL SYMPOSIUM OF THE HEALTH PHYSICS SOCIETY, P. 829, (1974)

KEYWORDS: NUCLEAR POWER PLANTS; POPULATION EXPOSURE; REACTOR; SEPA; USEAC (SEE ALSO AGENCY, AEC); FUEL CYCLE; REACTOR; DOSE; ENVIRONMENTAL EFFECT; DESIGN; DOSE ESTIMATES; ENVIRONMENTAL IMPACT; DOSE CALCULATION; MODEL; MATHEMATICAL TREATMENT; RADIOACTIVITY RELEASE; PUBLIC HEALTH; WASTE SYSTEM; FUEL REPROCESSING; REACTOR (SEE ALSO NUCLEAR GAS); NUCLEAR GAS

(141)

FOR DATE: 1971

AUTHOR: GENERAL DYNAMICS CORPORATION (U.S.A.)

TITLE: POTENTIAL ENVIRONMENTAL EFFECTS OF AN OFFSHORE SUBMERGED NUCLEAR POWER PLANT, VOL. I

COMPANATE AUTHOR: GENERAL DYNAMICS CORP.

ABSTRACT: POTENTIAL ENVIRONMENTAL EFFECTS OF WASTES FROM AN 1190-MW PRESSURIZED WATER NUCLEAR POWER PLANT, SUBMERGED 250-FT DEEP AT FOUR REPRESENTATIVE SITES OFF THE U.S. MAINLAND, WERE STUDIED. THE THERMAL FIELD OF THE PLANT'S COOLING WATER DISCHARGE, AND THE DISTRIBUTION OF RADIOISOTOPES IN THE SEA, WERE ANALYZED. IN EVERY CASE, THE THERMAL "WIRING ZONE" (BY THE MOST STRINGENT PRESENT STANDARDS) WAS FOUND TO END BEFORE EITHER A SURFACE OR SUBSURFACE FIELD WAS ESTABLISHED, AND TO BE MUCH SMALLER THAN FOR A PLANT IN SHALLOWER WATERS. FISH ORGANISMS WOULD BE KILLED BY ENTRAPMENT IN THE COOLING WATER TANK AT A COASTAL PLANT. A "BATCH" RELEASE OF RADIOISOTOPES, AFTER THE WORST HYPOTHETICAL NUCLEAR ACCIDENT, WOULD HARM LIFE, REQUIRING SUSPENSION OF LOCAL FISHING FOR ABOUT 10 YEARS. NO POTENTIAL ECOLOGICAL DAMAGE WAS PREDICTABLE FROM THE ORDINARY MINUTE RELEASE OF RADIOISOTOPES, THE THERMAL DISCHARGE, OR OTHER WASTES. (AUTHOR)

<101> CONT.

PUB DESC: 30-19075-12 (1973)

KEYWORDS: THERMAL EFFECTS; ENVIRONMENT; COOLING
WATER; OCCASIONS; RADIOACTIVITY; . . . ; RADIOACTIVE
WASTE; ECOLOGICAL DAMAGE; ECOLOGY; ECOSYSTEM

<102>

AUTHOR: ZNA, F.

PUB DATE: 1975

TITLE: GEOCHEMICAL BEHAVIOR OF LONG-LIVED
RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
YORKSBURG

ABSTRACT: THE HAZARD POTENTIAL ASSOCIATED WITH THE
HEAVY ELEMENTS PRESENT IN HIGH-LEVEL RADIOACTIVE WASTE
DECREASES GREATLY IN THE FIRST FEW YEARS OF THOUSANDS
OF YEARS OF DECAY; HOWEVER, FURTHER REDUCTION IN THE
HAZARD POTENTIAL OCCURS VIRTUALLY SLOW AFTER ABOUT
100,000 YEARS. CURRENT ESTIMATES SEEM TO INDICATE
THAT IF RADIOACTIVE WASTE CONTAINMENT WERE TO FAIL
AFTER A PERIOD OF 100,000 YEARS OR MORE, SOME
ENVIRONMENTAL CONTAMINATION WOULD RESULT; HOWEVER,
THE CONTAMINATION LEVELS WOULD BE LOW.

PUB DESC: ORNL-TR-0401, 100 PAGES, 32 FIGS, 175
REFS, JULY 1975

KEYWORDS: WASTE STORAGE; HAZARDS (SEE ALSO SAFETY);
ADVISORY COMMITTEE ON REACTIVE SUBSTANCES; GEOLOGY;
GEOCHEMICAL; ENVIRONMENT; CONTAMINATION; POPULATION
EXPOSURE; TRANSURANIC ELEMENT; COOLING WATER;
ECOSYSTEM; AQUATIC WASTE DISPOSAL;

<103>

AUTHOR: GERA, F.

PUB DATE: 1974

TITLE: THE CLASSIFICATION OF RADIOACTIVE WASTES

ABSTRACT: VARIOUS PROPOSALS OF CLASSIFICATION OF
RADIOACTIVE WASTES ARE REVIEWED. IT IS SUGGESTED THAT
THEY WERE FOR STANDARDIZED WASTE CATEGORIES COULD BE
SATISFIED BY SIMPLY REVISING THE MEANING OF THE TERMS,
PREVIOUSLY IN COMMON USE. IN THE PAST THE
CLASSIFICATION OF RADIOACTIVE WASTES HAS BEEN
CONSIDERED NECESSARY IN ORDER TO FACILITATE
COMMUNICATION, BUT HAS NOT BEEN INTENDED TO PROVIDE
INDICATIONS OF SUBSEQUENT OPERATIONS OF TREATMENT,
CONDITIONING, STORAGE AND DISPOSAL. IN ADDITION TO A
WASTE CLASSIFICATION OF SUCH LIMITED SCOPE, IT WOULD
BE VERY ADVANTAGEOUS TO ADOPT A CLASSIFICATION OF AN
OPERATIONAL NATURE. IT IS SUGGESTED HERE THAT THE
WASTES SHOULD BE CLASSIFIED AND SEGREGATED ON THE
BASIS OF THE DURATION OF REQUIRED CONTAINMENT. A
SIMPLE AND PROBABLY SUFFICIENT DIVISION WOULD BE IN
TWO GROUPS: (1) THE FIRST ONE FORMED BY WASTES
REQUIRING RELATIVELY SHORT-TERM CONTAINMENT AND
ACCEPTABLE FOR DISPOSAL BY RAPID BURIAL; (2) THE
SECOND GROUP WOULD CONTAIN WASTES REQUIRING LONG-TERM
CONTAINMENT AND DESIGNED FOR DISPOSAL IN DEEP GEOLOGIC
FORMATIONS. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 27(1), P. 11 (1974)

KEYWORDS: CLASSIFICATION (SEE ALSO WASTE
CLASSIFICATION); WASTE DISPOSAL; ASSESSMENT (SEE ALSO
ASSESSMENT); RADIOACTIVE WASTE; WASTE STORAGE; REVIEW;
STANDARDS; RADIATION (SEE ALSO RADIATION);
DESCRIPTION; GEOLOGY; CONTAINMENT; GLOSSARY;
COMMUNICATION; WASTE TREATMENT; CONDITIONING; STORAGE
(SEE ALSO DETRIMENTAL SURFACE STORAGE); WASTE
DISPOSAL; OPERATION; TIME; RADIATION GROUPS (SEE ALSO
COMMERCIAL RADIATION GROUPS); WASTE ISOLATION; LAND
FILL (SEE ALSO RADIATION GROUPS); LOW-LEVEL WASTE;
GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL,
TERRESTRIAL); HIGH-LEVEL WASTE; HEALTH PHYSICS;

<104>

AUTHOR: GERRA, F.; JACOBS, D.C.

PUB DATE: 1972

TITLE: CONSIDERATIONS IN THE LONG-TERM MANAGEMENT

OF HIGH-LEVEL RADIOACTIVE WASTE;

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
HEALTH PHYSICS DIVISION

ABSTRACT: HIGH-LEVEL RADIOACTIVE WASTES GENERATED
BY THE REPROCESSING OF SPENT FUEL ELEMENTS IN THE
PROJECTED NUCLEAR POWER INDUSTRY REQUIRE THE
DEVELOPMENT OF AN ONGOING WASTE MANAGEMENT SCHEME.
THE PRESENCE IN THESE WASTES OF LONG-LIVED
TRANSURANICS ASSURES ASSURANCE OF WASTE CONTAINMENT
FOR A TIME PERIOD OF THE ORDER OF SEVERAL HUNDREDS OF
THOUSANDS OF YEARS. FOR SUCH LONG TIMES, ONLY DEEP
GEOLOGIC FORMATIONS OFFER THE STABILITY REQUIRED FOR
PRESERVING THE NECESSARY DECAY OF CONTAINMENT.
PROJECTIONS ARE MADE OF THE AMOUNTS OF RADIOACTIVE
WASTES ACCUMULATED TO THE YEAR 2020. IMPORTANT
RADIOISOTOPES IN THE WASTE ARE COMPARED ON THE BASIS
OF THEIR POTENTIAL HAZARD TO HUMANITY OVER THEIR ENTIRE
PHYSICAL LIFETIME. ON THE BASIS OF THESE
CONSIDERATIONS, IT SEEMS THAT THE MOST PROMISING SCHEME
OF MANAGEMENT OF THESE WASTES INVOLVES SOLIDIFICATION
WITH FINAL DISPOSAL INTO A SUITABLE DEEP GEOLOGIC
FORMATION IN SUCH A MANNER THAT FURTHER HANDLING WILL
BE MINIMIZED. A DEEP GEOLOGIC FORMATION OF SALT SEEMS
TO OFFER MANY ADVANTAGES. (REVISED AUTHOR ABSTRACT)

PUB DESC: ORNL-6742; HEALTH PHYSICS DIVISION,
1970P. (1972)

KEYWORDS: WASTE DISPOSAL; PROJECTION (SEE ALSO
FORECAST); HAZARD, RELATIVE; HIGH-LEVEL WASTE; SALT
FORMATIONS; HAZARDS (SEE ALSO SAFETY); ISOLATION;
ISOTOPE; GREAT HEAT; HEAT TRANSFER; GEOLOGY;
HYDROLOGY; PLASTIC FLOW; FARMERS ANALYSIS; PHYSICAL
EROSION; LEACHING; WASTE SOLIDIFICATION; WASTE STORAGE

<105>

AUTHOR: GIESLER, R.; JENSEN, R.

PUB DATE: 1972

TITLE: TREATMENT OF BORIC ACID CONTAINING WASTE
USED IN A NUCLEAR POWER PLANT

CORPORATE AUTHOR: NATIONAL CENTRAL FOR RADIATION
PROTECTION OF THE GDR

ABSTRACT: THE AMOUNT OF RADIOACTIVE LIQUID
EFFLUENTS IS OF DECISIVE IMPORTANCE FOR THE OPERATION
OF A BORIC-ACID CONTROLLED REACTOR PLANT. IF THE
BORIC ACID IS NOT RECOVERED ITS LOW SOLUBILITY
DETERMINES THE WASTE WATER VOLUME WHICH MUST BE
TEMPORARILY STORED AND, IF NECESSARY, SOLIDIFIED. A
PROCEDURE IS DESCRIBED THAT WAS DEVELOPED AND
LARGE-SCALE TESTED AT VERBEN RESEARCHING. BY THIS
PROCEDURE THE BORIC ACID IS CONVERTED INTO A DIOL
PERMANENTLY SO THAT THE WASTE WATER CAN BE
CONCENTRATED UP TO 100 G BORO/LITER. LITERATURE DATA
ON SOLUBILITY ARE DISCUSSED AND OPERATING EXPERIENCE
IS EVALUATED. (IN GERMAN)

PUB DESC: SZS-103, 6 PAGES, PP. 1-6, SEPTEMBER 1972

KEYWORDS: RECOMBINATION; CRYSTALLINITY; EFFLUENT; WASTE
STORAGE; WASTE TREATMENT; REACTOR, POWER; LIQUID;
OPERATING EXPERIENCE; CONCENTRATION; ACID; SOLUBILITY
(SEE ALSO LEACHING);

<106>

AUTHOR: GILBERT AND PELCHER, INC. (U.S.A.)

PUB DATE: 1970

TITLE: ESTABLISHMENT OF HIGH-LEVEL RADIOACTIVE
MATERIALS MANAGEMENT GROUPS IN SALT DOME STRUCTURES

CORPORATE AUTHOR: GILBERT AND PELCHER, INC., BATON
ROUGE, LOUISIANA

ABSTRACT: PRESENTS A PRELIMINARY DESIGN OF A SALT
DOME WASTE FACILITY. BOTH TOPSIDE FACILITIES AND
MINE-LEVEL FACILITIES ARE PRESENTED HEREIN. ALTHOUGH
THE OVERALL MINE-LEVEL FACILITY IS FLEXIBLE AND CAN BE
MADE ALMOST ANY SIZE WITHIN REASON, THE ONE PROPOSED
HEREIN IS APPROXIMATELY ONE SQUARE MILE. IT WAS GROSS
ESTIMATED THAT THE INITIAL INVESTMENT REQUIRED WILL BE
\$20,643,000.00

<106> CONF. PUB DESC: 70-10527, 64 PAGES, MARCH 1970

KEYWORDS: DESIGN CRITERIA; BIDDING; WASTE DISPOSAL. ECONOMICS; WASTE DISPOSAL, SOLID

<107> PUB DATE: 1972
AUTHOR: GITTENBERG, S.; GORDON, A.J.

TITLE: RADIOACTIVE WASTE MANAGEMENT SYSTEM FOR HIGH TEMPERATURE GAS-COOLING REACTORS

CORPORATE AUTHOR: GULF GENERAL ATOMIC COMPANY

ABSTRACT: THE PROPOSED ICPP-50 APPENDIX I REGULATIONS APPLY SPECIFICALLY TO RADIOACTIVE EFFLUENT RELEASES FROM LIGHT-WATER-REACTOR POWER PLANTS. THE INTENT OF THE REGULATIONS IS TO DEFINE "AS LOW AS PRACTICABLE" IN AS QUANTITATIVE A MANNER AS POSSIBLE. THE REGULATIONS ARE DESIGNED TO SATISFY THE INTENT OF THE ICPP REGULATIONS. THE DESIGN PROPOSED EFFLUENT RELEASES FROM AN ICPP POWER PLANT IS ALREADY WELL BELOW THE SPECIFIC LIMITS NOW SPECIFIED FOR LIGHT WATER REACTOR POWER PLANTS. THE RELATIVELY MINOR CHANGES WHICH MUST BE MADE ON THE EXISTING PLANT DESIGN WOULD THEN PERMIT THESE EFFLUENT RELEASES.

PUB DESC: GULF-GA-81202, 17 PAGES, 3 FIGURES, 3 TABLES, PAPER PRESENTED AT THE 30TH ANNUAL MEETING OF THE AMERICAN NUCLEAR CONFERENCE, CHICAGO, ILLINOIS, APRIL 10-12, 1972

KEYWORDS: ACCUMULATION, AEC; LAW (SEE ALSO GEN; PUB, LAW); WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; REACTOR, ATOM

<108> PUB DATE: 1972
AUTHOR: GOSSEL, E.W.

TITLE: SEMI-ANNUAL COMPOSTING, CRYSTALLIZATION, AND PYROLYSIS OF COMBUSTIBLE SOLID WASTES CONTAINING TRANSURANIC ELEMENTS IN COMBUSTIBLE AND NON-COMBUSTIBLE CONTAINERS

CORPORATE AUTHOR: CARLISLE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: AN EVALUATION OF THE FEASIBILITY OF STORING ALPHA WASTES WITHOUT PRETREATMENT (SUCH AS INCINERATION) IN A FINAL DEPOSITORY. A SERIES OF HEATING TESTS WAS CARRIED OUT TO STUDY THE OXIDATION AND PYROLYSIS OF TYPICAL COMBUSTIBLE SOLID WASTES IN SMALL COMBUSTIBLE AND NONCOMBUSTIBLE CONTAINERS AT TEMPERATURES OF 90 TO 215 C FOR PERIODS OF TIME RANGING FROM 10 TO 205 HR. THE GENERAL CONCLUSIONS DRAWN FROM THESE TESTS ARE - (1) COMBUSTIBLE WASTES IN COMBUSTIBLE CONTAINERS SHOULD NOT BE ACCEPTED AT A FINAL DEPOSITORY; (2) COMBUSTIBLE WASTES IN SEALED NONCOMBUSTIBLE CONTAINERS, SUCH AS DOT 17C AND DOT 17H SPECIFICATION METAL CANS OR EQUIVALENTS, SHOULD BE ACCEPTABLE AT A FINAL DEPOSITORY; (3) THE QUANTITY OF GASES EVOLVED DURING HEATING OF THESE WASTES CAN BE REDUCED SUBSTANTIALLY BY INCLUDING A CATALYST SUCH AS CAO.

PUB DESC: OROU-760, 36 PAGES, 3 FIGURES, 1 TABLE, 10 REFERENCES, MAY 1972

KEYWORDS: CALCIUM; ALPHA EMITTER; OXIDATION; OXIDE; PLUTONIUM; WASTE DISPOSAL; PYROLYTIC; COMPOSITION; INCINERATION; RADIOACTIVE GAS; TRANSURANIC ELEMENT; SAFETY EVALUATION; SOLID

<109> PUB DATE: 1973
AUTHOR: GOSSEL, E.W.; HATHORN, D.R.; SINGH, B.; APALBAJ, B.V.

TITLE: GEO-HYDROLOGICAL CONDITIONS AT RADIOACTIVE SOLID WASTE MANAGEMENT SITE-BODUAY WITH SPECIAL REFERENCE TO PUMPING TEST STUDIES.

CORPORATE AUTHOR: ORANDBA ATOMIC RESEARCH CENTER, BODUAY (INDIA)

ABSTRACT: RADIOACTIVE WASTES ARE STORED FOR THEIR HAZARDOUS NATURE SINCE THEY ARE SUFFICIENTLY LONGER PERIODS. VARIOUS METHODS ARE ADOPTED TO CONTAIN/REPLACE OFF THESE WASTES IN A SUITABLE MANNER SO AS TO CAUSE MINIMUM POLLUTION TO THE SURROUNDINGS. OF THE VARIOUS METHODS, THE GROUND CONTAINMENT/DISPOSAL OF WASTE IS CONSIDERED TO BE THE SAFEST AND IS BEING ADOPTED WIDELY IN DIFFERENT PARTS OF THE WORLD. THE WASTES DEPENDING UPON THEIR PHYSICAL CONDITIONS AND THE RADIOCHEMICAL PROPERTIES ARE GENERALLY TREATED AND FINALLY CONTAINED OR DISPOSED OFF IN THE GROUND/GROUND ENVIRONMENT UNDER CONTROLLED CONDITIONS. BEFORE THE WASTES ARE DISPOSED OFF INTO THE GROUND, THOROUGH GEOHYDROLOGICAL INVESTIGATIONS ARE CARRIED OUT TO ASSESS THE SUITABILITY OF THE SITE, SINCE ADVERSE GROUND WATER CONDITIONS MAY AFFECT THE WASTES STORED UNDERGROUND IN CONTAINERS IN THE COURSE OF TIME AND CONTAMINATE THE SUB-SURFACE ENVIRONMENT. THE GROUND WATER MOVEMENT STUDIES WERE IN DETECTING PROBABLE DIRECTION AND RATE OF CONTAMINATION OF THE AREA IN ACCIDENTAL RELEASE THERE BY ADOPTING SUITABLE PRECAUTIONARY MEASURES. (AUTH)

PUB DESC: BANC-677 (1973)

KEYWORDS: GEOLOGY; HYDROLOGY; WASTE; BODUAY (SEE ALSO LAW; INDIA); WASTE DISPOSAL; RADIOCHEMISTRY (SEE ALSO SUBJECT); PHYSICAL PROPERTIES; CHEMICAL PROPERTIES; SITING; GROUND WATER; INDIA

<110> PUB DATE: 1965
AUTHOR: COLLIER, B.W.

TITLE: CONCENTRATION OF SOLUTIONS CONTAINING RADIOACTIVE MATERIALS BY EVAPORATION

CORPORATE AUTHOR: ASEA-CRAB, INC.

ABSTRACT: A METHOD FOR CONCENTRATING RADIOACTIVE MATERIALS BY EVAPORATION FROM A WASTE SOLUTION SUCH AS A REACTOR COOLANT SYSTEM IS DESCRIBED. IN ADDITION TO THE CONCENTRATION OF RADIOACTIVE WASTE, OTHER COMPONENTS MAY BE SEPARATED FROM THE LIQUID. THE METHOD IS USED TO PRODUCE A LIQUID PRODUCT OF LOWER RADIOACTIVITY FROM A FEED MATERIAL OF HIGHER RADIOACTIVITY. THE FORMER MAY BE RETURNED TO THE REACTOR COOLANT SYSTEM FOR REUSE AND THE LATTER DISPOSED OF.

PUB DESC: BRITISH PATENT 1-043-513 O. 4 PAGES, 1 FIGURE, MARCH 30, 1967, PATENT (BRITISH)

KEYWORDS: REACTOR; CONCENTR.; DESIGN CRITERIA; REACTOR COOLANT; WASTE DISPOSAL, SOLID; EVAPORATION; PATENT

<111> PUB DATE: 1968
AUTHOR: COLLIER, B.W.

TITLE: UNITED STATES EXPERIENCE IN MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS

CORPORATE AUTHOR: AES CORPORATION

ABSTRACT: MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS BEEN A MATTER OF CONCERN TO THE REGULATORY ARM OF THE UNITED STATES ATOMIC ENERGY COMMISSION AND TO THE ELECTRIC UTILITIES RESPONSIBLE FOR THE SAFE OPERATION OF THESE STATIONS. OPERATING EXPERIENCE FOR EIGHT NUCLEAR GENERATING STATIONS HAS BEEN ACCUMULATED AND EVALUATED IN TERMS OF SYSTEM PERFORMANCE, ATMOSPHERIC DILUTION AND ENVIRONMENTAL CONSEQUENCES. THE RESULTS OF THIS STUDY SHOW THAT THE MANAGEMENT OF GASEOUS WASTES FROM NUCLEAR POWER STATIONS HAS WITHOUT EXCEPTION BEEN WELL BELOW THOSE LEVELS OF RADIOACTIVITY WHICH WOULD EXCEED THE STANDARDS OF TITLE 10, CODE OF FEDERAL REGULATIONS, PART 20. THE MAJOR FACTOR INFLUENCING WASTE GAS EMISSIONS HAS BEEN THE PERFORMANCE OF FUEL CLADDING, WITH STAINLESS-STEEL-CLAD FUEL EXHIBITING A SIGNIFICANTLY GREATER TENDENCY FOR DEFECTS AND CONSEQUENT ESCAPE OF FISSION GASES. THE SIGNIFICANCE OF RETROLOGICAL PARAMETERS FOR SPECIFIC REACTOR SITES IS ALSO INDICATED.

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PUB DESC: 30-130 v. 1 PAGE, PAGE 42 OF ABSTRACTS OF PAPERS FROM SYMPOSIUM ON OPERATING AND DEVELOPMENTAL EXPERIENCE IN THE TREATMENT OF AIRBORNE RADIOACTIVE WASTES, NEW YORK, AUGUST 26-30, 1968

KEYWORDS: AIR CLEANING; CLADDING; SITING; WASTE DISPOSAL; HYDROPHOBIC; WASTE TREATMENT; METEOROLOGY (SEE ALSO AIR); SAFETY PRINCIPLES AND PHILOSOPHY; OPERATING EXPERIENCE

<152>

PUB DATE: 1976
AUTHOR: GOODWIN, J.T.

TITLE: RADIOACTIVE WASTE MANAGEMENT. VOLUME I-QUESTIONS

CORPORATE AUTHOR: SOUTHERN INTERSTATE NUCLEAR BOARD

ABSTRACT: IN THE NUCLEAR POWER INDUSTRY, THE LARGEST AND POTENTIALLY MOST HAZARDOUS AMOUNTS OF RADIOACTIVE WASTE ARE GENERATED FROM THE SPENT FUEL REPROCESSING OPERATION. THE FIRST COMMERCIAL FUEL REPROCESSING PLANT WAS SET UP BY NUCLEAR FUEL SERVICES AT WEST VALLEY, NEW YORK IN 1966. IT WAS SHUT DOWN FOR MODIFICATIONS AND ENLARGEMENT LAST YEAR AND IS NOT EXPECTED TO REOPEN UNTIL ABOUT 1976. GENERAL ELECTRIC HAS BUILT THE HIGHEST FUEL RECOVERY PLANT DEAR BOROIS, ILLINOIS AND SPENT FUEL REPROCESSING IS SCHEDULED TO BEGIN IN EARLY 1970. ALLIED CORP IS BUILDING A NUCLEAR FUEL SERVICES PLANT NEAR DANWELL, SOUTH CAROLINA WITH OPERATIONS SCHEDULED TO START IN 1975. THESE THREE PLANTS WILL HAVE A COMBINED FUEL REPROCESSING CAPACITY TO MEET THE PROJECTED DEMAND FOR SERVICES UNTIL ABOUT 1980. AT THAT TIME ADDITIONAL CAPACITY WOULD BE REQUIRED TO MEET THE RAPIDLY EXPANDING LOAD EXPECTED TO PATRIALIZE DURING THE 1980'S.

PUB DESC: EN-0326 ADMINISTRATORS GUIDE 05, (1970)

KEYWORDS: WASTE DISPOSAL; WEST VALLEY; NEW YORK STATE; DANWELL; SOUTH CAROLINA; FCBECAST; FUEL REPROCESSING; LOW-LEVEL WASTE; HIGH-LEVEL WASTE; WASTE TREATMENT; WASTE BAKING; FUEL; URANIUM; RUTHENIUM; RADIOISOTOPES; REGULATION (SEE ALSO STANDARDS, RADIATION); PUBLIC HEALTH

<153>

PUB DATE: 1976
AUTHOR: GOODWIN, J.T.

TITLE: RADIOACTIVE WASTE MANAGEMENT. VOL II - A CASE STUDY

CORPORATE AUTHOR: SOUTHERN INTERSTATE NUCLEAR BOARD

ABSTRACT: SOUTH CAROLINA IS ONE OF SIX STATES IN THE UNITED STATES WHICH HAS A RADIOACTIVE WASTE DISPOSAL SITE. THE OTHERS ARE NEPTUCHI, NEVADA, WASHINGTON, ILLINOIS, AND NEW YORK. THE SITE IN SOUTH CAROLINA IS LOCATED NEAR DANWELL, ADJACENT TO AEC'S SAVANNAH BIVED PLANT, AND THE ALLIED-CORP NUCLEAR FUEL REPROCESSING PLANT NOW UNDER CONSTRUCTION. THE DANWELL WASTE DISPOSAL SITE IS THE YOUNGEST OF THE SIX BURIAL SITES, HAVING BEEN IN OPERATION ONLY SINCE 1971. THE LOCATION IS SHOWN IN FIGURES 1 AND 2. SOUTH CAROLINA BECAUSE WHAT IS KNOWN AS AN "AGREEMENT STATE" WHEN, IN 1969, IT ENTERED INTO AGREEMENT WITH THE U.S. ATOMIC ENERGY COMMISSION TO ASSUME REGULATORY POWERS RELATING TO THE LICENSING OF RADIOACTIVE MATERIALS. IN THIS AGREEMENT, AUTHORITY WAS VESTED IN THE STATE TO LICENSE THE DISPOSAL OF RADIOACTIVE WASTE. THE AEC, HOWEVER, RETAINED THE AUTHORITY TO LICENSE THE BURIAL OF HIGH-LEVEL WASTE RESULTING FROM THE REPROCESSING OF SPENT NUCLEAR FUEL. CORP-NUCLEAR SYSTEMS, INC. IS THE OPERATOR OF THE BURIAL SITE AND CONDUCTS ACTIVITIES UNDER THE LICENSE AND REGULATION OF THE SOUTH CAROLINA STATE BOARD OF HEALTH AND ENVIRONMENTAL CONTROL.

PUB DESC: ADMINISTRATORS GUIDE NO. 5, (1970)

KEYWORDS: BURIAL GROOVE (SEE ALSO COMMERCIAL BURIAL GROOVE); WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); ADMINISTRATIVE CONTROL; DANWELL;

ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE DISPOSAL, TERRESTRIAL; SITING; THICKNESS; DESIGN; LICENSING; SURVEILLANCE; DECOMMISSIONING; SOUTH CAROLINA

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PUB DATE: 1964
AUTHOR: COOPER, J.D.; BACHZELIE, M.

TITLE: IMPROVEMENTS IN SO RELATION TO THE PRODUCTION OF GLASS BODIES

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY

ABSTRACT: DESCRIBES A PROCESS FOR THE PRODUCTION OF GLASS BODIES SUITABLE FOR FIXATION OF RADIOACTIVE WASTES FOR DISPOSAL. THE GLASS BODIES ARE FORMED BY BELLING BORAX, SILICA, AND WASTE OXIDES, THE RADIOACTIVE NATURE OF OXIDES OBTAINED FROM THE WASTE OR EFFLUENTS RESULTING FROM TREATMENT TO REMOVE U AND PU FROM IRRADIATED U AND THEN CASTING THE BELL INTO SUITABLE SHAPE AND SIZE.

PUB DESC: BRITISH PATENT 1,056,010, 7 PAGES, 1 FIGURE, DECEMBER 7, 1964

KEYWORDS: UNITED KINGDOM; CEMENT; WASTE TREATMENT; FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; GLASS (SEE ALSO VITRIFICATION); PATENT

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PUB DATE: 1976
AUTHOR: HAGEMAN, R.; BIER, C.; RYCE, E.

TITLE: CHEMICAL AND ISOTOPIC STUDIES OF THE ORIC NATURAL REACTOR

CORPORATE AUTHOR: CED, DEPT. OF RESEARCH AND ANALYSIS

ABSTRACT: THE FUNCTIONING OF THE ORIC NATURAL REACTOR HAS DRASTICALLY TRANSFORMED THE CHEMICAL AND ISOTOPIC COMPOSITION OF THE MINERALS PRESENT. IT IS SHOWN THAT MOST OF THE FISSION ELEMENTS HAVE DECREASED IN PLACE, EVIDENCE IS GIVEN OF THOSE WHICH HAVE MIGRATED OUTSIDE THE REACTION ZONE, THEN THE WAY IN WHICH THE FUNCTIONING OF THIS REACTOR CAN BE DESCRIBED FROM AN ANALYSIS OF THESE ELEMENTS IS DEMONSTRATED. PRELIMINARY RESULTS ARE GIVEN CONCERNING THE RATE AND LIFETIME OF THE FISSION, THE FLUXES AND THE SPECTRUM INDICATION OBTAINED FROM THE STUDY OF BROMINIUM, LEAD, BARIUM, STRONTIUM, RARE GAS AND BARIUM ISOTOPES.

PUB DESC: BULLETIN INFORMATION SCIENTIFIC TECHNIQUES, JUNE 1976 ORNL-TR-2094 P 65-76

KEYWORDS: REACTOR, FISSION; REACTOR, NATURAL; APPLICATION; ORIC; URANIUM; ISOTOPIC FRACTIONATION; GEOLOGY; GEOPHYSICS; TRANSPORT (SEE ALSO WATER TRANSPORT, GEOPHYSICS)

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PUB DATE: 1973
AUTHOR: HANFORD ENGINEERING DEVELOPMENT LAB. (U.S.A.)

TITLE: REPORT ON THE INVESTIGATION OF THE 1967 LEAK LINE AT THE DANFORD RESERVATION, RICHLAND, WASHINGTON

CORPORATE AUTHOR: HANFORD ENGINEERING DEVELOPMENT LABORATORY RICHLAND, WASHINGTON

ABSTRACT: THE TANK IS ONE OF TWELVE 533,000 GALLON UNDERGROUND WASTE TANKS. A LEAK DEVELOPED AND 115,000 GALLONS OF FLUID WAS LOST TO THE GROUND. THE LOST FLUID CONTAINED 40,000 CUBIC FEET OF CE-117, 10,000 CUBIC FEET OF STRONTIUM-90, AND 4 CUBIC FEET OF PU. REACT CAUSE OF LEAK IS STILL UNKNOWN.

PUB DESC: TID-26031, 129 PAGES, FIGURES, JULY 1973

KEYWORDS: WASTE STORAGE; STORAGE CONTAINER; RADIOACTIVITY RELEASE; HANFORD SITE; LEAK

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PUB DATE: 1974
 AUTHOR: HADDEE, R.C.; SULLIVAN, W.W.

TITLE: AN APPROXIMATE SOLUTION FOR SELF-MOBILE
 RATES OF RADIOACTIVE WASTE CONTAINERS

CORPORATE AUTHOR: SANDIA LABORATORIES, NEW MEXICO

ABSTRACT: IF A RADIOACTIVE HEAT SOURCE IS BURIED IN THE GROUND AND IF IT RELEASES HEAT IN EXCESS OF A CERTAIN MINIMUM VALUE, THE SURROUNDING GROUND OR ROCK WILL EVENTUALLY MELT AND THE SOURCE WILL MOVE OR MIGRATE UPWARD OR DOWNWARD, DEPENDING ON THE RELATIVE DENSITIES OF THE SOURCE AND THE SURROUNDING MEDIUM. A NUMBER OF STUDIES HAVE BEEN MADE TO DETERMINE THE MAXIMUM DISTANCE THAT SUCH A SOURCE MIGHT MIGRATE. THIS REPORT DESCRIBES A SIMPLE APPLICABLE METHOD FOR PREDICTING MIGRATION VELOCITIES. THE METHOD INCLUDES THE EFFECT OF PHASE CHANGE AND LATERAL CONDUCTION LOSSES. THE RESULTS OF THE MODEL COMPARE WELL WITH LABORATORY MODEL DATA OBTAINED BY SANDIA AND SIMILAR DATA OBTAINED BY OTHER INVESTIGATORS.

PUB DESC: SLA-73-0931, 20 PAGES, 2 TABLES, 4 FIGURES, 9 REFERENCES, JANUARY 1974

KEYWORDS: SOIL; RADIOISOTOPE MOVEMENT THROUGH; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; CENTERLINE MELTING; WASTE DISPOSAL, SOLID; HEAT GENERATION, INTERNAL; MODEL TESTING;

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PUB DATE: 1974
 AUTHOR: HADDEE, R.C.; SULLIVAN, W.W.

TITLE: ICE MELTING EXPERIMENTS - A MODEL STUDY FOR BURIAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: SANDIA LABORATORIES, NEW MEXICO

ABSTRACT: BURIAL OF RADIOACTIVE WASTES IN THE GROUND HAS BEEN SUGGESTED AS A DISPOSAL METHOD. IF A BURIED RADIOACTIVE SOURCE RELEASES HEAT IN EXCESS OF A CERTAIN MINIMUM VALUE, THE GROUND OR ROCK SURROUNDING THE SOURCE WILL EVENTUALLY MELT. THE ABILITY TO PREDICT THE MELT RATE AND THE SHAPE OF THE MELTED CAVITY IS IMPORTANT IN DETERMINING WHETHER SUCH MATERIALS CAN BE SAFELY DISPOSED OF UNDERGROUND. TO STUDY THE PROBLEM, SOME SIMPLE MODEL MELTING EXPERIMENTS WERE RUN WITH CYLINDRICAL AND SPHERICAL HEAT SOURCES IN ICE. CASES WERE STUDIED IN WHICH CONVECTIVE EFFECTS WERE BOTH IMPORTANT AND NEGLECTABLE.

PUB DESC: SLA-73-0942, 61 PAGES, FIGURES, REFERENCES, JANUARY 1974

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; ANALYTICAL MODEL; CENTERLINE MELTING; WASTE DISPOSAL, SOLID; HEAT GENERATION, INTERNAL; MODEL TESTING;

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PUB DATE: 1976
 AUTHOR: HADDEE, R.C.; JENKINS, C.E.; WAITE, D.R.; BROOKSBANK, R.E.; LOUIS, F.C.; DENIC, J.P.

TITLE: DECOMMISSIONING NUCLEAR FACILITIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: CURRENTLY ACCEPTED ALTERNATIVES FOR DECOMMISSIONING OFFERED FOR FUEL-CYCLE FACILITIES AND THE CURRENT STATE OF DECOMMISSIONING TECHNOLOGY ARE DESCRIBED. THREE ALTERNATIVES ARE RECOGNIZED: PROTECTIVE STORAGE, RETAINMENT, AND DISMANTLING. APPLICATION OF THESE ALTERNATIVES TO THE FOLLOWING TYPES OF FACILITIES IS BRIEFLY DESCRIBED: LIGHT WATER REACTORS, FUEL-REPROCESSING PLANTS, AND MIXED-OXIDE FUEL FABRICATION PLANTS. BRIEF DESCRIPTIONS ARE GIVEN OF DECOMMISSIONING OPERATIONS AND RESULTS AT A NUMBER OF SITES. AN OVERVIEW IS PROVIDED OF THE TYPES OF OPERATIONS PERFORMED AND THE TOOLS USED IN COMMON DECONTAMINATION AND DECOMMISSIONING TECHNIQUES. NEEDS FOR IMPROVED TECHNOLOGY ARE SUGGESTED. PLANNING FOR DECOMMISSIONING A NUCLEAR FACILITY IS DEPENDENT ON THE RATHER PERMITTED LEVELS OF RESIDUAL RADIOACTIVE

CONTAMINATION. PROPOSED GUIDES AND RECENTLY DEVELOPED METHODOLOGY FOR THE DEVELOPMENT OF SITE RELEASE CRITERIA ARE REVIEWED.

PUB DESC: CCHP-76-0701, JULY 11-16, 1976, DENVER, COLORADO 80944-012

KEYWORDS: DECOMMISSIONING; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); NUCLEAR FACILITIES; FUEL REPROCESSING; FUEL FABRICATION (SEE ALSO FABRICATION); NUCLEAR POWER PLANTS; DECONTAMINATION; TECHNOLOGY; CONTAMINATION;

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PUB DATE: 1974
 AUTHOR: HART, J.C.; RITCHIE, R.W.; VANBROOK, R.S.

TITLE: POPULATION EXPOSURES - PROCEEDINGS OF THE 8TH ANNUAL SYMPOSIUM OF THE HEALTH PHYSICS SOCIETY HELD IN KNOXVILLE, TENN., OCT. 21-24, 1974

CORPORATE AUTHOR: HEALTH PHYSICS SOCIETY, EAST TENN. CHAPTER

ABSTRACT: THE EIGHTH ANNUAL SYMPOSIUM WAS ORGANIZED TO PROVIDE AN OPPORTUNITY FOR CONSIDERATION AND DISCUSSION OF THE FOLLOWING TECHNICAL QUESTIONS: (I) POTENTIAL ADVERSE EFFECTS THAT THE NUCLEAR POWER INDUSTRY MAY HAVE ON THE ENVIRONMENT, (II) PATHWAYS THAT VARIOUS RADIOISOTOPES FOLLOW IN THE BIOSPHERE WHEN RELEASED IN AIR OR WATER, (III) THE RELATIONSHIP OF SUCH INFORMATION TO OTHER RADIOLOGICAL HAZARDS, AND (IV) ENVIRONMENTAL PROBLEMS ASSOCIATED WITH THE ALTERNATIVE FOSSEL-FUEL PRODUCTION OF ELECTRICITY. A SPECIAL POWER READER BY A PANEL OF EXPERTS WAS ORGANIZED AS AN EVENING SESSION TO ENCOURAGE PARTICIPATION BY MEMBERS OF THE PUBLIC. (MODIFIED AUTH ABST.)

PUB DESC: CCHP-761018, OCT. 1974, 434 PAGES

KEYWORDS: ENERGY DEVELOPMENT; RADIATION SAFETY AND CONTROL; HISTORICAL SIGNIFICANCE; BACKGROUND RADIATION; MEDICAL RADIATION EXPOSURE; POPULATION EXPOSURE; DOSIMETRY; FOSSIL FUELS; CONSUMER PRODUCTS; ACCELERATORS; GAS; WASTE DISPOSAL

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PUB DATE: 1969
 AUTHOR: HARTY, R.W.

TITLE: THE SAFE MANAGEMENT OF RADIOACTIVE WASTES

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD COMPANY, RICHMOND, WASHINGTON

ABSTRACT: A TALK PREPARED FOR GENERAL PRESENTATION BEFORE LAY GROUPS FROM WHICH SPEAKING INVITATIONS WILL BE SOLICITED. DESCRIBED THE SAFE MANAGEMENT OF RADIOACTIVE WASTES AT THE FUEL-REPROCESSING PLANTS AT THE HARTFORD PLANT.

PUB DESC: ABB-58-52, 16 PAGES, 1969

KEYWORDS: RADIATION IN PERSPECTIVE; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIATION, PUBLIC EDUCATION; HARTFORD SITE; FUEL REPROCESSING

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PUB DATE: 1975
 AUTHOR: HAUG, H.

TITLE: AMOUNT, DISPOSAL AND RELATIVE TOXICITY OF LONG-LIVED FISSION PRODUCTS AND ACTIVITIES IN THE RADIOACTIVE WASTES OF THE NUCLEAR FUEL CYCLE

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG MBH

ABSTRACT: A REVIEW IS PRESENTED ON THE MAGNITUDE OF THE LONG-TERM PROBLEMS OF RADIOACTIVE WASTES FROM THE NUCLEAR POWER INDUSTRY OF THE FRG (AND WESTERN EUROPE). THE PRODUCTION OF LONG-LIVED FISSION PRODUCTS AND ACTIVITIES HAS BEEN CALCULATED FOR SEVERAL FUEL TYPES OF THE URANIUM-PLUTONIUM AND FROBIUM-URANIUM FUEL CYCLES AND RELATED TO A PROJECTION OF THE

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DEVELOPMENT AND SHAPE OF LUN, FOR AND OTHER. THE QUANTITIES AND CONCENTRATIONS OF ACTINIDES, THE RADIOACTIVITY AND RELATIVE TOXICITY INDEX OF THE WASTES OF REPROCESSING (AND FUEL REAPPLICATION) AND THEIR CHANGES BY RADIOACTIVE DECAY ARE PRESENTED. THE RADIOACTIVITY OF THE NUCLIDE INVENTORY OF THE SOLIDIFIED HIGH-LEVEL WASTES HAVE BEEN COMPARED WITH NATURALLY OCCURRING URANIUM ORES. ON THE LONG TERM (>100 YEARS) THE RADIOACTIVITY LEVEL OF THE TOTAL AREA OF THE FINAL DEPOSITORY IN DEEP GEOLOGICAL FORMATION DOES NOT RESULT IN A SIGNIFICANTLY HIGHER RADIOACTIVITY LEVEL THAN AN URANIUM ORE DEPOSIT OF LOW URANIUM CONTENT. ALSO DISCUSSED HAVE BEEN THE CHEMICAL SEPARATION OF THE ACTINIDES FROM HIGH-LEVEL WASTES AND RECYCLING IN FISSION REACTORS.

PUB DESC: EPK-2022 PWA-88 25/75 (1979)

KEYWORDS: ACTINIDES (SEE ALSO TRANSURANIUM); WASTE DISPOSAL; PLUTONIUM; FUEL CYCLE; URANIUM; PLUTONIUM; THORIUM; CONCENTRATION; TOXICITY; FUEL REPROCESSING; CHEMICAL; GERMAN; REVIEW; SEPARATION; RECYCLING

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PUB DATE: 1968

AUTHOR: HAVLIK, BOZIVOD; GRABOVA, JAROSLAVA; BYCOVA, ZDEBISKA

TITLE: RADIUM-226 LIBERATION FROM URANIUM ORE PROCESSING MILL WASTE SOLIDS AND URANIUM ROCKS INTO SURFACE STREAMS--I. THE EFFECT OF DIFFERENT PH OF SURFACE WATERS

ABSTRACT: INTENSIVE URANIUM ORE MINING AND PROCESSING CAUSE INCREASING CONTAMINATION OF SURFACE WATERS WITH PARTIAL RADIOACTIVITY NOT ONLY OF A PERTINENT RESIDING REGION BUT OFTEN OF LARGE AREAS. MOST OF THE RADIOACTIVE WASTES PENETRATING INTO SURFACE WATERS (MINE WATERS, EFFLUENTS FROM URANIUM ORE PROCESSING MILLS, WASH FOUR FROM DUMPS AND OVERBURDENS) CONTAIN RADIOACTIVE ISOTOPIES ABOVE BEFORE ALL TO SEDIMENTARY MATTER. THIS PAPER PRESENTS THE RESULTS OF EXPERIMENTAL STUDIES OF THE DEPENDENCE OF RADIUM RELEASE FROM URANIUM ORE AND SEDIMENTS ON DIFFERENT CONCENTRATIONS OF HYDROGEN IONS IN SURFACE WATERS. DRIED HOMOGENIZED SAMPLES OF URANIUM ORE AND SEDIMENTS CONTAINING RA-226 TO 146CI/G, 80PCI/G AND 540 PCI/G WERE SHAKEN FOR 15, 30, 60, 90, 300 AND 480 MIN WITH WATER OF A PH MODIFIED IN THE RANGE OF 1/13. RADIUM WAS LEACHED IN 15/30 MIN OF SHAKING IN THE FAIRER AMOUNT WHEN PH WAS 1 (TO 229). WITH THE INCREASING OF PH THE AMOUNT OF RELEASED RADIUM INCREASED TO PH9. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 14(5), P. 417 (1968)

KEYWORDS: HEALTH PHYSICS; SEPARATION; URANIUM ORE; EFFLUENT; RADIOACTIVE WASTE; MILLING; URANIUM ROCK SURFACE WATER; CONTAMINATION; ION EXCHANGE; MILL TAILINGS (SEE ALSO TAILINGS); RADIUM; SOIL; LEACH; EFFECT, PH; SEDIMENT;

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PUB DATE: 1968

AUTHOR: HAVLIK, BOZIVOD; BYCOVA, ZDEBISKA; GRABOVA, JAROSLAVA

TITLE: RADIUM-226 LIBERATION FROM URANIUM ORE PROCESSING MILL WASTE SOLIDS AND URANIUM ROCKS INTO SURFACE STREAMS--II. THE EFFECT OF DIFFERENT CHEMICAL COMPOSITION OF SURFACE WATERS

ABSTRACT: THE CONTROL OF THE RADIOACTIVITY LEVEL OF SURFACE WATER CONTAMINATED BY RADIOACTIVE WASTE FROM URANIUM ORE MINING AND PROCESSING REVEALED HIGHER CONCENTRATION OF DISSOLVED RADIUM IN PLACES SEVERAL KILOMETERS FAR FROM THE PLACE OF THE OUTLET OF THE WASTES THAN IN THE OUTLET ITSELF. AFTER THE FINDING THAT THE PH OF SURFACE WATERS DOES NOT PLAY THE MAIN ROLE IN RELEASING RADIUM FROM THE SEDIMENTS, WE EXPERIMENTALLY STUDIED THE INFLUENCE OF INORGANIC SALTS CONCENTRATION. HOMOGENIZED AND DRIED SAMPLES OF URANIUM ORES AND SEDIMENTS WERE SHAKEN WITH DISTILLED WATER TOGETHER WITH 1 M, 0.1 M AND 0.01 M CONCENTRATIONS OF BA(1/2), SN(1/2), HCL(1/2), CA(1/2), KCl, NaCl, KCl, (NH4)2SO4, NA(3)PO4, AND MGCO(3)

SALTS. IT WAS FOUND, THAT 95-100% OF RADIUM BOUND IN SEDIMENTS WAS RELEASED IN 1 M SOLUTIONS OF KCl AND NaCl SALTS, DEPENDENT ON THEIR STRUCTURE AND MINERALOGICAL COMPOSITION. POSITIVE EFFECT ON THE LEACHABILITY OF RADIUM HAS ALSO CA(1/2) SOLUTION. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 14(5), P. 423 (1968)

KEYWORDS: HEALTH PHYSICS; SEPARATION; URANIUM ORE; RADIOACTIVE WASTE; SOLID; URANIUM ROCK; CHEMICAL COMPOSITION; EFFECT; INORGANIC; EFFECT, PH; MILL TAILINGS (SEE ALSO TAILINGS); RADIUM; SURFACE WATER; SEDIMENT; LEACHING;

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PUB DATE: 1967

AUTHOR: HAVLIK, R.R.; MORTON, J.R.

TITLE: PEPTICITE AS A PROTECTIVE COVER FOR DUBIED RADIOACTIVE WASTE

ABSTRACT: WYOMING BENTONITE CLAY PREVENTED INFILTRATION OF RAINWATER INTO RADIOACTIVE WASTE BURIED ABOVE THE WATER TABLE IN A DUNE REGION. A LYSIMETER STUDY SHOWED THAT A 1-IN.-THICK BENTONITE LAYER WAS ADEQUATE AND THAT CRACKING AND CRACKING OF THE BENTONITE DURING FRODOLOG DROUGHT COULD BE PREVENTED WITH 2 FT. OF SOIL COVER. A 1-IN. SUBSURFACE BENTONITE STRUCTURE BUILT IN THE FIELD DEMONSTRATED THE FEASIBILITY OF APPLYING A CONTINUOUS BENTONITE LAYER OVER EXTENSIVE VEHICLE AND HORIZONTAL AREAS. THE TEST WAS EVALUATED BY D(2)C TRACING OF SOIL MOISTURE BOTH OUTSIDE AND UNDER THE BENTONITE STRUCTURE. STRUCTURES MUST BE MAINTAINED FREE OF ALL PLANT GROWTH BECAUSE BENTONITE IS EASILY PENETRATED BY ROOTS. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 13(3), P. 207 (1967)

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); WASTE DISPOSAL, TERRESTRIAL; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); BENTONITE; SAFETY EVALUATION; ASSESSMENT; WYOMING CLAY; CLAY; HUMIDITY; REASUREMENT; LYSIMETER; SOIL MOISTURE; SOIL; CLAY; LAND BURIAL (SEE ALSO BURIAL GROUND);

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PUB DATE: 1972

AUTHOR: HEALD, R.B.

TITLE: ATLANTIC RICHFIELD HAMPDEN COMPANY TRANSURANIC WASTE RETRIEVABLE BURIAL

CORPORATE AUTHOR: ATLANTIC RICHFIELD HAMPDEN COMPANY

ABSTRACT: THE ATLANTIC RICHFIELD HAMPDEN COMPANY RECENTLY DESIGNED, BUILT, AND INITIATED OPERATION OF A PROTOTYPE V-TRENCH FOR THE RETRIEVABLE BURIAL OF 55-GALLON DRUMS IN COMPLIANCE WITH IMMEDIATE ACTION DIRECTIVE (IAD) 0511-21. THE BASIC INTENT OF THE TRENCH IS TO PROVIDE A CONCRETE BASE FOR THE PILE OF DRUMS TO KEEP THEM FROM CONTACT WITH EARTH FOR REDUCED DRUM CORROSION. THE V-DESIGN HOLDS THE DRUM STACK TOGETHER AND PROVIDES A STRONG GEOMETRIC PILE TO SUPPORT THE EARTH LOAD. ACCESSORY FEATURES INCLUDE A PORTABLE DUST COVER FOR USE DURING THE FILLING OPERATION, AN EXHAUST BLOWER WITH HIGH EFFICIENCY PARTICULATE AIR FILTRATION FOR MONITORING DRUMS FOR FAILURE (FOR THE PROTOTYPE ONLY), AND A DRAIN GUTTER WITH SUMP FOR WATER COLLECTION FROM PRECIPITATION DURING THE FILLING OPERATION.

PUB DESC: CNRP-721010, 1 FIGURE, 2 REFERENCES, PP. 516-523, PAPER PRESENTED AT THE ARC FOLLOW-UP CONTROL CONFERENCE, HELD IN OAK RIDGE, TENN. ON OCTOBER 25, 1972

KEYWORDS: DESIGN CRITERIA; CORROSION (SEE ALSO STRESS CORROSION); ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); OPERATION; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; STORAGE CONTAINER; ARMC; CONSTRUCTION

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PUB DATE: 1971

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AUTHOR: REPT, R.I.; HARRISON, P.I.; PHILLIPS, W.A.

TITLE: RADIOECOLOGICAL STUDY OF THE HUMBOLDT BAY MARINE ENVIRONMENT

CORPORATE AUTHOR: LAURENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: TRANSPORT IN THE ENVIRONMENT OF NUCLEAR-POWER-REACTOR WASTE IS BEING STUDIED AT HUMBOLDT BAY, CALIFORNIA, WITH THE EVENTUAL GOAL OF DEVELOPING A PREDICTIVE MODEL. MODELLING STUDIES INCLUDE SOURCE DESCRIPTION (SAMPLING WASTES), INTERPOOL TRANSPORT (A CDC 7600 COMPUTER PROGRAM IS BEING DEVELOPED), AND INTERPOOL EXCHANGE (MOVEMENT THROUGH ECOSYSTEM COMPONENTS). EXPERIMENTAL METHODS DETAILED INCLUDE - STABLE ELEMENTS BY NEUTRON ACTIVATION; COMPARTIMENTAL OPT-KE OF GAMMA FITTING RADIOISOTOPES AND THIMING AS A FUNCTION OF PH, SALINITY, AND TEMPERATURE; AND DICPASS ASSAY.

PUB DESC: UCRL-73160, COMP-710010-3, 15 PAGES, FROM THE MEETING ON NUCLEAR WASTES IN ENVIRONMENTAL RESEARCH, COLOMBIA, MISSOURI, AUGUST 23, 1971

KEYWORDS: ACTIVATION; CALIFORNIA; ENVIRONMENT; HUMBOLDT BAY (BAY); COMPARISON, THEORY AND EXPERIENCE; THIMING; WASTE DISPOSAL, OCEAN; SAMPLING; ESTUARY; CRITICAL NUCLEIDE PATHWAY; GAMMA RADIATION; MATHEMATICAL TREATMENT; RADIOISOTOPE UPTAKE; BIOACCUMULATION/BIODIVERSITY; BIOASSAY; FOOD CHAIN; RADIOISOTOPE TRANSPORT; SPECIFIC ACTIVITY; TEMPERATURE; ECOSYSTEM, MARINE; CONCENTRATION FACTOR; COMPARTMENT; ECOSYSTEM, MODEL; ECOSYSTEM, ESTUARINE; COMPUTER PROGRAM; EFFECT, PH; SALINITY

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PUB DATE: 1972

AUTHOR: REINERT, W.; REIFE, R.; PAUL, L.

TITLE: STUDIES OF THE BEHAVIOR OF RADIOACTIVE WASTE GLASSES

CORPORATE AUTHOR: BAW-REITER-INSTITUTE FOR KERNFORSCHUNG, BERLIN GDR

ABSTRACT: THE PROGRAM AT BAW, A PART OF WHICH REPORTED HERE, DEALS WITH PHYSICAL AND CHEMICAL ASPECTS OF BORO-SILICATE WASTE GLASSES AND CONTRIBUTES TO ENGINEERING PROGRAMS AT GDR, FRG, AND USA, JULICH. THE PROCESS OF DEHYDRATION HAS BEEN INVESTIGATED. SOME CRYSTALLINE PHASES HAVE BEEN IDENTIFIED AND ARE CHARACTERIZED IN TERMS OF FISSION PRODUCT ENRICHMENT AND LEACHABILITY. HOT SPOT FORMATION IS CONSIDERED. THE RELATIVE IMPORTANCE OF FINGER LEACHING AND BLOCK LEACHING IS DISCUSSED IN VIEW OF THE RECENT IAEA RECOMMENDATION. LEACHING KINETICS IS INVESTIGATED AND INTERPRETED ON THE BASIS OF WELL-KNOWN MECHANISMS.

PUB DESC: COMP-721107, 37 PAGES, 12 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: WASTE TREATMENT; FISSION; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; GERMANY; GLASS (SEE ALSO VITRIFICATION); PROPERTY, PHYSICAL; FUEL REPROCESSING; PROPERTY, CHEMICAL; ENRICHMENT FACILITY; LEACHING; VITRIFICATION

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PUB DATE: 1971

AUTHOR: REITHARD, H.G.; POTHAVALA, A.

TITLE: METHODS AND DEVELOPMENTS IN TREATMENT OF NUCLEAR POWERPLANT WASTES

CORPORATE AUTHOR: KRAFTWERK UNION AG ERLANGEN, GERMANY

ABSTRACT: SURVEYS THE NUCLEAR POWER STATIONS IN GERMANY, AND THEIR RADIOACTIVE EFFLUENTS. PROCESSES FOR DECONTAMINATING THE EFFLUENTS ARE OUTLINED (CHEMICAL PRECIPITATION, MECHANICAL FILTRATION, ION EXCHANGE, EVAPORATION); AND FLOW DIAGRAMS ARE GIVEN

FOR TREATMENT OF EFFLUENTS FROM PRESSURIZED- AND BOILING-WATER REACTORS. THE SEPARATED WASTE IS SOLIDIFIED OFF-SITE STORAGE IN A (SALT MINE) GEOLOGIC FORMATION. SOLIDIFICATION TECHNIQUES THAT ARE NOW UNDERGOING FURTHER DEVELOPMENT INCLUDE ARROW DRYING, POT CALCINING, SPRAY DRYING, AND DRYING AND MIXING WITH BITUMEN OR POLYETHYLENE IN A SCREW-CONVEYOR-TYPE DRYER.

PUB DESC: VCH WASSER, VOL. 30, PP. 373-390 7 FIGURES, 2 TABLES, 7 REFERENCES, (1971) (IN GERMAN)

KEYWORDS: WASTE TREATMENT; WASTE DISPOSAL, SOLID; EVAPORATION; FILTRATION; SEPARATION; GERMANY; ION EXCHANGE; WASTE DISPOSAL, SALT; REVIEW; WASTE DISPOSAL, REDUCTION; CONTAINMENT LEAKAGE CONTROL; INDUSTRY, NUCLEAR

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PUB DATE: 1972

AUTHOR: HENRICHSON, W.P.; AXEL, C.E.

TITLE: COMPARISON OF FERROCYANIDES FOR CESIUM EXTRACTION

CORPORATE AUTHOR: NAVAL ORDNANCE LABORATORY

ABSTRACT: A STUDY WAS MADE OF FERROCYANIDE COMPOUNDS THAT ARE USED FOR EXTRACTION OF CESIUM FROM SP. WATER, ENVIRONMENTAL AND BIOLOGICAL SAMPLES, AND REACTOR FUEL REPROCESSING WASTE. A COMPARISON WAS MADE OF DISTRIBUTION COEFFICIENT, CAPACITY, AND SELECTIVITY WITH RESPECT TO CS/N. A COMPARISON IS MADE BETWEEN GRANULAR FERROCYANIDES AND OTHER F.TRACTANTS PREPARED BY PRECIPITATION OF A FERROCYANIDE ON A SUBSTRATE OF GLASS FIBER, OR MICROSCOPIC MATERIALS. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 29(1), P. 17 (1975)

KEYWORDS: FERROCYANIDES; EXTRACTION; HEALTH PHYSICS; CESIUM; POTASSIUM; ADSORPTION; COPRECIPITATION; ENVIRONMENTAL CONTAMINATION; AQUATIC; FILTRATION; SEA WATER; RADIOACTIVE WASTE

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PUB DATE: 1972

AUTHOR: RESEK, R.D.; HADDY, C.J.

TITLE: MANAGEMENT OF WASTES FROM IRRADIATED NUCLEAR FUELS

CORPORATE AUTHOR: AUSTRALIAN ATOMIC ENERGY COMMISSION, LUCAS HEIGHTS

ABSTRACT: THE MAIN CONCERN IN WASTE MANAGEMENT IS THE POSSIBILITY THAT THE WASTES MAY BECOME DISPENSED IN THE ENVIRONMENT, BE INGESTED BY MAN, AND THUS EXPOSE HIM TO INTERNAL RADIATION INJURY. ALL THE MAJOR PROCEDURES OF THESE WASTES USE SOME FORM OF STORAGE IN TANKS AS AN INTERIM MEASURE. ALL HAVE WORKED, OR ARE WORKING, ON THE DEVELOPMENT OF PROCESSES TO CONVERT THE WASTES TO INSOLUBLE HIGH-MELTING-POINT SOLIDS FOR FINAL STORAGE. THE METHODS OF ULTIMATE DISPOSAL OF THE SOLIDS THAT HAVE BEEN DEVELOPED SO FAR, OR HAVE BEEN PROPOSED, ARE REVIEWED.

PUB DESC: AARC/TH-620, COMP-720627-1, 19 PAGES, FROM THE SYMPOSIUM ON THE ROLE OF NUCLEAR ENERGY IN AUSTRALIA'S DEVELOPMENT, CANBERRA, AUSTRALIA, JUNE 1, 1972

KEYWORDS: WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; AUSTRALIA; WASTE MANAGEMENT

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PUB DATE: 1976

AUTHOR: HILL, J.

TITLE: RADIOACTIVE WASTE MANAGEMENT IN THE UNITED KINGDOM

CORPORATE AUTHOR: UNITED KINGDOM

ABSTRACT: WITH THE GROWTH OF NUCLEAR POWER FOR

<172> COST.

INDUSTRIAL PURPOSES THERE HAS EVOLVED A SYSTEM OF LICENSING, CONTROL, AND AUTHORIZATIONS FOR ALL NUCLEAR INSTALLATIONS, ADMINISTERED AND ENFORCED BY GOVERNMENT DEPARTMENTS AND AGENCIES (CONCERNED WITH PUBLIC AND INDUSTRIAL HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION). THIS LICENSING SYSTEM HAS BEEN APPLIED MORE PARTICULARLY THAN FOR OTHER INDUSTRIES AND IS NOW BEING HELD AS A MODEL FOR WIDER USE. THE GUIDING PRINCIPLES AT PRESENT ADOPTED IN THE UNITED KINGDOM, BASED ON THE INTERNATIONALLY RECOGNIZED RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP), ARE EMBODIED IN A GOVERNMENT PAPER, "THE CONTROL OF RADIOACTIVE WASTES," WHICH REQUIRES THE INDUSTRY (1) TO ENSURE, IRRESPECTIVE OF COST, THAT NO MEMBER OF THE PUBLIC SHALL BE EXPOSED TO A RADIATION DOSE EXCEEDING THE ICRP DOSE LIMIT; (2) TO ENSURE, IRRESPECTIVE OF COST, THAT THE WHOLE POPULATION OF THE COUNTRY SHALL NOT RECEIVE AN AVERAGE DOSE OF MORE THAN 1 REM PER PERSON IN 30 YEARS; AND (3) TO DO WHAT IS REASONABLY PRACTICABLE-HAVING REGARD TO COST, CONVENIENCE, AND THE NATIONAL IMPORTANCE OF THE SUBJECT-TO REDUCE DOSES FAR BELOW THESE LEVELS. THE WAY IN WHICH THESE OBJECTIVES CAN BE CONVERTED INTO A PRACTICAL PROGRAM CAN BE SET OUT IN BROAD GENERAL PRINCIPLES OF PLANT DESIGN AS FOLLOWS: 1. ALL UNNECESSARY EXPOSURE TO RADIATION SHOULD BE AVOIDED. APART FROM THE OBVIOUS REQUIREMENTS OF ADEQUATE SHIELDING, IT MEANS THAT ONCE RADIOACTIVE WASTE IS SAFELY STORED, WE SHOULD NOT TREAT IT FURTHER UNLESS WE ARE SURE THAT BY DOING SO THE IMPROVEMENT IN ITS FORM OR CONTAINMENT WILL HAVE BEEN SUFFICIENT TO JUSTIFY THE EXTRA PENALTY. 2. ALL UNNECESSARY WASTES SHOULD BE AVOIDED. THIS SEEMS A VERY OBVIOUS STATEMENT, BUT IT HAS IN FACT DEEP AND FAR-REACHING IMPLICATIONS IN THE DESIGN OF ACTIVE CHEMICAL PLANTS. THE COST AND DIFFICULTY OF DEALING WITH SIDE STREAMS CAN EASILY EXCEED THE COST OF OPERATING THE MAIN LINE. IT FOLLOWS THEREFORE THAT THE MAIN-LINE PROCESS TO BE ADOPTED IS AS MUCH DETERMINED BY THE COST OF SIDE-STREAM PROCESSES AS THE COST OF THE MAIN-LINE ITSELF. 3. ALL UNNECESSARY OPERATIONS SHOULD BE AVOIDED. THIS MEANS LOOKING AHEAD AS FAR AS POSSIBLE. IF WE COULD SEE NOW IN WHAT FORM DIFFERENT TYPES OF WASTE WILL BE WHEN FINALLY WE DISPOSE OF THEM, WE COULD ARRANGE COMPETENTLY IN SUCCESSIVE STAGES OF TREATMENT. MEANWHILE, WE CAN SEE ONLY SOME WAY AHEAD, AND IN MAKING APPROPRIATE MOVES TO IMPROVE STORAGE AND DISPOSAL WE MUST DO WHAT WE CAN TO AVOID THE NEED FOR BACKTRACKING AT SOME LATER DATE. 4. WE MUST BE ABLE TO BACKTRACK ALL THE SAME. IT IS BAD PRACTICE TO PUT WASTE INTO A PHYSICAL FORM FROM WHICH WE CANNOT RECOVER IT, UNTIL WE ARE SURE THAT WE SHALL NEVER WISH TO DO SO.

FOR DESC: CONF.-76-0701, JULY 11-16, 1976, DENVER
CC:CHADOC

KEYWORDS: LICENSING; ADMINISTRATIVE AGENCY; PUBLIC HEALTH; NUCLEAR POWER PLANTS; NUCLEAR FUEL; FUEL REPROCESSING; REGULATION (SEE ALSO STANDARDS, RADIATION); STANDARDS, RADIATION (SEE ALSO REGULATION); ICRP; RADIATION EXPOSURE; UNITED KINGDOM; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS);

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PUB DATE: 1965

AUTHOR: BOGERTON, J.F.; CLINE, J.G.; KNAPP, D.W.; TULLISH, C.E.

TITLE: BACKGROUND INFORMATION ON ATOMIC POWER WASTE HANDLING

CORPORATE AUTHOR: ATOMIC INDUSTRIAL FORUM, INC.

ABSTRACT: THE BOOKLET DEALS WITH THE HANDLING AND DISPOSAL OF THE RADIOACTIVE WASTE THAT IS ROUTINELY FORMED IN THE COURSE OF ATOMIC POWER GENERATION. IT IS DIVIDED INTO THREE PRINCIPAL AND ESSENTIALLY SELF-CONTAINED PARTS- THE ON-SITE HANDLING OF WASTES AND EFFLUENTS- THE SHIPMENT OF RADIOACTIVE MATERIALS FROM THE POWER PLANT- AND THE PROCESSING OF SPENT FUEL AND ULTIMATE STORAGE OF RADIOACTIVE WASTES.

FOR DESC: AIP 48 PAGES, FIGURES, TABLES- APRIL 1965

KEYWORDS: EFFLUENT; INFORMATION; RADIATION IN PERSPECTIVE; HAZARD, RELATIVE; WASTE HANDLING; WASTE

STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; RADIATION UNIT; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION

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PUB DATE: 1972

AUTHOR: BGGC, F.R.

TITLE: WASTE MANAGEMENT

CORPORATE AUTHOR: BARCOCK AND WILCOX

ABSTRACT: DEALS WITH WASTE MANAGEMENT IN A LIGHT-WATER REACTOR AND DESCRIBES NEW EQUIPMENT DESIGNED TO FURTHER REDUCE THE ALREADY LOW WASTE DISCHARGE FROM A NUCLEAR STEAM SYSTEM.

FOR DESC: ORP/SID-72-4, PP. 66-86 OF THE SOUTHERN CONFERENCE ON ENVIRONMENTAL RADIATION PROTECTION FROM NUCLEAR POWER PLANTS, APRIL 21-22, 1971

KEYWORDS: DILUTION; LWR (SEE ALSO REACTOR, LWR); EFFLUENT; EFFLUENT (SEE ALSO MOBILE GAS); MAXIMUM PERMISSIBLE CONCENTRATION (MPC); SOURCE, RADIATION; TRITIUM; WASTE DISPOSAL; WASTE STORAGE; WASTE; REACTOR, POWER; STACK; REGULATION, REC; WASTE TRANSPORTATION; WASTE MANAGEMENT; STORAGE CONTAINER; RADIOACTIVITY RELEASE; LIQUID; OPERATING EXPERIENCE; DISCHARGE

<175>

PUB DATE: 1972

AUTHOR: HOLCOMB, K.A.

TITLE: PETROFABRIC CHANGES IN HEATED AND IRRADIATED SALT FROM PROJECT SALT VAULT, LYONS, KANSAS

CORPORATE AUTHOR: UNIVERSITY OF KANSAS, LAWRENCE

ABSTRACT: AN IMPORTANT FACTOR TO CONSIDER BEFORE THE STORAGE OF RADIOACTIVE WASTES IN SALT CAN BE INITIATED IS THE DEGREE TO WHICH HEATING AND IRRADIATION WILL CAUSE MAJOR CHANGES IN CRYSTAL STRUCTURE AND PETROFABRIC OF THE SALT. THE MAIN OBJECTIVES OF THIS INVESTIGATION WERE (1) TO DETERMINE THE GENERAL NATURE OF THE RADIATION DAMAGE CAUSED BY THE GAMMA RAY COMPONENT OF THE HIGH ENERGY RADIATION IN SALT, (2) TO STUDY WATER MIGRATION WITHIN THE GAMMA IRRADIATED SALT, AND (3) TO DETERMINE THE NATURE OF THE STRESS FIELD GENERATED AROUND THE RADIATION SOURCE BY HEAT.

FOR DESC: COO-1057-SM, 73 PAGES, FIGURES, JUNE 30, 1972

KEYWORDS: CRYSTAL HEAT; PROJECT SALT VAULT; KANSAS; HEAT TRANSFER; RADIATION DAMAGE; WASTE DISPOSAL, SOLID; HIGH TEMPERATURE; HIGH-LEVEL WASTE; MEASUREMENT, STRAIN GAGE; WASTE DISPOSAL, SALT; STRESS STRAIN DATA; RADIATION EXPOSURE

<176>

PUB DATE: 1972

AUTHOR: HOLLIDA, J.W.

TITLE: REDUCTION OF TRITIUM IN EXHAUST STACK EFFLUENTS AT PINELLAS PLANT

CORPORATE AUTHOR: GENERAL ELECTRIC COMPANY, ST. PETERSBURG, FLORIDA

ABSTRACT: REDUCTION OF TRITIUM IN EXHAUST STACK EFFLUENT AT THE PINELLAS PLANT IS ATTRIBUTED TO A PROCEDURE CHANGE AND THE OPERATION OF A HYDROGEN OXIDIZING-COLLECTION SYSTEM. THE OXIDIZING-COLLECTION SYSTEM IN USE AT PINELLAS IS DESCRIBED. IT IS SUGGESTED THAT SUCH A SYSTEM, PROPERLY DESIGNED, COULD EFFECT SIMILAR REDUCTIONS AT OTHER LOCATIONS.

FOR DESC: CENP-721030, 1 FIGURE, PP. 393-402, PAPER PRESENTED AT THE AEC POLLUTION CONTROL CONFERENCE, HELD IN OAK RIDGE, TENN. ON OCTOBER 25, 1972

KEYWORDS: EFFLUENT; AIR CLEANING; TRITIUM; WASTE TREATMENT; STACK; WASTE MANAGEMENT

<177>
 PUB DATE: 1963
 AUTHOR: HOUSTEAD, J.F.
 TITLE: WASTE MANAGEMENT IMPLICATIONS IN NUCLEAR-SITE SELECTION
 PUB DESC: SITING OF REACTORS AND NUCLEAR RESOURCES
 CITIES 2 PAGES 201-207 1963
 KEYWORDS: WASTE DISPOSAL; SITING; REACTOR

<178>
 PUB DATE: 1961
 AUTHOR: BORTON, J.B.
 TITLE: RADIOACTIVE WASTE MANAGEMENT BY THE SAVANNAH RIVER PLANT
 PUB DESC: W-564
 KEYWORDS: RIVER; WASTE DISPOSAL; SAVANNAH RIVER PLANT; RADIOISOTOPE; PLANT

<179>
 PUB DATE: 1973
 AUTHOR: MULL, A.P.
 TITLE: AVERAGE EFFLUENT RELEASES FROM U.S. NUCLEAR POWER REACTORS, COMPARED WITH THOSE FROM FOSSIL-FUELED PLANTS, IN TERMS OF CURRENTLY APPLICABLE ENVIRONMENTAL STANDARDS
 CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, Upton, New York
 ABSTRACT: BETWEEN 1967 AND 1972, 18 SECOND GENERATION LIGHT-WATER-COOLED NUCLEAR POWER PLANTS, WITH CAPACITIES IN THE RANGE OF 500-900 MW(E) HAVE BEEN PUT INTO OPERATION IN THE UNITED STATES. THESE WERE IN ADDITION TO TEN SMALLER DEPCRYSTATION PLANTS AND ONE HIGH-TEMPERATURE GAS-COOLED NUCLEAR POWER PLANT IN OPERATION AT THE START OF THIS PERIOD. THE REPORTED YEARLY AIR EFFLUENT RELEASES OF RADIOACTIVE GASES, HALOGENS AND PARTICULATES, AND LIQUID EFFLUENT FISSION AND ACTIVATION PRODUCTS ARE OF TRITIUM FROM THESE PLANTS ARE EVALUATED ON A CI/10(COED) D(12) BASIS, AND THE OVERALL YEARLY AVERAGES FOR THE VARIOUS TYPES OF REACTORS (BOILING WATER, PRESSURIZED WATER, AND HIGH TEMPERATURE GAS-COOLED) ARE COMPARED.
 PUB DESC: DBL-10223, CONF-730907-19, 15 PAGES, PRESENTED AT THE 3RD INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOC. MEETING, HELD IN WASHINGTON, D.C., SEPT. 9, 1973
 KEYWORDS: REACTOR, BWR; LWR (SEE ALSO REACTOR, LWR); ENVIRONMENT; STANDARDS; RADIATION (SEE ALSO REGULATION); EFFLUENT; REACTOR, PWR; WASTE DISPOSAL; RADIOACTIVITY RELEASE; REVIEW; REACTOR, HTGR; POWER PLANT, FOSSIL FUEL; POWER PLANT, NUCLEAR

<180>
 PUB DATE: 1973
 AUTHOR: MULL, A.P.
 TITLE: RADIOACTIVE SAFETY ASPECTS OF WASTE MANAGEMENT
 CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, Upton, New York
 ABSTRACT: THE MANAGEMENT OF RADIOACTIVE WASTES MAY BE VIEWED AS AN APPLICATION OF THE GENERAL PRINCIPLES OF RADIATION PROTECTION, TIME, SHIELDING AND DISTANCE. IN THEIR APPLICATION, THE STRATEGIES OF RADIOACTIVE WASTE MANAGEMENT CONSIST PRINCIPALLY OF THE DETENTION OF THESE MATERIALS FROM THE ENVIRONMENT UNTIL THEY HAVE DECAYED TO INSIGNIFICANT LEVELS, AND THEIR STORAGE IN A NATURAL OR MAN-MADE LOCATION WHICH PROVIDES A SUFFICIENT BARRIER AND DISTANCE SO AS TO MINIMIZE THE RADIATIONS THAT DO REACH THE ENVIRONMENT AND MAN. AS WITH MOST OTHER WASTES, THE DIVERSE NATURE OF RADIOACTIVE WASTES CALLS FOR A VARIETY OF MANAGEMENT PRACTICES. A COMPREHENSIVE OUTLINE OF THE FACTORS WHICH SHOULD BE CONSIDERED IN THE MANAGEMENT

OF RADIOACTIVE WASTES, AS ENUMERATED BY GORHAM (1), IS GIVEN IN APPENDIX L. THEY ARE SUMMARIZED BRIEFLY HEREIN. (MOD. AUTH.)

PUB DESC: DBL-10351 (CONF. 731127-2)
 KEYWORDS: RADIATION PROTECTION; WASTE MANAGEMENT; PHYSICAL PROPERTIES; PUBLIC HEALTH; WASTE STORAGE; WASTE DISPOSAL; PHYSICAL CHARACTERISTICS; CHEMICAL;

<181>
 PUB DATE: 1962
 AUTHOR: HURST, F.J.
 TITLE: SAFETY IN URANIUM MINING AND MILLING
 ABSTRACT: SAFETY IN URANIUM MINING AND MILLING IS OUTLINED IN THIS ARTICLE. SPECIFIC EXPOSURE STANDARDS AND PROTECTION REGULATIONS, ALONG WITH THE RADIATION HAZARDS IN MINES AND MILLS, ARE DISCUSSED FOR MINING AND MILLING OPERATIONS. RADIOCHEMICAL DATA FOR ATMOSPHERE AND LIQUID MATERIALS AS RELATED TO OPERATIONS ARE THOROUGHLY COVERED IN THIS WELL-WRITTEN ARTICLE.

PUB DESC: NUCLEAR SAFETY 8(1) - 5 PAGES, 1 TABLE-60-72 (SEPTEMBER 1962)
 KEYWORDS: IMMEDIATE; OCCUPATION EXPOSURE (SEE ALSO PERSONNEL EXPOSURE, RADIATION); MILL TAILINGS (SEE ALSO TAILINGS); MILLING; MINING; RADIATION DAMAGE; REGULATION (SEE ALSO STANDARDS, RADIATION); THORIUM; ATMOSPHERIC POLLUTION; URANIUM; WASTE TREATMENT, LIQUID; RADIUM; RADON (SEE ALSO POOR GAS); WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; HAZARDOUS ANALYSIS; DOSE MEASUREMENT, INTERNAL; PERSONNEL EXPOSURE, RADIATION; RADIATION PROTECTION, CHEMICAL; RADIATION EFFECT

<182>
 PUB DATE: 1970
 AUTHOR: ICHIHARA, S.
 TITLE: RADIOACTIVE WASTE MANAGEMENT IN JAPAN
 CORPORATE AUTHOR: COMMITTEE ON RADIOACTIVE SOLID WASTE MANAGEMENT, NUCLEAR SAFETY RESEARCH ASSOCIATION, TOKYO, JAPAN
 ABSTRACT: DISCUSSES PRESENT STORAGE PROBLEM AND AN OUTLOOK FOR ULTIMATE DISPOSAL INTO THE OCEAN. POINTS OUT THAT LAND DISPOSAL IS NOT DESIRABLE IN JAPAN'S CONCENTRATED POPULATION. THEIR PRESENT STUDY OF TECHNICAL QUESTIONS RELATING TO SOLID-WASTE DISPOSAL IS REPORTED.

PUB DESC: SN-137/26A, SI/PDB-26A, CONF-700905, 15 PAGES, 2 FIGURES, 2 TABLES, 6 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, ATX-ED-PROCEEDS, FRANCE, SEPTEMBER 7-11, 1970
 KEYWORDS: IAEA; POPULATION DENSITY; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; JAPAN

<183>
 PUB DATE: 1974
 AUTHOR: IMOTO, Y.; MORISAWA, S.
 TITLE: ON THE SELECTION OF A GROUND DISPOSAL SITE FOR RADIOACTIVE WASTES: AN APPROACH TO ITS SAFETY EVALUATION
 ABSTRACT: THE DISPOSAL OF RADIOACTIVE SOLIDS ON SOLIDIFIED WASTES IN THE GROUND IS NOT ALLOWED IN JAPAN MAINLY BECAUSE OF THE DIFFICULTIES IN ESTIMATING THE MIGRATION OF ESCAPED RADIOISOTOPES AND THEIR EFFECT ON THE HUMAN BODY (INTERNAL DOSE). IN THIS REPORT, THE ACTION OF RADIOISOTOPES IN AN ENVIRONMENT IS QUANTIFIED, AND THE DOSE RATE OF INTERNAL IRRADIATION IS ESTIMATED. FOR RADIOISOTOPES CONTAINED IN RADIOACTIVE WASTES AND THREE PATHS OF FLOW BY WHICH THEY WAYS ESCAPED INTO THE GROUND TO MIGRATE IN AN ENVIRONMENT, I.E. THE PATHS OF DRINKING WATER, SEA FOODS AND VEGETABLES, ARE DISCUSSED. IT IS CONCLUDED THAT (1) THE MOST DANGEROUS NUCLIDES IN THIS METHOD OF

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DISPOSAL AND 90 SR ARE 100RAC, (2) THE LARGEST INTERNAL DOSE IS ABSORBED THROUGH THE INTAKE OF VEGETABLES, (3) THE METHOD OF GROUND DISPOSAL OF RADIOACTIVE WASTES APPEARS TO BE SAFE AND PROMISING BECAUSE OF THE LOW INTERNAL DOSE ESTIMATED, AND (4) THE METHOD OF ESTIMATION DISCUSSED IN THIS REPORT IS ALSO APPLICABLE TO OTHER FOCULENS OF THE SAME TYPE SUCH AS THE SANITARY LAND-FILL OF INDUSTRIAL WASTES. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 26(1), P. 53 (1974)

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL; ASSESSMENT (SEE ALSO ASSESSMENT); SITING; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); WASTE DISPOSAL; SAFETY EVALUATION; ASSESSMENT; SOLID; RADIOISOTOPE MIGRATION; POPULATION EXPOSURE; INTERNAL EXPOSURE (SEE ALSO DOSE CALCULATION); STRONTIUM; SILVER; VEGETATION; JAPAN; DOSE RATE; FOOD CHAIN; WATER TRANSPORT, GROUND (SEE ALSO SOIL, RADIOISOTOPE MOVEMENT); ENVIRONMENT; STRONTIUM; RADIUM, RELATIVE;

<104> PUB DATE: 1972
AUTHOR: INOUE, Y.; MURISAWA, S.

TITLE: SELECTION OF A SITE FOR THE GROUND DISPOSAL OF RADIOACTIVE WASTES. II. SELECTION OF A GROUND DISPOSAL SITE OF RADIOACTIVE WASTES BY THE SENSITIVITY ANALYSIS

CORPORATE AUTHOR: KYOTU UNIVERSITY, JAPAN

ABSTRACT: THE DESIRABLE CONDITIONS FOR GROUND DISPOSAL SITES OF RADIOACTIVE WASTES AND AN APPROXIMATE METHOD OF ESTIMATING THE INTERNAL DOSE ARE DISCUSSED. SIXTEEN OF 26 ENVIRONMENTAL FACTORS AND THEIR ECOLOGICAL TRANSPORT PATHS OF RADIOISOTOPES THROUGH WHICH LEAKED RADIOISOTOPES MIGRATE (I.E., THE PATH OF DRINKING WATER, SEA FOODS AND VEGETABLES) ARE QUANTITATIVELY EXAMINED BY SENSITIVITY ANALYSIS. THE RELATIONSHIPS EXISTING BETWEEN THE INTERNAL DOSE AND EACH ENVIRONMENTAL FACTOR ARE SHOWN IN THE ACCOMPANYING TABLE. (IN JAPANESE)

PUB DESC: NIPPON GYORIN. GAKK., 8 PAGES, 14 (12), PP. 652-660 (1972)

KEYWORDS: ECOLOGY; SITING; WASTE DISPOSAL; WASTE DISPOSAL; WATER, DRINKING; CRITICAL NUCLEIDE PATHWAY; DOSE CALCULATION; INTERNAL; ENVIRONMENT; SAFETY EVALUATION; VEGETATION; CONCENTRATION; FOOD CHAIN; TRANSPORT

<105> PUB DATE: 1973
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: CONTROL OF IODINE IN THE NUCLEAR INDUSTRY

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

ABSTRACT: ALTHOUGH SEVERAL ICD BOOKS ARE AVAILABLE ON AIR CLEANING, A GREAT NEED AS BEEN EXPRESSED BY PCIP DEVELOPED AND DEVELOPING COUNTRIES FOR ASSEMBLING UNDER ONE COVER THE UP-TO-DATE INFORMATION ON THE CONTROL OF RADIOACTIVE IODINE FROM THE NUCLEAR INDUSTRY. THIS PUBLICATION RESULTS FROM A PANEL ON THE CONTROL OF IODINE AND OTHER CONSTITUENTS OF AIRBORNE RADIOACTIVE WASTES, HELD AT THE INTERNATIONAL ATOMIC ENERGY AGENCY'S HEADQUARTERS IN VIENNA FROM 19 TO 23 OCTOBER 1970, AND PRESENTS THE AVAILABLE INFORMATION FOR THE FIRST TIME IN A SINGLE VOLUME. THE BEHAVIOR OF IODINE IN VARIOUS TYPES OF NUCLEAR REACTORS AND IN PURE REPROCESSING PLANTS IS EXAMINED AND WAYS ARE DISCUSSED BY WHICH IODINE MAY ENTER THE OFF-GASES OF SUCH FACILITIES. INCLUDED ARE DISCUSSIONS OF THE CHEMICAL FORMS IN WHICH THE IODINE MAY APPEAR AND OF THE EVIDENCE THAT THE PHYSICAL AND CHEMICAL BEHAVIOR OF THE VARIOUS FORMS HAVE IN THE DEVELOPMENT OF MONITORING AND REMEDIAL SYSTEMS. A BRIEF REVIEW IS ALSO MADE OF SYSTEMS AND TECHNIQUES THAT HAVE BEEN EMPLOYED FOR THE REMOVAL OF IODINE FROM OFF-GASES AND FOR ITS MONITORING. THE RADIOLOGICAL ASPECTS OF RADIOIODINE AND THE PROCEDURES FOR DRYING

WORKING LIMITS OF DISCHARGE TO THE ATMOSPHERE ARE TREATED IN DETAIL. (DOC. AUTH. ABST.)

PUB DESC: TECHNICAL REPORT SERIES NO. 140, 101E. STI/DOC/10/140 CONF 701077, Oct. 23, 1970 (MEETING)

KEYWORDS: IODINE; AIR CLEANING; IAEA; SUMMARY REPORT; CONTROL; NUCLEAR INDUSTRY; BEHAVIOR; NUCLEAR REACTORS; OFF GAS; PHYSICAL ASPECTS; CHEMICAL ASPECTS; MONITORING (SEE ALSO SURVEY)

<106> PUB DATE: 1972
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: USE OF LOCAL MINERALS IN THE TREATMENT OF RADIOACTIVE WASTE

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: MANY NATURALLY OCCURRING MATERIALS EXHIBIT ONE OR MORE OF THE USEFUL SORPTION OR CHEMICAL REACTIONS WITH RADIOACTIVE OR STABLE TRACE ELEMENTS. THESE NATURAL MATERIALS ARE SELDOM PURE CHEMICAL SPECIES AND THUS A NUMBER OF DIFFERENT REACTIONS MAY OCCUR IN THE TESTING OR USE OF A SINGLE MATERIAL. TO EVALUATE THESE MATERIALS FOR USE IN THE SORPTION OF RADIOACTIVE NUCLEIDES, IT IS NECESSARY TO UNDERSTAND THE VARIOUS USEFUL REACTION MECHANISMS AND CLASSIFICATION SCHEMES.

PUB DESC: STI/DOC-10/136, 113 PAGES, TABLES, FIGURES, REFERENCES, JUNE 1972

KEYWORDS: ADSORPTION; CHEMICAL REACTION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE TREATMENT; ION EXCHANGE; MATERIAL; PRECIPITATION; MINERAL

<107> PUB DATE: 1971
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 6

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: PUBLICATION BY IAEA CONTAINING RESEARCH ABSTRACTS OF WASTE-TREATMENT METHODS FOR GASEOUS WASTES, LIQUID WASTES, SOLID WASTES STORAGE AND DISCHARGE STUDIES, AND ECONOMIC STUDIES.

PUB DESC: IAEA/MSW/5, 110 PAGES, 1971

KEYWORDS: WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; ECONOMIC STUDY; GAS; LIQUID; SOLID

<108> PUB DATE: 1970
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: INTERNATIONAL SYMPOSIUM ON DEVELOPMENTS IN THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: ANNOUNCING SYMPOSIUM FOR VIENNA/PARIS AT AIR-EN-PROVENCE, 7-11 SEPTEMBER 1971. THE SUBJECT OF DISCUSSION IS TO BE, DEVELOPMENTS IN THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES, AND PARTICULARLY IN SYSTEMS FOR COLLECTION, TREATMENT, STORAGE, AND SUBSEQUENT DISPOSAL OF THESE WASTES.

PUB DESC: IAEA PRESS RELEASE 70/42, 2 PAGES, JULY 15, 1970

KEYWORDS: FRANCE; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; IAEA; REGULATION (SEE ALSO STANDARDS, RADIATION); WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT

<1989>

PUB DATE: 1970

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: DEVELOPMENTS IN THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: DISCUSSES DEVELOPMENTS IN THE MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES. THERE WERE 220 PARTICIPANTS AT THE SYMPOSIUM, REPRESENTING 33 COUNTRIES AND 7 INTERNATIONAL ORGANIZATIONS. ABOUT 60 PRESENTS WERE GIVEN.

PUB DESC: SM-137, STI/PUB-269, CONF-700905, 825 PAGES, FIGURES, TABLES, REFERENCES, PROCEEDINGS OF THE SYMPOSIUM HELD AT AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT

<1990>

PUB DATE: 1970

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: CURRENT STATE OF RADIOACTIVE SOLID WASTE MANAGEMENT IN JAPAN

ABSTRACT: DISPOSAL OF SOLID RADIOISOTOPES AND SOLID MATERIALS CONTAMINATED WITH RADIOISOTOPES SHOULD BE CARRIED OUT IN ACCORDANCE WITH ONE OF THE FOLLOWING RULES. (A) DISPOSE OF THE RESIDUE ACCORDING TO (B) OR (C) AFTER INCINERATION BY USING A INCINERATOR. (B) PLACE THE SOLIDIFIED MATERIAL ACCORDING TO (C) AFTER SOLIDIFICATION WITH CONCRETE OR OTHER MATERIAL IN THE SOLIDIFICATION FACILITIES. (C) PLACE THE WASTE INTO THE STORAGE DISPOSAL FACILITIES AFTER PACKAGING. HOWEVER, LARGE MATERIALS WHICH ARE TOO DIFFICULT TO BE PACKAGED MAY BE EXEMPTED FROM PACKAGING.

PUB DESC: SM-137-269, STI/PUB-269, CONF-700905, 15 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, SEPTEMBER 7-11, 1970

KEYWORDS: CONCRETE; WASTE MANAGEMENT; IAEA; LAW; WASTE STORAGE; WASTE DISPOSAL; SOLID; COMPRESSION; INCINERATION; JAPAN

<1991>

PUB DATE: 1970

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 5

ABSTRACT: THIS EDITION IS THE SECOND IN THE SINGLE ANNUAL SERIES WHICH INCLUDES ABSTRACTS OF BOTH RECENTLY COMPLETED AND CURRENT INVESTIGATIONS. IT INCLUDES ABSTRACTS RECEIVED UP TO THE LAST QUARTER OF 1969. THEY COME FROM THE GOVERNMENTS OF EIGHTEEN MEMBER STATES.

PUB DESC: IAEA/NSR/3, 1 PAGES, 1970

KEYWORDS: IAEA; BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; ECONOMIC STUDY; B AND C PROGRAM

<1992>

PUB DATE: 1970

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: STANDARDIZATION OF RADIOACTIVE WASTE CATEGORIES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: A LARGE AMOUNT OF INFORMATION ABOUT MOST ASPECTS OF RADIOACTIVE WASTE MANAGEMENT HAS BEEN ACCUMULATED AND MADE AVAILABLE TO INTERESTED NATIONS IN RECENT YEARS. THE EFFICIENCY OF THIS SERVICE HAS BEEN SOMEWHAT HINDERED BECAUSE THE TERMINOLOGY USED TO

DESCRIBE THE DIFFERENT TYPES OF RADIOACTIVE WASTE HAS VARIED FROM COUNTRY TO COUNTRY AND EVEN FROM INSTALLATION TO INSTALLATION WITHIN A GIVEN COUNTRY. THIS PUBLICATION IS THE OUTCOME OF A PANEL MEETING ON STANDARDIZATION OF RADIOACTIVE WASTE CATEGORIES WHICH WAS HELD AT THE HEADQUARTERS OF THE INTERNATIONAL ATOMIC ENERGY AGENCY IN VIENNA FROM 6 TO 10 NOVEMBER 1967. SOME PROBLEMS CONCERNING THE RANGE OF APPLICATIONS OF THE STANDARD WERE SOLVED DURING THE PANEL MEETING AND WERE CLEARER BY LATER WITH THE INTERESTED PANEL MEMBERS. THE TEXT, CONTAINING THE RESULTS OF THE PANEL AND THE FOLLOWING DISCUSSIONS, WAS APPROVED IN OCTOBER 1969. IT PRESENTS A SIMPLE STANDARD TO BE USED AS A COMMON LANGUAGE BETWEEN PEOPLE WORKING IN THE FIELD OF WASTE MANAGEMENT AT NUCLEAR INSTALLATIONS. THE PURPOSE OF THE STANDARD IS ONLY TO ACT AS A PRACTICAL TOOL FOR INCREASING EFFICIENCY IN COMMUNICATING, COLLECTING AND ASSESSING TECHNICAL AND ECONOMIC INFORMATION IN THE COMMON INTEREST OF ALL NATIONS AND THE DEVELOPING COUNTRIES IN PARTICULAR. A FUTURE PANEL WILL BE CONVENED TO ASSESS THE EXPERIENCE GAINED WITH THE PRESENT STANDARD. AT THAT TIME THE NEED TO EXPAND THE SCOPE OF THE STANDARD SO THAT IT MAY ALSO BE USED AS A TOOL FOR REGULATORY ACTION, AND FOR LEGAL AND SAFETY ASSESSMENT, WILL BE CONSIDERED. (AUTH)

PUB DESC: IAEA-TECHNICAL REPORT SERIES NO. 101 (1970)

KEYWORDS: RADIATION SAFETY AND CONTROL; IAEA; WASTE CLASSIFICATION (SEE ALSO STANDARDS, RADIATION); LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; HIGH-LEVEL WASTE; LIQUID; SOLID; GAS; MAXIMUM PERMISSIBLE CONCENTRATION (MPC)

<1993>

PUB DATE: 1968

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: MANAGEMENT OF RADIOACTIVE WASTES AT NUCLEAR POWER PLANTS

ABSTRACT: THIS MANUAL WAS PREPARED ON BEHALF OF THE AGENCY BY FOUR CONSULTANTS FROM FOUR OF THE MEMBER STATES HAVING THE GREATEST EXPERIENCE IN THE GENERATION OF ELECTRICAL POWER FROM NUCLEAR STATIONS, NAMELY USA, CANADA, FRANCE, AND THE UK. CHAPTERS COVER - SUMMARY OF DESIGNS AND OPERATING EXPERIENCES. FACTORS TO BE CONSIDERED IN DESIGN AND OPERATION - FUTURE TRENDS AND PERSPECTIVES. APPENDIX 3 COMPRISES A REPORT ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM COMMERCIAL NUCLEAR POWER STATIONS IN THE UK, REVIEWS METHODS OF WASTE MANAGEMENT AT THE MAGNOL AND AGO STATIONS AND INCLUDES DATA FROM OPERATIONAL EXPERIENCE AT THE MAGNOL STATIONS.

PUB DESC: IAEA SAFETY SERIES NO. 29, 225 PAGES 1968

KEYWORDS: CONTROL SYSTEM; DESIGN CRITERIA; UNITED KINGDOM; WASTE MANAGEMENT; DESIGN STUDY; SYSTEM DESCRIPTION; OPERATING EXPERIENCE

<1994>

PUB DATE: 1968

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 4

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA, 1968

ABSTRACT: PROVIDES ABSTRACTS OF WASTE MANAGEMENT RESEARCH CONCERNING THE FOLLOWING - (1) GASEOUS WASTE TREATMENT AND DISPOSAL, (2) LIQUID WASTE TREATMENT. (3) SOLID WASTE TREATMENT, (4) STORAGE AND DISCHARGE STUDIES, (5) ECONOMIC STUDIES.

PUB DESC: IAEA-ABSTRACTS NO. 4, 136 PAGES (1968)

KEYWORDS: WASTE DISPOSAL, OCEAN; IAEA; BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, RIVER; WASTE TREATMENT, GAS; WASTE DISPOSAL, GAS; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS

<195>
 PUB DATE: 1960
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: ECONOMICS OF MANAGING RADIOACTIVE WASTES
 CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: THE PURPOSE OF THIS REPORT IS TO RECOMMEND FOR EUROPEAN REPORTING PURPOSES A COSTING SYSTEM. THE SYSTEM SHOULD INCLUDE ALL ASPECTS OF THE COSTS OF WASTE MANAGEMENT IN ORDER TO PROVIDE A SUFFICIENTLY ACCURATE ASSESSMENT OF THE TRUE COSTS AND A COMMON STANDARD OF REPORTING. THE STUDY, AT THE REQUEST OF THE AGENCY, WAS CONFINED TO RADIOACTIVE WASTES PRODUCED AT RESEARCH AND DEVELOPMENT CENTRES. BECAUSE DIFFERENCES OF LOW, INTERMEDIATE, AND HIGH LEVELS OF RADIOACTIVITY VARY FROM SITE TO SITE, NO SPECIFIC UPPER LIMIT WAS SET ON WASTES TO BE INCLUDED IN THE STUDY EXCEPT TO EXCLUDE WASTES FROM THE FIRST EXTRACTION CYCLE OF CHEMICAL PROCESSING FOR RECOVERY OF REACTOR FUEL.

PUB DESC: STI/DOC-10-83, 45 PAGES, 1 TABLE, 1960

KEYWORDS: WASTE DISPOSAL; IAEA; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); WASTE STORAGE; WASTE TREATMENT; MONITORING; ENVIRONMENTAL; WASTE TRANSPORTATION; WASTE MANAGEMENT; RCHITTING (SEE ALSO SURVEY); P.C.M.W. 1960

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 PUB DATE: 1967
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: STANDARDIZATION OF RADIOACTIVE WASTE CATEGORIES
 CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA (AUSTRIA)

ABSTRACT: REPORTS ACTION OF A PANEL MEETING OF IAEA HELD IN VIENNA IN NOVEMBER 1967. THE NEEDS OF STANDARDS OF WASTE CATEGORIES, THE APPROACH TO THE PROBLEM AND THE CATEGORIES ESTABLISHED ARE DISCUSSED.

PUB DESC: STI-DOC-10/101 +. 19 PAGES, 1970

KEYWORDS: ADMINISTRATIVE CONTROL; GLOSSARY; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); STANDARDS; RADIATION (SEE ALSO REGULATION); IAEA; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); REGULATION (SEE ALSO STANDARDS, RADIATION); AUSTRIA; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; ENERGY LEVEL

<197>
 PUB DATE: 1967
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: DISPOSAL OF RADIOACTIVE WASTE-055P

ABSTRACT: EIGHT PAPERS DEALING WITH DISPOSAL OF RADIOACTIVE WASTES OF LOW ACTIVITY LEVEL IN CLAY SOILS SECTION AND MIGRATION OF RADIOISOTOPES IN SOILS AND ROCKS, CONDITIONS FOR BURIAL OF RADIOACTIVE CONTENT IN SOILS, PROBLEMS OF HEAT GENERATION IN UNDERGROUND STORAGE OF SOLID RADIOACTIVE WASTES, EXPEDIENCE OF MELTING CALCINATED RADIOACTIVE WASTES IN THE GROUND, SCIENTIFIC PREMISES FOR THE USAGE OF DEEP FORMATIONS FOR STORAGE OF LIQUID RADIOACTIVE WASTES, RESULTS OF OPERATION OF PILOT-SCALE INSTALLATION FOR DISPOSAL OF LIQUID RADIOACTIVE WASTES IN DEEP FORMATIONS OF EARTH'S CRUST, AND THE CENTRAL STORAGE AREA FOR RADIOACTIVE WASTES IN THE CZECHOSLOVAKIAN SSR.

PUB DESC: JPPS-02565, TT-67-33193, 109 PAGES, JUNE 2, 1967, TRANSLATION OF EIGHT PAPERS PRESENTED AT THE INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM ON DISPOSAL OF RADIOACTIVE WASTE IN THE GROUND, VIENNA, MAY 29--JUNE 2, 1967

KEYWORDS: SOIL; RADIOISOTOPE MOVEMENT THROUGH; CLAY; LOW-LEVEL WASTE; HEAT TRANSPORT; CURRENT; LIQUID WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); REPOSITORY; WASTE DISPOSAL; CALCINATION; CZECHOSLOVAKIA; STORAGE CONTAINER; HEAT GENERATION; INTERNAL

<198>
 PUB DATE: 1967
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: BASIC FACTORS FOR THE TREATMENT AND DISPOSAL OF RADIOACTIVE WASTES
 CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: PREPARED BY A PANEL OF EXPERTS CONVENED BY THE IAEA IN VIENNA, 24-28 OCTOBER 1966, IT GIVES A GUIDE TO THE FACTORS TO BE EVALUATED IN SELECTING A WASTE MANAGEMENT SYSTEM, SO THAT ESTABLISHMENTS, ESPECIALLY IN DEVELOPING MEMBER STATES, CAN CHOOSE THE METHODS MOST SUITABLE FOR THEIR PARTICULAR NEEDS. CONTENTS - INTRODUCTION, DEFINITION OF A WASTE MANAGEMENT SYSTEM, GENERAL FACTORS IN THE SELECTION OF A WASTE MANAGEMENT SYSTEM, SELECTION FACTORS FOR WASTE MANAGEMENT SYSTEM, REFERENCES, BIBLIOGRAPHY, ANNEX I (DATA QUESTION SHEET).

PUB DESC: STI-PUB-170, 42 PAGES, 2 FIGURES 29 REFERENCES, 1967

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); IAEA; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; DISPERSION; RADIATION; PUBLIC EDUCATION; ENVIRONMENT

<199>
 PUB DATE: 1967
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: OPERATION AND CONTROL OF ION-EXCHANGE PROCESSES FOR TREATMENT OF RADIOACTIVE WASTES
 CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: A MANUAL DEALING WITH THE APPLICATION OF ION-EXCHANGE MATERIALS TO THE TREATMENT OF RADIOACTIVE WASTES AND REVIEWING THE FACILITIES CURRENTLY USING THIS METHOD. THIS BOOK IS ONE OF THREE COMMISSIONED BY THE IAEA ON THE THREE PRINCIPAL METHODS OF CONCENTRATING RADIOACTIVE WASTES AND WAS PREPARED BY L.A. EMILY. CONTENTS - INTRODUCTION, HISTORICAL REVIEW RELATED TO REMOVAL OF RADIOACTIVITY, PRINCIPLES OF ION EXCHANGE, ION-EXCHANGE MATERIALS, LIMITATIONS OF ION EXCHANGERS, APPLICATION OF ION EXCHANGE TO WASTE PROCESSING, OPERATIONAL PROCEDURES AND EXPERIENCES, COSTS OF TREATMENT BY ION EXCHANGE, APPENDICES, GLOSSARY, TABLES, REFERENCES, BIBLIOGRAPHY.

PUB DESC: STI/DOC-10/7A, 147 PAGES, FIGURES, TABLES, REFERENCES, 1967

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); DESIGN CRITERIA; IAEA; OPERATION; PROCEDURES AND MANUALS; WASTE TREATMENT, LIQUID; WASTE TREATMENT, ECONOMICS; ION EXCHANGE; EQUIPMENT

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 PUB DATE: 1966
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY
 TITLE: DISPOSAL OF RADIOACTIVE WASTE IN WATER

ABSTRACT: PAPERS FROM SYMPOSIUM HELD IN VIENNA DURING MAY 1966 DEALT WITH PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIOISOTOPES RESULTING FROM DISPOSAL OF RADIOACTIVE WASTE TO SURFACE WATERS. POSSIBLE EFFECTS ON RESOURCES OF SEAS, OCEANS, AND SURFACE WATERS, AND THE EVALUATION OF THE MAIN ROUTES OF EXPOSURE TO MAN. DATA GIVEN SUPPORTED THE FACT THAT VERY LITTLE HARM IS BEING CAUSED TO THE WATERS AND THEIR FAUNAS AT PRESENT, BUT SOME EXPRESSED CONCERN FOR FUTURE HAZARDS. WITH THE CONTINUED SUPPORT OF THE VARIOUS GOVERNMENTS AS IN THE PAST, RESEARCH WILL CONTINUE IN THE FIELD OF WASTE DISPOSAL AND WITH A RESPECTABLE PRIORITY.

PUB DESC: IAEA BULLETIN 9(3), PAGE 6 THRU 9, (SEPTEMBER 1966)

KEYWORDS: IAEA; WATER; TRANSPORT; WASTE DISPOSAL,

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 OCEAN; AUSTRIA; WASTE DISPOSAL, RIVER; WASTE DISPOSAL, LIQUID; ENVIRONMENT; RADIOISOTOPES, INDUCED; R AND D PROGRAM; RADIOISOTOPE; CONCENTRATION; ACRYLIC ORGANISM

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PUB DATE: 1965
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: THE MANAGEMENT OF RADIOACTIVE WASTES PRODUCED BY RADIOISOTOPE USERS

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: THIS CODE OF PRACTICE DISCUSSES THE NEED FOR PROPER GOVERNMENTAL CONTROL OF THE ARRANGEMENTS MADE FOR RECEIVING, USING AND DISPOSING OF RADIOACTIVE MATERIALS, ALSO COVERED ARE WASTE MANAGEMENT BY INDIVIDUAL USERS, WASTE MANAGEMENT IN A CENTRAL FACILITY SERVING A NUMBER OF USERS AND METHODS OF STORAGE AND ENVIRONMENTAL CONTAINMENT OF RADIOACTIVE WASTES. A TABLE SHOWING THE TYPES OF WASTE ASSOCIATED WITH SOME USES OF RADIOISOTOPES IS INCLUDED ALONG WITH EXAMPLES OF NATIONAL REGULATIONS LIMITING DISCHARGE OF RADIOACTIVE WASTES BY RADIOISOTOPE USERS.

PUB DESC: IAEA-55-12, (511/PUB/67) 54 PAGES, FEBRUARY 1965

KEYWORDS: STANDARDS, RADIATION (SEE ALSO REGULATION); IAEA; REGULATION (SEE ALSO STANDARDS, RADIATION); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; WASTE DISPOSAL, GAS; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL

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PUB DATE: 1964
 AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: TECHNOLOGY OF RADIOACTIVE WASTE MANAGEMENT AVOIDING ENVIRONMENTAL DISPOSAL.

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: THE TECHNOLOGY OF TREATING, TRANSPORTING, STORING AND, IN GENERAL, THE MANAGEMENT OF RADIOACTIVE WASTES IS WELL DEVELOPED THROUGH EXPERIENCE IN THE DESIGN AND OPERATION OF WASTE MANAGEMENT SYSTEMS WHICH HAVE AS THEIR BASIS THE PREVENTION OF RADIATION EXPOSURES ABOVE THE APPROPRIATE PERMISSIBLE LEVEL. THESE SYSTEMS RELEASE QUANTITIES OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT IN PLACES, CONCENTRATIONS AND QUANTITIES WHICH ARE SAFE. WITH THE INCREASING USE OF RADIOISOTOPES AND THE SIZE AND NUMBER OF NUCLEAR POWER PROGRAMS IT MAY BE NECESSARY TO MINIMIZE THE DISCHARGES OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT. ABSOLUTE CONTAINMENT OF ALL RADIOACTIVE WASTES WOULD, OF COURSE, BE THE THEORETICAL LIMIT OF SUCH AN EFFORT, BUT EXCEPT WHERE SMALL AMOUNTS OF RADIOISOTOPES ARE USED, ABSOLUTE CONTAINMENT MAY NOT BE POSSIBLE. THIS PAPER WAS PRESENTED AT VIENNA FROM 12-16 FEBRUARY 1962 TO RELATE PRESENT RADIOACTIVE WASTE MANAGEMENT PRACTICE TO TOTAL CONTAINMENT, TO DETERMINE HOW CLOSELY TOTAL CONTAINMENT MIGHT BE APPROACHED USING PRESENT TECHNOLOGY, TO ASSESS THE EFFECTS OF RESEARCH AND DEVELOPMENT WORK UNDER WAY AND TO POINT OUT WHAT FURTHER TECHNOLOGICAL DEVELOPMENTS ARE NEEDED. (AUTH)

PUB DESC: IAEA TECHNICAL REPORTS SERIES NO. 27, (1964)

KEYWORDS: RADIOACTIVITY; IAEA; CONTAINMENT DESIGN; ENVIRONMENT; WASTE DISPOSAL; DESIGN CRITERIA; OPERATION; WASTE TREATMENT; WASTE STORAGE; R AND D PROGRAM

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PUB DATE: 1969
 AUTHOR: JACOBUS, D.G.; KIN, T.E.; YANCA, J.A.; BOBER, S.H.

TITLE: FACTORS AFFECTING THE BEHAVIOR OF CALCIUM AND STRONTIUM IN MINERAL EXCHANGE SYSTEMS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: THE TERRESTRIAL MOVEMENT OF STRONTIUM RELEASED TO THE ENVIRONMENT FROM NUCLEAR FALLOUT OR WASTE-DISPOSAL OPERATIONS IS CLOSELY RELATED TO THAT OF CALCIUM. THE ION EXCHANGE BEHAVIOR OF STRONTIUM AND CALCIUM ON EARTHEN MATERIALS HAS BEEN STUDIED AND MOVEMENT OF BOTH ELEMENTS CORRELATED WITH THE MOVEMENT OF WATER. LABORATORY COLUMN HAVE BEEN USED TO DEMONSTRATE THE VALIDITY OF THE MATHEMATICAL MODELS USED TO PREDICT STRONTIUM MOVEMENT IN SUCH SYSTEMS.

PUB DESC: HEALTH PHYSICS, 17(2), PAGE 308 (AUGUST 1969), PRESENTED AT THE HEALTH PHYSICS 14TH ANNUAL MEETING, PITTSBURGH, JUNE 1969

KEYWORDS: CALCIUM; HEALTH PHYSICS; CHEMICAL REACTION; FALLOUT; SOIL; RADIOISOTOPE MOVEMENT THROUGH; STRONTIUM; WASTE DISPOSAL, TERRESTRIAL; ION EXCHANGE; MINERAL EXCHANGE; PRECIPITATION; MODEL TESTING

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PUB DATE: 1964
 AUTHOR: JACOBUS, D.G.

TITLE: DESORPTION OF RADIOIODINE FROM CLAYS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: IT HAS BEEN SUGGESTED THAT THE LARGE QUANTITIES OF GASEOUS RADIOISOTOPES RELEASED IN A REACTOR-FUEL MELTDOWN INCIDENT MIGHT BE DISCHARGED INTO PERMEABLE FORMATIONS IN THE GROUND. IODINE ISOTOPES PRESENT THE MOST SERIOUS HAZARD. CLAYS AND SEDIMENTS WERE CONTAMINATED WITH IODINE VAPOR FROM THE OXIDATION OF TAGGED KI. THE IODINE WAS DISPLACED WITH DRY AIR AT VARIOUS TEMPERATURES. THE RATE OF DESORPTION DECREASES WITH DECREASED SURFACE CONCENTRATION, AND, AFTER 24 HRS THE RESIDUAL CONCENTRATION WAS PROPORTIONAL TO THE RECIPROCAL OF THE ABSOLUTE TEMPERATURE OF THE DESORBING AIR. WHEN THE MOISTURE CONTENT OF THE DESORBING AIR WAS INCREASED, DESORPTION WAS FASTER.

PUB DESC: ORNL-P-1581, CONF-650821-1, 13 PAGES, REFERENCES, 1964, PRESENTED AT CLAY MINERALS SOCIETY MEETING, BERKELEY, CALIF.

KEYWORDS: FUEL MELTDOWN; IODINE; AIR; CLAY; REACTOR, POWER; ACCIDENT, HYPOTHEtical; ORNL; WASTE DISPOSAL, GAS; MINERAL EXCHANGE

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PUB DATE: 1960
 AUTHOR: JACOBUS, D.G.

TITLE: STRONTIUM MOVEMENT IN THE SOIL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: SEVERAL FACTORS ARE DISCUSSED THAT INFLUENCE THE MOVEMENT OF Sr 90 IN THE SOIL. THE SELECTIVITY, AS WELL AS EXCHANGE CAPACITY, IS IMPORTANT IN ION EXCHANGE PROCESSES OF TRACE LEVELS OF Sr. OTHER ADSORPTION MECHANISMS, SUCH AS PRECIPITATION AND REPLACEMENT IN INSOLUBLE SOIL PHOSPHATES AND CARBONATES, WILL ALSO REMOVE STRONTIUM FROM SOLUTION. FROSTION OF SURFACE SOILS MAY RESULT IN MOVEMENT OF STRONTIUM FIRMLY ATTACHED TO SOIL PARTICLES. THE MOVEMENT OF STRONTIUM CAN BE LIMITED BY IMPROVING THE EFFICIENCY OF CONTACT BETWEEN PERCOLATING COATERS AND THE SOIL THROUGH WHICH THE WATER IS MOVING.

PUB DESC: NUCLEAR SAFETY, 2(2)- 3 PAGES, 17 REFERENCES- 63-65 (DECEMBER 1960)

KEYWORDS: GROUND WATER; SOIL; RADIOISOTOPE MOVEMENT THROUGH; STRONTIUM; WASTE DISPOSAL, TERRESTRIAL

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PUB DATE: 1974

AUTHOR: JACOBSON, D.L.; BARTER, H.L.; ORTE, D.A.; BOSS, C.F.

TITLE: CONTROL AND TREATMENT OF RADIOACTIVE LIQUID WASTE EFFLUENTS AT THE SAVANNAH RIVER PLANT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: RADIOACTIVE WASTE EFFLUENTS AT THE SAVANNAH RIVER PLANT ARE TREATED ON THE BASIS OF POTENTIAL OFF-SITE EFFECTS. THOSE WASTES THAT ARE NOT STORED IN TANKS OR RELEASED DIRECTLY TO PLANT STREAMS ARE EITHER DISCHARGED TO SURFACE BASINS OR TREATED FURTHER TO REDUCE THEIR ACTIVITY BEFORE BEING DISCHARGED. ADMINISTRATIVE CONTROLS REQUIRE THAT RELEASES NOT RESULT IN HARMFUL CONSEQUENCES AND THAT THEY ARE ALSO KEPT AS LOW AS PRACTICAL. THIS DOCUMENT DESCRIBES THE CONTROLS, DOCUMENTS THE RELEASES OF RADIONUCLIDES TO SURFACE BASINS, AND DESCRIBES OTHER METHODS USED TO TREAT RADIOACTIVE LIQUID WASTES.

PER DESC: DP-1349, 120 PAGES, 11 TABLES, 7 FIGURES, FEBRUARY 1974

KEYWORDS: EFFLUENT; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; SAVANNAH RIVER PLANT; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT;

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PUB DATE: 1966

AUTHOR: JAMES, G.; WILLINGHAM, R.E.; DENIER, W.V.

TITLE: BURIED RADIOACTIVE WASTE STORAGE TANK TEMPERATURES AND SOIL TEMPERATURES NEAR LEAKS

CORPORATE AUTHOR: PATTIELE RESEARCH LABORATORY, RICHMOND, WASHINGTON

ABSTRACT: THE TEMPERATURES AND HEAT LOSSES AROUND WASTE TANKS CONTAINING BOILING SOLUTIONS AND HEAT-GENERATING SLUDGE LAYERS ARE COMPARED FOR DRY AND WET SOILS. IN ALL CASES MOST OF THE CONDUCTED HEAT FLOWS FROM THE TOP OF THE TANK, THROUGH THE SOIL LAYER ABOVE THE TANK, AND TO THE ATMOSPHERE. THE TEMPERATURE DISTRIBUTION THROUGHOUT THE SOIL-TANK SYSTEM IS NEARLY INDEPENDENT OF THE MOISTURE CONTENT OF THE SOIL IF ALL THE SOIL IN THE SYSTEM HAS THE SAME THERMAL CONDUCTIVITY. HOWEVER, IF A LOCALIZED WET REGION APPEARS ONLY ADJACENT TO THE TANK WALL, HIGHER TEMPERATURES WILL BE FOUND IN THIS REGION OF THE SOIL THAN IN DRYER DRY AREAS. REMOVAL OF ALL LIQUID FROM WASTE TANKS WITHOUT REMOVING THE SLUDGE CAN RESULT IN EXTREMELY HIGH TEMPERATURES. LEAKS OF ALKALINE SUPERHEATED CONTAINING ONLY CESIUM AND SMALL AMOUNTS OF BUTENIUM CANNOT CAUSE DANGEROUSLY HIGH SOIL TEMPERATURES. TEMPERATURE-RISE RATES ARE PROVIDED FOR HEMISPHERICAL LEAKS, VARYING FROM 100 TO 100,000 GAL, FOR WET AND DRY SOIL AND FOR VARIOUS TYPES OF FISSION PRODUCTS. THESE RATES MAY PROVE USEFUL IN ANALYZING TEMPERATURE RECORDS TO DETERMINE THE SIZE AND LOCATION OF A LEAK. A COMPUTER PROGRAM IS PROVIDED FOR CALCULATING TEMPERATURE RISE RATES AROUND HEMISPHERICAL LEAKS AND HEMISPHEROIDAL LEAKS OF VARYING SHAPES. HIGHER TEMPERATURES ARE REACHED IN ISOLATE HEMISPHEROIDAL LEAKS THAN IN HEMISPHERICAL LEAKS OF EQUAL VOLUME.

PER DESC: HWU-101, 69 PAGES, 11 FIGURES, 7 TABLES, 7 REFERENCES, MARCH 1966

KEYWORDS: DESIGN; STORAGE TANKS; LEAK; COMPUTER PROGRAM; HEAT TRANSFER; POTENTIUM; SOIL; RADIONUCLIDE MOVEMENT THROUGH; WASTE STORAGE; SOIL; MICLIDE OCCURRENCE; THERMAL CONSIDERATION;

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PUB DATE: 1970

AUTHOR: JASON, R.P.; WARD, J.L.

TITLE: NUCLEAR WASTE MANAGEMENT PRACTICES AND TRENDS

CORPORATE AUTHOR: SARGENT AND LUNDY, ENGINEERS

ABSTRACT: DEALS WITH RADIOACTIVE WASTE MANAGEMENT

FOR '74 AND FOR NUCLEAR REACTORS. REPORT HAS 13 PAGES, 10 FIGURES. COVERS ALL TYPES OF REACTOR WASTES AND GIVES ENGINEERING SUGGESTIONS FOR IMPROVED OFF-GAS, LIQUID, AND SOLID WASTE CONTROL.

PER DESC: AMERICAN POWER CONFERENCE, CHICAGO, ILLINOIS, APRIL 21-23, 1970

KEYWORDS: REACTOR, DNB; REACTOR, FBR; WASTE DISPOSAL; REACTOR; RADIOACTIVITY RELEASE; RADIONUCLIDE TRANSFER

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PUB DATE: 1974

AUTHOR: JONES, C.E.; BOFF, C.D.

TITLE: STORAGE AND RELEASE OF RADIATION ENERGY IN SALT IN RADIOACTIVE WASTE DEPOSITORIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY CHEMICAL TECH. DIVISION

ABSTRACT: ONE OF THE QUESTIONS RAISED WITH RESPECT TO THE SUITABILITY OF WASTE DISPOSAL IN SALT IS WHETHER ANY STORED ENERGY MIGHT BE ACCUMULATED IN THE SALT IMMEDIATELY SURROUNDING A WASTE PACKAGE DUE TO GAMMA RADIATION COULD BE RELEASED IN SUCH A MANNER AS TO CAUSE SERIOUS THERMAL EXCURSIONS OR OTHER UNDESIRABLE EFFECTS. AVAILABLE INFORMATION INDICATED THAT THE AMOUNTS OF STORED ENERGY ARE THE CONDITIONS UNDER WHICH IT COULD BE RELEASED (ANNEALED) WERE SUCH THAT NO SAFETY HAZARDS WOULD BE INVOLVED. HOWEVER, COMPLETE AGREEMENT HAS NOT BEEN REACHED CONCERNING THE AMOUNTS OF STORED ENERGY THAT HAD ACCUMULATED IN SAMPLES OF RECOVERED SALT FROM THE LIGHS RISE, OR THE AMOUNTS THAT MIGHT ACCUMULATE UNDER VARIOUS CONDITIONS WHICH WOULD PREVAIL IN AN ACTUAL DEPOSITORY. TO PROVIDE FURTHER AND MORE DETAILED INFORMATION, WE CONDUCTED EXPERIMENTS IN WHICH SAMPLES OF SALT WERE IRRADIATED UNDER SEVERAL DIFFERENT SETS OF EXPOSURE CONDITIONS OF DOSE RATE, DOSE, AND TEMPERATURE, AND THEN ANALYZED FOR STORED ENERGY USING A SPECIALLY CONSTRUCTED CALORIMETER. POSTIRRADIATION THERMAL ANNEALING CHARACTERISTICS WERE INVESTIGATED BY EXPOSING SOME OF THE IRRADIATED SAMPLES AT ELEVATED TEMPERATURES PRIOR TO MEASURING THE STORED ENERGY. OUR EXPERIMENTAL RESULTS SHOWED THAT ENERGY STORAGE IN REPOSITORY SALT WILL DEPEND UPON THE TEMPERATURE OF THE SALT DURING IRRADIATION AS WELL AS UPON THE DOSE RATE AND THE DOSE IN THE SALT. IT WAS FURTHER DECIDED THAT NO STORED RELEASE OF STORED ENERGY IS LIKELY. (MODIFIED AUTHOR ABST.)

PER DESC: OPL-TR-0009, JAN. 1974, RI EP., 11 PAGES, 11 TAB, 25 PPF, 2 APPEND.

KEYWORDS: STORED ENERGY; WASTE DISPOSAL, SALT; ENERGY RELEASE; SALT (SPE ALSO REDUCED SALT AND WASTE DISPOSAL, SALT); RADIOACTIVE WASTE; WASTE DISPOSAL; THERMAL CONSIDERATION; HAZARDS ANALYSIS; GAMMA RADIATION; TEMPERATURE DEPENDENCE

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PUB DATE: 1976

AUTHOR: JONASON, E.B.

TITLE: PERSONNEL INVOLVED IN THE DEVELOPMENT OF NUCLEAR STANDARDS IN THE UNITED STATES 1975

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE DEVELOPMENT OF VOLUNTARY NUCLEAR STANDARDS IN THE UNITED STATES IS AN ACTIVE AND NECESSARY ENDEAVOR OF THE TECHNICAL COMMUNITY CONCERNED WITH THE SAFE, ORDERLY, AND ECONOMIC DEVELOPMENT OF THE NUCLEAR POTENTIAL. THERE ARE ALMOST 900 PEOPLE PRESENTLY INVOLVED EITHER IN WRITING VOLUNTARY STANDARDS AND CODES OR IN THE MANAGEMENT AND PROCESSING POLS NECESSARY FOR THEIR APPROVAL AND PROMULGATION. THIS DOCUMENT RECORDS THE CURRENT PARTICIPATION OF THESE PEOPLE AS MEMBER, CHAIRMAN, OR SECRETARY OF ABOUT 900 IDENTIFIED COMMITTEES AND PROJECTS. THE STANDARDS PROJECTS ARE IDENTIFIED WITH THE ORGANIZATIONS THAT ARE RESPONSIBLE FOR THE PREPARATION, REVIEW, AND MAINTENANCE OF THE STANDARDS AND THAT PROVIDE SUPPORT THROUGH SUPERVISORY COMMITTEES AND PRADUNTERS STAFF. THE DIRECTORY HAS

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FOUR MAJOR SECTIONS: PERSONNEL, EMPLOYERS, COMMITTEES, AND A BASIC INDEX OF COMMITTEE TITLES. THE DIRECTORY CAN BE USED TO IDENTIFY THESE NUCLEAR STANDARDS PROJECTS CURRENTLY ACTIVE, TO INDICATE THE PARTICIPATION OF EMPLOYERS, AND TO RECOGNIZE THE CONTRIBUTIONS OF INDIVIDUALS TO THESE OFTEN INTERDISCIPLINARY ACTIVITIES.

PUB DESC: OMBL/RBG-1 SPECIAL 1976 (NAT);

KEYWORDS: STANDARDS; RADIATION (SEE ALSO REGULATION); NUCLEAR INDUSTRY; SAFETY; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); ADMINISTRATIVE AGENCY; ADMINISTRATIVE CONTROL; INFORMATION; BIBLIOGRAPHY (SEE ALSO REVIEW);

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PUB DATE: 1971

AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: ENVIRONMENTAL STATEMENT, RADIOACTIVE WASTE DEPOSITORY, LYONS, KANSAS

ABSTRACT: DESCRIBES THE INITIAL MEASURES TO BE TAKEN AS A PART OF THE COMMISSION'S OVERALL WASTE MANAGEMENT POLICY AND PROGRAM FOR THE PERMANENT DISPOSAL WASTES. THE PROPOSED FACILITY WILL SAFELY CONTAIN THESE WASTES FOR THE REQUIRED PERIOD OF TIME WITHOUT ANY SIGNIFICANT IMPACT ON THE ENVIRONMENT. THIS POLICY HAS, IN FACT, BEEN ESTABLISHED WITH PUBLICATION IN THE FEDERAL REGISTER ON NOVEMBER 14, 1970, OF APPENDIX F TO 10 CFR 50 WHICH REQUIRES THAT INDUSTRY SOLIDIFY THEIR HIGH-LEVEL LIQUID WASTES AND TRANSFER THESE WASTES TO A FEDERAL DEPOSITORY. THIS POLICY WAS FIRST PROPOSED ON JUNE 3, 1969, WHEN IT WAS ISSUED FOR PUBLIC COMMENT. ADDITIONAL COMMENTS RECEIVED ON DRAFT ENVIRONMENTAL STATEMENT AND AEC RESPONSES ARE GIVEN.

PUB DESC: JCAR READINGS, PART 3, APPENDIX 21, PAGE 2032-2206, JUNE 1971

KEYWORDS: GEOLOGY; PUBLIC RESPONSE (SEE ALSO OFFICENT, PROPOSAL, AND REGULATORY RESPONSE); PROJECT SALT VAULT; KANSAS; ENVIRONMENT; GEOLOGY; THERMAL CONSIDERATION; POPULATION EXPOSURE; HYDROLOGY; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; SAFETY EVALUATION; SAFETY ANALYSIS; POPULATION RESPONSE; RADIATION EFFECT; REPORT, ENVIRONMENTAL

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PUB DATE: 1970

AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: INTERIM REPORT OF THE KANSAS GEOLOGICAL SURVEY ON STORAGE OF RADIOACTIVE WASTE IN SALT AT LYONS, KANSAS

ABSTRACT: THE GEOLOGICAL SURVEY RECOGNIZES A VARIETY OF SIGNIFICANT PROBLEMS REGARDING THIS SITE, AND RECOMMENDS STRONGLY THAT ADDITIONAL STUDIES AND INVESTIGATIONS BE UNDERTAKEN IMMEDIATELY AND CONCURRENTLY WITH PLANNING AND SITE ACQUISITION. THESE PROBLEMS, STUDIES, AND INVESTIGATIONS ARE DESCRIBED.

PUB DESC: JCAR READINGS, PART 3, APPENDIX 17, PAGE 1988-2002, MARCH 1971

KEYWORDS: HEAT TRANSFER; PUBLIC RESPONSE (SEE ALSO OFFICENT, PROPOSAL, AND REGULATORY RESPONSE); PROJECT SALT VAULT; KANSAS; SAFETY REVIEW; SITING, WASTE DISPOSAL; REGULATION, STATE; POPULATION EXPOSURE; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; SAFETY PRINCIPLES AND PHILOSOPHY; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; GEOLOGY, STRATIGRAPHY; GEOLOGY, GEOCHEMICAL; GEOLOGY, GEOPHYSICAL; SAFETY EVALUATION; SAFETY ANALYSIS; SAFEGUARDS, NUCLEAR MATERIAL; POPULATION RESPONSE; POPULATION ORGANIZATION; AGENCY, AEC (SEE ALSO USAEC);

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PUB DATE: 1969

AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: TESTIMONY OF DR. JOSEPH A. LIEBERMAN, ASSISTANT DIRECTOR FOR NUCLEAR SAFETY, AEC, CONCERNING RADIOACTIVE WASTE MANAGEMENT AND RELATED MATERIALS

CORPORATE AUTHOR: CONGRESS OF THE UNITED STATES

ABSTRACT: REPORTS AND STRONGLY SUPPORTS THE EFFORTS WHICH ARE DIRECTED TOWARD RESTORING AND/OR MAINTAINING THE QUALITY OF OUR ENVIRONMENT-A GOAL WHICH HAS BECOME AN IMPORTANT NATIONAL OBJECTIVE. THE COMMISSION'S PROGRAM OF RADIOACTIVE WASTE CONTROL IS CONSISTENT WITH THIS OBJECTIVE. INDEPENDENT EVALUATIONS OF THE PROGRAM THAT HAVE BEEN MADE OVER THE YEARS BY VARIOUS TECHNICAL COMMITTEES IN THE NATIONAL ACADEMY OF SCIENCES, AND AN ADVISORY GROUP TO THE PRESIDENT'S FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY HAVE SHOWN THAT RADIOACTIVE WASTE MANAGEMENT OPERATIONS ARE BEING CARRIED OUT IN A SAFE AND ECONOMICAL MANNER.

PUB DESC: JOINT COMMITTEE ON ATOMIC ENERGY, CONGRESS OF THE UNITED STATES, 1969 PG 337-351

KEYWORDS: ADMINISTRATIVE CONTROL; CONGRESSIONAL ACTIVITY; EMPLOYMENT; WASTE DISPOSAL; WASTE STORAGE; REACTOR, POWER; WASTE TRANSPORTATION; WASTE MANAGEMENT; R AND D PROGRAM; THERMAL POLLUTION; CONCENTRATION; FUEL CHAIN

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PUB DATE: 1962

AUTHOR: JONES, E.N.

TITLE: HYDROLOGY OF RADIOACTIVE WASTE DISPOSAL IN THE MTN-ETH AREA, NATIONAL REACTOR TESTING STATION, IDAHO.

PUB DESC: U. S. GEOL. SURV. PROF. PAPERS 450 PAGES 113-116 1962

KEYWORDS: DIFFUSION; IDAHO; TESTING; TRITON; WASTE DISPOSAL; WATER; HYDROLOGY; REACTOR; SEAL; RADIOISOTOPE

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PUB DATE: 1966

AUTHOR: KASEB, J.D.

TITLE: RADIOACTIVE WASTE DISPOSAL USING COLERANITE

ABSTRACT: THIS PATENT RELATES TO A PROCESS IN WHICH A SOLUTION OF RADIOACTIVE FISSION PRODUCTS IN NITRIC ACID IS MIXED WITH FINELY DIVIDED COLERANITE (2 CAO.3B2O3.5H2O) AND THE SLURRY IS SUBJECTED TO SPRAY CALCINATION. THE COLERANITE ACTS AS A PLUG, GIVING A PRODUCT WHICH DOES NOT STICK TO THE WALLS OF THE CALCINER AND WHICH CAN BE MELTED AND CAST AT A TEMPERATURE BELOW 1000 C TO FORM A RELATIVELY INSOLUBLE GLASSY SOLID WHICH DOES NOT DISINTEGRATE IN WATER.

PUB DESC: U.S. PATENT 3-272-756 +. 2 PAGES, 1 TABLE, SEPTEMBER 13, 1966

KEYWORDS: CALCINATION; SPRAY SOLIDIFICATION; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; PATENT

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PUB DATE: 1975

AUTHOR: KELLEY, J.A.

TITLE: EVALUATION OF GLASS AS A MATRIX FOR SOLIDIFICATION OF SAVANNAH RIVER PLANT WASTE: NONRADIOACTIVE AND TRACER STUDIES

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, BIKER, SOUTH CAROLINA

ABSTRACT: TESTS WITH SIMULATED WASTE INDICATE THAT ALKALINE SLUDGE STORED IN SHP WASTE TANKS CAN BE SOLIDIFIED IN PHOSPHATE GLASS CONTAINING UP TO 45 WT % SLUDGE. FOR MELTING AT 1150 C, THE OPTIMUM GLASS MIXTURE IS 52.5 WT % SiO2, 10.0% B2O3, 12.5% Na2O, 5.0% CaO, AND 10.0% TiO2. ALUMINUM INCREASES GLASS MELT VISCOSITY AND CAN LIMIT THE AMOUNT OF SLUDGE SOLIDIFIED. SULFATE HAS LIMITED SOLUBILITY;

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 ARGUE 0.8 TO 1.0 WT % SULFATE, SEIBATE,
 UPTON-SOLUBLE, CESIUM-RICH PHASE IS FORMED. DURING
 MELTING, APPROXIMATELY 0.5% OF THE CESIUM, 10 TO 50%
 OF THE BARIUM, AND ALL OF THE MERCURY PRESENT IN
 THE GLASS Mixture ARE VOLATILIZED.

PUB DESC: DP-1302, 20 PAGES, 12 TABLES, 15
 REFERENCES, MAY 1975

KEYWORDS: ADVISORY COMMITTEE ON REACTOR
 SAFEGUARDS; WASTE DISPOSAL; WASTE TREATMENT; WASTE
 SOLIDIFICATION; SAVANNAH RIVER PLANT; GLASS (SEE ALSO
 VITRIFICATION);

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PUB DATE: 1975

AUTHOR: KELLEY, J.A.

TITLE: EVALUATION OF GLASS AS A MATRIX FOR
 SOLIDIFICATION OF SAVANNAH RIVER PLANT WASTE

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken,
 SOUTH CAROLINA

ABSTRACT: LABORATORY TESTS USING ACTUAL SLUDGES
 COLLECTED FROM SAVANNAH RIVER PLANT WASTE TANKS WERE
 PERFORMED TO EVALUATE GLASS AS A WASTE SOLIDIFICATION
 MATRIX. SLUDGE WAS COLLECTED FROM THREE SFP WASTE
 TANKS, WASHED TO REMOVE SOLUBLE SALTS, AND THEN
 GRIND TO A FINE POWDER. FROM 25 TO 40 WT % OF THESE
 SLUDGES WAS VITRIFIED INTO A MONOSILICATE GLASS BY
 MELTING AT 1150 C. SUBSTITUTION OF 4 WT % Li2O FOR 4
 WT % Na2O IN THE GLASS MIX ALLOWED HIGHER LOADING OF A
 HIGH-ALUMINUM SLUDGE. NO PROBLEM WITH PHASE
 SEPARATION WAS ENCOUNTERED, AND ALL SLUDGE
 COMPONENTS, EXCEPT MERCURY WHICH VOLATILIZED, APPEARED
 TO DISSOLVE COMPLETELY IN THE GLASS MELT. THIS WORK
 SHOWED THAT VITRIFICATION OF SFP HIGH-LEVEL WASTE
 SLUDGES IN MONOSILICATE GLASS IS FEASIBLE.

PUB DESC: DP-1397, 21 PAGES, 15 TABS, 2 FIGS, 3
 REFS, OCT. 1975

KEYWORDS: HIGH-LEVEL WASTE; ADVISORY COMMITTEE ON
 REACTOR SAFEGUARDS; SAVANNAH RIVER PLANT; WASTE
 SOLIDIFICATION; GLASS (SEE ALSO VITRIFICATION);
 VITRIFICATION

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PUB DATE: 1970

AUTHOR: KERRY, A.W.; MITCHELL, B.T.

TITLE: UK WASTE DISPOSAL POLICY

CORPORATE AUTHOR: MINISTRY OF HOUSING AND LOCAL
 GOVERNMENT, LONDON; FISHERY'S RADIOBIOLOGICAL
 LABORATORY, MINISTRY OF AGRICULTURE, FISHERIES AND
 FOOD, LONDON, ENGLAND

ABSTRACT: EXPLAINS AIMS OF THE BRITISH RADIOACTIVE
 WASTE MANAGEMENT POLICY. *** THE LEGAL POWERS TO
 CONTROL WASTE DISCHARGES IN ACCORDANCE WITH THESE AIMS
 ARE DESCRIBED. *** FOR IMPORTANT WASTES, THE PRINCIPLE
 OF THE CRITICAL PATH APPROACH GOVERNS THE SETTING OF
 LIMITS FOR DISPOSAL. SOME EXAMPLES ARE DESCRIBED IN
 DETAIL. FOR SMALL WASTES, A MORE GENERAL APPROACH
 BASED ON GUIDING LIMITS DERIVED FROM REPRESENTATIVE
 WASTE CASES IS FOLLOWED - THE LIMITS ARE GIVEN. *** A
 FEW REMARKS ARE MADE ON FUTURE WASTE DISPOSAL PROBLEMS
 AND ON THE BRITISH CONTRIBUTION TO GLOBAL PROBLEMS IN
 THIS FIELD.

PUB DESC: SN-137/62, STI/EOR-244, CONF-700905, 20
 PAGES, FIGURES, TABLES, REFERENCES, PAPER PRESENTED AT
 THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND
 INTERMEDIATE-LEVEL RADIOACTIVE WASTE, Aix-en-Provence,
 FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: GUIDE; IAEA; LAW; REGULATION (SEE ALSO
 STANDARDS, RADIATION); UNITED KINGDOM; WASTE
 MANAGEMENT; RADIATION SAFETY AND CONTROL

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PUB DATE: 1975

AUTHOR: KNEHRVICH, A.A.; KOLYCHEV, F.S.

TITLE: BOOK REVIEW: CLEANUP OF RADIOACTIVELY
 CONTAMINATED EFFLUENTS FROM LABORATORIES AND NUCLEAR
 RESEARCH PRACTICES

ABSTRACT: THIS BOOK DEALS WITH REPROCESSING,
 DECONTAMINATION OF LOW-LEVEL AND MEDIUM-LEVEL RADIOACTIVE
 WASTES, AND SUBSEQUENT BURIAL OF CONCENTRATES DERIVED
 FROM THESE WASTES. THE THIRD EDITION IS REVISED AND
 SUPPLEMENTED WITH FRESH MATERIAL DRAWN FROM SOVIET AND
 FOREIGN PUBLICATIONS AND IS UP TO DATE AT LEAST AS OF
 THE SECOND HALF OF 1973. ALL OF THE BASIC TECHNIQUES
 FOR REPROCESSING AND PROCESSING LIQUID RADIOACTIVE WASTES
 ARE TOUCHED UPON.

PUB DESC: SOVIET ATOMIC ENERGY, 37(4), PG. 1302
 (JUNE 1975)

KEYWORDS: DECONTAMINATION; REVIEW;
 INTERMEDIATE-LEVEL WASTE; USSR; WASTE TREATMENT; WASTE
 DISPOSAL, LIQUID; WASTE TREATMENT, LIQUID

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PUB DATE: 1974

AUTHOR: KIBBY, A.W.; GODFREY, M.W.

TITLE: A CRITICAL REVIEW OF SOLID RADIOACTIVE WASTE
 PRACTICES AT NUCLEAR POWER PLANTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE RELATIONSHIPS AMONG SOLID RADIOACTIVE
 WASTE (RADWASTE) VOLUME, CURIE CONTENT, AND SIZE AND
 NUMBER OF SHIPMENTS WERE STUDIED. THESE RADWASTE
 VARIABLES WERE NORMALIZED ON THE BASIS OF THERMAL
 NEGAWATT-HOURS ALL OPERATING LIGHT WATER REACTORS
 (LWRs), STARTING WITH DUESSEN UNIT 1, WERE CONSIDERED
 FROM FIRST CRITICALITY THROUGH DECEMBER 31, 1972.
 PLANT OPERATING REPORTS AND LOCKET MATERIALS,
 SUPPLEMENTED WITH EARLIER SIMILAR OPEN LITERATURE
 SUMMARIES, 1-6 WERE THE MAIN SOURCES OF INFORMATION.
 IN ADDITION, SELECTED PLANTS KNOWN TO BE PLANNING OR
 UNDERGOING REVISIONS IN SOLID RADIOACTIVE WASTE
 HANDLING PROCEDURES WERE CONTACTED DIRECTLY. WASTE
 CORE COMPONENTS WERE EXCLUDED FROM THE ANALYSIS
 BECAUSE THIS STUDY WAS CONCERNED MAINLY WITH THE
 TRENDS OF ROUTINE SOLID RADWASTE GENERATED FROM
 OPERATION OF THE LIQUID WASTE TREATMENT SYSTEM. THE
 ROUTINE WASTES CONSIDERED IN THIS STUDY ARE FILTERS,
 FILTER SLUDGES, SPENT DEMINERALIZED RESINS, EVAPORATOR
 CONCENTRATES, AND DRY COMPRESSIBLE WASTES WHICH ARE
 SHIPPED FOR OFFSITE BURIAL. IN THE OVERALL ANALYSIS,
 THESE ARE GROUPED TOGETHER AND REFERRED TO AS TOTAL
 SOLID RADWASTE SHIPPED. (MODIFIED AUTH ABST.)

PUB DESC: OERL-474, 1974 (MARCH), 66 P.

KEYWORDS: WASTE MANAGEMENT; SOLID COMPACTION;
 PACKAGING; TRANSPORTATION; HANDLING (SEE ALSO
 TRANSPORTATION AND HANDLING); WASTE STORAGE; WASTE
 DISPOSAL; STORAGE CONTAINER; WASTE PRODUCTION; VOLUME;
 COMPARISON; COILING WATER REACTOR (CWR); PRESSURIZED
 WATER REACTOR (SEE ALSO REACTOR, PWR); DATA
 COLLECTION; REVIEW

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PUB DATE: 1976

AUTHOR: KILLOUGH, G.G.; KERRY, LARRY B.

TITLE: A METHODOLOGY FOR CALCULATING RADIATION
 DOSES FROM RADIOACTIVITY RELEASED TO THE ENVIRONMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY;
 OAK RIDGE NATIONAL LABORATORY, ENVIRONMENTAL SCIENCES
 DIVISION

ABSTRACT: THIS DOCUMENT REPRESENTS A COMPILATION OF
 THE PRINCIPAL ENVIRONMENTAL TRANSPORT AND DOSIMETRY
 MODELS DEVELOPED, ADAPTED, AND IMPLEMENTED BY THE
 RADIOLOGICAL ANALYSES AND APPLICATIONS GROUP OF THE
 ENVIRONMENTAL SCIENCES DIVISION OF THE OAK RIDGE
 NATIONAL LABORATORY. THE TRANSPORT OF RELEASED
 RADIOACTIVITY THROUGH THE NATURAL ENVIRONMENT IS
 DISCUSSED IN FOUR SECTIONS: ATMOSPHERIC DISPERSION,
 RESUSPENSION OF MATERIAL BY WIND ACTION, TERRESTRIAL
 TRANSPORT, AND MOVEMENT IN UNDERGROUND WATER SEQUENCE.
 THE DISCUSSION OF DOSE TO MAN AND BICR IS DIVIDED

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INTO INTERNAL AND EXTERNAL EXPOSURE SECTIONS. AND FINALLY, A REVELMENTAL MODEL (CCD002) WHICH ESTIMATES THE DOSE TO A POPULATION RESULTING FROM THE MANUFACTURE, STORAGE, DISTRIBUTION, USE, AND DISPOSAL OF CONSUMER PRODUCTS WHICH CONTAIN RADIOACTIVITY IS DESCRIBED. NUMEROUS TABLES ARE INCLUDED. (A07H)

PUB DESC: OREL-4992 1976 (BANC) ENVIRONMENTAL SCIENCES DIVISION PUBLICATION NO. 660

KEYWORDS: WASTE TREATMENT; OREL; SURVEY; TRANSPORT; DOSIMETRY; ENVIRONMENT; WASTE DISPOSAL; CONTAMINATION; TRANSPORT; RADIOACTIVITY; ATMOSPHERIC DISPERSION; RESUSPENSION; MOVEMENT IN UNDERGROUND WATER; CONSUMER PRODUCTS

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PUB DATE: 1969

AUTHOR: KING, G.E.

TITLE: RADIATION PROTECTION ASPECTS OF THE MOVEMENT OF RADIOACTIVE LIQUID WASTE IN RAILROAD TANK CARS

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: LIQUID RADIOACTIVE WASTE GENERATED IN BATTILLE-NORTHWEST 300 AREA OPERATIONS IS COLLECTED IN STORAGE TANKS AND SUBSEQUENTLY TRANSPORTED TO ATLANTIC RICOPIED HANFORD CONTAINMENT FACILITIES IN THE 200 AREAS, ABOUT 30 MILES AWAY, FOR DISPOSAL. BEFORE 1968, THIS WASTE WAS HAULED IN TANK TRUCKS WITH A CAPACITY OF 5,000 GAL EACH. BEGINNING IN JANUARY 1968, RAILROAD TANK CARS WITH A CAPACITY OF 20,000 GAL EACH WERE USED. AS EXPERIENCE WAS GAINED WITH TANK CARS, SOME RADIOLOGICAL CONTROL PROBLEMS AROSE. CONTROL OF CONTAMINATION ON THE CARS AND IN THE LOADING AREA BECAME DIFFICULT AND WAS COMPLICATED BY SIGNIFICANT DOSE RATES FROM THE CARS. THE PROBLEMS AND METHODS DEVISED TO DEAL WITH THEM ARE DISCUSSED.

PUB DESC: BNWL-966, 10 PAGES, 2 FIGURES, 5 TABLES, JANUARY 1969

KEYWORDS: DECONTAMINATION; DOSIMETRY; MONITOR, PERSONNEL; SPACE CONTAMINATION; WASTE HANDLING; WASTE DISPOSAL, LIQUID; WASTE TRANSPORTATION; MONITOR, BACKGROUND; CONTAMINATION; STORAGE CONTAINER; BATTILLE NORTHWEST; SHIELDING

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PUB DATE: 1961

AUTHOR: KING, L.J.; MCCARTHY, W.T.

TITLE: PLUTONIUM RELEASE INCIDENT OF NOVEMBER 20, 1959

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A NONNUCLEAR EXPLOSION INVOLVING AN EVAPORATOR OCCURRED IN A SHIELDED CELL IN THE RADIOCHEMICAL PROCESSING PILOT PLANT AT OAK RIDGE NATIONAL LABORATORY ON NOV. 20, 1959. PLUTONIUM WAS RELEASED FROM THE PROCESSING CELL, PROBABLY AS AN AEROSOL OF FINE PARTICLES OF PLUTONIUM OXIDE, VIA THREE PRINCIPAL ROUTES: (1) CELL VENTILATION SYSTEM: ABOUT 1.5 G COMPLETELY REMOVED FROM THE AIR STREAM BY HOUGHING AND ABSOLUTE FILTERS. (2) CELL 6 DOOR, SLOWN OPEN (BUT NOT OFF) TO THE OUTSIDE: ABOUT 600 MG SPREAD RAPIDLY OVER LIMITED AREA SOUTH AND EAST OF BUILDING; GRAPHITE REACTOR BUILDING MOST CONTAMINATED. (3) PIPE PASSAGES AND SERVICE OPENINGS FROM CELL 6 TO THE INTERIOR OF BLDG. 3019: ABOUT 70 MG; REQUIRED DECONTAMINATION OVER SEVERAL MONTHS. IT IS PROBABLE THAT THIS EVAPORATOR SYSTEM HAD ACCUMULATED ABOUT 1100 G OF NITRIC ACID-INSOLUBLE PLUTONIUM IN THE STEAM STRIPPED PACKING; THE EXPLOSION RELEASED AN ESTIMATED 150 G INSIDE CELL 6, WITH ABOUT 130 G IN THE EVAPORATOR SOURCE CELL AND ABOUT 15 G IN THE LARGER MAIN CELL. NO RADIOACTIVE MATERIAL WAS RELEASED FROM THE VENTILATION STACKS; NO CONTAMINATION OF GROUND AND FACILITIES OCCURRED OUTSIDE OF A RELATIVELY SMALL AREA OF OAK RIDGE NATIONAL LABORATORY IMMEDIATELY ADJACENT TO THE EXPLOSION. NO ONE WAS INJURED BY THE EXPLOSION, AND NO ONE RECEIVED MORE THAN 2% OF A LIFETIME BODY BURDEN OF PLUTONIUM OR AN OVEREXPOSURE TO SOURCES OF

IONIZING RADIATION EITHER AT THE TIME OF THE INCIDENT OR DURING SUBSEQUENT CLEANUP OPERATIONS. THE EXPLOSION IS CONSIDERED TO BE THE RESULT OF RAPID REACTION OF NITRATED ORGANIC COMPOUNDS FORMED BY INADVERTENT MIXTURE OF ABOUT 14 LITERS OF A PRECIPITARY DECONTAMINATING REAGENT. IN CLEANUP THE CONTAMINATION WAS LIMITED TO THE REARMY STREET AND BUILDING SURFACES WITH TAR, PAINT, HOOPING COMPOUND, OR MASONRY SEALER, AS APPROPRIATE TO THE SURFACE. DECONTAMINATION OF THE INTERIOR OF THE PILOT PLANT BUILDING, EXCEPT THE PROCESSING CELLS, WAS 95% COMPLETE BY SEPT. 1, 1960. DECONTAMINATION OF THE PROCESS CELLS WAS DELAYED 8 MONTHS UNTIL BUILDING MODIFICATIONS COULD BE MADE TO IMPROVE CONTAINMENT. COMPLICATIONS TO THE PILOT PLANT HAVE BEEN FORECAST WHICH WILL PRECLUDE DISCHARGE INTO THE LABORATORY AREA AND ITS ENVIRONMENT OF CONCENTRATIONS OR AMOUNTS OF RADIOACTIVE MATERIALS THAT WOULD BE INJURIOUS TO HEALTH OR INTERFERE WITH OTHER LABORATORY PROGRAMS.

PUB DESC: OREL-2969 1961 (FEB.)

KEYWORDS: INCIDENT; RADIOACTIVITY RELEASE; PLUTONIUM; RADIOCHEMICAL PROCESSING; EXPLOSION; DECONTAMINATION; EVAPORATION; EMERGENCY PROCEDURE; OREL;

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PUB DATE: 1975

AUTHOR: KITCE, T.

TITLE: RADIOACTIVE WASTE MANAGEMENT IN JAPAN

CORPORATE AUTHOR: UNIVERSITY OF TOKYO, JAPAN

ABSTRACT: JAPANESE A.E.C. CONSIDERS THAT THE TREATMENT OF RADIOACTIVE WASTES INTO SOME FORM APPROPRIATE FOR ULTIMATE MANAGEMENT SHOULD BE DONE BY OPERATORS OF NUCLEAR FACILITIES ON SITE. A TENTHARY GUIDE FOR CEMENT-SOLIDIFICATION OF LOW-LEVEL WASTES FOR OCEAN DUMPING TESTS WAS PREPARED IN 1973. ALTHOUGH THE GUIDE IS RELATED ONLY WITH HOMOGENEOUS SOLIDIFIED WASTES, IT IS HOPED TO EXTEND THE GUIDE TO BE APPLICABLE FOR MULTI-STAGE DESIGNS. IT IS EXPECTED THAT THE OCEAN DUMPING TEST WILL BE STARTED IN 1977.

PUB DESC: AMERICAN NUCLEAR SOCIETY, TOPICAL MEETING OF NUCLEAR SOCIETY, TUCSON, ARIZONA, OCT. 5-8, 1975, 6 PPS

KEYWORDS: WASTE MANAGEMENT; LOW-LEVEL WASTE; CEMENT; WASTE DISPOSAL; FUEL CYCLE; FUEL REPROCESSING; ENVIRONMENT; JAPAN; WASTE SOLIDIFICATION; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN);

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PUB DATE: 1970

AUTHOR: KCHLER, W.; ENGELHAUB, W.J.

TITLE: HOT CELLS FOR THE PROCESSING OF SOLID RADIOACTIVE WASTES

ABSTRACT: DESCRIBES A NEW HOT CELL FACILITY INTRODUCED FOR REDUCING SOLID HIGHLY RADIOACTIVE WASTES INTO A FORM SUITABLE FOR PERMANENT STORAGE, AND FOR PACKAGING AND STORING THESE WASTES PENDING FINAL TRANSPORT. THIS BLOCK OF CELLS IS THE CORE OF THE FERRAS FACILITY OF THE KARLSRUHE NUCLEAR RESEARCH CENTER.

PUB DESC: REUSITECHNIK, 12(2), PG. 67-70 (FEBRUARY 1970) (IN GERMAN)

KEYWORDS: DESIGN CRITERIA; HOT CELL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; FISSION; WASTE TREATMENT, SOLID; FUEL WASTE HANDLING

<226>

PUB DATE: 1967

AUTHOR: KRAUCZINSKI, S.J.

TITLE: RADIOACTIVE WASTES. TREATMENT, STORAGE, AND DISPOSAL

ABSTRACT: THE COLLECTION, PROCESSING, AND STORAGE OF RADIOACTIVE WASTE HAS BECOME ONE OF THE PRINCIPAL

(226) CGMT.
PROBLEMS OF NUCLEAR TECHNOLOGY. THE MOST IMPORTANT
METHODS USED PRESENTLY IN THE PROCESSING AND STORAGE
OF RADIOACTIVE WASTE ARE DESCRIBED. SUGGESTIONS ARE
MADE FOR THE FUTURE DEVELOPMENT AND RESEARCH.

PUB DESC: THIEBIG-TASCHENRECHER, BAND 27. HUBICH,
VERLAG KARL THIEBIG KG, 1967

KEYWORDS: WASTE STORAGE; REVIEW; WASTE TREATMENT;
WASTE DISPOSAL; ECONOMICS; WASTE MANAGEMENT; RADIATION
SAFETY AND CONTROL; B AND D PROGRAM

(227)

PUB DATE: 1970
AUTHOR: KUPFER, H.

TITLE: RADIOACTIVE FALL-CUT

ABSTRACT: DISCUSSES THE METHODS OF DISPOSAL OF
RADIOACTIVE WASTE AND FALL-CUT PRODUCED BY NUCLEAR
REACTORS. METHODS SUGGESTED INCLUDE COMBINING WITH
GLASS, ION EXCHANGE, ADSORPTION (IN THE CASE OF
GASEOUS PRODUCTS) AND ASHING FOLLOWED BY DRYING
FIXING. THE PROBLEMS OF UNDERGROUND STORAGE WITH
SPECIAL REFERENCE TO THE ROCK-SALT TYPE ARRANGEMENT IS
EXPLAINED IN SOME DETAIL, WITH A DIAGRAM. AN ATTEMPT
IS MADE TO CLASSIFY RADIATION FALL-CUT AFTER THE IAEA
SYSTEM. ALSO DISCUSSES, IN SOME DETAIL, THE
REGENERATION OF THE FUEL AND COMPONENTS USED IN THE
PRODUCTION OF NUCLEAR FUEL.

PUB DESC: CONFERENCE ON NUCLEAR POWER PLANT SAFETY
AND RADIATION PROBLEMS, BERNE, SWITZERLAND, NOVEMBER
4-5, 1970 (IN GERMAN)

KEYWORDS: STANDARDS, RADIATION (SEE ALSO
REGULATION); CLASSIFICATION (SEE ALSO WASTE
CLASSIFICATION); FALLOUT; IAEA; WASTE TREATMENT; WASTE
TREATMENT, PITATION; WASTE DISPOSAL; SALT; GERMANY

(228)

PUB DATE: 1975
AUTHOR: KUPFER, H.J.; VAN SIEKE, W.J.

TITLE: ATLANTIC RICHFIELD HANFORD COMPANY QUARTERLY
REPORT - WASTE MANAGEMENT AND TRANSPORTATION
TECHNOLOGY DEVELOPMENT - JANUARY 1975 THROUGH MARCH
1975

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CO.,
RICHLAND, WASHINGTON

ABSTRACT: THIS DOCUMENT IS THE THIRD IN A SERIES OF
QUARTERLY PROGRESS REPORTS ON WORK IN SUPPORT OF
MANAGEMENT OF HANFORD HIGH-LEVEL WASTES. THE WORK
REPORTED HERE WAS PERFORMED DURING THE PERIOD JANUARY
THROUGH MARCH 1975. THE SPECIFIC TOPICS DISCUSSED ARE
GROUPED INTO THE SUBJECT AREAS OF: SALT CAME
RETRIVAL, CAME INTEGRITY, STORAGE SYSTEM
IMPROVEMENTS; WASTE IMMOBILIZATION; AND PREPARATION OF
FAILED, CONTAMINATED EQUIPMENT FOR DISPOSITION.

PUB DESC: ABB-SI-110C, 143 PPS, 29 TABS, 33 FIGS,
FAY 1975

KEYWORDS: WASTE MANAGEMENT; WASTE DISPOSAL; WASTE
TRANSPORTATION; WASTE TREATMENT; WASTE SOLIDIFICATION;
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(229)

PUB DATE: 1974
AUTHOR: KUPFER, H.J.; SCHULZ, W.W.

TITLE: HIGH-TEMPERATURE PROCESSES FOR
IMMOBILIZATION OF HANFORD IN-TANK SOLIDIFIED WASTE

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CO.,
RICHLAND, WASHINGTON

ABSTRACT: UPON COMPLETION OF THE HANFORD WASTE
MANAGEMENT PROGRAM MILLIONS OF GALLONS OF SALT CAME
CONTAMINATED BY EVAPORATION OF AQUEOUS, HIGH-LEVEL, AQUEOUS
WASTE LIQUOR WILL HAVE ACCUMULATED IN UNDERGROUND
STORAGE TANKS. THIS IN-TANK SOLIDIFIED WASTE IS
ESSENTIALLY A MIXTURE OF HANCO, HANCO2, HANCO3, HANCO4,

AND HANCO5; PRINCIPAL RADIOISOTOPES ARE SR-90 AND
CS-137. ULTIMATE DISPOSITION OF THIS SOLID
HIGH-LEVEL WASTE HAS NOT YET BEEN DETERMINED; IT MAY
BECOME NECESSARY, HOWEVER, IN THE FUTURE TO
CONVERT THE SALT CAME TO A FORM MORE SUITABLE FOR
LONG-TERM STORAGE. SEVERAL HIGH-TEMPERATURE METHODS
FOR CONVERSION OF IT AND OTHER HIGH-LEVEL WASTES TO
IMMOBILE SILICATE AND ALUMINO-SILICATE FORMS SUITABLE
FOR LONG-TERM DISPOSAL AND/OR STORAGE HAVE BEEN
PROPOSED RECENTLY. THESE INCLUDE THE HANFORD THERMITE
PROCESS, THE THERMAL PROCESS, AND THE BASALT MELT
PROCESS.

PUB DESC: ABB-SI-133, CONF-721109-13, 9 PAGES,
PAPER PRESENTED AT THE INTERNATIONAL CONFERENCE ON
NUCLEAR SOLUTIONS TO WORLD ENERGY PROBLEMS HELD IN
WASHINGTON, D.C. ON NOVEMBER 12, 1972

KEYWORDS: WASTE DISPOSAL; THERMAL-PROCESS; WASTE
STORAGE; WASTE MANAGEMENT

(230)

PUB DATE: 1973
AUTHOR: KUPFER, H.J.; SCHULZ, W.W.

TITLE: THE ENDOTHERMIC PROCESS -- APPLICATION TO
IMMOBILIZATION OF HANFORD IN-TANK SOLIDIFIED WASTE

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD COMPANY

ABSTRACT: CONVERSION OF HIGH-LEVEL SOLID
RADIOACTIVE WASTE TO A NONLEACHABLE SILICATE GLASS IS
ACCOMPLISHED IN THE ENDOTHERMIC PROCESS BY SIMPLY
MELTING OF A MIXTURE OF THE WASTE WITH CRUSHED BASALT.
OWSE (2.5 G CM(-3)) GREEN-PLACK GLASSES ARE OBTAINED
BY MELTING MIXTURES CONTAINING 30 TO 40 WTS HANFORD
IN-TANK SOLIDIFIED (ITS) WASTE, 50 TO 70 WTS BASALT,
AND 0 TO 10 WTS B2O3. ADDITION OF B2O3 TO THE PROCESS
CHANGE IS DESIRABLE TO LOWER ITS MELTING RANGE FROM
ABOUT 1100-1150 DEGREES C TO 1000-1050 DEGREES C.
LEACH RATES OF THESE GLASSES (CALCULATED FROM THE SUM
OF THE CONCENTRATIONS OF PE, BA, CA, SI, MG, AL, SR,
AND CS IN THE LEACH LIQUOR) IN WATER AT 25 DEGREES C
RANGE FROM 10(-7) TO 10(-5) G/CM(2) DAY. THE LEACH
RATE, BASED ON 137CS PER DAY FROM A SQUARE CENTIMETER
OF GLASS CONTAINING 57 MCI 137CS PER GRAM. JUDGING
FROM INITIAL TESTS, THE ENDOTHERMIC PROCESS IS A VERY
PROMISING SCHEME TO INCREASE IMMOBILIZATION OF THE ITS
WASTE. (AUTH)

PUB DESC: ABB-2450, JULY 1973, 11 P., 3 FIG., 7
TAB., 10 REF.

KEYWORDS: WASTE MANAGEMENT; HIGH-LEVEL WASTE; WASTE
TREATMENT; VITRIFICATION; ENDOTHERMIC; BASALT;
SYNTHETIC WASTE; GLASS (SEE ALSO VITRIFICATION);
LEACHING; REASCREENT; PENETRATION; SALT;
PERMEABILITY; POROSITY; MOVEMENT, RADIOACTIVITY;

(231)

PUB DATE: 1965
AUTHOR: KOZMICHENKO, M.M.

TITLE: THE DETERMINATION OF VANADIUM IN AIR

CORPORATE AUTHOR: BRISMAN RESEARCH INSTITUTE OF
HYGIENE, MOSCOW

ABSTRACT: THE WIDESPREAD AND INCREASING USE OF
RADIOACTIVE ISOTOPES AND OTHER SOURCES OF IONIZING
RADIATION HAS CREATED WASTE-DISPOSAL PROBLEMS. THE
OPERATION OF A DISPOSAL SERVICE IS DESCRIBED. THE
MECHANICS OF COLLECTION, TRANSPORT, AND PROCEDURAL
ARRANGEMENTS ARE COVERED.

PUB DESC: VI-66-51011/2-A, 1ST-CAT, 1516-1540, 3
PAGES, PAGE 239 FROM 241 OF HYGIENE AND SANITATION
30(4-6), APRIL 1965

KEYWORDS: WASTE DISPOSAL, LIQUID, AIR; WASTE
DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE

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PUB DATE: 1968
AUTHOR: LAPPERS, M.T.

<22> CONT.

TITLE: THE DISTRIBUTION OF COBALT-60, RUTHENIUM-106, AND CESIUM-137 ABOVE SUSPENDED AND DISSOLVED PARTICLES IN WHITE OAK LAKE

CORPORATE AUTHOR: ONE SIX EIGHTS REPROCESSING PLANT

ABSTRACT: WHITE OAK LAKE WAS SAMPLED ROUTINELY DURING A 14-MONTH PERIOD. EACH SAMPLE WAS CENTRIFUGALLY FRACTIONATED INTO SELECTED PARTICULATE FRACTIONS AND A DISSOLVED MATERIALS FRACTION. THE FRACTIONS ISOLATED FROM SAMPLES OF WHITE OAK LAKE WATER WERE SUBJECTED TO RADIOCHEMICAL ANALYSIS. LINEAR CORRELATIONS WERE CALCULATED FOR SEVERAL COMBINATIONS OF THE DATA. FROM THIS STATISTICAL ANALYSIS AND INTERPRETATION, THE PATTERNS OF UPTAKE AND DISTRIBUTION OF THREE RADIONUCLIDES (COBALT-60, RUTHENIUM-106, AND CESIUM-137) IN THE AQUATIC ENVIRONMENT IS BETTER UNDERSTOOD.

PUB DESC: E-1750, 20 PAGES, REFERENCES, TABLES, FIGURES, OCTOBER 3, 1968

KEYWORDS: CESIUM; COBALT; PARTICLE; RUTHENIUM; SAMPLING; ISOTOPIC FRACTIONATION; PARTICLE SIZE DISTRIBUTION; PARTICLE, RADIOACTIVE; RADIOCHEMICAL ANALYSIS; DISPERSION; CORRELATION; STATISTICAL ANALYSIS; WASTE DISPOSAL, LAKE; AQUATIC ENVIRONMENT

<23>

PUB DATE: 1975

AUTHOR: LARSEN, B.J.

TITLE: WASTE MANAGEMENT - A DEFINITION OF THE PROBLEM

CORPORATE AUTHOR: ATOMIC INDUSTRIAL POWER INC.

ABSTRACT: THERE NEEDS TO BE AN EXPANDED DEFINITION OF WASTE CATEGORIES. LOW-LEVEL GENERATING TRANSURANIC WASTES ARE NOT ADDRESSED DIRECTLY. IT IS IMPLIED THAT THESE WASTES MAY BE TREATED THE SAME AS HIGH-LEVEL, HIGH-LEVEL SOLIDIFIED WASTES. THE PRESENTLY-PROPOSED RADIOACTIVE REMEDIATION TRANSMUTATION CONCENTRATION LEVELS WHICH REQUIRE EVERYTHING ABOVE NATURAL BACKGROUND TO GO TO THE DEPOSITORY ARE TOTALLY UNNECESSARY.

PUB DESC: AMERICAN NUCLEAR SOCIETY, TOPICAL MEETING ON NUCLEAR SAFETY, TUCSON, ARIZONA, 17 PAGES, OCT. 5-8, 1975

KEYWORDS: WASTE MANAGEMENT; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); WASTE DISPOSAL; FUEL CYCLE; FUEL REPROCESSING; REINFORCEMENT; REGULATION (SEE ALSO STANDARDS, RADIATION)

<23a>

PUB DATE: 1972

AUTHOR: LARSEN, B.; MERTZ, E.

TITLE: ON THE QUESTION OF ENERGY STORAGE IN SOLIDS BY NUCLEAR IRRADIATION IN THE CASE OF HIGHLY RADIOACTIVE WASTE STORAGE

CORPORATE AUTHOR: KERNFORSCHUNGSANLAGE, INSTITUT FÜR KERNUSSCHE TECHNOLOGIE, MÜNCHEN, GERMANY

ABSTRACT: REPORTS ON THE THEORETICAL AND PRACTICAL ASPECT OF STORED RADIOACTIVE ENERGY IN SOLIDS AND ITS ENVIRONMENT FROM HIGHLY RADIOACTIVE WASTE. THE CONSEQUENCES OF A SUDDEN RELEASE OF SUCH ENERGY IS PLEADED.

PUB DESC: HWL-78-76 +. 26 PAGES, FIGURES, TABLES, REFERENCES, 1972

KEYWORDS: ENERGY SOURCE; BASIN, DELTA; VIGOR ENERGY; ENERGY PREDICTION; HIGH-LEVEL WASTE; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; ENERGY LEVEL

<23b>

PUB DATE: 1974

AUTHOR: LEIBERMAN, S.I.

TITLE: MANAGEMENT OF RADIOACTIVE AQUEOUS WASTES

FROM U.S. ATOMIC ENERGY COMMISSION'S FUEL REPROCESSING OPERATIONS EXPERIENCE AND PLANNING

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: SINCE 1964, THE U.S. ATOMIC ENERGY COMMISSION (AND ITS PREDECESSOR, THE NUCLEAR ENERGY ADMINISTRATION) HAS BEEN OVERSEEING THE MANAGEMENT OF RADIOACTIVE WASTES FROM ITS FUEL REPROCESSING PLANTS WHICH ARE CURRENTLY OPERATED. EXPERIENCE DURING THE YEARS HAS INDICATED THAT MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING REQUIRES UNREMITTING EVALUATION AND APPRAISAL BY HIGHLY MANAGED AND MANAGED GROUPS. IMPORTANT RELATED ACTIVITIES ARE PERIODIC REVIEWS, FREQUENT ANALYSES, AND CONTINUOUS PLANNING. SUGGESTED GUIDANCE FOR FUEL REPROCESSING WASTE MANAGEMENT SYSTEMS INCLUDE SUCH FEATURES AS ACID WASTE STORAGE, DOUBLE CONTAINMENT, PROTECTION AGAINST CREDIBLE FORCES OF NATURE, FACILITIES FOR EMPTYING WASTE STORAGE TANKS, SPACE AND ACCESS FOR INSPECTION, ADEQUATE RADIATION MONITORING DEVICES CONNECTED TO A CENTRAL RECORDING STATION, AND SEGREGATION AND DIVERSION CAPABILITY FOR DISCHARGED EFFLUENT AQUEOUS STREAMS. (AFC)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING - PROCEEDINGS OF SYMPOSIUM, 357-407 (1976)

KEYWORDS: FUEL REPROCESSING; USARC (SEE ALSO AGENCY, REC); WASTE MANAGEMENT; AQUEOUS WASTES (SEE ALSO WASTE DISPOSAL, LIQUID); LIQUID; OPERATION; EVALUATION; ASSESSMENT; PLANNING; WASTE STORAGE; CONTAINMENT; EFFLUENT; MONITORING (SEE ALSO SURVEY)

<23c>

PUB DATE: 1973

AUTHOR: LEIBERMAN, S.I.

TITLE: MANAGEMENT OF RADIOACTIVE AQUEOUS WASTES FROM FUEL REPROCESSING OPERATIONS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: EXPERIENCE WITH LEAKING WASTE TANKS AT HAFORD, SAVANNAH RIVER, AND THE NATIONAL REACTOR TESTING STATION TO 1972 IS SUMMARIZED. IMPORTANT RELATED ACTIVITIES ARE PERIODIC REVIEWS, FREQUENT ANALYSES, AND CONTINUOUS PLANNING. GUIDANCE IS PROVIDED FOR DESIGNERS OF FUEL-REPROCESSING WASTE-MANAGEMENT SYSTEMS INCLUDING SUCH FEATURES AS ACID WASTE-STORAGE TANKS, SPACE AND ACCESS FOR INSPECTION, ADEQUATE RADIATION-MONITORING DEVICES CONNECTED TO A CENTRAL RECORDING STATION, AND SEGREGATION AND DIVERSION CAPABILITY FOR DISCHARGED EFFLUENT AQUEOUS STREAMS.

PUB DESC: NUCLEAR SAFETY, 10(5), PP. 502-506 7 TABLES, 20 FIGURES, 13 REFERENCES, (SEPTEMBER-OCTOBER 1973)

KEYWORDS: EFFLUENT; LEAK; WATS; WASTE TREATMENT; WASTE TREATMENT, LIQUID; SAVANNAH RIVER PLANT; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; REVIEW; HAFORD SITE

<23d>

PUB DATE: 1972

AUTHOR: LEIBERMAN, S.I.

TITLE: MANAGEMENT OF RADIOACTIVE AQUEOUS WASTES FROM U.S. ATOMIC ENERGY COMMISSION'S FUEL REPROCESSING OPERATIONS, EXPERIENCE AND PLANNING

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF PRODUCTION AND MATERIALS MANAGEMENT

ABSTRACT: SUGGESTED GUIDANCE FOR FUEL REPROCESSING WASTE MANAGEMENT SYSTEMS INCLUDE SUCH FEATURES AS ACID WASTE STORAGE, DOUBLE CONTAINMENT, PROTECTION AGAINST CREDIBLE FORCES OF NATURE, FACILITIES FOR EMPTYING WASTE STORAGE TANKS, SPACE AND ACCESS FOR INSPECTION, ADEQUATE RADIATION MONITORING DEVICES CONNECTED TO A CENTRAL RECORDING STATION, AND

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 INFORMATION AND DIVERSION CAPABILITY FOR DISCHARGED EFFLUENT AQUEDUCT SYSTEMS. HISTORICAL DATA IS GIVEN FOR CONSTRUCTION AND OPERATING EXPERIENCE OF WASTE TANK STORAGE INCLUDING ABOUT STORIES AT EACH OF THE THREE LOCATIONS - SAVANNAH RIVER, BICKLAND (HARTFORD STN) AND THE NATIONAL REACTOR TESTING STATION (NRTS) FOR THE YEARS 1961 THRU 1971. RADIOACTIVE DISCHARGE AND LEAK DATA ARE ALSO GIVEN.

PUB DESC: CONF-721107, 42 PAGES, 20 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: CONTAINMENT; EFFLUENT; NRTS; WASTE STORAGE; CONTAINMENT INTEGRITY; CONTAINMENT INSPECTION AND MAINTENANCE; GASEL; SAVANNAH RIVER PLANT; HIGH-LEVEL WASTE; WASTE MANAGEMENT; STORAGE CONTAINER; HARTFORD STN; MONITORING SYSTEM; RADIATION; SAFETY EVALUATION; FUEL REPROCESSING; LEAK; LIQUID; DISCHARGE

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PUB DATE: 1970
AUTHOR: LEIBERMAN, W.L.; TIGALLS, W.P.; JACKSON, E.B.; LOUSE, G.E.; YARBRO, C.C.; SIEGEL, E.; ZEPPEL, D.R.

TITLE: INCUBATION OF RADIOACTIVE SOLID WASTES

CORPORATE AUTHOR: U.S. AEC, WASHINGTON

ABSTRACT: AN ANALYSIS OF INCUBATION EXPERIENCE INDICATES THAT SEVERAL COMMON PROBLEMS STAND OUT AS THE CAUSE FOR FAILURE OF MANY PAST SYSTEMS TO MEASURE UP TO DESIRED PERFORMANCE. INADEQUATE DESIGN OR OPERATION OF THE INCUBATOR OFTEN LED TO INCOMPLETE COMBUSTION, WITH THE RESULT THAT OFF-GAS TREATMENT EQUIPMENT WAS INEFFECTIVE OR FAILED COMPLETELY. THIS EXPERIENCE INDICATES THAT HIGHER COMBUSTION TEMPERATURES IN THE RANGE OF 1800-2000 °C, WITH EFFECTIVE AFTERBURNER CAPABILITY, ARE NEEDED TO ENSURE COMPLETE COMBUSTION AND TO BURN SUBSEQUENT OFF-GAS TREATMENT PRACTICAL AND ECONOMIC. SUCH HIGHER OPERATING TEMPERATURES, HOWEVER, LEAD TO MORE-FREQUENT MAINTENANCE, INCREASED REQUIREMENT FOR HEAT SHIELDING, AND POSSIBLY SOME ADDED DIFFICULTY IN LEACHING FISSION PRODUCTS FROM INCUBATION ASHES.

PUB DESC: WASH-1160, 142 PAGES, REFERENCES, FIGURES, TABLES, AUGUST 1970

KEYWORDS: FAILURE; DESIGN CRITERIA; LEACHING; MAINTENANCE AND REPAIR; WASTE DISPOSAL, ECONOMICS; WASTE DISPOSAL, SOLID; HIGH TEMPERATURE; COMBUSTION; INCUBATION; OFF GAS; OPERATING EXPERIENCE; AGENCY, AEC (SEE ALSO 5548C)

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PUB DATE: 1967
AUTHOR: LEIBERMAN, W.L.

TITLE: UNITED STATES ATOMIC ENERGY COMMISSION INTERIM RADIOACTIVE WASTE DISPOSAL PROGRAM

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: EARLY IN 1960, THE AEC PROVIDED INDUSTRY WITH RADIOACTIVE WASTE DISPOSAL SERVICES IN SEVERAL LOCATIONS WITHIN THE UNITED STATES. IT ANNOUNCED THAT RADIOACTIVE WASTE BURIAL GROUNDS AT OAK RIDGE, TENNESSEE, AND THE NATIONAL REACTOR TESTING STATION, IDAHO, WOULD BE MADE AVAILABLE TO AEC LICENSEES FOR THE DISPOSAL OF SOLID RADIOACTIVE WASTES. FOR THE NEXT THREE YEARS, THE AEC HAD AN INTERIM RADIOACTIVE WASTE PROGRAM WHICH WAS TERMINATED WHEN PRIVATELY OPERATED GROUNDS, SERVING REGIONAL AREAS OF THE COUNTRY, BECAME AVAILABLE. THE ADMINISTRATIVE PROCESSES, TREATMENT, AND PROCEDURES OF A NATIONAL RADIOACTIVE WASTE DISPOSAL PROGRAM ARE DESCRIBED.

PUB DESC: STI/PUB-156, CONF-676112, PAGES 261-300 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VICTOR, IARI, 1967

KEYWORDS: NRTS; WASTE HANDLING; WASTE TREATMENT; DATA PROCESSING; GASEL; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE MANAGEMENT; AGENCY, AEC (SEE ALSO 5548C)

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PUB DATE: 1974
AUTHOR: LEWIS, A.E.; COHEN, J.J.; SPORN, A.L.; BODMAN, A.J.

TITLE: PLACEMENT AND SELF-PROCESSING OF NUCLEAR FUEL REPROCESSING WASTES IN DEEP UNDERGROUND CAVITIES

CORPORATE AUTHOR: LAWRENCE BERKELEY LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: A METHOD IS PRESENTED FOR DISPOSING OF NUCLEAR FUEL REPROCESSING WASTES BY IN SITU INCORPORATION IN MOLTED SILICATE ROCK. IN THIS METHOD, LIQUID WASTES ARE INJECTED INTO A DEEP UNDERGROUND CAVITY AND ALLOWED TO SELF-SEAL. THE RESULTING STEAM IS PROCESSED AT THE GROUND SURFACE AND RECYCLED IN A CLOSED SYSTEM. WHEN WASTE ADDITION IS TERMINATED, THE CRACKS IS ALLOWED TO COOL DOWN, THEREBY SOLIDIFYING THE WASTE. THE HEAT GENERATED BY THE RADIOACTIVE WASTE THEN MELTS THE SURROUNDING ROCK, WHICH DISSOLVES THE WASTE. FINALLY, THE ROCK REFRIGERATES, TRAPPING THE RADIOACTIVITY IN AN INSOLUBLE ROCK MATRIX DEEP UNDERGROUND. THIS METHOD HAS SIGNIFICANT ENVIRONMENTAL AND ECONOMIC ADVANTAGES OVER PREVIOUSLY PROPOSED METHODS. (AUTH)

PUB DESC: CONF-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 933-952 (1970)

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE; LIQUID; SELF-PROCESSING; SELF-BOILING; CLOSED SYSTEM; CRACKS; EVAPORATION; SOLID; HIGH TEMPERATURE; ROCK; MELTING; DISSOLUTION

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PUB DATE: 1972
AUTHOR: LEWIS, J.D.

TITLE: THE CONTROL AND DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND

ABSTRACT: AEC IS PROPOSING REGULATORY AGREEMENTS SPECIFYING RESPONSIBILITIES OF PHYSICIANS IN THE USE OF RADIOACTIVE MATERIALS IN TREATING AND DIAGNOSING PATIENTS AND OUTLINING THOSE ACTIVITIES WHICH MAY BE DELEGATED TO TECHNICIANS. ONE WOULD INCLUDE A REQUIREMENT THAT ALL LICENSEES WOULD REPORT TO THE COMMISSION ALL DISADMINISTRATIONS OF RADIOACTIVE MATERIAL AND NOTIFY THE PATIENT OF HIS FAMILY OF THE SAME IF SUCH ADMINISTRATION COULD CAUSE A DEMONSTRABLE ADVERSE EFFECT ON THE PATIENT, UNLESS, IN THE JUDGEMENT OF THE PHYSICIAN, SUCH NOTIFICATION WOULD BE CONTRARY TO BEST INTERESTS OF PATIENT OR FAMILY. ABOVE WOULD INVOLVE ADMINISTRATION OF RADIOPHARMACEUTICAL OR RADIATION TO A PATIENT OTHER THAN THE ONE INTENDED, A DOSE OUTSIDE THE INTENDED DOSE RANGE PRESCRIBED OR BY A METHOD NOT INTENDED BY PHYSICIAN.

PUB DESC: CHEMICAL ENGINEER, NO. 267, PP. 425-428, 4 PAGES, (NOVEMBER 1972)

KEYWORDS: LAW; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); REGULATION (SEE ALSO STANDARDS, RADIATION); RIVER; WASTE TREATMENT, LIQUID; WASTE TREATMENT, GAS; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; INCUBATION; RADIOACTIVITY RELEASE; LEGISLATION

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PUB DATE: 1972
AUTHOR: LEWIS, J.D.

TITLE: RADIOACTIVE WASTE MANAGEMENT IN THE LONG TERM

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD.,

**<242> COST.
CELANO STVEN**

ABSTRACT: A POWER IS ENVISAGED IN WHICH A WORLD OF 15,000 BILLION PEOPLE IS SUPPLIED WITH ENERGY FROM NUCLEAR FISSION AT AN AVERAGE OF 50 THERMAL KILOWATTS PER CAPITA. THE RESULTING RADIOACTIVE WASTES ARE DISPOSED PERMANENTLY WITHIN THE SCHEMES OF PLANTS THAT RECOVER FUEL FOR RECYCLE AND FORTIFY THE NEW NUCLEAR FUEL. IT IS FORESEEN THAT A SINGLE PLANT WOULD RECOVER THE FUEL AND WASTES FOR 250 TO 300 BILLION KILOWATTS ELECTRIC GENERATING CAPACITY. BY THE YEAR 2000 ABOUT FOUR SUCH PLANTS MAY BE BUILT IN NORTH AMERICA. IN THE LONG-TERM FUTURE ABOUT 1,000 SUCH PLANTS WOULD MEET THE ENVIAGE WORLD DEMAND.

PUB DESC: ARCL-3268, 11 PAGES, 2 TABLES, 3 REFERENCES, OCTOBER 1972

KEYWORDS: CANADA; ENERGY PRODUCTION; WASTE MANAGEMENT; FUEL REPROCESSING; FORECAST; FUEL, NUCLEAR; FUEL CYCLE; FUEL ELEMENTS

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PUB DATE: 1970
AUTHOR: LONGMOR, J.E.; CHISLER, R.I.

TITLE: RADIOACTIVE WASTE DISCHARGES TO THE ENVIRONMENT FROM NUCLEAR POWER FACILITIES.

CORPORATE AUTHOR: BUREAU OF RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND

ABSTRACT: SUMMARIZES DISCHARGES OF RADIOACTIVE MATERIAL TO THE ENVIRONMENT FROM SOME SELECTED NUCLEAR POWER FACILITIES AND REGULATES THE DISCHARGES TO POWER PRODUCED AND PLANT MAINTENANCE OPERATIONS. THE FACILITIES REPRESENT THREE BASIC REACTOR TYPES - PRESSURIZED WATER, BOILING WATER, AND HIGH-TEMPERATURE GAS. FACILITIES NOT INCLUDED IN EITHER REPRESENT UNIQUE DESIGNS NOT BEING CONSIDERED IN THE PRESENT CUMULATION OF POWER PLANTS, OR THEY ARE SMALLER PLANTS SIMILAR IN DESIGN TO THOSE WHICH ARE INCLUDED.

PUB DESC: ORL/RES-70-2, 28-190717, 77 PAGES, MARCH 1970

KEYWORDS: ADMINISTRATIVE COSTS; BIG ROCK POINT (200); REACTOR, BWR; CHESLEY 1 (300); EFFLUENT; REACTOR, GCR; HANFORD BAY (200); INDIAN POINT 1 (200); PEACH BOTTOM 1 (200); REACTOR, PWR; TRITIUM; CONNECTICUT YANKEE (200); REACTOR, POWER; WASTE MANAGEMENT; RADIOACTIVITY RELEASE; ENVIRONMENT; REPORT, OPERATIONS; REACTOR, BWR; OPERATING EXPERIENCE; DATA COLLECTION; COMPARISON; INDUSTRY, NUCLEAR

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PUB DATE: 1967
AUTHOR: LONGMOR, J.E.; JACOBS, E.C.; KENNEDY, E.C.

TITLE: THE BEHAVIOR OF STROUHL-90 AND CESIUM-137 IN SEEPAGE PITS AT ORE.

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: RE OAK RIDGE NATIONAL LABORATORY, NEARLY 66,000 CI OF SR-90 AND 156,000 CI OF CS-137 ARE CONTAINED IN THE VICINITY OF TWO INTERMEDIATE-LEVEL LIQUID-WASTE SEEPAGE PITS THAT ARE NO LONGER RECEIVING INPUT OF LIQUID WASTE. RADIOCHEMICAL ANALYSIS OF CORES TAKEN WITHIN THE AREA INDICATE THAT MOST OF THE ACTIVITY IS ASSOCIATED WITH THE SOFT SLUDGES AND PARTICLES AND THE FIRST TWO INCHES OF WEATHERED SHALE THAT COMPOSE THE SIDE WALLS AND BOTTOMS OF THE PITS. WITH TRITIUM ENTER AS A TRACER, IT WAS OBSERVED THAT THE NORMAL RATE OF GROUNDWATER MOVEMENT IN THE WASTE-PIT AREA IS ABOUT 0.1 FT/DAY, WITH A DISPERSION COEFFICIENT OF APPROXIMATELY 0.004 SQ. CM/SEC. PREDICTIONS OF RADIOCLINE MOVEMENT AND DISPERSION WITH TIME WERE MADE, BASED ON THE MECHANICAL PROPERTIES OF THE COARSE-SHALE FOR CALCIUM AND THE CRITICAL RADIOCLINE. THE PREDICTED DISPERSION AGRED CLOSELY WITH EXPERIENCE TO DATE AND SUGGESTS THAT MOVEMENT OF RADIOISOTOPES AND RADIOACTIVITY IS NOT LIKELY TO PRESENT SIGNIFICANT CONTAMINATION PROBLEMS IN

NEARBY SURFACE STREAMS IN THE FUTURE.

PUB DESC: HEALTH PHYSICS 13(4), PAGE 897-905, 8 FIGURES, 1 TABLE, 11 REFERENCES, (AUGUST 1967)

KEYWORDS: CESIUM; BEHAVIOR; SEEPAGE PITS; GEOLOGY; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); RADIOCHEMICAL ANALYSIS; LIQUID CALCIUM CARBONATE; FORECAST; SURFACE WATER; HEALTH PHYSICS; INTERMEDIATE-LEVEL WASTE; SHALE; WATER TRANSPORT, GROUND (SEE ALSO SOIL, RADIOCLINE MOVEMENT); STROUHL; WASTE DISPOSAL, TERRESTRIAL; WATER; ORE; WASTE DISPOSAL, LAND; ION EXCHANGE; ADSORPTION (SEE ALSO ABSORPTION); RADIOISOTOPE

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PUB DATE: 1974
AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY (U.S.A.)

TITLE: QUARTERLY REPORT, TRANSMURATIC SOLID WASTE MANAGEMENT RESEARCH PROGRAMS, OCTOBER-DECEMBER 1973

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: THE INTERIM STORAGE CRITERIA, WHICH WERE REVIEWED BY AEC ADMINISTRATIVE AND CONTRACTOR PERSONNEL, WILL BE REVISED AND SUBMITTED TO AEC HEADQUARTERS FOR FURTHER COMMENT. THE EXPERIMENTAL CONDITIONS FOR THE STUDIES OF CORROSION IN WASTE AID HAVE BEEN REVISED TO BETTER SIMULATE CONDITIONS EXPECTED IN CLOSED-PAD STORAGE. IN ADDITION TO RARE MILD-STEEL AND STAINLESS-STEEL SAMPLES, MILD-STEEL CORROSION CONTAINERS WITH SEVERAL MOST-IMMUNIZING CORROSION ARE BEING STUDIED. ANALYSIS STUDIES OF TYPICAL WASTE MATERIALS CONTAMINATED WITH 238Pu HAVE BEEN PRODUCED BEFORE 0.54 AND 0.01 EPA OF GAS PER SIMULATED YEAR.

PUB DESC: LA-5610-PR, 55 PAGES, 16 TABLES, 16 FIGURES, 50 REFERENCES, MAY 1974

KEYWORDS: DIUTONUM; CORROSION (SEE ALSO STRESS CORROSION); ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; TRANSMURATIC ELEMENT; B AND B PROGRAM; EFFECT, CORSE

<246>

PUB DATE: 1969
AUTHOR: LYON, I.

TITLE: NUCLEAR POWER AND THE PUBLIC INTEREST, BY IRVING LYON

ABSTRACT: A MORE OR LESS Nontechnical REVIEW OF N-POWER AND ITS IMPLICATIONS BY A CRITIC. OF THE INDUSTRY. HIS CONTENTION IS THAT WE ARE NOT YET READY FOR NUCLEAR POWER. HE COVERS THE ENTIRE CIRCLE OF CONSIDERATIONS TO ITS INTRODUCTION INTO OUR SOCIETY, AND THAT PEOPLE DEMAND WASTE-CORE INFORMATION REGARDING UNSOLVED PROBLEMS BEFORE ENDORSEMENT OF A NATIONWIDE PROGRAM OF CONSTRUCTION AND OPERATION OF N-PLANTS. HE NOTES INSURANCE OF EXPERTISE INVESTED ON NUCLEAR VS FORTHCOMING POWER DEVELOPMENT AND THE PLACING OF OUR PRIORITIES ON THE POWER WHICH IS IN AN EXPOSED AND VULNERABLE POSITION, ENVIRONMENTALLY, BIOLOGICALLY, AND ECONOMICALLY. HE SUGGESTS THAT ELECTRICITY SHOULD BE USED IN MEANINGFUL (LESS FRIVOLOUS) WAYS, AND RESEARCH SHOULD BE DEVELOPED TO ELIMINATE THE UNDESIRABLE CHARACTERISTICS OF FOSSIL-FUEL PLANTS. ALSO, DEVELOP PLANS TO EXPLOIT OUR OIL, SHALE RESERVES.

PUB DESC: BROOKHOLM REVIEW, 3(3), PP. 59-76 13 REFERENCES, (FALL 1969)

KEYWORDS: STANDARDS; RADIATION (SEE ALSO REGULATIONS); PUBLIC RELATIONS; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMIC); FABRICATION; FERRI (LAW); INDIAN POINT 1 (PWR); INSURANCE; ACCIDENT, NUCLEAR; CORROSION (SC); DIVE GILL POINT (BWR); INCIDENT, CONSEQUENCE; PWR; INCIDENT CONTAMINATION; STING, REACTOR; REACTOR, POWER; WASTE MANAGEMENT; RADIOACTIVITY RELEASE; ENVIRONMENT; PWR; VERMONT YANKEE (BWR); FUEL REPROCESSING; THERMAL POLLUTION; REACTOR (BWR); FOOD CHAIN; BIOLOGICAL; BAW; RESOURCE, NATURAL; POWER TRANSMISSION; N-POWER, SAFETY OF (SEE

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ALSO HAZARD; OPPOSED; SPOKESMAN, ACADEMIC; R-POWER
FORECAST; FUEL ELEMENT

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PUB DATE: 1976

AUTHOR: MCDONALD, R.P.

TITLE: RADIOACTIVE WASTE AND NUCLEAR POWER

CORPORATE AUTHOR: CENTRAL ELECTRICITY GENERATING
BOARD, ENGLAND

ABSTRACT: THE NATURE AND ORIGINS OF ACTIVE WASTES
PRODUCED IN EACH PHASE OF THE NUCLEAR FUEL CYCLE ARE
CONSIDERED. THE DOMINANT SOURCES OF WASTE ARE
ASSOCIATED WITH POWER REACTOR OPERATION AND THE
SUBSEQUENT FUEL REPROCESSING OPERATIONS. VARIOUS
CATEGORIES OF NUCLEAR WASTE CAN BE IDENTIFIED FROM
THEIR METHOD OF PRODUCTION AND POTENTIAL HAZARD TO
MAN; THIS ARTICLE EXAMINES THE CHARACTERISTICS OF
WASTE ARISING FROM A RANGE OF THERMAL AND FAST REACTOR
DESIGNS AND THE PROBLEMS LIKELY TO ARISE IN THE
DISPOSAL OF AN OBSOLETE NUCLEAR PLANT. ALTERNATIVE
METHODS OF EXPLOITING NUCLEAR ENERGY, OTHER THAN
CURRENT OPERATION OF FLOUORIDE WASTE FUEL CYCLES ARE
CONSIDERED.

PUB DESC: PHYSICS IN TECHNOLOGY, 17(1), PP. 11-20 2
PAGES, 5 FIGS, (JAN. 1976)

KEYWORDS: FUEL CYCLE; CLASSIFICATION (SEE ALSO
WASTE CLASSIFICATION); WASTE DISPOSAL; FUEL
REPROCESSING; REVIEW; REACTOR, POWER

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PUB DATE: 1966

AUTHOR: SAMUESCHNIOT, J.P.

TITLE: RECENT ADVANCES IN MONITORING OF RADIOACTIVE
GASEOUS WASTES AT ORE

CORPORATE AUTHOR: ORE RIDGE NATIONAL LABORATORY

ABSTRACT: MANY ACTIVITIES AT THE ORE RIDGE NATIONAL
LABORATORY ARE CONCERNED WITH THE CHEMICAL PROCESSING
OF RADIOACTIVE MATERIALS. GASEOUS EFFLUENTS FROM
THESE OPERATIONS ARE THREAT TO REMOVE HARMFUL
CONTAMINANTS BEFORE RELEASE TO THE ATMOSPHERE.
ROUTINE MONITORING OF SUCH EFFLUENTS HAS STARTED IN
1966 WHEN MANUALLY OPERATED PARTICULATE MONITORS WERE
INSTALLED AT EACH OF THREE PROCESS STACKS. SINCE THAT
DATE, COVERAGE HAS BEEN EXTENDED TO SIX STACKS, THE
SAMPLE WITHDRAWAL SYSTEM HAS BEEN REMOVED, AND THE
DETECTION EQUIPMENT HAS BEEN ADDED TO AND MODERNIZED.
THE INTENSIVE MONITORING HAS LEAD TO PROCESS
IMPROVEMENTS THAT HAVE REDUCED THE ENVIRONMENTAL
RELEASES OF RADIOACTIVITY IN THE GASEOUS WASTE
EFFLUENTS BY A FACTOR OF 3 SINCE 1962.

PUB DESC: CONF-660900, 27 PAGES, 17 FIGURES, 6
REFERENCES, PRESENTED AT 9TH AEC AIR CLEANING
CONFERENCE, BOSTON, MASS., SEPTEMBER 13-16, 1966

KEYWORDS: MONITORING, EMERGENCY; REPROCESSING (SEE
ALSO FUEL REPROCESSING); MONITOR, GENERAL PRACTICE;
MONITOR, STACK; MONITOR, AIR; MONITOR, GAS; MONITOR,
SAMPLING; WASTE TREATMENT, GAS; MONITOR,
ENVIRONMENTAL; ORE; WASTE DISPOSAL, GAS; MONITOR,
BACKGROUND; MONITORING (SEE ALSO SURVEY);
RADIOCHEMICAL PROCESSING; RADIOISOTOPE; FUEL
REPROCESSING

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PUB DATE: 1976

AUTHOR: MARCUS, F.B.

TITLE: INDUSTRIAL ASPECTS OF RADIOACTIVE WASTE
MANAGEMENT

CORPORATE AUTHOR: FORATOM

ABSTRACT: A REVIEW IS GIVEN OF DIFFERENT WASTE
MANAGEMENT ASPECTS AS SEEN FROM THE VIEWPOINT OF THE
NUCLEAR INDUSTRY. FUTURE ASPECTS OF WASTE ARISING IN
THE FORATOM COUNTRIES ARE ESTIMATED, AND A SURVEY IS

GIVEN OF AVAILABLE WASTE TREATMENT METHODS. INDUSTRIAL
WASTE QUESTIONS, AS SEEN BY ELECTRICITY PRODUCERS,
REPROCESSORS AND WASTE OPERATORS ARE DISCUSSED;
QUESTIONS CONCERNING DECOMMISSIONING ARE ALSO DEALT
WITH. A NUMBER OF RECOMMENDATIONS FOR FURTHER ACTION,
PRIMARILY ON THE PART OF NATIONAL AUTHORITIES AND
INTERNATIONAL ORGANIZATIONS, ARE PUT FORWARD
THROUGHOUT THE REPORT. ONE CONCLUSION OF THE STUDY IS
THAT THERE IS NO REASON WHY WASTE MANAGEMENT PROBLEMS
SHOULD IMPED THE TIMELY DEVELOPMENT OF NUCLEAR ENERGY
AS A LARGE-SCALE INDUSTRIAL ACTIVITY IN WESTERN EUROPE.

PUB DESC: FORATOM 1976

KEYWORDS: ALTERNATIVES (SEE ALSO WASTE DISPOSAL
ALTERNATIVES); WASTE MANAGEMENT; REVIEW; NUCLEAR
ENERGY; NUCLEAR POWER PLANTS; FUEL REPROCESSING;
EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); FORECAST;

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PUB DATE: 1976

AUTHOR: MARCUS, F.B.

TITLE: INDUSTRIAL ASPECTS OF RADIOACTIVE WASTE
MANAGEMENT IN WESTERN EUROPE

CORPORATE AUTHOR: FORATOM

ABSTRACT: VARIOUS ASPECTS OF WASTE MANAGEMENT ARE
DISCUSSED FROM THE VIEWPOINT OF THE NUCLEAR INDUSTRY.
FUTURE ASPECTS OF WASTE GENERATED IN THE 15 FORATOM
COUNTRIES IN WESTERN EUROPE ARE ESTIMATED. INDUSTRIAL
WASTE QUESTIONS - AS SEEN BY ELECTRICITY PRODUCERS,
REPROCESSORS, AND WASTE OPERATORS - ARE DISCUSSED;
QUESTIONS CONCERNING DECOMMISSIONING ARE ALSO DEALT
WITH. A NUMBER OF RECOMMENDATIONS FOR FURTHER ACTION,
PRIMARILY ON THE PART OF NATIONAL AUTHORITIES AND
INTERNATIONAL ORGANIZATIONS, ARE PUT FORWARD. ONE
CONCLUSION OF THE STUDY IS THAT THERE IS NO REASON FOR
WASTE-MANAGEMENT PROBLEMS TO IMPED THE TIMELY
DEVELOPMENT OF NUCLEAR ENERGY AS A LARGE-SCALE
INDUSTRIAL ACTIVITY IN WESTERN EUROPE.

PUB DESC: CONF.-76-0701; JULY 11-16, 1976; DENVER,
COLORADO

KEYWORDS: NUCLEAR ENERGY; NUCLEAR INDUSTRY;
PRODUCTION (SEE ALSO FORECAST); FORECAST; ELECTRIC
POWER; REPROCESSING (SEE ALSO FUEL REPROCESSING);
DECOMMISSIONING;

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PUB DATE: 1966

AUTHOR: MARCUS, F.B.

TITLE: ROLE OF WASTE MANAGEMENT AT EUROCHEM

CORPORATE AUTHOR: EUROPEAN COMMISSION FOR THE CHEMICAL
PROCESSING OF IRRADIATED FUELS

ABSTRACT: THE EUROCHEM PLANT IS LOCATED IN A
DENSELY POPULATED EUROPEAN ISLAND AREA WHERE RELEASED
OF RADIOACTIVITY TO THE ENVIRONMENT ARE EXTREMELY
LIMITED. WASTE MANAGEMENT AT EUROCHEM IS DESIGNED
TO (1) REDUCE THE AMOUNT OF WASTE AS FAR AS PRACTICAL,
(2) SEGREGATE THE DIFFERENT CATEGORIES OF WASTE BY
THEIR ORIGIN, THUS PERMITTING INDIVIDUAL TREATMENT OR
UTILIZATION, (3) DESIGN METHODS OF TREATMENT TO REDUCE
THE VOLUMES OF WASTE, (4) DESIGN SAFE STORAGE
INSTALLATIONS, (5) PROVIDE FOR PERPETUAL CARE OF
STORED WASTE, (6) PROMOTE RESEARCH INTO SOLIDIFICATION
METHODS, (7) PREVENT UNDESIRABLE ESCAPE OF ACTIVITY IN THE
WASTE RELEASED, (8) DESIGN WASTE-HANDLING SYSTEMS AT
MINIMUM COST.

PUB DESC: ALORFONAS 12(1), PAGE 50-53, 1 FIGURE, 1
TABLE, (JAN. 1966)

KEYWORDS: WASTE TREATMENT; WASTE DISPOSAL, GAS;
WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE
MANAGEMENT; EUROCHEM

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PUB DATE: 1972

AUTHOR: MARTIN, A.; APSIMOV, N. (RUS.)

<252> CONF.

TITLE: THE FORECASTING OF RADIOACTIVE WASTES

CORPORATE AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD), NUCLEAR ENERGY AGENCY AND THE INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: A MATHEMATICAL MODEL DEVELOPED TO DETERMINE GENERATION AND SUBSEQUENT MOVEMENTS OF RADIOISOTOPES ARISING IN A NUCLEAR POWER PROGRAM. THIS MODEL HAS BEEN WRITTEN INTO A COMPUTER PROGRAM, NEMO, IN TERMS OF WHICH ESTIMATES MAY BE OBTAINED OF THE INVENTORIES AND THROUGHPUTS OF RADIOISOTOPES IN NUCLEAR INSTALLATIONS, INCLUDING REPROCESSING PLANTS AND STORAGE FACILITIES. THE OPERATIONS AND APPLICATION OF THE MODEL ARE ILLUSTRATED BY RESULTS OBTAINED ON THE BASIS OF A RECENT FORECAST OF THE NUCLEAR POWER PROGRAM IN THE UK UP TO THE YEAR 2000 A.D. PRESENT RESULTS INDICATE THAT THE QUANTITIES OF LONG LIVED RADIOACTIVE WASTES RESULTING FROM THE REPROCESSING OF FAST REACTOR FUEL WILL NOT BE MATERIALLY GREATER THAN THOSE FROM CURRENT TYPES OF THERMAL REACTORS. (AUTH)

PCJ DESC: OECD-PARIS 1972-OCOE. PAPER GIVEN AT SYMPOSIUM ON MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, 1972, PP. 55-75

KEYWORDS: MODEL; CRN (SEE ALSO ENRA); ENVIRONMENT; MATHEMATICAL TREATMENT; RADIOACTIVITY RELEASE; FORECAST; NUCLEAR INDUSTRY; COMPUTER PROGRAM; INVENTORY; FUEL REPROCESSING; WASTE STORAGE; THERMAL REACTOR; CORRELATION; FAST REACTOR

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PUB DATE: 1970

AUTHOR: BARNES, C.A.; RUSSELL, A.L.

TITLE: CANADIAN EXPERIENCES WITH A NATIONAL WASTE MANAGEMENT FACILITY

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER LABORATORIES

ABSTRACT: CANADIAN WASTE MANAGEMENT HAS BEEN BASED ON GATHERING RADIOACTIVE WASTE IN ONE PLACE, RATHER THAN HAVING REGIONAL WASTE MANAGEMENT AREAS. APART FROM URANIUM MILL TAILINGS AND SOME RADIONUCLIDE WASTES, ALL SUCH MATERIAL HAS BEEN HANDLED BY ATOMIC ENERGY OF CANADA LIMITED, MAINLY AT THE CHALK RIVER NUCLEAR LABORATORIES SITE. DURING THE 20 YR OF OPERATION OF THE CHALK RIVER FACILITIES, THERE HAVE BEEN SEVERAL INCIDENTS PROVIDING EXPERIENCES USEFUL IN ILLUSTRATING IMPORTANT ASPECTS OF SUCCESSFUL OPERATION OF A WASTE MANAGEMENT SYSTEM. PRACTICAL EXAMPLES DRAWN FROM THIS EXPERIENCE WILL BE USED TO ILLUSTRATE THE POINTS MADE IN THIS PAPER.

PUB DESC: SN-137-0, STI/EUR-264, CONF-700905, 15 PAGES, 11 REFERENCES, PAPER PRESENTED AT THE 13TH SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: CANADA; MILL TAILINGS (SEE ALSO TAILINGS); IAEA; REGULATIONS (SEE ALSO STANDARDS, REGULATION); SITING; WASTE DISPOSAL; WASTE MANAGEMENT; RIVER, CHALK; OPERATING EXPERIENCE

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PUB DATE: 1967

AUTHOR: BARNES, C.A.

TITLE: PHILOSOPHY AND PRACTICE OF WASTE MANAGEMENT AT CNEL

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO

ABSTRACT: THE HISTORY OF DEVELOPMENT OF WASTE-MANAGEMENT PRACTICES AT CNEL IS OUTLINED. THE POLICY HAS BEEN TO DEVELOP A SYSTEM THAT COULD BE OPERATED SAFELY AT A SITE CLOSE TO A BUILT-UP AREA AND TO DEMONSTRATE THE CONSTRUCTION AND USE OF FACILITIES THAT CAN BE BUILT AND OPERATED AT A REASONABLE COST. THE WASTE FACILITIES ARE DESCRIBED, AND AN ACCOUNT IS GIVEN OF EXPERIMENTS DESIGNED TO TEST THE BEHAVIOUR OF FISSION PRODUCTS MOVING THROUGH THE GROUNDWATER ZONE.

OTHER EXPERIMENTS ON DISPERSION OF RADIOISOTOPES THROUGH THE ENVIRONMENT ARE OUTLINED. THE BASIS FOR SETTING WORKING LIMITS FOR CERTAIN TYPES OF DISPOSALS IS GIVEN, ESPECIALLY THE CORRELATION BETWEEN RAILROAD DISCHARGE LEVELS TO THE RIVER AND THE R/C(WATER) RECOMMENDATIONS OF THE ICRP. IT IS SHOWN THAT WASTE AT PRESENT POWER TO REACTOR PIT 2 COULD BE DISCHARGED TO THE RIVER WITHOUT APPROACHING THE ICRP LIMITS, BUT IT IS POINTED OUT THAT THIS WOULD CAUSE A LARGE INCREASE IN SN-90 AND CS-137 IN THE RIVER WATER.

PUB DESC: BNCL-2710, 21 PAGES, 3 TABLES, 4 REFERENCES, FEBRUARY 1967

KEYWORDS: CANADA; CESIUM; STRONTIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE DISPOSAL, RIVER; WASTE MANAGEMENT; RIVER, CHALK

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PUB DATE: 1963

AUTHOR: BARNES, C.A.

TITLE: NUCLEAR WASTE MANAGEMENT IN CANADA

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

ABSTRACT: THE NUCLEAR WASTE MANAGEMENT PROGRAM IN CANADA IS DISCUSSED. THE REGULATIONS THAT PERTAIN ARE OUTLINED AND THE PROCEDURES EMPLOYED TO COMPLY TO THE REGULATIONS ARE PRESENTED. THE EFFECTIVENESS OF THE PROGRAM IS REVIEWED.

PUB DESC: JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION 35-1055-65 (AUGUST 1963)- 35TH ANNUAL MEETING OF THE WATER POLLUTION CONTROL FEDERATION, TORONTO, ONTARIO, OCTOBER 7-11, 1962

KEYWORDS: CANADA; DILUTION; GEOLOGY; SOIL, RADIOISOTOPES; MOVEMENT THROUGH; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, RIVER; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; DESORPTION; HYDROLOGY; RIVER, CHALK

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PUB DATE: 1974

AUTHOR: BCGHATE, P.L.

TITLE: RADIOACTIVE WASTE MANAGEMENT POTENTIALS AND DANGERS FROM A RISK POINT OF VIEW

CORPORATE AUTHOR: KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: THE PROBLEM OF RADIOACTIVE WASTE MANAGEMENT ARE ADDRESSED IN THIS PAPER. THE MAGNITUDE OF THE PROBLEM IS IDENTIFIED AS PRIMARILY CONCERNING THE FEDERAL REPUBLIC OF GERMANY. PREDICTIONS ARE INCLUDED OF THE CHARACTERISTICS OF THE WASTES FROM THE VARIOUS ACTIVITIES OF THE NUCLEAR FUEL CYCLE, AND THEIR ACCUMULATION AS A FUNCTION OF TIME UNTIL THE YEAR 2010. ALL IMPORTANT REACTION TYPES ARE CONSIDERED. THE METHODS FOR THE EVALUATION OF RISK ARE REVIEWED AS WELL AS POSSIBLE EXTENSIONS OF THE METHODS NEEDED TO EVALUATE RISK FROM RADIOACTIVE WASTE MANAGEMENT STRATEGIES.

PUB DESC: EUTRAN-1200, 67 PAGES, JUNE 1974 (TRANSLATION OF EPA-7992)

KEYWORDS: HAZARDS ANALYSIS; WASTE MANAGEMENT; GERMAN; FORECAST

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PUB DATE: 1960

AUTHOR: MCBAUGHTON, G.S.

TITLE: WASTE DISPOSAL FACILITIES

CORPORATE AUTHOR: DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, LOWER HUTT, NEW ZEALAND

ABSTRACT: SCOPE OF THE WASTE DISPOSAL PROBLEMS FOR THE 10 MW REACTOR WAS ESTIMATED AT 400,000 AUSTRALIAN POUNDS, BUT IS MORE LIKELY TO BE 600,000 AUSTRALIAN

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PCOBS PLUS 50,000 AUSTRALIAN POOPES PER YEAR. THE SCHEME PROVIDES FOR THE MONITORING AND POSSIBLE RADIOCHEMICAL TREATMENT OF SUCH LOW ACTIVITY WASTES AS 5,000 GALL. SEWAGE- 35,000 GALL. TRADE WASTES- AND 20,000 GALL. LABORATORY WASTES PER DAY. THIS INVOLVES SOME TANKS, DELAY TANKS, DILUTION TANKS, A SLUDGE BLASTING CLARIFIER, A MOUND COAL ICE EXCHANGER AND DRAINING TANKS. BEFORE RADIOCHEMICAL PURIFICATION THE WASTE GOES THROUGH A SEPTIC TANK AND THE TRADE WASTE THROUGH SETTLING TANKS AND SAND FILTERS. PLANT IS NOW BEING INSTALLED FOR THE EVAPORATION OF WASTE. FIATONIN IS CONCENTRATED ON EVAPORATORS IN SOLID GLASSES IS BEING INVESTIGATED. SOLID WASTES ARE STORED ON THE REACTOR SITE AND LOW ACTIVITY SOLID WASTES ARE BOUND SOME DISTANCE AWAY. INSTEAD OF DOING WITH Ca^{++} , Fe^{++} AND PO_4^{--} IN THE SLUDGE BLASTING PRECIPITATOR, IT HAS BEEN FOUND THAT FILTED ALUM OF FERRIC ALUM MAY BE BETTER FOR SOFT WASTES.

PUB DESC: UP-15051 PAGES 9-10 FROM REPORT ON VISIT TO AUSTRALIA FOR THE SIXTH CONFERENCE ON TECHNOLOGICAL APPLICATIONS OF RADIATION- MAY 1969

KEYWORDS: WASTE STORAGE; WASTE TREATMENT; WASTE TREATMENT; FIATONIN; WASTE TREATMENT, LIQUID; AUSTRALIA; WASTE SOURCE AND TYPE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE TREATMENT, RADIOCHEMICALS

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PUB DATE: 1971

AUTHOR: MITCHELL, J. T.

TITLE: RADIOACTIVITY IN SURFACE AND COASTAL WATERS OF THE BRITISH ISLES, 1969

ABSTRACT: THIS THE FOURTH REPORT OF AN ANNUAL SERIES DETAILING THE RESULTS OF SURVEYS CARRIED OUT BY THE FISHERIES RADIOBIOLOGICAL LABORATORY ON THE LEVEL OF RADIOISOTOPES FOUND IN MARINE FAUNA AND FLORA IN THE VICINITY OF RADIOACTIVE DISCHARGES. SITES COVERED INCLUDE THOSE OPERATED BY THE UKAEA, THE MINISTRY OF DEFENSE AND THE CEC. MONITORING HAS ALSO BEEN CARRIED OUT ON BEHALF OF THE CHANNEL ISLANDS STATES AND THE IRISH REPUBLIC. ANNUALIZED LEVELS OF DISCHARGES AT CEC AND UKAEA SITES TOGETHER WITH THE PERCENTAGE UTILIZED ARE GIVEN IN A TABLE. A BIBLIOGRAPHY OF PAPERS BY LABORATORY STAFF ON RADIOACTIVE WASTE DISPOSAL AND MONITORING COVERING THE YEARS 1967-70 IS INCLUDED.

PUB DESC: MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, FISHERIES RADIOBIOLOGICAL LABORATORY, TECHNICAL REPORT PBL 7, MARCH 1971 33 PAGES

KEYWORDS: UNITED KINGDOM; BIBLIOGRAPHY (SEE ALSO PUBLICATION); WASTE DISPOSAL, OCEAN; MONITORING PROGRAM, ENVIRONMENTAL; SURVEY; ECOSYSTEM, AQUATIC; ECOSYSTEM, MARINE

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PUB DATE: 1974

AUTHOR: MORISAWA, S.; INOUE, T.

TITLE: ON THE SELECTION OF A GROUND DISPOSAL SITE BY SENSITIVITY ANALYSIS

ABSTRACT: DISPOSAL OF RADIOACTIVE WASTES IN THE GROUND IS NOT ALLOWED IN JAPAN BY PRESENT LAWS BECAUSE OF THE DIFFICULTIES IN ESTIMATING THE GROUND MIGRATION OF RADIOISOTOPES AND IN EVALUATING THE INTERNAL DOSE CAUSED BY THESE WASTES. BASED ON CERTAIN ASSUMPTIONS THE MIGRATION PATTERN WAS SET DOWN IN A PREVIOUS PAPER, (1) AND THE INTERNAL DOSE WAS ESTIMATED. IN THIS PAPER, THE RESIDABLE CONDITIONS FOR THE GROUND DISPOSAL OF RADIOACTIVE WASTES AND THE APPROXIMATE METHOD FOR ESTIMATING THE INTERNAL DOSE ARE DISCUSSED BY MEANS OF A SENSITIVITY ANALYSIS. EIGHTEEN OUT OF SOME 26 FACTORS IN THE THREE ECOLOGICAL PATHS THROUGH WHICH LEAKED RADIOISOTOPES MIGRATE (I.E. DRINKING WATER, SEA FOODS AND PLANTS) ARE QUANTITATIVELY EXAMINED BY SENSITIVITY ANALYSIS. THE RELATIONSHIPS BETWEEN THE INTERNAL DOSE AND THE MAIN FACTORS CONCERNED ARE SHOWN IN THE TABLES. THE DIFFERENCE BETWEEN STRICT CALCULATION AND APPROXIMATION OF INTERNAL DOSE IS ALSO EXAMINED. THE

APPROXIMATION IS SHOWN TO BE USEFUL ESPECIALLY FOR THE QUICK ESTIMATION OF THE SAFETY OF A SITE FOR THE GROUND DISPOSAL OF RADIOACTIVE WASTES. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 26(3), P. 251 (1974)

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); SITING; WASTE DISPOSAL; SENSITIVITY ANALYSIS; RADIOISOTOPES MIGRATION; SAFETY EVALUATION; INTERNAL EXPOSURE (SEE ALSO DOSE CALCULATION); ECOLOGY; CRITICAL NUCLEONIC PATHWAY; DOSE CALCULATION; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); SYMPTOM; DOSE CALCULATION, INTERNAL; WATER, DRINKING; JAPAN; PCOB CHAIN; HEALTH PHYSICS; ENVIRONMENT

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PUB DATE: 1974

AUTHOR: MORISAWA, S.; INOUE, T.

TITLE: ON THE SELECTION OF A GROUND DISPOSAL SITE FOR RADIOACTIVE WASTES BY MEANS OF A COMPUTER

ABSTRACT: THE FEASIBILITY OF DISPOSING OF RADIOACTIVE WASTES IN THE GROUND, THE OPTIMAL CONDITIONS FOR THE SITE, AND THE EVALUATION OF SAFETY FACTORS HAVE BEEN REPORTED IN PREVIOUS PAPERS. THIS PAPER DISCUSSES PROCESSES OF SELECTING OPTIMUM LOCATIONS FOR THE DISPOSAL OF RADIOACTIVE WASTES BY MEANS OF A COMPUTER. A PROGRAM FOR SITE SELECTION IS BASED ON SOME REASONABLE ASSUMPTIONS AND INCLUDES THE DATA REQUIRED TO ESTIMATE THE DOSE OF RADIOACTIVITY IN THE HUMAN BODY DUE TO THE DISPOSAL WASTES OF A NUCLEAR FACILITY ALONG A COAST. THE CALCULATION WAS MADE FOR A MODEL NUCLEAR FACILITY THAT WAS CHOSEN TO SHOW THE GENERAL METHOD OF SELECTING A GROUND DISPOSAL SITE. AN OPTIMUM LOCATION FOR A GROUND DISPOSAL SITE IS DEFINED AS A LOCATION WITH MINIMUM INTERNAL DOSE CAUSED BY THE DISPOSAL WASTES. FOUR LOCATIONS WERE SELECTED USING A COMPUTER, EACH LOCATION HAVING A MINIMUM INTERNAL DOSE BASED ON THE ASSUMPTION OF 0.1 CI/YR LEAKAGE OF ^{90}Sr . THE MINIMUM INTERNAL DOSE FOR THE FOUR LOCATIONS WAS ESTIMATED TO BE LOWER THAN 10 -80 MRD/YR. THE METHOD OF SELECTING OPTIMUM LOCATIONS IS REASONABLY PROMISING FOR SOLVING CURRENT PROBLEMS OF SITE SELECTION FOR DISPOSAL. A CHART TO COMPARE THE SAFETY OF SITES BY EVALUATING EACH WITH REFERENCE TO EIGHTEEN ENVIRONMENTAL FACTORS IS INCLUDED. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 27(5), P. 947 (1974)

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); SITING, WASTE DISPOSAL; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); SAFETY EVALUATION; WASTE DISPOSAL, TERRESTRIAL; DOSE; MODEL STUDIES; DOSE CALCULATION; INTERNAL EXPOSURE (SEE ALSO DOSE CALCULATION); SYMPTOM; POPULATION EXPOSURE; PUBLIC HEALTH; SITING; BIOCHEMISTRY; COMPUTER PROGRAM; WASTE DISPOSAL

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PUB DATE: 1974

AUTHOR: ROBINSON, J. A.

TITLE: AECL EXPERIENCE IN MANAGING RADIOACTIVE WASTES FROM CANADIAN NUCLEAR REACTORS

COMPOSITE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

ABSTRACT: THE CURRENT STATUS OF RADIOACTIVE WASTE FROM CANADIAN NUCLEAR REACTORS IS OUTLINED IN A DESCRIPTION OF WASTE MANAGEMENT PRACTICE AND EXPERIENCE AT CHALK RIVER NUCLEAR LABORATORIES UNDER THE JURISDICTION OF THESE WASTES ARE STORED TODAY. THE MAJOR POLICIES WHICH GOVERN THESE OPERATIONS, THE PRINCIPLE OF DETRIMENTALITY, AND SOME FUTURE TRENDS IN THE RADIOACTIVE WASTE MANAGEMENT FIELD ARE DISCUSSED BRIEFLY.

PUB DESC: AECL-6707, 25 PAGES, 9 FIGURES, 8 REFERENCES, MARCH 1974

KEYWORDS: CANADA; WASTE STORAGE; WASTE MANAGEMENT; REVIEW

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PUB DATE: 1969
AUTHOR: MURPHY, R.J.

TITLE: LAND BURIAL OF SOLID RADIOACTIVE WASTES. STUDY OF COMMERCIAL OPERATIONS AND FACILITIES

CORPORATE AUTHOR: U.S. AEC, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY

ABSTRACT: REVISOR COMMERCIAL BURIAL OPERATIONS ON STATE-OWNED SITES UNDER LICENSES ISSUED BY THE AEC OR BY AGREEMENT STATES ARE TO FORMULATE RECOMMENDATIONS FOR CARRIED OUT SUCH OPERATIONS IN THE FUTURE.

PUB DESC: WASH-1143, 133 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 31, 1969

KEYWORDS: ADMINISTRATIVE CONTROL; WASTE DISPOSAL ALTERNATIVES; LAND BURIAL (SEE ALSO BURIAL CONCEPTS); STAFFINGS, MANAGING (SEE ALSO DECONTAMINATION); PROCEDURES AND STANDARDS; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE SOURCE AND TYPE; SITE PROGRAM; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; AGENCY, AEC (SEE ALSO AEC);

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PUB DATE: 1973
AUTHOR: ROSS, C.E.

TITLE: CONTROL OF RADIOISOTOPE RELEASES TO THE ENVIRONMENT FROM DIAGNOSTIC ISOTOPE PROCEDURES

PUB DESC: HEALTH PHYSICS, 25(2), P. 197 (1973)

KEYWORDS: HEALTH PHYSICS; RADIOISOTOPE; RELEASE RATE; DIAGNOSIS; THERAPY; DOSIMETRY, CLINICAL; PUBLIC HEALTH; CONTROL; SAFETY EVALUATION; ASSESSMENT; WASTE DISPOSAL, SOLID; RIVER, OCEAN; PALACUT; NATURAL RESOURCES; WASTE SOURCE AND TYPE; ISOTOPES; THERMIONIC; POPULATION EXPOSURE; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); ENVIRONMENT; SECRETION; EXCRETION, URINE-FECAL ANALYSIS; ENVIRONMENTAL CONTAMINATION; STANDARDS, RADIATION (SEE ALSO DECONTAMINATION); RADIOACTIVE WASTE; ; DECONTAMINATION (SEE ALSO THERAPY);

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PUB DATE: 1968
AUTHOR: SUMMERS, T.

TITLE: ON THE INCINERATION FACILITY FOR INFLAMMABLE RADIOACTIVE WASTES

ABSTRACT: AN INCINERATION FACILITY IS DESCRIBED AND COMPARED WITH SIMILAR FACILITIES IN OTHER COUNTRIES. THREE YEARS WERE REQUIRED TO COMPLETE THE FACILITY, INCLUDING THE APPROVALS WITH REGARD TO THE PERFORMANCE, HEAT LOSS, RADIOACTIVITY TREATMENT, ELECTRICAL DISTURBANCES AND SAFETY. THE FACILITY HAS A SOLID WASTE CAPACITY OF 10 TO 20 kg/hr, INCLUDING RADIOACTIVE WASTES. IT CONTAINS EQUIPMENT FOR INCINERATION AND FOR DECONTAMINATION OF THE PRODUCED GASES.

PUB DESC: NUKA JIMO, 17(67), P. 47-53 (SEPTEMBER 1968) (IN JAPANESE)

KEYWORDS: DECONTAMINATION; EFFLUENT; WASTE DISPOSAL, SOLID; INCINERATION; RADIATION SAFETY AND CONTROL; GAS

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PUB DATE: 1968
AUTHOR: NATIONAL ACADEMY OF SCIENCES (U.S.A.)

TITLE: NATIONAL ACADEMY OF SCIENCES COMMITTEE TO ADVISE AEC ON WASTE MANAGEMENT PLANS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE ATOMIC ENERGY COMMISSION AND THE NATIONAL ACADEMY OF SCIENCES HAVE ANNOUNCED THE ESTABLISHMENT OF A COMMITTEE OF RADIOACTIVE WASTE DISPOSAL TO ADVISE AND ADVISE THE AEC CONCERNING

LONG-RANGE RADIOACTIVE WASTE MANAGEMENT PLANS AND PROCEDURES FOR THE RAPIDLY EXPANDING NUCLEAR ENERGY INDUSTRY. THE PRIMARY TASK OF THE AEC ACADEMY COMMITTEE INCLUDES THE ASSESSMENT OF THE ADEQUACY OF THE PRESENT AEC PROJECTED TECHNOLOGY TO MEET LONG-RANGE HEALTH, SAFETY, AND OTHER ENVIRONMENTAL REQUIREMENTS AND THE IDENTIFICATION OF NEW RESEARCH AND DEVELOPMENT NEEDS.

PUB DESC: AEC PRESS RELEASE NO. 1-100, 1 PAGE, AUGUST 6, 1968

KEYWORDS: GEOLOGY; NATIONAL ACADEMY OF SCIENCES; ASSESSMENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL; WASTE MANAGEMENT; HYDROLOGY; RADIATION SAFETY AND CONTROL; ENVIRONMENT; R AND D PROGRAM; ENGINEERED SAFETY FEATURES; AGENCY, AEC (SEE ALSO AEC);

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PUB DATE: 1961
AUTHOR: NATIONAL ACADEMY OF SCIENCES (U.S.A.)

TITLE: WASTE DISPOSAL, SECTION IV

CORPORATE AUTHOR: ARCONCE NATIONAL LABORATORY

ABSTRACT: SIX COMMITTEES OF THE NATIONAL ACADEMY OF SCIENCES HAVE PREPARED NEW SUMMARY REPORTS BRINGING THE FINDINGS OF THE COMMITTEES UP TO DATE. AS OF 1960, RADIOACTIVE WASTE OPERATIONS HAD NOT RESULTED IN ANY SIGNIFICANT EFFECT ON THE PUBLIC, ITS ENVIRONMENT, OR ITS NATURAL RESOURCES. THE COST OF RADIOACTIVE WASTE DISPOSAL DOES NOT APPEAR TO BE A LIMITING FACTOR IN THE DEVELOPMENT OF NUCLEAR POWER. WASTE TREATMENT AND DISPOSAL METHODS BEING USED AND DEVELOPED ARE REVIEWED INCLUDING: WASTE PACKAGING- LOW-LEVEL-ACTIVITY LIQUID WASTE TREATMENT BY ION EXCHANGE- HIGH-LEVEL-ACTIVITY WASTE TREATMENT AND STORAGE- DISSOLUTION TO SOLIDS BY CALCINATION, ADSORPTION, CONVERSION TO GLASSES, AND INCORPORATION IN CERAMIC SPONGES- GROUND DISPOSAL- DISPOSAL INTO SALT- DEEP-DRILL INJECTION- AND SEPARATION OF SPECIFIC ISOTOPES.

PUB DESC: REACTOR FUEL PROCESSING, 4(4)- 12 PAGES, 46 REFERENCES- 57-68 (OCTOBER 1961)

KEYWORDS: WASTE DISPOSAL, OCEAN; WASTE MANAGEMENT; REVIEW; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; FISSION PRODUCT, SEPARATION

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PUB DATE: 1975
AUTHOR: NATIONAL COUNCIL ON RADIATION, PROTECTION AND DECONTAMINATION (U.S.A.)

TITLE: CRITICAL-95 IN THE ATMOSPHERE - ACCUMULATION, BIOLOGICAL SIGNIFICANCE, AND CONTROL TECHNOLOGY

CORPORATE AUTHOR: NATIONAL COUNCIL ON RADIATION AND PROTECTION AND DECONTAMINATION

ABSTRACT: THIS REPORT ESTIMATES THE FUTURE GLOBAL CONCENTRATIONS OF CR-95 IN THE ATMOSPHERE RESULTING FROM PROJECTED FUTURE LEVELS OF NUCLEAR POWER AS THE AVERAGE DOES TO THE RESULTING FROM THESE CONCENTRATIONS, AND POSSIBLE TECHNIQUES WHICH MAY BECOME PRACTICABLE FOR THE FUTURE CONTROL OF CR-95 ATMOSPHERIC LEVELS.

PUB DESC: NCRP REPORT NO. 44, 88 PAGES, 16 TABLES, 9 FIGURES, SEPT, JULY 1, 1975

KEYWORDS: CRITICAL (SEE ALSO NOBLE GAS); CR-95; PRODUCTION (SEE ALSO PRODUCTION); DOSIMETRY; NOBLE GAS; FISSION PRODUCT RELEASE; FORECAST; CONCENTRATION; POPULATION STRUCTURE; ACCUMULATION; REVIEW; WASTE TREATMENT, GAS; ATMOSPHERIC POLLUTION

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PUB DATE: 1971
AUTHOR: STEINER, R.L.; LACKY, L.T.

TITLE: LIQUID WASTE MANAGEMENT AT THE NETS TEST

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REACTOR AREA**

CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION, IDAHO FALLS; ALLIANCE CHEMICAL CORPORATION

ABSTRACT: DESCRIBES RADIOACTIVE-WASTE-DISPOSAL PRACTICES AT THE NATIONAL REACTOR TESTING STATION'S TEST REACTOR AREA. PROBLEMS ENCOUNTERED IN THE OPERATION OF THE WASTE SYSTEM ARE DISCUSSED. SOLUTIONS TO THESE PROBLEMS AND PROPOSED CHANGES IN THE EXISTING SYSTEM ARE DISCUSSED ALSO.

PUB DESC: NUCLEAR ENGINEERING, 60(123), PP. 10-17 & FIGURES, 5 TABLES, 5 REFERENCES, (1972)

KEYWORDS: CESIUM; COBALT; URANIUM; STRONTIUM; THORIUM; WASTE TREATMENT; GROUND WATER; NUCLIDE OCCURRENCE; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; RADIOACTIVITY RELEASE; REACTOR TEST FACILITY; MONITOR, AREA; OPERATING EXPERIENCE; CONCENTRATION

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PUB DATE: 1964

AUTHOR: NELSON, J.L.; PERRINS, R.B.; WILSEN, J.B.

TITLE: PROGRESS IN STUDIES OF RADIONUCLIDES IN COLUMBIA RIVER SEDIMENTS

CORPORATE AUTHOR: BAFORD ATOMIC PRODUCTS OPERATION, RICHMOND, WASHINGTON

ABSTRACT: THIS DOCUMENT REPORTS PROGRESS ON THE BEHAVIOR OF BAFORD NUCLIDE RADIOISOTOPES IN THE COLUMBIA RIVER. IT HAS BEEN OBSERVED THAT DEPLETION OF SEVERAL NUCLIDES OCCURS EITHER THE BAFORD REACTORS AND VASCULAR INDICATING SEDIMENTS MAY SOBB AND RETAIN THEM TO AN APPRECIABLE EXTENT. STUDIES ARE AHEAD AT DEFINING THE ROUTE OF RADIOISOTOPES AS THEY BECOME ASSOCIATED WITH RIVER SEDIMENTS DURING BOTH NORMAL AND ABNORMAL OPERATION OF THE BAFORD PLANT. PART OF THE STUDY INVOLVES AN INVENTORY OF RADIOISOTOPES IN THE RIVER BOTTOM SEDIMENTS. OTHER WORK IS AHEAD AT DEFINING THE MECHANISMS OF ADSORPTION AND RELEASE IN ORDER TO BE ABLE TO PREDICT WHAT CHANGES IN RIVER CONDITIONS MIGHT CAUSE EITHER RELEASE OF DEPOSITED SEDIMENTS OR SUBMERSE ADSORPTION.

PUB DESC: EN-83610 26 PAGES, TABLES, 5 REFERENCES-DECEMBER 1964

KEYWORDS: CESIUM; CESIUM; COBALT; HYDRAULIC ANALYSIS; HYDRAULIC EFFECT; PARTICULATE SIZE; HAZARD, RELATIVE; RADIATION; SURFACE WATER; SURVEY, ENVIRONMENT; WATER; ZINC; COBALT; CESIUM; MANGANESE; SURFACE WATER, NUCLIDE OCCURRENCE; SURFACE WATER, SUSPENDED MATERIAL; SURFACE WATER, TRACER; WASTE DISPOSAL, RIVER; ZINC; CRITICAL NUCLIDE; RIVER, COLUMBIA; SURFACE WATER, DISPOSAL MEDIA; SURFACE WATER, SEDIMENT; POPULATION EXPOSURE; ADSORPTION; ION EXCHANGE; MINERAL EXCHANGE; SEDIMENT

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PUB DATE: 1965

AUTHOR: BERHAUS, G.B.

TITLE: DISCHARGE OF RADIOACTIVE WASTE WATERS TO PUBLIC WATERS

ABSTRACT: THE DISCHARGE OF RADIOACTIVE WASTE WATERS TO SURFACE WATERS IS DISCUSSED AND DETAILS ARE GIVEN OF THE DIFFICULTIES AND PROBLEMS WHICH ARISE UNDER METHODS OF TREATMENT AND INADEQUATE AND FAIL TO REACH THE STANDARD REQUIRED BY THE NATIONAL PERMISSIBLE CONCENTRATION.

PUB DESC: GAS-BAFFENPACH, 106, PAGES 1035-9 (1965)

KEYWORDS: MAXIMUM PERMISSIBLE CONCENTRATION (MPC); WASTE TREATMENT, LIQUID; SURFACE WATER, DISPOSAL MEDIA; WASTE DISPOSAL, LIQUID

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PUB DATE: 1973

AUTHOR: BERGON, B.C.

TITLE: REQUIREMENTS OF AN OPTIMUM SITE FOR SUBSURFACE STORAGE OR DISPOSAL OF RADIOACTIVE WASTES

ABSTRACT: OPTIMUM SITES WOULD PROVIDE ISOLATION BUT ACCESSIBILITY, PROTECTION FROM GEOLOGIC AND HYDROLOGIC HAZARDS, HYDROLOGICALLY SUITABLE CONDITIONS, ADEQUATE ROCK TYPES, COMPATIBLE LAND USE CHARACTERISTICS, AND ECONOMIC FEASIBILITY. ALSO, MUST BE FREE FROM EARTHQUAKES OF AN INTENSITY GREATER THAN 7 ON THE MODIFIED MERCALLI SCALE WITHIN 50 MILES DURING THE LAST 100 YRS. HAVING NO MORE THAN TWO EARTHQUAKE EPICENTERS OF INTENSITY GREATER THAN 5 WITHIN 50 MILES DURING THE LAST 100 YRS. MORE THAN 50 MILES FROM TECTONIC STRUCTURES THAT HAVE DISPLACED THE SURFACE DURING THE LAST 10,000 YRS.

PUB DESC: BULLETIN OF THE ASSOC. OF ENGINEERING GEOLOGISTS, 10(3), PP. 219-230 3 FIGURES, (1973)

KEYWORDS: GEOLOGY; SITING; SEISMOLOGY; WASTE DISPOSAL, SOLID; HYDROLOGY; WASTE DISPOSAL, SOLID; EARTHQUAKE EPICENTER; PLANNING, LAND

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PUB DATE: 1971

AUTHOR: MOOI, R.

TITLE: TREATMENT, DISPOSAL, AND DISCHARGE TO ENVIRONMENT OF RADIOACTIVE WASTES

CORPORATE AUTHOR: FIRST ATOMIC POWER INDUSTRY GROUP, TOKYO

ABSTRACT: THE QUANTITY OF GASEOUS AND LIQUID RADIOACTIVE WASTES RELEASED BY NUCLEAR POWER STATIONS IN ENGLAND, GERMANY, AND THE USA ARE SHOWN. HOWEVER, IT HAS BEEN RECOMMENDED THAT ANY SUCH WASTE MUST BE KEPT AS LOW AS PRACTICABLE. BUT THIS REPORT NUMERICALLY PRESCRIBES BOTH THE RELEASED QUANTITY AND RELEASED CONCENTRATION OF THE RADIOACTIVE MATERIALS. ACCORDING TO THIS PRESCRIPTION, THE MAXIMUM PERMISSIBLE DOSE TO THE POPULATION IS TO BE LOWERED SIGNIFICANTLY. IT PROPOSES THAT THE EXPOSURE DOSE TO THE INHABITANTS IN NEIGHBORHOOD OF PLANTS SHOULD NOT EXCEED 5% OF THE YEARLY MEAN NATURAL RADIATION DOSE.

PUB DESC: PAPIC (TOKYO), NO. 63, PP. 136-102 (NOVEMBER 1971)

KEYWORDS: DOSE; ENVIRONMENT; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); REGULATION (SEE ALSO STANDARDS, RADIATION); UNITED KINGDOM; WASTE DISPOSAL; WASTE TREATMENT; MAXIMUM PERMISSIBLE DOSE (MPD); POPULATION EXPOSURE; GERMANY; JAPAN; UNITED STATES; DISCHARGE

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PUB DATE: 1974

AUTHOR: O'CONNELL, R.P.; WOLCONE, W.P.

TITLE: A SUMMARY OF LOW-LEVEL RADIOACTIVE WASTES BURIED AT COMMERCIAL SITES BETWEEN 1962-1973 WITH PROJECTIONS TO THE YEAR 2000

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF RADIATION PROGRAMS

ABSTRACT: THE US ENVIRONMENTAL PROTECTION AGENCY CONTRACTED WITH THE SIX STATES HAVING COMMERCIAL BURIAL FACILITIES FOR LOW-LEVEL RADIOACTIVE WASTES TO OBTAIN INVENTORIES OF THE TYPES AND QUANTITIES OF WASTES BURIED AT THESE SIX SITES. A COMPILATION AND INTERPRETATION OF THE INVENTORY DATA IS PRESENTED IN TABLES AND FIGURES. PROJECTIONS ARE MADE TO THE YEAR 2000 OF THE QUANTITIES OF LOW-LEVEL RADIOACTIVE WASTES THAT WILL RESULT FROM THE NUCLEAR FUEL CYCLE AND FUEL CYCLE SOURCES. IN ADDITION, ASSUMPTIONS ARE MADE RELATING THESE PROJECTIONS TO THE AVAILABLE CAPACITY AND OPERATIONAL LIFE OF THE COMMERCIAL SITES. BASED ON ESTIMATES OF WASTE GENERATION RATES, IT IS INDICATED, ASSUMING PRESENT OPERATIONAL PRACTICES, THAT BY THE YEAR 1990, THE SIX EXISTING SITES WILL EXHAUST THEIR CURRENT BURIAL CAPACITY. (AUTH)

PUB DESC: RADIATION DATA AND REPORTS, 15(12), P. 757-767 (1974)

KEYWORDS: LOW-LEVEL WASTE; WASTE DISPOSAL,

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ASSESSMENT (SEE ALSO ASSESSMENT); SUMMARY REPORT;
ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC
HEALTH); COMMERCIAL NUCLEAR POWER (SEE ALSO NUCLEAR
POWER); WASTE FUELS (SEE ALSO WASTE FUELS); WASTE
DISPOSAL, TERRESTRIAL; FORECAST; PRODUCTION (SEE ALSO
FORECAST); ESTIMATES; INVENTORY

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PUB DATE: 1973
AUTHOR: OAK RIDGE NATIONAL LABORATORY (U.S.A.)

TITLE: PROGRAM PLAN FOR THE DEVELOPMENT OF THE
DESIGN SALT PILOT PLANT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: A PROGRAM LEADING TO THE ESTABLISHMENT IN
FY 1983 OF A PILOT PLANT FOR STORING RADIOACTIVE
WASTES IN DESIGN SALT IS DESCRIBED. THE PROGRAM
CONSISTS OF LABORATORY AND FIELD INVESTIGATIONS OF
FACTORS AFFECTING THE SUITABILITY OF A SPECIFIC SITE
IN SOUTHEASTERN NEW MEXICO; OF MOST GENERALLY
APPLICABLE PROBLEMS ASSOCIATED WITH GEOLOGY AND
ROCK MECHANICS; AND OF CONSIDERATIONS RELATING TO THE
OPERATIONAL SAFETY OF A PILOT PLANT REPOSITORY. TASKS
CONCERNED WITH THE ENGINEERING DEVELOPMENT AND DESIGN
OF THE FACILITY ARE ALSO INCLUDED.

PUB DESC: OURL-TH-0233, 30 PAGES, FIGURES, OCTOBER
1973

KEYWORDS: SITING; NEW MEXICO; WASTE DISPOSAL, SALT;
R AND D PROGRAM

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PUB DATE: 1971
AUTHOR: OAK RIDGE NATIONAL LABORATORY (U.S.A.)

TITLE: RADIOACTIVE WASTE REPOSITORY PROJECT -
TECHNICAL STATUS REPORT FOR PERIOD ENDING SEPT 30, 1971

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: TO ENSURE THE SUCCESSFUL APPLICATION OF
NUCLEAR POWER FOR HUMANITY'S BENEFIT, A SATISFACTORY
MEANS MUST BE FOUND FOR THE DISPOSAL OF THE LONG-LIVED
TOXIC RADIOISOTOPES THAT WILL ACCUMULATE AS WASTE
MATERIALS. MOST OF THE ISOTOPES OF CONCERN ARE IN
THE HIGH-LEVEL LIQUID WASTES GENERATED BY THE
REPROCESSING OF SPENT FUELS AND IN SOLID REFUSE FROM
AEC AND INDUSTRIAL MANUFACTURING OPERATIONS. FOR THE
PAST 15 YEARS THE AEC HAS PROMOTED THE DEVELOPMENT OF
PROCESSSES FOR CONVERTING THE LIQUID WASTES TO STABLE,
SOLID FORMS AND, IN CONSULTATION WITH THE NATIONAL
ACADEMY OF SCIENCES AND MEMBERS OF THE GEOLOGICAL
COMMUNITY, HAS SPONSORED WORK AT CNL TO EXAMINE THE
SUITABILITY OF DESIGN SALT FORMATIONS AS A FINAL
REPOSITORY FOR THESE MATERIALS. SALT DEPOSITS ARE
CONSIDERED TO BE MOST ATTRACTIVE FOR THIS PURPOSE.

PUB DESC: OURL-0751, 315 PAGES, FIGURES, TABLES,
REFERENCES, DECEMBER 1971

KEYWORDS: GEOLOGY; GEOLOGY; SITING, WASTE DISPOSAL;
THERMAL ANALYSIS; CALCINATION; WASTE TREATMENT,
LIQUID; WASTE DISPOSAL, SOLID; SYNOLOGY; RADIATION
SAFETY AND CONTROL; WASTE DISPOSAL, SALT; SALT (SEE
ALSO DESIGN SALT AND WASTE DISPOSAL, SALT); SAFETY
EVALUATION; ROCK MECHANICS

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PUB DATE: 1967
AUTHOR: OAK RIDGE NATIONAL LABORATORY (U.S.A.)

TITLE: SPEAKER PHYSICS DIVISION ANNUAL PROGRESS
REPORT FOR PERIOD ENDING JULY 31, 1967. PART I.
RADIOACTIVE WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: RESEARCH IS REPORTED ON - (1) RATE OF
RADIOISOTOPES IN TERRESTRIAL ENVIRONMENT, (2) DISPOSAL
BY STORAGE IN FRACTURING, (3) DISPOSAL IN NATURAL SALT

FORMATIONS, (4) APPLICATION OF MINERAL EXCHANGE TO
REACTOR TECHNOLOGY, (5) ENGINEERING, ECONOMIC, AND
SAFETY EVALUATIONS, (6) EARTHQUAKES AND REACTOR
DESIGN, (7) COST-ESTIMATION STUDIES RELATED TO
PROPOSED CONSTRUCTION OF AN ATLANTIC-PACIFIC
INTEROCEANIC CANAL WITH NUCLEAR EXPLOSIVES, AND (8)
RELATED COOPERATIVE PROJECTS.

PUB DESC: OURL-0160, 60 PAGES, 33 FIGURES, 8
TABLES, 99 REFERENCES, PAGE 1-60, OCTOBER 1967

KEYWORDS: DESIGN; ECONOMICS (SEE ALSO WASTE
DISPOSAL, ECONOMICS); EARTHQUAKE (SEE ALSO MOBILE GAS);
FLOWMETER; SOIL; RADIOISOTOPES; WASTE DISPOSAL;
THERMAL ANALYSIS; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE;
WASTE CALCULATION, INTERNAL; OURL; WASTE DISPOSAL, GAS;
WASTE MANAGEMENT; WASTE CALCULATION, INTERNAL; CURIOUS;
MINERAL EXCHANGE; ADSORPTION (SEE ALSO ADSORPTION);
WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL,
SALT; COOL; SALT STRUCTURE; SAFETY EVALUATION;
EARTHQUAKE; INSURING; ROCK MECHANICS; VEGETATION;
CONCENTRATION

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PUB DATE: 1974
AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND
DEVELOPMENT

TITLE: MANAGEMENT OF PLUTONIUM-CONTAMINATED SOLID
WASTES

ABSTRACT: THE TWO MAIN SESSIONS WERE DEVOTED TO
OPERATIONAL EXPERIENCE OF, AND RESEARCH AND
DEVELOPMENT IN, THE MANAGEMENT OF
PLUTONIUM-CONTAMINATED SOLID WASTES.

PUB DESC: PROCEEDINGS OF A SEMINAR HELD IN
BARCELONA, FRANCE, 1974, 250 PPS

KEYWORDS: PLUTONIUM; WASTE MANAGEMENT; OPERATING
EXPERIENCE; R AND D PROGRAM; WASTE DISPOSAL, SOLID

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PUB DATE: 1974
AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND
DEVELOPMENT

TITLE: PROCEEDINGS OF THE SEMINAR ON THE MANAGEMENT
OF PLUTONIUM-CONTAMINATED SOLID WASTES

CORPORATE AUTHOR: NUCLEAR ENERGY AGENCY, PARIS

ABSTRACT: PRESENTS THE TEXT OF 17 PAPERS WHICH
REVIEW THE MANAGEMENT OF PU-CONTAMINATED SOLID WASTES
BASED ON EXPERIENCE ACQUIRED BY INSTALLATIONS WHICH
HANDLE LARGE QUANTITIES OF PU. SOME OF THE TOPICS
ARE: RADIOLOGICAL PROTECTION; U.S. EXPERIENCE;
EXPERIENCE IN GERMANY; U.S. EXPERIENCE; STORAGE; LONG
RANGE MANAGEMENT; AND VOLUME REDUCTIONS.

PUB DESC: CONF-741026, 250 PPS, FROM SEMINAR ON
THE MANAGEMENT OF PLUTONIUM-CONTAMINATED SOLID WASTES,
BARCELONA, FRANCE, OCT. 10, 1974

KEYWORDS: WASTE MANAGEMENT; WASTE TREATMENT;
PLUTONIUM; OPERATING EXPERIENCE; RADIATION SAFETY AND
CONTROL; SWITZERLAND; GERMANY; WASTE STORAGE

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PUB DATE: 1974
AUTHOR: OURL STAFF

TITLE: THE INTERNATIONAL SYMPOSIUM ON THE
MANAGEMENT OF WASTES FROM THE LWR FUEL CYCLE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY AND
EPDA

ABSTRACT: UNITED STATES REQUIREMENTS FOR ENERGY AND
FEASIBLE ALTERNATIVE MEANS OF MEETING THESE
REQUIREMENTS ARE REVIEWED FOR THE NEAR TERM (TO 1985),
THE MID TERM (1985 TO 2000), AND THE LONG TERM (2000
AND BEYOND). THE IMPORTANCE OF LIGHT-WATER-REACTOR
POWER GENERATION DURING THE SHORT AND MID TERMS AND
INTO THE LONG TERM IS DEMONSTRATED, AND THE NEED TO
CLOSE THE LWR FUEL CYCLE IS STRESSED. FINALLY, AN

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OVERVIEW IS PRESENTED OF HIGH-LEVEL WASTE DISPOSAL TECHNOLOGIES AND OF THE DEVELOPMENT OF TECHNOLOGIES REQUIRED TO IMPLEMENT THEM.

PUB DESC: CONF. 76-0701, JULY 11-16, 1976, DENVER, COLORADO

KEYWORDS: PUBLIC HEALTH; PUBLIC RELATIONS; PUBLIC ATTITUDE; PUBLIC RESPONSE (SEE ALSO OPINION, PROGRESS, AND POPULATION RESPONSE); ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); WASTE TREATMENT; WASTE DISPOSAL; WASTE STORAGE; PAYMENT (SEE ALSO CRITICAL NUCLEIDE PAYMENT); ECOLOGY; ENERGY DEVELOPMENT; FORECAST; LBN (SEE ALSO REACTOR, LBN);

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PUB DATE: 1970

AUTHOR: ORNL STAFF

TITLE: SITING OF FUEL REPROCESSING PLANTS AND WASTE MANAGEMENT FACILITIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE PRINCIPAL OBJECTIVE OF THIS STUDY IS TO IDENTIFY AND CHARACTERIZE THE FACTORS THAT MAY INFLUENCE THE GROWTH PATTERNS OF THE FUEL REPROCESSING INDUSTRY. EMPHASIS IS PLACED ON THE SITING OF REPROCESSING PLANTS AND WASTE STORAGE AND DISPOSAL FACILITIES, PARTICULARLY THOSE FOR HIGH-LEVEL WASTE. ANOTHER PURPOSE IS TO EXPLORE THE NEED FOR AN AEC POLICY ON SITING, WHICH, WHILE FULLY RECKONING THE REQUIREMENTS IMPOSED BY CONSIDERATIONS OF PUBLIC HEALTH AND SAFETY, WOULD NOT PRESENT AN IMPEDIMENT TO THE GROWTH OF ECONOMIC NUCLEAR POWER. THE KEY ISSUES UNDER CONSIDERATION AND THE PRINCIPAL CONCLUSIONS OF THE STUDY ARE PRESENTED. THE TECHNICAL INFORMATION IN THE BODY OF THE REPORT RELATING TO THESE ISSUES AND CONCLUSIONS IS SUMMARIZED.

PUB DESC: ORNL-4451 (1970), 413PP.

KEYWORDS: PLUTONIUM; WASTE DISPOSAL ALTERNATIVES; LBN (SEE ALSO REACTOR, LBN); FUEL REPROCESSING; PLANT SITING; WASTE MANAGEMENT; TECHNOLOGY; WASTE HANDLING; WASTE TRANSPORTATION; WASTE DISPOSAL; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); ENVIRONMENT; SAFETY EVALUATION; RADIOACTIVE RELEASE; RYPTON (SEE ALSO NOBLE GAS); TRITIUM

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PUB DATE: 1970

AUTHOR: OSTWISHT, P.J.F.

TITLE: RECENT DEVELOPMENTS IN RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: OSTERSCHLICHESKE
STUENKESSEL-SCHAFT FÜR KERNENERGIE G.M.B.H.,
STRIEDSBORG

ABSTRACT: POINTS UP THE NEED TO FIND ACCEPTABLE SOLUTIONS FOR THE ULTIMATE STORAGE OR DISPOSAL OF THE HIGH-LEVEL WASTE. THE EUROPEAN COUNTRIES AND THE U.S.A., WHICH PLAY A MAJOR ROLE IN THE APPLICATION OF NUCLEAR POWER, HAVE A MORAL RESPONSIBILITY FOR A CAREFUL AND RESPONSIBLE APPROACH TO THE PROBLEM. THE U.S.A. HAS ALREADY ACCEPTED THE CHALLENGE AND IT IS HOPED EUROPE WILL UNITE THEIR EFFORTS IN DETERMINING A COMMON POLICY TOWARD ULTIMATE DISPOSAL OF HLW.

PUB DESC: SCAR-RT-35/1970, CONF-700701-19, 11 PAGES, FROM 4TH FORNATOR CONGRESS ON INDUSTRIAL ASPECTS OF THE NUCLEAR FUEL CYCLE IN EUROPE, STOCKHOLM, SWEDEN, 1970

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE; WASTE STORAGE; WASTE MANAGEMENT; UNITED STATES; PUBLIC RELATIONS

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PUB DATE: 1970

AUTHOR: PAVESKO, J.V.

TITLE: PALLADIUM RECOVERY FROM ALKALINE POREX

WASTES BY ADSORPTION ON ACTIVATED CHARCOAL

CORPORATE AUTHOR: ATLANTIC RECOVERED RANFORD COMPANY, RICHMOND, VIRGINIA

ABSTRACT: PALLADIUM WAS SELECTIVELY RECOVERED FROM ALKALINE POREX WASTES BY ACTIVATED CHARCOAL. A LOADING OF 1.1 GRAMS PALLADIUM PER POUND OF CHARCOAL WAS OBTAINED BY 50 PERCENT PALLADIUM BREAKTHROUGHS. QUANTITATIVE PALLADIUM REMOVAL WAS ACHIEVED BY ELUTION WITH H₂O AND NH₄OH.

PUB DESC: ADM-1552, 12 PAGES, JULY 1970

KEYWORDS: WASTE TREATMENT, LIQUID; POREX (SEE ALSO PARTITIONING); CHARCOAL ADSORBER; PALLADIUM

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PUB DATE: 1969

AUTHOR: FISHER, P.L.

TITLE: STATUS OF RADIOACTIVE WASTE DISPOSAL IN U.S.A.

CORPORATE AUTHOR: VANDERBILT UNIVERSITY, NASHVILLE, TN

ABSTRACT: THE MANAGEMENT OF RADIOACTIVE WASTES HAS NOT PROVED TO BE A DETERMINANT TO A NUCLEAR POWER ECONOMY. THE MAJOR PROBLEMS REMAINING ARE METHODS FOR THE REMOVAL OF NOBLE GASES AND TRITIUM, DEVELOPMENT OF FUEL REPROCESSING METHODS, AND UNDERSTANDING OF THE BEHAVIOR OF RADIOISOTOPES IN THE ENVIRONMENT. THE EFFECTS OF RELEASES OF RADIOACTIVE MATERIALS UPON MAN, AND A COMPARISON OF THESE EFFECTS WITH SIMILAR EFFECTS PRODUCED BY NATURAL CAUSES, ARE ALSO CONSIDERED. THE ESTIMATED AVERAGE RADIATION EXPOSURES TO THE CONSUMER IN THE U.S. IN 1963 WAS 193.2 MRD, AND ABOUT 1 PERCENT OF THIS DOSE WAS DUE TO THE NUCLEAR INDUSTRY. RADIOACTIVE WASTES ARE NOT AT PRESENT, AND DO NOT APPEAR TO BE IN THE FUTURE, A DETERMINANT TO A NUCLEAR-POWER ECONOMY, AND CANCERS AND GENETIC DISEASES DUE TO A NUCLEAR-POWER ECONOMY ARE SMALL IN COMPARISON TO CANCERS AND GENETIC DISEASES DUE TO NATURAL CAUSES.

PUB DESC: JOURNAL OF THE SANITARY ENGINEERING DIVISION, PROCEEDINGS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, VOL. 95, PG. 439-464 (JUNE 1969)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); DOSIMETRY; HEALTH PHYSICS; EFFLUENT; TRITIUM; WASTE DISPOSAL; WASTE MANAGEMENT; ENVIRONMENT; UNITED STATES; FUEL REPROCESSING; GAS; EFFECT; COMPARISON

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PUB DATE: 1968

AUTHOR: FISHER, P.L.

TITLE: RADIOACTIVE WASTES FROM FUSION REACTORS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: LONG-TERM FUTURE FOR NUCLEAR POWER GENERATION IS IN BREEDER-FUSION OR FUSION. COST/ELECTRICITY-OR-ELECTRICAL FOR THERMONUCLEAR POWER: LESS THAN 4 MILL-KWH. MAJOR PROBLEM OF FUSION REACTOR WILL BE TRITIUM LOSS. 300 MEGAWATT-ELECTRICAL POWER PRODUCTION REQUIRES FUSION OF 220 GRAMS OF TRITIUM/DAY. MAJOR ANTS TRITIUM RELEASED NOT AT REACTOR SITE BUT DURING FUEL REPROCESSING. ASSUMING 30% THERMAL EFFICIENCY PER 1000 MEGAWATT-ELECTRICAL AND 1.75 TRITIUM ATOMS PER 10,000 FISSIONS, AND 200 NEV/FISSION, A FISSION REACTOR WOULD GENERATE 50 CUBIC/DAY OF TRITIUM/1000 MEGAWATT-ELECTRICAL, WHEREAS A FUSION REACTOR WOULD GENERATE 1,000,000 CUBIC/DA (20,000 TIMES AS MUCH). CCOSER (ORNL-4007) CALCD THAT OVERALL INCREASE IN DOSE RATE TO THE HUMAN POPULATION FROM NUCLEAR FUEL REPROCESSING WOULD BE 0.002 MRD/YR BY THE YEAR 2000 A.D. IF RELEASE WERE TO INCREASE 20,000 TIMES (40 MRD/YR) SUCH AN ANNUAL POPULATION DOSE RATE WOULD BE UNACCEPTABLE; HOWEVER, THERMONUCLEAR REACTORS WILL NEED MOST OF THE TRITIUM GENERATED, AND TECHNOLOGY WILL BE DEVELOPED BY THEN TO CONTAIN AND USE THE VAST QUANTITIES OF TRITIUM ENVISIONED AS RESULT OF THERMONUCLEAR POWER PRODUCTION

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FROM D-T-TYPE REACTION.

PUB DESC: SCIENCE, 159, 83-84, 1968

KEYWORDS: TRITIUM; PRODUCTION; REACTOR; FUEL REPROCESSING; INVENTORY SURVEY; RICHMOND (SEE ALSO HAZARD); POPULATION EXPOSURE; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); TECHNICAL INFORMATION; HISTORICAL SIGNIFICANCE; TOXIC; WASTE MANAGEMENT; RECYCLING; INTERNAL EXPOSURE (SEE ALSO DOSE CALCULATION); DOSE RATE

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PUB DATE: 1967
AUTHOR: PARKER, F.L.

TITLE: RECENT DEVELOPMENTS IN AND FUTURE PLANS FOR RADIOACTIVE WASTE MANAGEMENT IN THE UNITED STATES OF AMERICA

CORPORATE AUTHOR: VANDEBILT UNIVERSITY, NASHVILLE, TN

ABSTRACT: THE FUNDAMENTAL POLICY AND MAIN DIRECTION OF RADIOACTIVE-WASTE MANAGEMENT IN THE UNITED STATES OF AMERICA IS NOW EVIDENT. POLICY IS TO KEEP TOTAL RADIATION HAZARDS AT OR BELOW THEIR PRESENT LEVELS ALTHOUGH THE AMOUNT OF NUCLEAR FUEL GENERATION WILL INCREASE EXponentially. THIS LEVEL WILL BE MAINTAINED THROUGH INCREASED EMPHASIS ON CONCENTRATING, SOLIDIFYING AND CONTAINING BOTH HIGH- AND LOW-LEVEL WASTES AND BY DISCHARGING TO THE ENVIRONMENT A NONHAZARDOUS, ECONOMICALLY IMPRODUCTIBLE MINIMUM OF RADIOACTIVE MATERIAL.

PUB DESC: NUCLEAR ENERGY REVIEW, 5(4), PAGES 93-121 (1967)

KEYWORDS: DECONTAMINATION; PARTICLE; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, TERRESTRIAL; CALCINATION; WASTE TREATMENT; FISSION; HAZARD ANALYSIS; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; RADIATION SAFETY AND CONTROL; REACTOR POWER; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; SITED STATES; A AND D PROGRAM; CONCENTRATION; RAN

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PUB DATE: 1968
AUTHOR: PARKER, F.L.; DIAMCO, R.E.

TITLE: WASTE TREATMENT AND DISPOSAL PROGRESS REPORT, MAY-OCTOBER 1963

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROGRESS OF THE RESEARCH AND DEVELOPMENT PROGRAM AT ORNL ON WASTE TREATMENT AND WASTE DISPOSAL IS REPORTED. SUBJECTS PRESENTED INCLUDE CALCINATION-LEVEL WASTE TREATMENT BY SCAVENGING-PRECIPITATION ION EXCHANGE PROCESS AND BY POOR SEPARATION-ENGINEERING, ECONOMIC, AND SAFETY EVALUATIONS OF WASTE MANAGEMENT PRACTICES- DISPOSAL BY HYDROFRACTURING- DISPOSAL INTO NATURAL SALT FORMATIONS- CLINCH RIVER STUDIES- MINERAL EXCHANGE- AND MOVEMENT OF RADIOISOTOPES IN THE WHITE OAK CREEK BASIN.

PUB DESC: ORNL-TN-757 189 PAGES, 53 FIGURES, 36 TABLES, 56 REFERENCES- APRIL 1968

KEYWORDS: GROUND WATER; SOIL; RADIOISOTOPE MOVEMENT THROUGH; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT

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PUB DATE: 1964
AUTHOR: PARKER, F.L.; FREDERICK, R.J.; CARRIGAN, P.W.

TITLE: MOVEMENT OF RADIOISOTOPES IN THE CLINCH RIVER

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE FATE OF RADIOACTIVE CONTAMINANTS DISCHARGED INTO HIGHLY REGULATED AND STRATIFIED FLOW STREAMS IS DISCUSSED. EXPERIMENTAL DATA ARE POSED TO

COMPARE WITH THE VALUES PREDICTED BY THEORY.

PUB DESC: ORNL-R-606 (CONF-772-1)- THIRD SANITARY ENGINEERING CONFERENCE, NASHVILLE, MAY 1964, 13 PAGES, 4 FIGURES, 4 REFERENCES- OCTOBER 6, 1964

KEYWORDS: DILUTION; EFFLUENT; FISSION PRODUCT TRANSPORT; RICHMOND; SURFACE WATER, NUCLEON OCCURRENCE; SURFACE WATER, TRACER; ESTUARY; RIVER, CLINCH; THERMAL CONSIDERATION; WASTE DISPOSAL, LIQUID; HYDROLOGY; MINERAL EXCHANGE; SURFACE WATER, PROPERTY; SEDIMENT

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PUB DATE: 1974
AUTHOR: PARKER, G.C.; STEARNS, R.A.; FANG, C.S.

TITLE: THERMAL EFFECTS OF THE SORBY NUCLEAR POWER PLANT ON THE JAMES RIVER, VIRGINIA. PART IV. RESULTS OF MONITORING PHYSICAL PARAMETERS DURING THE FIRST YEAR OF PLANT OPERATIONS

CORPORATE AUTHOR: VIRGINIA INSTITUTE OF MARINE SCIENCE

ABSTRACT: THE PRIMARY OBJECTIVE OF THIS STUDY IS TO THOROUGHLY DOCUMENT WASTE HEAT DISTRIBUTION AND RELATED PHENOMENA FOR THE JAMES RIVER ESTUARY DUE TO THE THERMAL DISCHARGE FROM THE SORBY NUCLEAR POWER PLANT. RESULTS OBTAINED TO DATE WILL BE COMPARED TO THOSE PREDICTED BY PRITCHARD AND CARPENTER. THE SORBY NUCLEAR POWER PLANT, SITED ON HOG ISLAND, UTILIZES SURFACE DISCHARGE BY OPEN-CHANNEL FLOW INTO THE JAMES RIVER. THIS DISCHARGE, DUE TO ITS FREE SURFACE NATURE, IS A SOURCE OF BOTH MOMENTUM AND BUOYANCY, SPREADING VERTICALLY, Laterally, AND LONGITUDINALLY DUE TO TURBULENT DIFFUSION AND DENSITY DRIVEN MOTIONS. (MOD. AUTH)

PUB DESC: ORO-0067-5 (1974)

KEYWORDS: NUCLEAR POWER PLANTS; THERMAL EFFECTS; RIVER, JAMES; VIRGINIA; WASTE HEAT; RIVER, JAMES; SORBY NUCLEAR POWER PLANT; DATA COLLECTION; TURBULENCE; DIFFUSION

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PUB DATE: 1967
AUTHOR: PARSONS, P.J.

TITLE: INTERNATIONAL SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND

CORPORATE AUTHOR: LONDON UNIVERSITY, ENGLAND

ABSTRACT: THE SYMPOSIUM WAS CONCERNED WITH ALL TYPES OF RADIOACTIVE-WASTE DISPOSAL AND STORAGE IN THE SOIL, INCLUDING THE RELEASE OF RADIOACTIVE EFFLUENTS INTO PITS OR POUNDS. THE SHALLOW BURIAL OF SOLID OR SOLIDIFIED WASTES AND, FOR THE EXPLOITATION OF GEOLOGICAL FORMATIONS, THE DEEP INJECTION OF FLUID WASTES AND THE USE OF MINES. PAPERS ON HYDROLOGY AND GEOCHEMISTRY CONCERNING THE MINERAL REACTIONS AND MIGRATION RATES OF RADIOISOTOPES IN GROUNDWATER WERE ALSO INCLUDED IN THE CONTEXT OF SITE INVESTIGATION AND THE CHOICE OF SUITABLE AREAS FOR DISPOSAL GROUNDS.

PUB DESC: NUCLEAR SAFETY 9(4), PAGES 313-21, 1 TABLE, 2 REFERENCES, (JULY-AUGUST 1968)

KEYWORDS: CONCRETE; POND; HYDRAULIC FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE TREATMENT; CALCINATION; AUSTRIA; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; POPULATION EXPOSURE; GLASS (SEE ALSO VITRIFICATION); ION EXCHANGE; SOIL; ADSORPTION (SEE ALSO ABSORPTION); WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; BURIAL GROUND (SEE ALSO CONCRETE BURIAL GROUND);

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PUB DATE: 1974
AUTHOR: PEDGE, A.F.; HANSEY, R.W.

TITLE: PLANS FOR THE MANAGEMENT OF RADIOACTIVE WASTE FROM REPROCESSING FUEL IN COMMERCIAL OPERATIONS

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CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THE MAGNITUDE OF THE COMMERCIAL REPROCESSING WASTE BUSINESS IS ESTIMATED AND PLANS OF THE UNITED STATES ATOMIC ENERGY COMMISSION (AEC) ARE DISCUSSED IN FOUR AREAS: (1) AEC POLICIES GOVERNING THE MANAGEMENT OF THE WASTE PRIOR TO TRANSFER TO A FEDERAL DEPOSITORY; (2) PLANS FOR CONSTRUCTION OF FEDERAL DEPOSITORIES; (3) RESEARCH AND DEVELOPMENT ON WASTE TREATMENTS; AND (4) EVALUATION OF ADVANCED CONCEPTS FOR LONG-TERM STORAGE OR DISPOSAL TO DETERMINE WHICH ARE WORTHY OF FURTHER DEVELOPMENT. (AUTH)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING - PROCEEDINGS OF SYMPOSIUM, 285-295 (1974)

KEYWORDS: FUEL REPROCESSING; WASTE DISPOSAL; ASSESSMENT (SEE ALSO ASSESSMENT); DEPOSITORY; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); COMMERCIAL NUCLEAR ENERGY (SEE ALSO NUCLEAR ENERGY); PLANNING; FEDERAL DEPOSITORY (SEE ALSO DEPOSITORY); WASTE TREATMENT; WASTE PROGRAM; EVALUATION

<291> PUB DATE: 1972
AUTHOR: FUDGE, A.F.; BARNETT, D.W.

TITLE: PLANS FOR THE MANAGEMENT OF RADIOACTIVE WASTE FROM REPROCESSING FUEL IN COMMERCIAL OPERATIONS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION

ABSTRACT: THE MAGNITUDE OF THE COMMERCIAL REPROCESSING WASTE BUSINESS IS ESTIMATED AND PLANS OF THE USAEC ARE DISCUSSED IN FOUR AREAS - (1) AEC POLICIES GOVERNING THE MANAGEMENT OF THE WASTE PRIOR TO TRANSFER TO A FEDERAL DEPOSITORY; (2) PLANS FOR CONSTRUCTION OF FEDERAL DEPOSITORIES; (3) RESEARCH AND DEVELOPMENT ON WASTE TREATMENTS; AND (4) EVALUATION OF ADVANCED CONCEPTS FOR LONG-TERM STORAGE OR DISPOSAL TO DETERMINE WHICH ARE WORTHY OF FURTHER DEVELOPMENT.

PUB DESC: CONF-721107, 7 PAGES, 1 TABLE, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: WASTE STORAGE; WASTE TREATMENT; WASTE TRANSPORTATION; WASTE MANAGEMENT; SAFETY EVALUATION; FUEL REPROCESSING; W AND E PROGRAM; AGENCY, AEC (SEE ALSO USAEC);

<292> PUB DATE: 1961
AUTHOR: PINORA, J.J.; BHASKARAN, P.L.; ROBERTS, J.T.; BLOMBERG, J.O.

TITLE: EVALUATION OF ULTIMATE DISPOSAL METHODS FOR LIQUID AND SOLID RADIOACTIVE WASTES. PART II. CONVERSION OF SOLID BY POT CALCINATION

CORPORATE AUTHOR: ORNL RIEGE NATIONAL LABORATORY

ABSTRACT: THE COSTS OF POT CALCINATION OF PUREX AND THOREX WASTES WERE CALCULATED. THE WASTES WERE ASSUMED PRODUCED BY A PLANT PROCESSING 1500 TONNES/YEAR OF URANIAN CONVERTED FUEL AT A BURDEN OF 16,000 RUB/TONNE AND 270 TONNES/YEAR OF THORIUM CONVERTED FUEL AT 20,000 RUB/TONNE. COSTS WERE CALCULATED FOR PROCESSING PUREX WASTE IN ACIDIC AND REACIDIFIED FORMS AND FOR PROCESSING THOREX WASTES IN ACIDIC AND REACIDIFIED FORMS AND WITH CONSTITUENTS ADDED FOR PRODUCING AN ACIDIC THOREX GLASS. COSTS WERE CALCULATED FOR PROCESSING IN 6-, 12-, AND 24-IN.-DIA VESSELS WITH A FIXED LENGTH OF 10 FT. COSTS WERE CALCULATED FOR WASTES DECAYED 120 DAYS AND 1, 3, 10, AND 30 YEARS AFTER REACTOR DISCHARGE PRIOR TO CALCINATION. AGING HAD NEGLECTIBLE EFFECT ON COSTS. THE LOWEST COST WAS 0.87 X 10⁻² \$/KWH FOR PROCESSING ACIDIC PUREX AND THOREX WASTES IN 24-IN.-DIA VESSELS, AND THE HIGHEST WAS 5.0 X 10⁻²

\$/KWH FOR PROCESSING REACIDIFIED PUREX AND THOREX WASTES IN 6-IN.-DIA VESSELS.

PUB DESC: OROU-3192 46 PAGES, 13 FIGURES, 14 TABLES, 12 REFERENCES- SEPTEMBER 27, 1961

KEYWORDS: WASTE STORAGE; CALCINATION; WASTE DISPOSAL; ECONOMICS; WASTE TREATMENT; FIXATION; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS

<293> PUB DATE: 1973
AUTHOR: PICEB, E.; PICEB, E.; STACHAL, P.

TITLE: FIXATION OF MANGANESE ON QUARTZ, LIMESTONE, DOLOMITE AND BAMBER SEDIMENT SAMPLES

ABSTRACT: APPLYING WELL-KNOWN RADIOACTIVE TECHNIQUES THE ADSORPTION-DESORPTION PROCESSES OF MANGANESE HAVE BEEN INVESTIGATED IN A SEA WATER MEDIUM, IN SEA SEDIMENTS, LIMESTONE, DOLOMITE AND QUARTZ. THE INFLUENCE OF SALINITY AND PH WERE ALSO MEASURED. DESORPTION PROCESSES HAVE BEEN STUDIED IN RELATION TO THE CHANGES OF PH OF THE SEA SYSTEM. ADSORPTION ISOTHERMS HAVE BEEN STUDIED IN SEA SEDIMENT, LIMESTONE AND QUARTZ. THE RESULTS INDICATE THAT UNDER NATURAL CONDITIONS IN THE SEA ENVIRONMENT THE ADSORPTION OF 5000 MG BAMBER SEDIMENT IS RELATIVELY LOW. AT LOWER PH VALUES WHICH MAY BE FOUND IN THE CUTS OF CERTAIN RIVERS STRONG ADSORPTION WAS FOUND. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 25(3), P. 205 (1973)

KEYWORDS: HEALTH PHYSICS; WASTE TREATMENT; FIXATION; LIMESTONE; QUARTZ; DOLOMITE; SAMPLING; RADIOACTIVE TRACER; ADSORPTION (SEE ALSO ADSORPTION); DESORPTION; EFFECT; MARINE ENVIRONMENT; SEDIMENT; SALINITY; EFFECT, PH-SEA WATER; ADSORPTION; ENVIRONMENTAL CONTAMINATION, AQUATIC; ENVIRONMENTAL CONTAMINATION; ENVIRONMENTAL CONTAMINATION, CORRELATION STUDIES; ION EXCHANGE; PARTICULATES; RADIOACTIVE WASTE; ; MANGANESE;

<294> PUB DATE: 1966
AUTHOR: PILLAI, K.C.; GANAPATHY, S.; DESAI, N.V.; GANGULY, A.K.

TITLE: EVALUATION OF ACCEPTABLE LIMITS FOR RADIOACTIVE CONTAMINANTS IN THE CHANNEL RIVER-BARA PRATAP SAGAR

CORPORATE AUTHOR: ATOMIC ENERGY ESTABLISHMENT
THIRUVARUR, INDIA

ABSTRACT: MAXIMUM PERMISSIBLE DISCHARGE LIMIT TO THE RIVER WAS DETERMINED TO BE 90 MC OF SR-90 (OR EQUIVALENT ACTIVITY) PER DAY FOR EVERY 1000 CUSKS OF FLOW RATE OF THE RIVER. THE CALCULATIONS ARE BASED ON EXPERIMENT AND ON ICRP STANDARDS. THE STANDARD HAS BEEN ADJUSTED TO THE INDIA BY A RATIO OF 5/7 TO ALLOW FOR THE NORMALITY SPALL STATUTE OF INDIA.

PUB DESC: AEE/MP/2-13, 40 PAGES, 20 FIGURES, 7 TABLES, 14 REFERENCES, 1966

KEYWORDS: WASTE DISPOSAL, RIVER; SEDIMENT; ICRP; STANDARD MAP; CONTAMINATION; INDIA; ENVIRONMENT

<295> PUB DATE: 1974
AUTHOR: PITMAN, F.S.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION

ABSTRACT: THIS REPORT IS THE SUMMARY OF A COMPREHENSIVE OVERVIEW STUDY OF POTENTIAL ALTERNATIVE METHODS FOR LONG-TERM MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE. THE STUDY INCLUDES A COMPILATION OF INFORMATION RELEVANT TO TECHNICAL FEASIBILITY, SAFETY, COST, ENVIRONMENTAL CONSIDERATIONS, POLICY

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CONFLICTS, PUBLIC RESPONSE AND RESEARCH AND DEVELOPMENT BESS FOR: 1. DISPOSAL IN TERRESTRIAL LOCATIONS (A) IN GEOLOGIC SETTINGS ON LAND; (B) IN THE SEA; (C) IN ICE SHEETS. 2. DISPOSAL INTO SPACE. 3. ELIMINATION BY TRANSFORMATION (NUCLEAR TRANSFORMATION OF CERTAIN WASTE CONSTITUENTS INTO SOLIDS HAVING LESS LONG-TERM TOXICITY). THE STUDY IS LIMITED TO THE MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE FROM NUCLEAR POWER BY VARIATIONS OF THESE ALTERNATIVES. CONSIDERATION OF ALTERNATIVE TYPES OF ELECTRICAL POWER GENERATION ARE NOT WITHIN THE SCOPE OF THE STUDY. IN ADDITION, EVALUATION OF IMMERSE STORAGE OF RADIOACTIVE WASTE IN RETRIEVABLE SURFACE STORAGE FACILITIES IS NOT PART OF THIS STUDY. DISPOSAL OF WASTE IN BRINED SALT DEPOSITS HAS STUDIED EXTENSIVELY IN OTHER AEC PROGRAMS, AND THE CONCEPT IS INCLUDED HERE AS PART OF THE OVERALL MATRIX OF GEOLOGIC DISPOSAL TECHNIQUES. (AUG77)

PUB DESC: WASH-1297, MAY, 1974, 105 P., 24 FIG., 14 TAB., 5 REF., 1 BIBLIOG.

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL, ICE SHEET; TREATMENT; WASTE DISPOSAL, SALT; EXTRA-TERRESTRIAL DISPOSAL; EVALUATION; SAFETY; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); GEOLOGY; SALT (SEE ALSO BRINED SALT AND WASTE DISPOSAL, SALT); OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); TERRESTRIAL (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); OTHER SPACE (SEE ALSO EXTRA-TERRESTRIAL); TRANSFORMATION; HYDRAULIC FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); HIGH-LEVEL WASTE; ENVIRONMENT; PUBLIC RESPONSE (SEE ALSO CONCEPT, PROGRESS, AND POPULATION RESPONSE); ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); USARC (SEE ALSO AGENCY, AEC);

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PUB DATE: 1973

AUTHOR: PITTMAN, P.K.

TITLE: PITTMAN REPORTS ON COMMERCIAL WASTE MANAGEMENT STATUS

ABSTRACT: THE NEAR-TERM PROGRAM CALLS FOR RETRIEVABLE SURFACE STORAGE, AND AEC IS PLANNING CONSTRUCTION OF SUCH A STORAGE FACILITY TO BE READY TO ACCEPT THE FIRST COMMERCIAL WASTES. DEVELOPMENT IS CONTINUING HEADWINDS ON A POSSIBLE SUCCESSOR CONCEPT: PLACEMENT IN A DEEP SALT BED. THE NEXT STEP IS DEVELOPING THIS CONCEPT IS CONSTRUCTION AND OPERATION OF AN UNDERGROUND PILOT PLANT IN THE DEEP SALT IN WHICH THE WASTE CONTAINERS WILL BE RETRIEVABLE. AEC IS ALSO LOOKING BY OTHER MORE FAR-OUT ALTERNATIVES FOR PERMANENT DISPOSAL. SURFACE STORAGE CARRIES WITH IT THE BURDEN OF CONTINUED SURVEILLANCE AND MAINTENANCE, BUT IS TOTALLY SAFE, AEC INSISTS. ULTIMATE DISPOSAL IS DESIRABLE ONLY TO ELIMINATE THE BURDEN OF MAINTENANCE.

PUB DESC: NUCLEAR INDUSTRY, 20(8), PP. 20-23 (AUGUST 1973)

KEYWORDS: PLUTONIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; REGULATION, AEC; WASTE MANAGEMENT; WASTE DISPOSAL, SALT; B AND B PROGRAM

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PUB DATE: 1972

AUTHOR: PITTMAN, P.K.

TITLE: MANAGEMENT OF COMMERCIAL HIGH-LEVEL WASTES

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: A SPEECH BY FRANK PITTMAN, DIRECTOR OF THE USARC DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION, IN WHICH HE REVIEWED WASTE-MANAGEMENT PROBLEMS. EMPHASIZED THAT WE DO TODAY HAVE THE ANSWERS NEEDED FOR SAFE MANAGEMENT OF COMMERCIAL, HIGH-LEVEL RADIOACTIVE WASTE AND CAN MANAGE IT NOW IN A WAY THAT WILL GIVE USE THE FLEXIBILITY TO TAKE FULL ADVANTAGE OF POTENTIAL IMPROVEMENTS IN FUTURE TECHNOLOGY FOR ULTIMATE DISPOSAL.

PUB DESC: AEC PRESS RELEASE S-10-72, 4 PAGES, NOVEMBER 15, 1972

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE TRANSPORTATION; WASTE MANAGEMENT; AGENCY, AEC (SEE ALSO USARC);

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PUB DATE: 1972

AUTHOR: PITTMAN, P.K.

TITLE: PLAN FOR THE MANAGEMENT OF AEC-GENERATED RADIOACTIVE WASTES

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THIS DOCUMENT PRESENTS THE AEC'S PLANS FOR CONTROLLING THE RELEASES OF RADIOACTIVITY AND ENSURING THE SAFE STORAGE OF RADIOACTIVE WASTES GENERATED BY FAS, PRESENT AND FUTURE OPERATIONS OF THE AEC. THE BASIC AND FUNDAMENTAL OBJECTIVE OF THIS PLAN IS TO HANDLE THESE WASTES AT ALL TIMES IN A MANNER: (1) THAT WILL NOT ENDANGER THE HEALTH AND SAFETY OF ITS EMPLOYEES OR THE PUBLIC; (2) THAT WILL NOT HAVE AN ADVERSE IMPACT ON MAN'S ENVIRONMENT OR ON THE ECOLOGY; AND (3) THAT WILL BE ACCEPTED BY THE PUBLIC.

PUB DESC: WASH-1202 1972 (JAN.)

KEYWORDS: ADMINISTRATIVE CONTROL; USARC (SEE ALSO AGENCY, AEC); ADMINISTRATIVE AGENCY; GLOSSARY; PLANNING; RADIOACTIVITY RELEASE; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL; ADVERSE IMPACTS

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PUB DATE: 1971

AUTHOR: PITTMAN, P.K.

TITLE: MANAGEMENT OF COMMERCIAL HIGH-LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: DISCUSSION OF WASTE DISPOSAL - STORAGE IN BRINED TANKS, DISPOSAL IN SALT MINES, SAFETY ASPECTS OF DISPOSAL IN SALT, OTHER SCENARIOS FOR WASTE DISPOSAL.

PUB DESC: ATOMIC INDUSTRIAL FORUM WORKSHOP ON THE END OF THE CYCLE, -PAPER, 17 PAGES, CHICAGO, ILLINOIS, AUGUST 22-25, 1971

KEYWORDS: WASTE DISPOSAL, ECONOMICS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SALT; WASTE DISPOSAL, DEEP WELL

<300>

PUB DATE: 1975

AUTHOR: PLATT, R.H.

TITLE: NUCLEAR WASTE MANAGEMENT AND TRANSPORTATION. QUARTERLY PROGRESS REPORT, JANUARY THROUGH MARCH 1975

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: REPORTS PROGRESS FOR THE PERIOD OF THE FOLLOWING: ADVANCED METHODS FOR MANAGEMENT AND DISPOSAL OF RADIOACTIVE WASTES; SEPARATION OF ACTINIDE ELEMENTS FROM RADIOACTIVE WASTE; DECONTAMINATION AND DEMINERALIZATION OF CROP-LEACH CLADDING RESIDUES; FIBROSIS-INDUCED BY CORROSIBLE ALPHA WASTES; TRITIUM SEPARATION AND FIXATION; DISPOSITION OF BRINED CONTAMINATED FACILITIES AT HANFORD; AND DEVELOPMENT OF PACKAGING TECHNOLOGY FOR PLUTONIUM URATE SHIPMENT.

PUB DESC: BNWL-1913, 60 PPS, 24 TABS, 23 FIGS, JUNE 1975

KEYWORDS: CROP-LEACH PROCESS; TRITIUM; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE MANAGEMENT; WASTE TRANSPORTATION; SHIPPING CONTAINERS

<300> CONT.
DECONTAMINATION; WASTE TREATMENT; INCINERATION;
PLUTONIUM; URANIUM

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PUB DATE: 1975

AUTHOR: PLATT, A.R.

TITLE: NUCLEAR WASTE MANAGEMENT AND TRANSPORTATION
QUARTERLY PROGRESS REPORT JULY THROUGH SEPTEMBER 1975

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
RICHLAND, WASHINGTON

ABSTRACT: A CONCEPTUAL PLAN WAS DEVELOPED FOR
MANAGEMENT OF HIGH-LEVEL WASTE FOR PURPOSES OF
RECOVERY AND USE OF ECONOMIC VALUES.***WORK ON
RADIOCLIDE MIGRATION FROM MOUNTAIN FORMATIONS WAS
COMPLETED.***ANALYSIS OF DATA FROM THE SURVEY OF
PUBLIC ATTITUDES TOWARD NUCLEAR WASTE MANAGEMENT IS
NEAR COMPLETION.***THE STUDY OF ALTERNATIVES FOR
MANAGEMENT OF IONINE AND INCINERATION WAS
COMPLETED.***THE ASSESSMENT OF RISK OF TRANSPORTING
PLUTONIUM BY RAIL AND TRUCK WAS MADE.

PUB DESC: BNWL-1952, 51 PPS, 7 TABS, 15 FIGS, NOV.
1975

KEYWORDS: WASTE MANAGEMENT; PUBLIC RESPONSE (SEE
ALSO OPINION, PROPAGANDA, AND POPULATION RESPONSE);
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE
DISPOSAL; SURVEY; R AND D PROGRAM; WASTE
TRANSPORTATION; PLUTONIUM; DECONTAMINATION;
TRANSPORTATION;

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PUB DATE: 1974

AUTHOR: PLATT, A.R.; HANSEY, R.W.

TITLE: LONG TERM WASTE MANAGEMENT METHODS

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
RICHLAND, WASHINGTON

ABSTRACT: BATTILLE-NORTHWEST HAS BEEN CONDUCTING
EXTENSIVE EVALUATIONS OF PERMANENT OR ULTIMATE METHODS
FOR STORAGE AND/OR DISPOSAL OF HIGH-LEVEL RADIOACTIVE
WASTES. INCLUDED ARE USE OF EXTRATERRESTRIAL
TRANSPORT, TRANSMUTATION, CAVITIES DEEP IN THE EARTH,
THE SEA BED INCLUDING USE OF TECTONIC SUBSIDENCE
AREAS, AND VARIOUS COMBINATIONS OF GEOLOGICAL AND
ENGINEERED STRUCTURES. A LARGE NUMBER OF FACTORS CAN
INFLUENCE THE SELECTION OF NEW METHODS FOR THE
LONG-TERM MANAGEMENT OF RADIOACTIVE WASTES. BECAUSE
OF THE SKETCHY KNOWLEDGE OF THESE FACTORS AT THIS
TIME, THE INITIAL STUDIES HAVE FOCUSED ON FEASIBILITY,
TIMING, AND SAFETY. THIS PAPER REPORTS THE
METHODOLOGY BEING USED TO STUDY THESE SUBJECTS.
SPECIFIC INFORMATION IS PRESENTED ON THE POTENTIAL
USEFULNESS OF TRANSMUTATION, EXTRATERRESTRIAL DISPOSAL
AND POLAR ICE FOR MANAGEMENT OF NUCLEAR WASTES. THE
REQUIREMENTS OF EACH OPTION FOR ACCEPTATION IN
METHODS OF REPROCESSING OR SUBSEQUENT WASTE TREATMENT
ARE DISCUSSED. (AUTH)

PUB DESC: OSRC-OCRB-MANAGEMENT OF RADIOACTIVE WASTE
FROM FUEL REPROCESSING PROCEEDINGS OF SYMPOSIUM,
409-429 (1974)

KEYWORDS: FUEL REPROCESSING; BATTILLE NORTHWEST;
SUMMARY REPORT; WASTE TREATMENT; HIGH-LEVEL WASTE;
EFFLUENT; GEOLOGY; WASTE DISPOSAL; LONG-TERM; WASTE
STORAGE; EXTRA-TERRESTRIAL DISPOSAL; TRANSMUTATION;
SEA BED DISPOSAL (SEE ALSO WASTE DISPOSAL, OCEAN OR
SEA BED); WASTE DISPOSAL, OCEAN; POLAR ICE

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PUB DATE: 1972

AUTHOR: PLATT, A.R.; HANSEY, R.W.

TITLE: LONG-TERM WASTE MANAGEMENT METHODS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON; BATTILLE NORTHWEST LABORATORY, RICHLAND,
WASHINGTON

ABSTRACT: BATTILLE-NORTHWEST HAS BEEN CONDUCTING
EXTENSIVE EVALUATIONS OF PERMANENT OR ULTIMATE METHODS
FOR STORAGE AND/OR DISPOSAL OF HIGH-LEVEL RADIOACTIVE
WASTES. INCLUDED ARE USE OF EXTRATERRESTRIAL
TRANSPORT, TRANSMUTATION, CAVITIES DEEP IN THE EARTH,
THE SEA BED INCLUDING USE OF TECTONIC SUBSIDENCE
AREAS, AND VARIOUS COMBINATIONS OF GEOLOGICAL AND
ENGINEERED STRUCTURES. A LARGE NUMBER OF FACTORS CAN
INFLUENCE THE SELECTION OF NEW METHODS FOR THE
LONG-TERM MANAGEMENT OF RADIOACTIVE WASTES. BECAUSE
OF THE SKETCHY KNOWLEDGE OF THESE FACTORS AT THIS
TIME, THE INITIAL STUDIES HAVE FOCUSED ON FEASIBILITY,
TIMING, AND SAFETY. THIS PAPER REPORTS THE
METHODOLOGY BEING USED TO STUDY THESE SUBJECTS.

PUB DESC: CONF-721107-3, BNWL-SA-4450, 12 PAGES, 7
FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE
MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL
REPROCESSING, HELD IN PARIS, SEPTEMBER 27-DECEMBER 1,
1972

KEYWORDS: WASTE DISPOSAL, OCEAN; TRANSMUTATION;
EXTRA-TERRESTRIAL DISPOSAL; HIGH-LEVEL WASTE; WASTE
DISPOSAL, TERRESTRIAL; WASTE TREATMENT; WASTE
MANAGEMENT; FUEL REPROCESSING

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PUB DATE: 1963

AUTHOR: PLATT, A.R.

TITLE: THE MANAGEMENT OF HIGH-LEVEL RADIOACTIVE
WASTES.

PUB DESC: BN-SA-3279

KEYWORDS: WASTE DISPOSAL; HIGH-LEVEL WASTE;
REACTOR; RADIOISOTOPE

<305>

PUB DATE: 1974

AUTHOR: FOX, W.L.; FENIMORE, J.W.; BARNIE,
L.B.; PROUT, R.E.

TITLE: LEAKAGE FROM WASTE TANK 16 - AMOUNT, PATH,
AND IMPACT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken,
SOUTH CAROLINA

ABSTRACT: ON SEPTEMBER 8, 1960, A SMALL AMOUNT OF
HIGH ACTIVITY WASTE LEAKED FROM TANK 16 AT THE
SAVANNAH RIVER PLANT AND REACHED THE SURROUNDING SCIL.
CALCULATIONS BASED ON THE MEASURED GROUND WATER FLOW
VELOCITIES, ESTIMATED FLOW PATHS, AND THE MEASURED
ION EXCHANGE CAPABILITIES OF SOIL SAMPLES INDICATE
THAT THE RADIOCLIDES THAT LEAKED INTO THE GROUND
WILL DECAY BEFORE REACHING THE NEAREST CREEK, AND
THUS WILL HAVE NO EFFECT ON THE PUBLIC. INTENSIVE
INVESTIGATION AND MONITORING SINCE 1960 CONFIRM THAT
ONLY A FEW TENS OF GALLONS OF WASTE ENTERED THE SCIL.
THIS WASTE CONTAINED 7.4 CUBES OF RADIOCLIDES
(85% 137CS) PER GALLON. THE RADIOACTIVITY IN THE
LEAKED WASTE REACHED THE GROUND WATER ALMOST
IMMEDIATELY, BUT HAS MOVED ONLY A FEW FEET SINCE 1960.

PUB DESC: DE-1350, 145 PAGES, 13 TABLES, 74
FIGURES, NOVEMBER 1974

KEYWORDS: GROUND WATER; SAVANNAH RIVER PLANT;
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; SOIL;
RADIOCLIDE MIGRATION THROUGH; WASTE STORAGE;
SAMPLING; WASTE DISPOSAL, LIQUID; ION EXCHANGE; SCIL;
LEAK;

<306>

PUB DATE: 1970

AUTHOR: PGRABOLA, J.; VILLIERS, P.; TESTERALE, G.

TITLE: IMPROVEMENTS BASED ON EXPERIENCE OF THE
WASTE MANAGEMENT SYSTEM AT PORTOFAT-AUX-ROSES

CORPORATE AUTHOR: CEA, CENTRE D'ETUDES NUCLEAIRES
DE PORTOFAT-AUX-ROSES, FRANCE

ABSTRACT: A HISTORY OF THE CENTER IS GIVEN, AND
REMEDIAL MEASURES PLACED IN SERVICE ARE REVIEWED.

(306) COST. TREATMENT, STORAGE, AND SEIZING ARE GIVEN GENERAL COVERAGE.

PUB DESC: SH-137/14, STI/PW-244, CONF-700905, 50 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, ALL-ED PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ADMINISTRATIVE CONTROL; FRANCE; IAEA; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL

(307)

PUB DATE: 1975
AUTHOR: POST, R.G.

TITLE: WASTE MANAGEMENT 1975

CORPORATE AUTHOR: UNIVERSITY OF ARIZONA, ARIZ. ATOMIC ENERGY COMMISSION; WESTERN INTERSTATE BOARD

ABSTRACT: THIS SYMPOSIUM, SPONSORED BY THE COLLEGE OF ENGINEERING AT THE UNIVERSITY OF ARIZONA, THE ARIZONA ATOMIC ENERGY COMMISSION, THE WESTERN INTERSTATE NUCLEAR BOARD UNDER THE CHAIRMANSHIP OF BOY S. POST AND R.L. BAKER, WAS HELD MARCH 24, 25, 26, 1975 IN TUCSON, ARIZONA. ALTHOUGH PRIMARILY CONCERNED WITH HIGH LEVEL WASTES, THE SYMPOSIUM INCLUDED SOME REPORTS ON ALPHA WASTES AND LOW-LEVEL WASTE. IT INCLUDED DISCUSSIONS OF THE VARIOUS PUBLIC ISSUES AND PROGRAMS TOGETHER WITH AN ASSESSMENT OF THE PAST AND FUTURE OF THIS IMPORTANT TECHNOLOGY. THIS SYMPOSIUM ALSO INCLUDED A SERIES OF WORKSHOPS ON VARIOUS ASPECTS OF NUCLEAR WASTE MANAGEMENT. (MCH. ATOM. INST.)

PUB DESC: BOOK (1975)

KEYWORDS: WASTE DISPOSAL; INFORMATION; WASTE TREATMENT; FUEL CYCLE WASTES; BENEFICIAL USE; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); PUBLIC RELATIONS; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); TRANSURANIDE DISPOSAL; PUBLIC INFORMATION

(308)

PUB DATE: 1972
AUTHOR: PRESTON, A.

TITLE: ARTIFICIAL RADIOACTIVITY IN FRESHWATER AND ESTUARINE SYSTEMS

CORPORATE AUTHOR: MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, FISHERIES RADIOBIOLOGICAL LABORATORY, HAMILTON ROCK, LONDON

ABSTRACT: THE NATURE AND ORIGIN OF ARTIFICIAL RADIOACTIVITY IN FRESHWATER AND ESTUARINE ENVIRONMENTS ARE DESCRIBED AND THE SITUATION TO THE END OF THE CENTURY, PARTICULARLY AS REGARDS THE EXPANSION OF NUCLEAR POWER, IS REVIEWED. THE POLICY IN THE U.K. CONCERNING THE DISPOSAL OF RADIOACTIVE WASTE IS STATED AND THE SYSTEM OF CONTROL USED TO ACHIEVE THE OBJECTIVES OF THIS POLICY - THAT NO PERSON SHALL BE EXPOSED TO MORE THAN THE INTERNATIONALLY ACCEPTED STANDARDS FOR SAFE EXPOSURE OF MEMBERS OF THE PUBLIC - IS DESCRIBED. DATA ON THE BEHAVIOUR OF ARTIFICIAL RADIOISOTOPES, ON WHICH SYSTEMS OF CONTROL ARE INITIALLY BASED, ARE REVIEWED, AND INFORMATION ON THE CURRENT RADIOLOGICAL STATUS OF U.K. FRESHWATER AND ESTUARINE DISPOSAL AREAS IS PRESENTED.

PUB DESC: ROYAL SOCIETY OF LONDON, SERIES B, BIOLOGICAL SCIENCES, 166(1961), PP. 421-436 6 FIGURES, 5 TABLES, REFERENCES, (MARCH 21, 1972)

KEYWORDS: STANDARDS; RADIATION (SEE ALSO SOLIDIFICATION); REGULATION (SEE ALSO STANDARDS, RADIATION); UNITED KINGDOM; WASTE DISPOSAL; REACTOR, POWER; POPULATION EXPOSURE; CONTAMINATION; RADIATION SAFETY AND CONTROL; ENVIRONMENT; AQUATIC ORGANISMS; INDUSTRY, NUCLEAR

(309)

PUB DATE: 1972
AUTHOR: PRESTON, A.; HITCHELL, R.T.

TITLE: THE EVALUATION OF PUBLIC RADIATION EXPOSURE FROM THE CONTROLLED MARINE DISPOSAL OF RADIOACTIVE WASTE (WITH SPECIAL REFERENCE TO THE UNITED KINGDOM)

CORPORATE AUTHOR: MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, FISHERIES RADIOBIOLOGICAL LABORATORY, ENGLAND

ABSTRACT: DISCUSSES THE APPLICATION OF CRITICAL PATH TECHNIQUES TO THE EVALUATION OF PUBLIC RADIATION EXPOSURE FROM THE CONTROLLED MARINE DISPOSAL OF RADIOACTIVE WASTE. RELATES EXCLUSIVELY TO THE SITUATION IN THE UK, SINCE CRITICAL PATH TECHNIQUES HAVE BEEN MORE EXTENSIVELY APPLIED THERE AND BECAUSE THERE IS A SHORTAGE OF PUBLISHED INFORMATION ON WHICH TO BASE RELIABLE ESTIMATES OF RADIATION DOSE CONTRIBUTION FOR OTHER SITUATIONS. THE PRINCIPAL SOURCES OF RADIOACTIVE WASTE AT THIS TIME ARE NUCLEAR POWER PROGRAMMES AND ESPECIALLY AT THE STAGE AT WHICH FUEL IS REPROCESSING. LOW-LEVEL LIQUID RADIOACTIVE WASTES FROM THESE PROGRAMMES ARE DISPOSED IN SURFACE WATERS AND THE INSHORE MARINE ENVIRONMENT. THE ORIGIN AND NATURE OF SUCH OF THESE DISPOSALS AS ARE MADE TO ESTUARIES AND THE SEA ARE BRIEFLY SURVEILLED AND THE METHOD OF CONTROL IS OUTLINED.

PUB DESC: IAEA-SM-150/34, 15 PAGES, 2 FIGURES, 5 TABLES, 13 REFERENCES, FROM THE IAEA SYMPOSIUM ON THE INTERACTION OF RADIOACTIVE CONTAMINANTS WITH THE CONSTITUENTS OF THE MARINE ENVIRONMENT, SEATTLE, JULY 10-14, 1972

KEYWORDS: DOMESTIC; UNITED KINGDOM; REACTOR, POWER; CRITICAL NUCLEI; WASTE DISPOSAL, LIQUID; POPULATION EXPOSURE; CRITICAL NUCLEI PATHWAY; RADIATION SAFETY AND CONTROL; RADIOACTIVITY RELEASE; WATER POLLUTION; SAFETY EVALUATION; FUEL REPROCESSING; CONCENTRATION; FOOD CHAIN; AQUATIC ORGANISMS; INDUSTRY, NUCLEAR; FUEL

(310)

PUB DATE: 1971
AUTHOR: PRESTON, A.; BISS, R.A.; HITCHELL, R.T.; DUNSTER, R.J.; GOODMAN, P.J.; CLELAND, D.V.

TITLE: U.K. EXPERIENCE OF RADIOACTIVE WASTE RELEASE TO THE ENVIRONMENT AND EXPECTED WASTE MANAGEMENT IN FUEL CYCLES IN THE 1980'S

CORPORATE AUTHOR: MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, FISHERIES RADIOBIOLOGICAL LABORATORY, LONDON; SCOTTISH DEVELOPMENT DEPARTMENT, EDINBURGH; NATIONAL RADIOLOGICAL PROTECTION BOARD, BARNWELL, ENGLAND; BRITISH NUCLEAR FUELS LIMITED, HINLEY AND WINDSCALE, ENGLAND

ABSTRACT: A CONSEQUENCE OF THE USE OF NUCLEAR POWER IS THE PRODUCTION OF TOXIC RADIOACTIVE WASTE. PART I OF THIS PAPER REVIEWS THE PRACTICE AND EXPERIENCE IN THE DISPOSAL OF THIS WASTE AND SHOWS HOW THE PROBLEMS OF CONTROL HAVE BEEN MET WHILE MAINTAINING PUBLIC RADIATION EXPOSURE AT ACCEPTABLY SMALL LEVELS. *** PART II CONSIDERS HOW FAR THIS EXPERIENCE PROVIDES SOLUTIONS TO THE WASTE PROBLEMS, WHICH WILL RESULT FROM FUEL CYCLES IN THE 1980'S.

PUB DESC: A/CONF.49/P/512, CONF-710901-229, 12 PAGES, 1 FIGURE, 1 TABLE, 25 REFERENCES, FROM THE FOURTH UNITED NATIONS INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, SEPTEMBER 6-16, 1971

KEYWORDS: ADMINISTRATIVE CONTROL; ENVIRONMENT; REGULATION (SEE ALSO STANDARDS, RADIATION); UNITED KINGDOM; WASTE DISPOSAL; SCOTLAND, ENVIRONMENTAL; POPULATION EXPOSURE; WASTE MANAGEMENT; CRITICAL NUCLEI PATHWAY; ICRP; RADIATION SAFETY AND CONTROL; RADIOACTIVITY RELEASE; TOXICITY; EFFECT, GENETIC; EFFECT, SOMATIC; FUEL, NUCLEAR; POWER PLANT, NUCLEAR

(311)

PUB DATE: 1959
AUTHOR: HITCHELL, R.T.

TITLE: PROBLEMS RELATED TO DISPOSAL OF RADIOACTIVE WASTES IN ESTUARINE AND COASTAL WATERS

<310> CONT.
CORPORATE AUTHOR: JOHN HOPKINS UNIVERSITY,
BALTIMORE, MARYLAND

ABSTRACT: IN THIS PAPER THE GENERAL APPROACH TO THE EVALUATION OF THE SUITABILITY OF ANY GIVEN MARINE LOCATIONS AS A RECEIVER OF NUCLEAR WASTES IS PRESENTED. THE STARTING POINT FOR ANY SUCH EVALUATION IS THE ALLOWABLE RADIATION DOSE WHICH THE GENERAL PUBLIC MAY RECEIVE WITHOUT UNDUE RISK. CONSIDERATION MUST BE GIVEN TO THE ROUTES BY WHICH ACTIVITY MAY RETURN TO MAN FROM THE MARINE ENVIRONMENT, THE PROCESSES OF CONCENTRATION OF ACTIVITY FROM SEA WATER INTO THE FOOD CHAIN, UPTAKE OF ACTIVITY BY SUSPENDED SOLID AND BOTTOM SEDIMENTS, AND THE PHYSICAL PROCESSES OF MOVEMENT AND DISPERSION.

PUB DESC: BIOLOGICAL PROBLEMS IN WATER POLLUTION, V60-3, 11 PAGES, 3 FIGURES, 6 REFERENCES, TRANSACTIONS OF THE 1959 SEMINAR ON BIOLOGICAL PROBLEMS IN WATER POLLUTION

KEYWORDS: OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); SEDIMENT; WASTE DISPOSAL, OCEAN; ESTUARY; RADIOACTIVE UPTAKE; CONCENTRATION; FOOD CHAIN

<312> PUB DATE: 1974
AUTHOR: RAJAN, R.S.S.; KOURA, R.S.; THOMAS, R.T.

TITLE: WASTE IMMOBILIZATION PLANT AT TARAPUR - A SURVEY OF PROCESS AND DESIGN FEATURES

CORPORATE AUTHOR: BARODA ATOMIC RESEARCH CENTRE, BARODA (INDIA)

ABSTRACT: A SURVEY OF MAJOR FEATURES OF THE PLANT FOR IMMOBILIZATION OF THE HIGHLY RADIOACTIVE WASTES GENERATED AT THE FUEL REPROCESSING PLANT AT TARAPUR, DESIGNED TO REPROCESS SPENT FUELS FROM THE TARAPUR AND THE RAJASTHAN ATOMIC POWER STATIONS, IS PRESENTED. NATURE OF THE WASTES AND GLASS MATRICES USED FOR THEIR SOLIDIFICATION AND THEIR CHARACTERISTICS ARE DISCUSSED. PROCESS DETAILS AND DESIGN FEATURES OF THE FACILITY, WITH PARTICULAR REFERENCE TO THE PROCESS CELLS, ARE REVIEWED. ALSO INCLUDED IS A GENERAL DESCRIPTION OF THE POST-PROCESS FACILITY FOR INTERIM STORAGE OF SOLIDIFIED WASTE PRODUCT CANDIDATES UNDER CONTINUOUS SURVEILLANCE. (AUTH)

PUB DESC: ORCE-OCDE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 683-704 (1974)

KEYWORDS: HIGH-LEVEL WASTE; INDIA; FACILITIES; DESIGN; DESIGN CRITERIA; CONTAINMENT; EFFLUENT; FUEL REPROCESSING; GLASS (SEE ALSO VITRIFICATION); WASTE CHARACTERISTICS; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); WASTE STORAGE; STORAGE CONTAINERS

<313> PUB DATE: 1967
AUTHOR: BALEKVA, J.; SAIDE, J.

TITLE: SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES. PART 3. THE DIFFUSION AND ELUTION RATES OF RADIOISOTOPES INCORPORATED IN BASALTS

CORPORATE AUTHOR: INSTITUT FÜR KERNFORSCHUNG, PRAGUE

ABSTRACT: THE SAFE RETENTION OF HIGH-LEVEL RADIOACTIVE WASTES AND THE REMOVAL OF THE INCORPORATED NUCLEIDES WAS STUDIED. THE DIFFUSION AND ELUTION OF CS-137 AND SR-90 IN GLASS AND IN POLYMER BASALT WERE INVESTIGATED. THE DIFFUSION COEFFICIENTS OBTAINED ARE SUFFICIENTLY LOW FOR ACCOMPLISHING THE LEGAL REQUIREMENTS ON OBSERVING THE MAXIMUM PERMISSIBLE CONCENTRATIONS OF ACTIVITY IN CONTACT WITH WATER.

PUB DESC: KERNFORSCHUNG 10, PAGES 161-8 2 FIGURES, 3 TABLES, 20 REFERENCES, (MAY 1967)

KEYWORDS: CESION; BASALT; HIGH-LEVEL WASTE; DIFFUSION; SYMPOSIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FIXATION; CZECHOSLOVAKIA

<314> PUB DATE: 1969
AUTHOR: BAECHER, R.

TITLE: METHODS FOR THE PROCESSING OF RADIOACTIVE WASTES

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG AG, KARLSRUHE, GERMANY

ABSTRACT: THE PROCESSING OF RADIOACTIVE RESIDUES HAS THE DOUBLE PURPOSE OF PRODUCING, FROM THE PRIMARY RAW WASTES GENERATED IN VARIOUS PHASES OF THE FUEL CYCLE, CONCENTRATES IN A FORM SUITABLE FOR STORAGE AND FOR DEFINITIVE DISPOSAL AND WASTE WATERS AND OTHER WASTES THAT CAN BE DISPOSED OF BY THE USUAL METHODS OF INDUSTRIAL WASTE DISPOSAL. THE COMMONLY USED PROCESSING METHODS FOR SOLID, LIQUID, AND GASEOUS RADIOACTIVE WASTES ARE DISCUSSED.

PUB DESC: KERNTECHNIK, VOL. 11, PG. 390-396 (JULY 1969)

KEYWORDS: WASTE DISPOSAL; WASTE STORAGE; WASTE MANAGEMENT; GERMANY; FUEL REPROCESSING; GAS; LIQUID; SOLID

<315> PUB DATE: 1969
AUTHOR: BAECHER, R.

TITLE: FUEL CYCLE AND RADIOACTIVE WASTES

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG AG, KARLSRUHE, GERMANY

ABSTRACT: THEY WILL DEPEND MAINLY ON THE INSTALLED CAPACITIES OF NEW NUCLEAR POWER PLANTS. AN ANALYSIS OF THE WASTES GENERATED IN THE CONSECUTIVE PHASES OF THE FUEL CYCLE SHOWS THAT, EXPRESSED IN TERMS OF THE ACTIVITY CONTENTS, THE CONTRIBUTIONS BY ONE PRODUCTION, BY FUEL CONVERSION AND ENRICHMENT, AND BY THE FABRICATION OF FUEL ELEMENTS, ARE RELATIVELY HIGH. THE WASTES GENERATED IN REACTOR OPERATION ARE APPRECIABLE, BUT THE PREDOMINANT PROPORTION OF ALL WASTES IS GENERATED IN THE COURSE OF REPROCESSING. THE KINDS OF WASTES GENERATED IN VARIOUS PHASES OF THE FUEL CYCLE ARE CLASSIFIED AND DISCUSSED.

PUB DESC: KERNTECHNIK, VOL. 11, PG. 269-276 (MAY 1969)

KEYWORDS: STANDARDS, RADIATION (SEE ALSO REGULATION); CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; FUEL REPROCESSING; FUEL, NUCLEAR; H-POWER, SAFETY OF (SEE ALSO HAZARD); H-POWER FORECAST; FUEL ELEMENTS

<316> PUB DATE: 1967
AUTHOR: BAECHER, R.

TITLE: WRITING WITH ATOMIC WASTE

CORPORATE AUTHOR: KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: DESCRIBES THE NATURE OF RADIOACTIVE WASTE AND OUTLINES PAST AND CURRENT METHODS FOR DISPOSAL AND CONTAINMENT. FORECASTS WASTE QUANTITIES IN WEST GERMANY AND PLANNED DISPOSAL PRACTICES.

PUB DESC: OBNL-TR-1701, 1701 +. 17 PAGES, FIGURES, TRANSLATED FROM DRSCH. WISS. TECH., 67, PAGE 219-224, (1967)

KEYWORDS: WASTE DISPOSAL; FORECAST; WASTE STORAGE; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; GERMANY

<317> PUB DATE: 1964
AUTHOR: BASTOGI, R.C.; SCHMIDT, J.D.; THOMAS, R.T.

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TITLE: INVESTIGATION OF MATERIALS AND METHODS FOR FIXATION OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE IN STABLE SOLID MEDIA- PROGRESS REPORT (FEBRUARY 1, 1965- OCTOBER 31, 1965)

CORPORATE AUTHOR: ATOMIC ENERGY ESTABLISHMENT TROMBAY, MUMBAI, INDIA

ABSTRACT: IN CONTINUATION OF THE FIRST PROGRESS REPORT, THIS REPORT DESCRIBES THE RESULTS OF THE PIONEER STUDIES ON THE INCINERATION ASHES OBTAINED FROM PILEO INCINERATION AND SYNTHETIC CHEMICAL TREATMENT PLANT SLAGS OBTAINED AS SECONDARY WASTES IN THE TREATMENT OF RADIOACTIVE LIQUID EFFLUENTS. THE LEACHING CHARACTERISTIC OF THE PILES ASHES AND VOLUME REDUCTION OBTAINABLE WERE STUDIED. A METHOD FOR EVALUATING LOSS OF VOLATILIZATION DURING FIRING, USING STABLE CESIUM SALT AND APPLICATION OF FLAME PHOTOGRAPHY FOR THE ESTIMATION OF VOLATILIZED CESIUM IS DESCRIBED. RESULTS OF VOLATILIZATION LOSS OF CESIUM DURING FIRING ARE PRESENTED. DETAILS OF PILEO PRODUCE UNDER INVESTIGATION, PROPOSAL TO RE USE FOR PREPARING 20 - 50 KG BATCHES OF GLASS USING ABOVE TYPE OF INACTIVE WASTES, AND SUGGESTIONS FOR FUTURE WORK ARE PRESENTED.

PUB DESC: TID-22531 48 PAGES- DECEMBER 4, 1965

KEYWORDS: ROSE; LEACHING; GLASS (SEE ALSO VITRIFICATION); WASTE TREATMENT; FIATON; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; INDIA

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PUB DATE: 1970

AUTHOR: BATTAY, E.R.; HALLER, H.

TITLE: IMPROVEMENTS IN THE MANAGEMENT OF INTERMEDIATE LEVEL LIQUID AND SOLID WASTE AT EPA JULICH

CORPORATE AUTHOR: KERNFORSCHUNGSANLAGE JULICH, GESELLSCHAFT MIT BESCHRANKTER HAFTUNG, JULICH, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: REPORTS ACTIVITIES OF COLLECTING, TREATING, AND DISPOSING OF RADIOACTIVE WASTES FROM 15 SCIENTIFIC INSTITUTES, TWO RESEARCH REACTORS, AND THE AVE TESTING REACTOR. IN ADDITION, WASTE IS COLLECTED FROM UNIVERSITIES, SCIENTIFIC INSTITUTES, HOSPITALS, AND INDUSTRIES.

PUB DESC: SN-137-1, STI/FEB-244, CONF-700905, 10 PAGES, 5 FIGURES, 1 REFERENCE, PAPER PRESENTED AT THE SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-BOVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: LAKE; INTERMEDIATE-LEVEL WASTE; WASTE HANDLING; WASTE STORAGE; WASTE MANAGEMENT; GERMANY

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PUB DATE: 1970

AUTHOR: BATTAY, E.R.; HALLER, H.

TITLE: IMPROVEMENTS IN THE MANAGEMENT OF INTERMEDIATE LEVEL RADIOACTIVE LIQUID AND SOLID WASTE AT EPA, JULICH

CORPORATE AUTHOR: KERNFORSCHUNGSANLAGE, INSTITUT FÜR CHEMISCHE TECHNOLOGIE, JULICH, GERMANY

ABSTRACT: REPORTS PROGRESS ON CONSTRUCTION OF AN ALL-ROUND SHIELDED SPECIAL CELL (TUMOR CELL), AN ALL-ROUND SHIELDED FCT BUNKER, AND PROBLEMS CONCERNED WITH CONTAMINATION OF THE OUT-GAS SYSTEM.

PUB DESC: JUL-710-DE, 12 PAGES, NOVEMBER 1970

KEYWORDS: DECONTAMINATION; INTERMEDIATE-LEVEL WASTE; WASTE STORAGE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GERMANY; SHIELDING

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PUB DATE: 1968

AUTHOR: BEICHERT, S.O.

TITLE: SOME GEOLOGICAL ASPECTS OF RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: AT NUCLEAR FACILITIES, THREE TYPES OF RADIOACTIVE WASTE MUST BE MANAGED - (1) HIGH-LEVEL LIQUID WASTE CONTAINING FISSION PRODUCTS FROM THE CHEMICAL SEPARATION OF IRRADIATED URANIUM, (2) LOW-LEVEL CONDENSATES FROM THE CONCENTRATION OF THE HIGH-LEVEL WASTE, AND (3) DRY SOLIDS SUCH AS OSCILLATE PROCESS EQUIPMENT, SEPT ION EXCHANGE RESINS, AND IRRADIATED METAL SCRAP. WITHIN THE GENERAL AREA WHERE THE WASTE ORIGINATES, STUDIES ARE MADE TO LOCATE STORAGE BASINS AND BURIAL GROUNDS IN THE MOST FAVORABLE SITES.

PUB DESC: SC-45-47-008, CONF-680262-8, 26 PAGES, REFERENCES, DECEMBER 8, 1967, FROM 97TH ANNUAL MEETING OF THE AMERICAN INSTITUTE OF MINING, METALLURGICAL AND PETROLEUM ENGINEERS, NEW YORK

KEYWORDS: GEOLOGY; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); GROUND WATER; SOIL; RADIONUCLIDE MOVEMENT THROUGH; WASTE MANAGEMENT; WASTE TREATMENT, ECOLOGICAL; HYDROLOGY; ION EXCHANGE; RADIATION SAFETY AND CONTROL; SOIL; WATER POLLUTION

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PUB DATE: 1968

AUTHOR: BEICHERT, S.O.

TITLE: GEOLOGY PLAYS AN IMPORTANT ROLE IN RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: JOJOBY DE MERCURS AND COMPANY, Aiken, S.C.

ABSTRACT: THE PROGRAM FOR MANAGEMENT OF GASEOUS, LIQUID, AND SOLID WASTES AT THE SAVANNAH RIVER PLANT IS DISCUSSED. KNOWLEDGE OF THE CHARACTERISTICS OF THE WASTES AND THE ENVIRONMENT ARE NECESSARY FOR SAFE GROUND DISPOSAL. FAVORABLE ENVIRONMENTAL PARAMETERS INCLUDE A CREE WATER TABLE WITH LONG FLOW PATH AND LOW GRADIENT TO THE STREAM AND SOIL WITH SUCH ION EXCHANGE CAPACITY AND REDUCED TO LOW PERMEABILITY. REDUCTION OF TRITIUM IS ACHIEVED BY GROUND WATER DILUTION. REDUCTION OF SR-90 IS ACHIEVED LARGELY BY GROUND WATER DILUTION BUT PARTIALLY BY SOIL ADSORPTION. ALL CITED RADIOISOTOPES ARE READILY ADSORBED BY THE SOIL.

PUB DESC: MINING ENGINEERING, VOL. 20, PG 98-103 (SEPTEMBER 1968)

KEYWORDS: GEOLOGY; ENVIRONMENT; SOIL; SYMPOSIUM; TRITIUM; WASTE DISPOSAL; SAVANNAH RIVER PLANT; WASTE MANAGEMENT; HYDROLOGY

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PUB DATE: 1962

AUTHOR: BEICHERT, S.O.

TITLE: LITHOLOGY AND HYDROLOGY OF RADIOACTIVE WASTE DISPOSAL SITES AT THE SAVANNAH RIVER PLANT.

PUB DESC: DESPO-62-30-210

KEYWORDS: DIFFUSION; LITHOLOGY; RIVER; SITING; WASTE DISPOSAL; WATER; SAVANNAH RIVER PLANT; HYDROLOGY; SOIL; RADIOISOTOPE; PLANT

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PUB DATE: 1973

AUTHOR: RICHARDSON, J.A.

TITLE: RADIOACTIVE WASTE QUANTITIES PRODUCED BY LIGHT WATER REACTORS AND METHODS OF STORAGE, TRANSPORTATION AND DISPOSAL

CORPORATE AUTHOR: BURNS AND ROE, INC.

ABSTRACT: OPERATIONAL STATISTICS FOR RADIOACTIVE LIQUIDS, GASES, AND SOLIDS FROM LIGHT-WATER REACTORS UP TO 800 MW(E) ARE TABULATED, TOGETHER WITH PROJECTIONS FOR 1100-MW(E) REACTORS. HANDLING AND

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TRANSPORTATION PROCEDURES FOR RADIOACTIVE WASTES AND SPENT FUEL IN COMPLIANCE WITH USARL AND DEPARTMENT OF TRANSPORTATION REGULATIONS ARE DESCRIBED. IMMobilIZATION METHODS FOR RADIOACTIVE SOLIDS FOR TRANSPORTATION TO AVAILABLE LAND AND FINAL DISPOSAL SITES IN THE USA ARE IDENTIFIED.

PUB DESC: JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY, 12(2), PP. 199-211 9 TABLES, 8 FIGURES, 9 REFERENCES, (APRIL 1973)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); LWR (SEE ALSO REACTOR, LWR); TRANSPORTATION AND HANDLING; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; REACTOR, POWER; WASTE SOURCE AND TYPE; REGULATION, AEC; WASTE TRANSPORTATION; WASTE MANAGEMENT; STORAGE CONTAINER; GAS; LIQUID; SOLID

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PUB DATE: 1974
AUTHOR: ROBERTSON, J.B.; SCHUB, R.; SAMRACLOWER, J.T.

TITLE: THE INFLUENCE OF LIQUID WASTE DISPOSAL ON THE GEOCHEMISTRY OF WATER AT THE OBTIONAL REACTOR TESTING STATION, ID-80: 1952-1970

CORPORATE AUTHOR: U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION

ABSTRACT: PRESENTS A SUMMARY EVALUATION OF THE GEOLOGY, HYDROLOGY, AND WATER GEOCHEMISTRY OF THE WATS AND THE ASSOCIATED INFLUENCES OF SUBSURFACE LIQUID-WASTE EFFLUENTS DISCHARGED FROM THE WATS FACILITIES. THE PROGRESSIVE BUILDUP, DISTRIBUTION, AND CHANGES OF BOTH RADIOACTIVE AND CHEMICAL WASTES ARE ANALYZED FOR THE TOTAL DISPOSAL PERIOD -- 1952-70. OF PRINCIPAL CONCERN IS THE FATE OF WASTES DISCHARGED FROM THE WATS IN THE SHAWK RIVER PLAIN AQUIFER, AN EXTENSIVELY LARGED AND INDOCTIVE GROUNDWATER SYSTEM UNDERLYING THE EASTERN SHAWK RIVER PLAIN. SINCE 1952, THE WATS FACILITIES (PRINCIPALLY THE TEST REACTOR AREA -- TRA, IOWA CHEMICAL PROCESSING PLANT -- ICPP, AND THE NAVAL REACTOR FACILITY -- NRP) HAVE DISCHARGED 1.6 X 10 (EXP 10) GALLONS OF LIQUID WASTE CONTAINING 7 X 10 (EXP 8) Curies OF RADIOACTIVITY AND ABOUT 1 X 10 (EXP 8) POUNDS OF CHEMICALS TO THE SUBSURFACE. THE DISCHARGE HAS BEEN DISPOSED IN WELLS AND SEEPAGE FIELDS. NO DETECTABLE WASTES HAVE BEEN FOUND 2 TO 30 FEET BEYOND THE SOUTHERN BOUNDARY OF THE WATS.

PUB DESC: IDO-22053, 231 PAGES, 14 TABLES, 74 FIGURES, FEBRUARY 1974

KEYWORDS: GEOLOGY; RIVER, SHAWK; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WATS; RIVER; SOIL; RADIOACTIVE WASTE TREATMENT; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GEOLOGY, GEOCHEMICAL; WASTE DISPOSAL, LAKE; WASTE DISPOSAL, DEEP WELL; EFFLUENT, CHEMICAL

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PUB DATE: 1969
AUTHOR: ROBERTSON, J.B.

TITLE: BEHAVIOR OF Xe-133 GAS AFTER INJECTION SUBGROUNDS - MOLECULAR DIFFUSION, MATERIALS BALANCE, AND BAROMETRIC PRESSURE EFFECTS

CORPORATE AUTHOR: GEOLOGICAL SURVEY, GRAND FALLS, IOWA

ABSTRACT: DESCRIBES EXPERIMENT OF INJECTION Xe-133 INTO A PERMEABLE GASEOUS STRATA AT WATS, IOWA. MEASUREMENTS ARE GIVEN FOR MOLECULAR DIFFUSION, MATERIAL BALANCE AND BAROMETRIC PRESSURE EFFECTS. THE GENERAL METHODS USED FOR THE MEASUREMENTS WERE GENERALLY SATISFACTORY AND COULD BE APPLIED TO FUTURE SUBGROUNDS GAS-INJECTION PROGRAMS.

PUB DESC: IDO-22051, 37 PAGES, 14 FIGURES, 2 TABLES, 10 REFERENCES, JULY 1969

KEYWORDS: DIFFUSION; BASALT; WATS; WASTE TREATMENT; XENON; WASTE DISPOSAL, GAS; WATERGATE TREATMENT; MODEL TESTING; PRESSURE, SUBATMOSPHERIC; WASTE

DISPOSAL, DEEP WELL

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PUB DATE: 1973
AUTHOR: ROCHER, G.A.; MCCLAIN, S.

TITLE: THE TECHNOLOGY OF NUCLEAR REACTOR SAFETY (VOL 2). CHAPTER 20 - RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: NUCLEAR FUEL SERVICES, INC.; MCCLAIN ASSOC., LAFAYETTE, INDIANA

ABSTRACT: THIS CHAPTER DISCUSSES THE SOURCES AND QUANTITIES OF THE WASTES PRODUCED IN CONJUNCTION WITH TYPICAL REACTORS AND THE METHODS AND EQUIPMENT USED TO CONTROL AND HANDLE THE RADIOACTIVE WASTES. WHILE EMPHASIS IS PLACED ON EXPERIENCE IN THE UNITED STATES, SOME DISCUSSION OF FOREIGN REACTORS AND EXPERIENCE IS ALSO PRESENTED.

PUB DESC: MIT PRESS, CAMBRIDGE, PP. 699-754, 1973

KEYWORDS: WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT; REVIEW; POWER, SAFETY OF (SEE ALSO HAZARD)

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PUB DATE: 1969
AUTHOR: BODIER, J.; MARCHAL, R.; REBUT, R.

TITLE: STUDY OF THE DIFFUSION OF THE RADIOACTIVITY OF GLASSES AND BITUMEN-COATED MATERIALS

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE

ABSTRACT: GLASS PELLETS OBTAINED FROM CONCENTRATED FISSION PRODUCT SOLUTIONS ARE SUBJECTED TO THE ACTION OF WATER, IN CONDITIONS WHICH ARE AS CLOSE AS POSSIBLE TO THOSE OF NATURAL SURROUNDINGS: STILL WATER, RENOVATED WATER, BOILING WATER. THE RETENTION OF A GIVEN TYPE OF SOIL OF THE CONTAMINATION IN WATER USED FOR LIXIVIATION IS ALSO STUDIED. A COMPARISON IS MADE BETWEEN VARIOUS COATING PROCESSES (BITUMEN OR CEMENT) AND VITRIFICATION FROM THE POINT OF VIEW OF THE BEHAVIOR IN THE SOIL OF RESIDUES THUS TREATED. THE OVERALL RESULTS MAKE IT POSSIBLE TO CHOOSE BETWEEN THE DIFFERENT MODELS OF STORAGE AS A FUNCTION OF THE ACTIVITY OF THE RESIDUES TO BE PROCESSED.

PUB DESC: CEA-R-3751, 30 PAGES, 13 FIGURES, TABLES, REFERENCES, MAY 1969 (IN FRENCH)

KEYWORDS: CONCRETE; ASPHALT; SOIL; RADIOACTIVE WASTE TREATMENT; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT, FIXATION; COATING; DESORPTION; GLASS (SEE ALSO VITRIFICATION); ADSORPTION (SEE ALSO ADSORPTION)

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PUB DATE: 1963
AUTHOR: BODIER, J.; LEFILLATRE, G.; SCHNEIDER, J.

TITLE: BITUMEN COATING OF THE RADIOACTIVE SLUDGES FROM THE EFFLUENT TREATMENT PLANT AT THE BARCOULE CENTER. REVIEW OF THE PROGRESS REPORTS 1, 2, 3, AND 4

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE

ABSTRACT: EVAPORATION, DESICCATION, AND COPRECIPITATION TECHNIQUES FOR THE PROCESSING OF HIGHLY ACTIVE LIQUID WASTES GIVE RISE TO INORGANIC SLUDGES WITH A HIGH WATER CONCENTRATION. THE PRELIMINARY STUDIES UNDERTAKEN ON THE BITUMEN COATING OF THE RADIOACTIVE SLUDGES FROM THE EFFLUENT TREATMENT PLANT AT BARCOULE ARE REVIEWED. THE PROPERTIES OF BITUMEN AND OF THE RADIOACTIVE SLUDGE ARE FIRST DESCRIBED. THE PRINCIPLE OF THE BITUMEN COATING OF SLUDGE IS DISCUSSED. A ONE-STAGE AND A TWO-STAGE PROCESS FOR THE COATING AND THE QUALITY OF THE COATING RESULTING FROM EACH PROCESS ARE DESCRIBED. THE ACTIVITY OF THE LIQUID WASTES AND THE ATMOSPHERIC CONTAMINATION RESULTING FROM THE BITUMEN COATING ARE DETERMINED FOR BOTH PROCESSES. THE PROPERTIES OF BITUMEN COATING ARE DISCUSSED.

PUB DESC: CIA-2331 ORNL-TF-202 135 PAGES- 1963

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KEYWORDS: DEPOSITION; ASINALLY; EFFLUENT; WASTE DISPOSAL; ATMOSPHERIC; WASTE TREATMENT; SOLID

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PUB DATE: 1961

AUTHOR: DOBETSCHE, L.

TITLE: TECHNICAL AND SCIENTIFIC PROBLEMS IN THE ISOLATION OF RADIOACTIVE WASTE

ABSTRACT: RADIOACTIVE WASTES, WHICH MUST BE ISOLATED AND MADE HARMLESS, ORIGINATE FROM REACTOR OPERATIONS, FROM THE PRODUCTION AND USE OF ARTIFICIALLY-MADE RADIOISOTOPES, FROM THE PROCESSING OF NATURAL RADIOMATERIALS, AND FROM THE REPROCESSING OF SPENT FISSIONABLE MATERIAL. THE AUTHOR DEALS WITH THE RESOLVING TECHNICAL AND SCIENTIFIC PROBLEMS, AND HE LAYS PARTICULAR STRESS ON THE PROBLEMS THAT AT EUROCHERIN IN BELGIUM.

PUB DESC: TECH ENG STROH 7(9/10), 4 PAGES, FIGURES, 2 TABLES- 71-74 (1961)

KEYWORDS: WASTE DISPOSAL; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; EUROCHERIN

<330>

PUB DATE: 1972

AUTHOR: DUBIS, J.B.

TITLE: THE NUCLEAR FUEL CYCLE AND WASTE PRODUCTION

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE MAIN ELEMENTS OF THE SLIGHTLY MODIFIED WATER-COOLED REACTOR FUEL CYCLE ARE DESCRIBED. INCLUDED ARE THE OPERATIONS OF - MINING AND MILLING, CHEMICAL CONVERSION, ISOTOPE ENRICHMENT, FUEL FABRICATION, REACTOR OPERATION, AND CHEMICAL REPROCESSING. THE NATURE OF THE RADIOACTIVE WASTES GENERATED IN THE VARIOUS STEPS OF THE FUEL CYCLE ARE CHARACTERIZED. THESE INCLUDE: MILL TAILINGS, LOW-LEVEL SOLID WASTES, HIGH-LEVEL WASTES, AND LOW-LEVEL WASTES CONTAINING PLUTONIUM AND OTHER ACTINIDES. TECHNIQUES FOR HANDLING WASTES, BASED ON THE PRESENT LEVEL OF TECHNOLOGY, AS WELL AS A VIEW TOWARD POSSIBLE FUTURE ALTERNATIVES ARE PRESENTED.

PUB DESC: CONF-72110, 22 PAGES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: REACTOR, SW; CHEMICAL REACTION; MILLING; MINING; OPERATION; PLUTONIUM; REACTOR, SW; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; FUEL REPROCESSING; ENRICHMENT FACILITY; FUEL MANAGEMENT; FUEL, NUCLEAR; FUEL CYCLE; FUEL ELEMENTS

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PUB DATE: 1972

AUTHOR: DUBIS, J.B.

TITLE: THE NUCLEAR FUEL CYCLE AND WASTE PRODUCTION

CORPORATE AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD), NUCLEAR ENERGY AGENCY AND THE INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: THE MAIN ELEMENTS OF THE SLIGHTLY MODIFIED WATER-COOLED REACTOR FUEL CYCLE ARE DESCRIBED. INCLUDED ARE THE OPERATIONS OF - MINING AND MILLING, CHEMICAL CONVERSION, ISOTOPE ENRICHMENT, FUEL FABRICATION, REACTOR OPERATION, AND CHEMICAL REPROCESSING. THE NATURE OF THE RADIOACTIVE WASTES GENERATED IN THE VARIOUS STEPS OF THE FUEL CYCLE ARE CHARACTERIZED. THESE INCLUDE: MILL TAILINGS, LOW-LEVEL SOLID WASTES, HIGH-LEVEL WASTES, AND LOW-LEVEL WASTES CONTAINING PLUTONIUM AND OTHER ACTINIDES. TECHNIQUES FOR HANDLING WASTES, BASED ON THE PRESENT LEVEL OF TECHNOLOGY, AS WELL AS A VIEW TOWARD POSSIBLE FUTURE ALTERNATIVES ARE PRESENTED. (AUTH)

PUB DESC: OIEC AND IAEA PARIS PAPER GIVEN AT SYMPOSIUM ON MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, 1972, PP. 15-26

KEYWORDS: RADIOACTIVITY RELEASE; EFFLUENT; GAS; LIQUID; FUEL REPROCESSING; FUEL CYCLE; MINING; MILLING; CHEMICAL CONVERSION; ENRICHMENT; REACTOR OPERATION; WASTE DISPOSAL; PLUTONIUM; ACTINIDES (SEE ALSO TRANSURANIUM); HIGH-LEVEL WASTE; LOW-LEVEL WASTE

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PUB DATE: 1972

AUTHOR: DUFF, A.P.

TITLE: A RADIOISOTOPE-ORIENTED VIEW OF NUCLEAR WASTE MANAGEMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: A SYSTEM FOR THE LONG-RANGE MANAGEMENT OF HIGH-LEVEL FISSION-PRODUCT WASTE IS PRESENTED.

PUB DESC: OBNL-8776, 16 PAGES, 3 FIGURES, 8 TABLES, 8 REFERENCES, MAY 1972

KEYWORDS: CESIUM; STRONTIUM; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIOISOTOPE

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PUB DATE: 1975

AUTHOR: DUGAN, A.D.; BLANCO, E.R.

TITLE: CORRELATION OF RADIOACTIVE WASTE TREATMENT COSTS AND THE ENVIRONMENTAL IMPACT OF WASTE EFFLUENTS IN THE NUCLEAR FUEL CYCLE FOR USE IN ESTABLISHING "AS LOW AS PRACTICABLE" GUIDES - APPENDIX A PREPARATION OF COST ESTIMATES FOR VOLUME 1, MILLING OF URANIUM ORES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY CHEMICAL TECHNOLOGY DIVISION

ABSTRACT: THIS APPENDIX PRESENTS THE METHODOLOGY AND DETAILED CALCULATIONS USED IN ESTIMATING THE COSTS FOR TREATING THE RADIONUCLIDES AT THE OBNL URANIUM MILLS. (AUTH)

PUB DESC: OBNL-TN-8903, VOL. 2, (1975)

KEYWORDS: WASTE TREATMENT; ENVIRONMENT; REGULATION (SEE ALSO STANDARDS, RADIATION); CONTROL; SAFETY; EFFLUENT; FUEL CYCLE; URANIUM; MILLING; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); COSTS

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PUB DATE: 1966

AUTHOR: SAKAGISHI, S.

TITLE: MOVEMENT OF RADIOACTIVE MATERIAL FOR THE SOURCE AND OFFSHORE RELEASE OF LOW LEVEL LIQUID WASTES

CORPORATE AUTHOR: JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

ABSTRACT: IN THE OPERATION OF RADIOACTIVE INSTALLATIONS, SUCH AS ATOMIC POWER STATIONS AND FUEL REPROCESSING PLANTS, ALTHOUGH LOW IN RADIOACTIVITY, LARGE AMOUNTS OF LIQUID WASTES ARE RELEASED INTO THE SEA. A STUDY WAS MADE OF HOW THE RADIOACTIVE MATERIAL IN THE EFFLUENT WAS DIFFUSED AND DILUTED BY THE SEA WATER. FOR THIS PURPOSE AN EFFLUENT WAS RELEASED AT THREE POINTS - 1 KM OFFSHORE, AT THE BEACH, AND AT THE MOUTH OF A RIVER.

PUB DESC: GENSSEIKOEN KOKUO 13(9), PAGES 32-35 (SEPT. 1966)

KEYWORDS: DIFFUSION; JAPAN; WASTE DISPOSAL, OCEAN; LOW-LEVEL WASTE; DILUTION; EFFLUENT; TACHU, FLUORESCENT; WASTE DISPOSAL, OCEAN; ESTUARY; CONCENTRATION, AREA; WATER POLLUTION; FUEL REPROCESSING

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PUB DATE: 1973

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AUTHOR: SANDIA LABORATORIES (U.S.A.)

TITLE: WASTE HEAT MELT PROBLEMS

CORPORATE AUTHOR: SANDIA LABORATORIES, NEW MEXICO

ABSTRACT: THE INTERNAL CONDUCTION METHOD IS USED TO STUDY THE MELT PROBLEM WHICH OCCURS WHEN RADIOACTIVE WASTE MATERIALS ARE PLACED IN VARIOUS CAVITIES IN THE GROUND. THE GEOMETRIES OF SPHERICAL CAVITIES, CYLINDRICAL CAVITIES, AND DISC CAVITIES ARE CONSIDERED FOR AN EXPONENTIALLY DECAYING HEAT SOURCE AND A CONSTANT HEAT SOURCE. QUANTITIES SUCH AS MAXIMUM MELT RADIUS, MELT RADIUS AS A FUNCTION OF TIME, AND TIME TO INITIATE MELTING ARE DETERMINED AS FUNCTIONS OF DIMENSIONLESS MELT PARAMETERS.

PUB DESC: SLA-73-0575 +. 24 PAGES, 6 FIGURES, 4 REFERENCES, JULY 1973

KEYWORDS: COMPUTER PROGRAM; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; HEAT HEAT; WASTE DISPOSAL, TERRESTRIAL; CRATERING MELTING; WASTE DISPOSAL, SOLID; THEORETICAL INVESTIGATION;

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PUB DATE: 1973

AUTHOR: SAVANNAH RIVER LABORATORY (U.S.A.)

TITLE: SOLID FORMS FOR SAVANNAH RIVER PLANT HIGH-LEVEL WASTE

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: ONE OPTION FOR LONG-TERM MANAGEMENT OF SAVANNAH RIVER PLANT HIGH-ACTIVITY WASTE IS SOLIDIFICATION AND STORAGE IN A RETRIEVABLE SURFACE STORAGE FACILITY TO BE LOCATED ON THE PLANTSITE. THIS STUDY WAS MADE TO EVALUATE CANDIDATE SOLID WASTE FORMS AND SOLIDIFICATION PROCESSES, AND TO DETERMINE THEIR APPLICABILITY TO ENGINEERED STORAGE OF SAVANNAH RIVER PLANT WASTE. THE STUDY INCLUDED: 1) CHARACTERISTICS OF THE PRESENT TANK-STORAGE WASTE, 2) CRITERIA FOR ACCEPTABLE LONG-TERM WASTE STORAGE FORMS, 3) PROPERTIES OF POTENTIALLY USEFUL SOLID FORMS AND THE ASSOCIATED PROCESSES, AND 4) EVALUATION OF THE POTENTIAL PROCESS FORMS FOR SAVANNAH RIVER PLANT WASTE.

PUB DESC: DP-1335, 30 PAGES, 4 TABLES, 35 REFERENCES, DECEMBER 1973

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; SAVANNAH RIVER PLANT; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; ECONOMIC STUDY; WASTE SOLIDIFICATION;

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PUB DATE: 1971

AUTHOR: SASTON NUCLEAR EXPERIMENTAL CORPORATION (U.S.A.)

TITLE: SAFETY EVALUATION OF UNDERGROUND TANKS AND PIPING AT SASTON

CORPORATE AUTHOR: SASTON NUCLEAR EXPERIMENTAL CORPORATION, PENNSYLVANIA

ABSTRACT: SASTON SUBMITTED A SAFETY EVALUATION OF THE POTENTIAL FOR FAILURE OF UNDERGROUND TANKS AND PIPING FROM CORROSION OR FLATATION. ALL SURFACES EXPOSED TO EARTH FILL WERE GIVEN A PROTECTIVE COATING. THE TANKS HAVE CATHODIC PROTECTION PROVIDED BY A RECTIFIER STATION AND UNDERGROUND ANODES. THE TANKS ARE ANCHORED TO CONCRETE FOUNDATIONS AND BACKFILLED OVER TOP OF THE TANKS.

PUB DESC: SASTON NUCLEAR EXPERIMENTAL CORPORATION TO DIVISION OF REACTOR LICENSING (ARC) - LETTER, 3 PAGES, - NOVEMBER 17, 1971, DOCKET 50-106, TYPE--PWR, EFC--WEST., AR--GILBERT ASSOC.

KEYWORDS: CONTAINMENT, UNDERGROUND; REACTOR, PWR; SASTON (PWR); WASTE STORAGE; CORROSION (SEE ALSO STRESS CORROSION); COATING; STORAGE CONTAINER; SAFETY EVALUATION; FLOOD; PIPING

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PUB DATE: 1960

AUTHOR: SCHEIDTBAUER, J.

TITLE: IMMEDIATE SUPERVISION OF THE COASTAL SITE AT THE LA HAGUE CENTRE

CORPORATE AUTHOR: FRANCE. COMMISSARIAT A L'ENERGIE ATOMIQUE

ABSTRACT: THE DISPOSAL INTO THE SEA OF THE RESIDUAL WASTES FROM A PLANT PROCESSING IRRADIATED FUELS REQUIRES THAT A VERY CLOSE WATCH HAS TO BE KEPT ON THE CORRESPONDING COASTAL ZONE. THE MATERIAL ORGANISATION OF SUCH A SUPERVISION, AND THE SAMPLING TECHNIQUES, ARE DESCRIBED. THESE LATTER CONCERN FLORA, FAUNA, SUBSTRATES, AND SEA-WATER. RESULTS OBTAINED USING VARIOUS ANALYTICAL AND ROUTINE MEASUREMENT METHODS ARE PRESENTED.

PUB DESC: CEA-R-3459, MARCH 1960, 33 PAGES (IN FRENCH)

KEYWORDS: OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); FRANCE; WASTE DISPOSAL, OCEAN; SAMPLING; ANALYTICAL TECHNIQUE; SURFACE WATER, DISPOSAL MEDIA; SURFACE WATER, SEDIMENT; RADIATION PROTECTION, ORGANIZATION; MEASUREMENT; MONITOR, TELEMETRY; FUEL, FUEL TYPE; MONITORING PROGRAM, ENVIRONMENTAL; SURVEILLANCE PROGRAM; IRRADIATION FACILITY; VEGETATION; CONCENTRATION

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PUB DATE: 1970

AUTHOR: SCHLOSSER, K.; OSEKSLAY, P.-J.-F.; BETHWICK, A.A.

TITLE: THE FUTURE MANAGEMENT OF RADIOACTIVE WASTES IN AUSTRIA

ABSTRACT: THIS REPORT DESCRIBES HOW TO ENSURE SAFE WASTE DISPOSAL TO A RIVER SYSTEM WITHOUT ENDANGERING ITS BIOLOGICAL EQUILIBRIUM WHILE TRYING TO COMPROMISE COST OF WASTE MANAGEMENT AND HIGH STANDARD OF SAFETY. FURTHERMORE IT CONCENTRATES AROUND THE LEGAL AND ECONOMIC ASPECTS OF WASTE MANAGEMENT SELECTING THE MOST SUITABLE PROCESSES FOR WASTE TREATMENT AND ITS STORAGE, THE COOPERATION BETWEEN WASTE PRODUCERS AND THE NATIONAL AUTHORITIES AND ORGANIZATIONS RESPONSIBLE FOR A CENTRALIZED SERVICE FOR WASTE COLLECTION, WASTE TREATMENT AND ULTIMATE STORAGE.

PUB DESC: SM-137/52, STI/PUB-264, CONF-700905, 25 PAGES, 30 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; LAW; WASTE STORAGE; WASTE TREATMENT; AUSTRIA; WASTE DISPOSAL, RIVER; WASTE MANAGEMENT

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PUB DATE: 1969

AUTHOR: SCHNEIDBACH, J.

TITLE: EXPERIENCE FROM LARGE DISCHARGES OF RADIOACTIVE LIQUID WASTE

ABSTRACT: THE INVESTIGATIONS OF LARGE DISCHARGES OF RADIOACTIVE LIQUID WASTES INTO THE COLUMBIA AND CLINCH RIVERS REVEAL THE POSSIBLE CONSEQUENCES OF RELEASED RADIOACTIVE SUBSTANCES INTO THE ENVIRONMENT. THEY SHOWED WHICH PROCESSES IN THE ENVIRONMENT DETERMINE THAT DOSE LIMITS FOR THE PUBLIC ARE NOT EXCEEDED. TWENTY YEARS OF EXPERIENCE WITH DISCHARGES OF SOME 100,000 CI ANNUALLY INTO THE COLUMBIA RIVER AND OF THE AVERAGE 700 CI ANNUALLY INTO THE CLINCH RIVER ALLOW US TO SAFELY ASSESS THE POSSIBLE CONSEQUENCES OF LARGE DISCHARGES TO MAN.

PUB DESC: ATOMKERNENERGIE, 10, PAGES 65-68 (JAN.-FEB. 1969) (IN GERMAN)

KEYWORDS: EFFLUENT; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); MAXIMUM PERMISSIBLE DOSE (MPD);

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WASTE DISPOSAL, RIVER; RIVER, CLINCH; RIVER, COLOMBIA;
WASTE DISPOSAL, LIQUID; GERMANY; ENVIRONMENT

<341> **PUB DATE: 1967**
AUTHOR: SCHWIMMER, J.

TITLE: RESEARCH ON THE PERMANENT DISPOSAL OF RADIOACTIVE WASTES IN SALT FORMATIONS IN THE FEDERAL REPUBLIC OF GERMANY

CORPORATE AUTHOR: FEDERAL MINISTRY FOR SCIENTIFIC RESEARCH, BAD GODEFROH, GERMANY

ABSTRACT: IN THE FEDERAL REPUBLIC OF GERMANY, AS WELL AS IN OTHER HEAVILY POLLUTED EUROPEAN COUNTRIES, THE METHOD OF BURIED RADIOACTIVE WASTES IN SHALLOW CAVES COULD NOT BE ADOPTED BECAUSE OF THE INTENSIVE LAND UTILIZATION, APPREHENSIONS ON THE PART OF THE PUBLIC AND THE NEED TO PRESERVE THE NATURAL WATER RESOURCES. ONLY IN EXCEPTIONAL CASES MAY RADIOACTIVE WASTES BE DISPOSED OF IN THE SAME WAY AS CONVENTIONAL WASTE. FOR THE PERMANENT DISPOSAL OF THE WASTE OF RADIOACTIVE WASTES, WHICH ARE PACKAGED AND CURRENTLY STORED IN PRIVATE OR STATE-OWNED INTERIM STORAGE BILLS, SCIENTIFIC BODIES IN THE FEDERAL REPUBLIC HAVE RECOMMENDED THAT SUCH WASTE BE STORED IN DEEP SALT FORMATIONS.

PUB DESC: STI/PUB-156, CCHP-670512, PAGES 645-77 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ECN SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: GEOLOGY; PUBLIC RESPONSE (SEE ALSO OPINION, PROTEST, AND POLITICAL RESPONSE); RIVINE; WASTE DISPOSAL, SOLID; GERMANY; HYDROLOGY; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; R AND B PROGRAM

<342> **PUB DATE: 1975**
AUTHOR: SELBY, J.B.; WATSON, E.C.; COBLEY, J.P.; WHITE, B.A.; CARTER, L.A.; KROPP, J.C.; CLARK, B.C.; BECK, C.L.

TITLE: CONSIDERATIONS IN THE ASSESSMENT OF THE CONSEQUENCES OF EFFLUENTS FROM URINE OXIDE FUEL FABRICATION PLANTS

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE PURPOSE OF THIS STUDY WAS TO PROVIDE INFORMATION AND IDENTIFY PARAMETERS RELEVANT TO ASSESSING THE CONSEQUENCES TO MAN AND HIS ENVIRONMENT OF LARGE SCALE URINE PLUTONIUM-URANIUM OXIDE FUEL FABRICATION PLANTS WHICH WILL BE BUILT IN THE NEXT 10 TO 15 YEARS. THE REPORT IDENTIFIES THE PERTINENT PARAMETERS, VALUES, FACTORS AND METHODS WHICH MAY BE USED IN EVALUATING THE ENVIRONMENTAL CONSEQUENCES OF ROUTINE PLANT OPERATION AS WELL AS POSTULATED ACCIDENTS. THIS STUDY PROVIDES A BASE FOR THE DEVELOPMENT OF SITING CRITERIA AND SAFETY ANALYSES FOR URINE OXIDE FUEL FABRICATION FACILITIES.

PUB DESC: BNWL-1697 029. 1 1975 (JUNE)

KEYWORDS: ASSESSMENT; SAFETY EVALUATION; FABRICATION FACILITY; PLUTONIUM; URANIUM; OXIDE; ENVIRONMENTAL EFFECT; RADIATION ANALYSIS; SAFETY; SITING

<343> **PUB DATE: 1964**
AUTHOR: SETU, G.E.

TITLE: DISPOSAL OF WASTES FROM ATOMIC ENERGY ESTABLISHMENTS

CORPORATE AUTHOR: CPREI, HYDERABAD, INDIA

ABSTRACT: DISCUSSES THE PROBLEMS OF DISPOSAL OF RADIOACTIVE WASTES FROM RADIOCHEMICAL SEPARATION PLANTS, NUCLEAR POWER REACTORS, AND PLACES WHERE RADIOISOTOPES ARE USED IN RESEARCH, MEDICINE, OR INDUSTRY. SUGGESTIONS ARE GIVEN FOR THE SAFE DISPOSAL

OF THESE WASTES.

PUB DESC: ENVIRON. HEALTH, 8, PAGES 254-61 (1966)

KEYWORDS: WASTE DISPOSAL; REACTOR, POWER; WASTE MANAGEMENT; INDIA; RADIATION SAFETY AND CONTROL; RADIOCHEMICAL PROCESSING; RADIOISOTOPE

<344> **PUB DATE: 1968**
AUTHOR: SETU, G.E.

TITLE: SOME CRITERIA FOR CHOOSING PRESSURES FOR THE COMPACTION OF RADIOACTIVE WASTE

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, CROUSILLON (FRANCE)

ABSTRACT: THE CHOICE OF A PRESS FOR COMPACTION LOW-ACTIVITY RADIO-ACTIVE WASTE DEPENDS ON THE POSSIBILITY OF RECOVERING THE COLLECTION CONTAINERS AND THE FINAL STORAGE CONTAINERS. THESE FACTORS WILL DETERMINE THE GENERAL ORGANIZATION OF THE MACHINE AND THE POSSIBLE LIMITATIONS TO THE COMPACTION PRESSURES. THE NATURE OF THE WASTE THEN MAKES IT POSSIBLE TO DETERMINE THE OPTIMUM PRESSURE CORRESPONDING TO THE BEST COMPRESSION POWER. IT SEEMS THAT IT IS POSSIBLE TO DISTINGUISH TWO TYPES OF WASTE ACCORDING TO THEIR BEHAVIOR ON COMPACTION. THE COST OF THE MACHINES IS RELATED TO THE PRESSURE CHOSEN.

PUB DESC: CEA-R-3619, 27 PAGES, FIGURES, 7 REFERENCES, OCTOBER 1968 (IN FRENCH)

KEYWORDS: WASTE TREATMENT, FIXATION; LOW-LEVEL WASTE; BAILING; WASTE TREATMENT, SOLID; WASTE TREATMENT, ECONOMICS; COMPACTION; STORAGE CONTAINERS; EQUIPMENT

<345> **PUB DATE: 1971**
AUTHOR: SLADSET, C.H.

TITLE: PRINCIPLES AND PRACTICES IN THE DISPOSAL OF RADIOACTIVE WASTE TO FRESH WATERS

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION, IDAHO FALLS, IDAHO

ABSTRACT: COVERS, IN BRIEF, THE FEATURES OF FRESH SURFACE WATER, THE ASSESSMENT OF RISK TO MAN, AND DISCHARGE PRACTICES WHICH ARE IMPORTANT IN A SATISFACTORY WASTE-MANAGEMENT PROGRAM. INCLUDED IS A DISCUSSION OF THE HYDROLOGICAL CYCLE, ECOLOGY AND WATER, TRANSPORT OF RADIOISOTOPES IN THE AQUATIC SYSTEM, THE CRITICAL PATHWAY CONCEPT, DOSE LIMITS, SAFE RELEASE LIMITS, ASSESSING DISCHARGES, AND WASTE MANAGEMENT POLICY.

PUB DESC: CCHP-711113-4, 14 PAGES, FROM THE REGIONAL TRAINING COURSE IN RADIOACTIVE WASTE MANAGEMENT CONFERENCE, TOKYO, JAPAN, NOVEMBER 8, 1971

KEYWORDS: DEPOSITION; PUBLIC RESPONSE (SEE ALSO OPINION, PROTEST, AND POPULATION RESPONSE); PATHWAY (SEE ALSO CRITICAL NUCLEIDE PATHWAY); ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); EFFLUENT; FISSION PRODUCT RELEASE; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); RADIATION IN PERSPECTIVE; WASTE DISPOSAL, ORGAN; FISSION PRODUCT TRANSPORT; WASTE DISPOSAL, RIVER; CRITICAL NUCLEIDE; POPULATION EXPOSURE; WASTE MANAGEMENT; CRITICAL NUCLEIDE PATHWAY; HYDROLOGY; ICRP; RADIATION SAFETY AND CONTROL; ENVIRONMENT; FUEL REPROCESSING; WASTE DISPOSAL, LAKE; POPULATION RESPONSE; WHOLE BODY; ORGAN; DISCHARGE; BENEFICIAL USE

<346> **PUB DATE: 1971**
AUTHOR: SLADSET, C.H.

TITLE: RADIOACTIVE WASTE MANAGEMENT IN RELATION TO THE ENVIRONMENT

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION, IDAHO FALLS, IDAHO

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ABSTRACT: RADIOACTIVE WASTE RELEASED TO THE ENVIRONMENT IS THE ONLY KIND OF WASTE DISCUSSED IN THIS PAPER. ALL OTHER WASTE IS SYSTEM. THE RELATION OF WASTE TO ENVIRONMENT IMPLIES POLLUTION OF THE ENVIRONMENT; POLLUTION IN THE FORM OF CONTAMINANTS IN THE AIR WE BREATHE, IN THE WATER WE DRINK, OR THE SOIL WE TILL OR TOWN. IN ADDITION, ENVIRONMENT INCLUDES ECOLOGICAL SYSTEMS - WILD LIFE, DOMESTIC ANIMALS, FISH AND MARINE LIFE; THAT IS ANY LIVING MATTER WHICH IS USED AS FOOD BY MAN OR IS A LINK IN MAN'S FOOD CHAIN. THE WASTE COMES UNDER THE WASTE-MANAGEMENT POLICY TERMED ELUTE AND DISPENSE. OUR PRINCIPAL CONCERN IS THE EFFECT OF WASTE FROM THE GENERATION OF NUCLEAR POWER, WHICH AMOUNTS TO ABOUT 99% OF ALL RADIOACTIVE WASTES RELEASED TO THE ENVIRONMENT.

PUB DESC: CONF-711113-2 +. 15 PAGES, SEPTEMBER 10, 1971, FROM THE REGIONAL TRAINING COURSE IN RADIOACTIVE WASTE MANAGEMENT CONFERENCE, TOKYO, JAPAN, NOVEMBER 4, 1971

KEYWORDS: ECOLOGY; ENVIRONMENT; ELUTION; WATER; AIR; WASTE MANAGEMENT; CONTAMINATION; SOIL; DISPERSION; RADIOACTIVITY RELEASE; FOOD CHAIN; AQUATIC ORGANISM; ECOSYSTEM; RADIATION EFFECT; MAN; FOOD

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PUB DATE: 1971

AUTHOR: SLANSKY, C.R.

TITLE: MONITORING AND PRETREATMENT ANALYSIS - RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: ALLIANCE CHEMICAL CORPORATION, IRAND FALLS, IDAHO

ABSTRACT: THE ENVIRONMENT HAS A LIMITING CAPACITY TO ABSORB WASTE. PRINCIPLES FOR LIMITING THE RELEASE OF WASTE TO THE ENVIRONMENT ARE BASED PRIMARILY ON THEIR DIRECT OR INDIRECT EFFECT UPON MAN. A VALUABLE TOOL IN DETERMINING THE EFFECT UPON MAN OF RADIOISOTOPES RELEASED TO THE ENVIRONMENT IS THE CRITICAL NUCLEIDE, CRITICAL PATHWAY, CRITICAL POPULATION APPROACH IN THE TRANSFER OF RADIOISOTOPES BY THE FOOD CHAIN TO MAN. INTERPRET, MONITORING THE ENVIRONMENT IS A DIRECT CHECK ON THIS CALCULATION.

PUB DESC: CONF-711113-3, 13 PAGES, OCTOBER 1, 1971, FROM THE REGIONAL TRAINING COURSE IN RADIOACTIVE WASTE MANAGEMENT CONFERENCE, TOKYO, JAPAN, NOVEMBER 4, 1971

KEYWORDS: MAXIMUM PERMISSIBLE CONCENTRATION (MPC); REGULATION (SEE ALSO STANDARDS, RADIATION); WASTE TREATMENT; CRITICAL NUCLEIDE; NUCLEIC, ENVIRONMENTAL; ECSE MEASUREMENT, EXTENSIVE; WASTE MANAGEMENT; CRITICAL NUCLEIDE PATHWAY; ENVIRONMENT; RADIATION EFFECT; MAN

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PUB DATE: 1970

AUTHOR: SLANSKY, C.R.

TITLE: FUTURE GOALS IN RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: REVIEWS POSSIBLE REDUCTIONS OF RADIOACTIVE WASTE DISCHARGE TO THE ENVIRONMENT. GIVES A FEW VALUES FOR THE QUANTITY OF RADIOACTIVE MATERIALS PRODUCED AND FOR THE VARIOUS DISPOSAL POLICIES APPLY. ECONOMICS OF WASTE DISPOSAL ARE DISCUSSED.

PUB DESC: SM-137/47, STI/PUB-240, CONF-700905, 11 PAGES, 3 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-LES-BAINS, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; TITRATION; WASTE DISPOSAL; AUSTRIA; WASTE MANAGEMENT; FUEL REPROCESSING; B AND D PROGRAM

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PUB DATE: 1972

AUTHOR: SMITH, J.R.; KJENTHOF, J.E.

TITLE: DEVELOPMENTS IN NUCLEAR PLANT EFFLUENT MANAGEMENT SYSTEMS

CORPORATE AUTHOR: NUCLEAR ENERGY DIVISION, GENERAL ELECTRIC COMPANY

ABSTRACT: THE KEY SYSTEMS DESCRIBED ARE - (A) A RADIUM CYCLE RADIOACTIVE LIQUID TREATMENT SYSTEM, UTILIZING TRAVELING BELT FILTERS FOR SOLIDS CONCENTRATION, WHICH TREAT ALL LIQUID WASTE STREAMS WHICH ARE MAJOR CARRIERS OF RADIOACTIVITY TO PURIFY THE WATER FOR RECYCLE TO IN-PLANT USAGE. (B) A HIGH-PERFORMANCE OFF-GAS EFFLUENT-CLEANUP SYSTEM. THIS ZERO-DEGREE CHARCOAL ADSORPTION SYSTEM FEATURES UTILIZATION OF PASSIVE COMPONENTS TO IMMOBILIZE THE RADIATION MATERIAL COLLECTED.

PUB DESC: AMERICAN NUCLEAR CONFERENCE, CHICAGO, ILLINOIS, APRIL 10-20, 1972, 30TH MEETING, 25 PAGES, 3 FIGURES

KEYWORDS: REACTOR, NMR; DESIGN CRITERIA; EFFLUENT (SEE ALSO WASTE GAS); EXPOSURE; CHARCOAL ADSORPTION; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1969

AUTHOR: SMITH, F.W.; HANSON, G.L.

TITLE: RADIOACTIVE WASTE MANAGEMENT POLICIES AND PRACTICES

ABSTRACT: REVIEWS PRACTICES AND IMPROVEMENT OF THE WASTE MANAGEMENT TECHNOLOGY SINCE 1900. DISCUSSES THE RADIOACTIVE WASTE MANAGEMENT POLICIES WHICH GUIDE THE ATOMIC ENERGY INDUSTRY TODAY AND THE WASTE MANAGEMENT PRACTICES CURRENTLY BEING USED.

PUB DESC: ASM-SM-30, 42 PAGES, APRIL 2, 1969

KEYWORDS: ADMINISTRATIVE CONTROL; HISTORICAL SIGNIFICANCE; DESIGN; PLUTONIUM; WASTE DISPOSAL; RADIATION SAFETY AND CONTROL; WFO (W); SANFORD SITE; FUEL REPROCESSING; REACTOR, PRODUCTION; AEC

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PUB DATE: 1975

AUTHOR: SMITH, T.R.; WIEGANDER, W.R.

TITLE: RISK ANALYSIS OF NUCLEAR WASTE MANAGEMENT SYSTEMS

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, BELLINGHAM, WASHINGTON

ABSTRACT: THE SAFETY OF NUCLEAR WASTE MANAGEMENT SYSTEMS IS BEING ADDRESSED BY THE QUANTITATIVE RISK ANALYSIS STUDY CONDUCTED BY BATTILLE PACIFIC NORTHWEST LABORATORIES. THIS STUDY IS SPONSORED BY THE AEC'S DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION. THE RESULTS WILL HELP GUIDE RESEARCH AND DEVELOPMENT EFFORTS, AND WILL BE USED IN THE FORMULATION OF WASTE PRODUCT CRITERIA AND FOR COMPARISONS OF ALTERNATIVE WASTE MANAGEMENT PROCEDURES. EVALUATING PROPOSED WASTE MANAGEMENT SYSTEMS IS A COMPLICATED PROCESS. IT INCLUDES ASSESSMENTS OF TECHNICAL FEASIBILITY, BOD BODS, COSTS, ENVIRONMENTAL IMPACTS, AND BOTH THE CALCULATED AND THE PUBLICLY PERCEIVED SAFETY. THE METHOD SELECTED FOR SAFETY ASSESSMENT OF PROPOSED YEAR-2000 WASTE MANAGEMENT SYSTEMS IS QUANTITATIVE RISK ANALYSIS. IT CONSIDERS BOTH THE CONSEQUENCES OF MATERIAL AND THE ESTIMATED PROBABILITIES OF SUCH EVENTS. THIS IS A DEPARTURE FROM THE TRADITIONAL 'MAXIMUM CREDIBLE ACCIDENT' APPROACH WHICH DEALS ONLY WITH THE CONSEQUENCES OF MAXIMUM-RELEASE ACCIDENTS.

PUB DESC: POWER ENGINEERING, 79(2), PP. 35-37 2 FIGURES, (FEBRUARY 1975)

KEYWORDS: HAZARD, RELATIVE; RISK (SEE ALSO BENEFIT VS RISK); RELIABILITY ANALYSIS; WASTE MANAGEMENT; DESIGN STUDY; RADIATION SAFETY AND CONTROL

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PUB DATE: 1965
 AUTHOR: SOBOLEV, I.A.; KUCHENIK, L.N.
 TITLE: CONTROLLED BURIAL OF SOLID AND LIQUID RADIOACTIVE WASTES

ABSTRACT: IN THE USSR, THE SANITARY REGULATIONS FOR WORK WITH RADIOACTIVE SUBSTANCES ARE SOURCES OF IONIZING RADIATIONS NO. 333-66 SPECIFY THAT SUCH WASTES MUST BE BURIED IN SPECIAL UNDERGROUND VAULTS FOR LIQUID AND SOLID WASTES HAS BEEN CHANGED TO USE OF ONE VAULT WITH SOLIDS AND LIQUIDS INCORPORATED INTO A SOLID MASS. COMBINING LIQUIDS AND SOLID WASTES IN CONCRETE IS A MORE EFFECTIVE USE OF SPACE AND REQUIRES LESS COVERED AREA. MIGRATION OF RADIOACTIVE SUBSTANCES INTO THE ENVIRONMENT IS PRACTICALLY IMPOSSIBLE. COST OF CONTROLLED BURIAL OF LIQUID WASTES IN CONCRETE IS ABOUT 60 TO 50% LESS THAN FOR LIQUID WASTES ALONE.

PUB DESC: TR-66-51033/4-6, 1PST-CAT.-1538-1540, 3 PAGES, 2 FIGURES, 1 REFERENCE, PAGE 92 TUDS 9% OF SYNTHE AND SENSITIVITY 70-61, APRIL 1965

KEYWORDS: WASTE STORAGE; STANDARDS, RADIATION (SEE ALSO REGULATION); CONCRETE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; USSR

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PUB DATE: 1968
 AUTHOR: SOIFE, Y.S.; PULLAG, R.T.

TITLE: AN EVALUATION OF STRONTIUM AND CESIUM COMPOUNDS FOR WASTE PACKAGING

CORPORATE AUTHOR: BATTILLI NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: AS PART OF THE OVERALL WASTE MANAGEMENT PROGRAM AT BARTON, VARIOUS METHODS HAVE BEEN EVALUATED FOR THE LONG-TERM DISPOSAL OF HIGH LEVEL CESIUM AND STRONTIUM LIQUID WASTES. THE METHOD SELECTED INVOLVES CONVERSION OF THE SEPARATED SR-90 AND CS-137 LIQUID STREAMS TO SOLID COMPOUNDS FOLLOWED BY ENCAPSULATION OF THE SOLIDS IN URINAL CANS. FINAL DISPOSAL OF THE SOLID-CONTACT CANS WOULD BE IN - AS YET UNSELECTED - STORAGE SITES.

PUB DESC: BNWL-CC-1695, 20 PAGES, FIGURES, JUNE 26, 1968

KEYWORDS: CESIUM; PACKAGING; STRONTIUM; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, LIQUID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; BARTON SITE; WASTE SOLIDIFICATION

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PUB DATE: 1975
 AUTHOR: SOULE, R.F.

TITLE: WASTE MANAGEMENT

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: CURRENT PLANNING FOR THE MANAGEMENT OF RADIOACTIVE WASTES, WITH SOME EMPHASIS ON PLUTONIUM CONTAMINATED WASTES, INCLUDES THE PROVISION OF REPOSITORIES FROM WHICH THE WASTES CAN BE SAFELY REMOVED TO PERMANENT DISPOSAL. A NUMBER OF POSSIBILITIES FOR PERMANENT DISPOSAL ARE UNDER INVESTIGATION WITH THE MOST FAVORABLE, AT THE PRESENT TIME, APPARENTLY BEING THAT IN A STABLE GEOLOGICAL FORMATION. HOWEVER, FINAL CHOICE CANNOT BE MADE UNTIL ALL STUDIES ARE COMPLETED AND A PILOT PHASE DEMONSTRATES THE ADROQUITY OF THE CHOSEN METHOD. THE RADIOACTIVE WASTES WHICH RESULT FROM ALL PORTIONS OF THE FUEL CYCLE COULD COME AS AN IMPORTANT SOURCE OF EXPOSURE TO THE PUBLIC IF PERMITTED TO DO SO. THE OBJECTIVES OF THE AEC WASTE MANAGEMENT PROGRAM ARE TO PROVIDE METHODS OF TREATING, HANDLING AND STORING THESE WASTES SO THAT THIS EXPOSURE WILL NOT OCCUR. THIS PAPER IS INTENDED TO DISCUSS SOME OF THE PROBLEMS AND CURRENT PROGRESS OF WASTE MANAGEMENT PROGRAMS, WITH EMPHASIS ON PLUTONIUM CONTAMINATED WASTES. (NOO. AUTHOR)

PUB DESC: HEALTH PHYSICS, 29(4), P. 481 (1975)

KEYWORDS: PLUTONIUM; REPOSITORY; SITING; AGENCY, AEC (SEE ALSO USARC); WASTE REACTOR; FUEL CYCLE; RADIOACTIVE WASTE; WASTE MANAGEMENT

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PUB DATE: 1973
 AUTHOR: SOULE, R.F.

TITLE: MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: HIGH-LEVEL RADIOACTIVE WASTE IS PRESENTLY DEPOSED CONTAINERS TRAIL ALL OF THE RADIOACTIVITY GENERATED IN THE NUCLEAR FUEL CYCLE AND MUST BE ISOLATED FROM THE ENVIRONMENT (ESSENTIALLY ZERO POPULATION EXPOSURE) FOR EXTREMELY LONG PERIODS OF TIME. ELEMENTS OF NECESSARY TECHNOLOGY ALREADY PROVEN ARE THE SAFE, REMOTE SEPARATION OF WASTE RADIOISOTOPES FROM USEFUL CONTENTS OF IMMATURE FUEL; LONG STORAGE OF HIGH-LEVEL LIQUID WASTE FOR AN INTERIM PERIOD NOW LIMITED BY REGULATION TO FIVE YEARS; REDUCTION OF HIGH-LEVEL LIQUID WASTE TO SOLID FORM AND STORAGE OF THE PRODUCT; AND INTERMITTENT TRANSPORTATION OF MATERIALS EQUIVALENT TO ENCAPSULATED SOLIDIFIED HIGH-LEVEL WASTE. PRESENT PLANS ARE TO USE THIS EXISTING TECHNOLOGY IN A SINGLE NEAR-SURFACE REPOSITORY FOR COMMERCIAL HIGH-LEVEL WASTE. CUMULATIVE OUTPUT COULD BE HANDLED AS OF 2010 IN VAULTS REQUIRING A FEW ACRES.

PUB DESC: HEALTH PHYSICS SOCIETY MEETING, HELD IN MIAMI BEACH, FLORIDA, JUNE 17, 1973 (SEE CONF-730603--)

KEYWORDS: WASTE STORAGE; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); WASTE TREATMENT, LIQUID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; FUEL REPROCESSING

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PUB DATE: 1970
 AUTHOR: SOULE, R.F.

TITLE: RADIATION STANDARDS AND RADIOACTIVE WASTE

ABSTRACT: DOMESTIC AND INTERNATIONAL RADIATION STANDARDS ARE ESSENTIALLY PERFORMANCE CODES (STATING EXPOSURES WHICH ARE NOT TO BE EXCEEDED) RATHER THAN SPECIFICATION CODES (STATING HOW RADIATION WORK IS TO BE ACCOMPLISHED). RATIONAL PLANNING THIS REQUIRES ANALYSIS OF THE ESTABLISHED STANDARDS AGAINST THE WORK TO BE DONE. THIS DISCUSSION CONSIDERS THE STANDARDS RELATIVE TO INTERIM AND LONG-TERM STORAGE OF RADIOACTIVE WASTES, PARTICULARLY NUCLEAR-FUEL REPROCESSING WASTES AND PLUTONIUM-CONTAMINATED SOLID WASTES.

PUB DESC: CONF-701106, 10 PAGES, PROCEEDINGS OF THE 5TH ANNUAL HEALTH PHYSICS SOCIETY MEETING TOPICAL SYMPOSIUM, VOLUME XII, PG. 656-666, NOVEMBER 1970

KEYWORDS: STANDARDS, RADIATION (SEE ALSO REGULATION); HEALTH PHYSICS; PLUTONIUM; WASTE STORAGE; WASTE DISPOSAL, SOLID; ICRP; OECD; FUEL REPROCESSING

<357>

PUB DATE: 1973
 AUTHOR: SOUSSELINE, Y.

TITLE: INTERNATIONAL WASTE MANAGEMENT EXPERIENCE AND PLANS

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, FRANCE

ABSTRACT: THE DISPOSAL OF RADIOACTIVE WASTES DOES NOT CONSTITUTE A PROBLEM AT PRESENT. TWO METHODS OF CONDITIONING AND DISPOSAL USED ARE SAFE, ESPECIALLY IN VIEW OF THE AMOUNTS NOW BEING PRODUCED AND OF THE ENDLESS CAPACITY OF THE POTENTIAL RECIPIENT MEDIA. FURTHERMORE THE WASTES NOW BEING STORED ARE REUSABLE AND THE STORAGE FACILITIES CAN BE REARRANGED.

<357> CONT.

PUB DESC: CEA-COMP-2225, COMP-721109-20, 16 PAGES, PAPER PRESENTED AT THE INTERNATIONAL CONFERENCE ON NUCLEAR SOLUTIONS TO POWER ENERGY PROBLEMS, WASHINGTON, D. C., NOVEMBER 12, 1972

KEYWORDS: EFFLUENT; INTERNATIONAL (SEE ALSO ORGANIZATION); WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; FRACTION, POWER; WASTE MANAGEMENT; FUEL REPROCESSING

<358>

PUB DATE: 1971
AUTHOR: SOUSELIER, Y.; PRADIER, J.

TITLE: MANAGEMENT OF RADIOACTIVE WASTES AND THEIR LONG-TERM STORAGE

CORPORATE AUTHOR: CEA, CENTRE D'ETUDES NUCLEAIRES DE FONTENAY-AUX-ROSES, FRANCE

ABSTRACT: THE MANAGEMENT OF RADIOACTIVE WASTES AND THEIR STORAGE ARE QUESTIONS WHICH DO NOT A. THE PRESENT TIME RAISE URGENT AND IMPORTANT PROBLEMS. IN THE INITIAL STAGES OF THE DEVELOPMENT OF NUCLEAR ENERGY, THOSE RESPONSIBLE CAREFULLY CONSIDERED ALL ASPECTS OF THE QUESTION. A VERY WIDE RANGE OF PROCESSES IS NOW AVAILABLE FOR TREATMENT AND PACKAGING, ALONG WITH DATA ON THE VARIOUS POSSIBILITIES FOR STORAGE, NOT FORGETTING EXTREMELY ACCURATE DETECTION EQUIPMENT, WHICH IS A NOT INCONSIDERABLE ADVANTAGE.

PUB DESC: A/COMP-49/P/766, COMP-710901-809, 17 PAGES, 2 TABLES, FROM THE FOURTH UNITED NATIONS INTERNATIONAL CONFERENCE IN THE PEACEFUL USE OF ATOMIC ENERGY, GENEVA, SEPTEMBER 6, 1971

KEYWORDS: WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE TREATMENT, FIXATION; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL

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PUB DATE: 1965
AUTHOR: SPIITSU, V.V.

TITLE: TREATMENT AND DISPOSAL OF RADIOACTIVE WASTES

ABSTRACT: (DISCUSSES THE MANY ASPECTS OF WASTE HANDLING, INCLUDING DISPOSAL, TREATMENT, TRANSPORTATION, AND BURIAL. TECHNIQUES FOR THE DISPOSAL OF RADIOACTIVE WASTES MUST BE STILL FURTHER IMPROVED. THIS IS BEING DONE IN THE USSR AND OTHER COUNTRIES AND NEW METHODS AND NEW TYPES OF EQUIPMENT ARE BEING DEVELOPED. MANY OF THE CURRENTLY USED PROCESSES WILL CONTINUE TO BE EXTENSIVELY USED IN THE FUTURE. IMPROVEMENTS IN THESE METHODS WILL PROCEED MAINLY TOWARD DEVELOPING NEW TYPES OF EQUIPMENT, NEW MATERIALS AND REAGENTS TO INTENSIFY THE TECHNOLOGICAL PROCESSES.

PUB DESC: AEC-TS-6801, 107 PAGES, ATOMIZDAT MOSKVA, 1965 (TRANSLATED FROM RUSSIAN)

KEYWORDS: WASTE DISPOSAL; WASTE TREATMENT; WASTE TRANSPORTATION; POPULATION EXPOSURE; WASTE MANAGEMENT; EVAPORATION; ION EXCHANGE; PRECIPITATION; RADIATION SAFETY AND CONTROL; USSR

<360>

PUB DATE: 1970
AUTHOR: SPIITSU, V.I.; VOLICREV, B.S.; SEDOV, V.N.

TITLE: REVIEW OF THE STATUS OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE MANAGEMENT IN THE USSR

CORPORATE AUTHOR: USSR STATE COMMITTEE ON THE UTILIZATION OF ATOMIC ENERGY

ABSTRACT: DISCUSSES WASTE DISPOSAL STATUS OF FLOWING RADIOISOTOPES IN EFFLUENTS, OPERATION OF ATOMIC POWER STATIONS, MAJOR NUCLEAR CENTERS, AND CENTRALIZED FACILITIES SERVING GROUPS OF INSTITUTES. STANDARD INSTALLATIONS FOR ATOMIC POWER STATIONS AND CENTRALIZED FACILITIES ARE DESCRIBED. ALSO DESCRIBES WORK ON THE RECOVERY OF ACIDS AND ALKALIES FROM

REGENERATION SOLUTIONS AFTER ION EXCHANGE BY ELECTROLYSIS AND STEAM EVAPORATION.

PUB DESC: SN-137/64, STL/PWD-264, COMP-700905, 2 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW AND INTERMEDIATE RADIOACTIVE WASTE, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: EFFLUENT; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; IAEA; WASTE DISPOSAL; WASTE MANAGEMENT; ION EXCHANGE; USSR; CONCENTRATION

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PUB DATE: 1968
AUTHOR: SPIITSU, V.I.; BALOGOVA, V.D.; BAGNETSOV, V.V.

TITLE: PHYSICAL AND CHEMICAL CONDITIONS OF UNDEGROUND BURIAL OF RADIOACTIVE WASTES

ABSTRACT: DETERMINED THE BASIC COMPLEX OF PHYSICAL-CHEMICAL STUDIES NECESSARY FOR EVALUATION OF THE UNDEGROUND BURIAL OF LIQUID RADIOACTIVE WASTES. THE CONDITIONS FOR THE BURIAL OF THE DEACTIVATED WASTES HAD BEEN DESCRIBED. NATIONAL TECHNOLOGICAL PROCESSES, GUARANTEEING THE STABILITY OF THE LIQUID PHASE DURING COMBINATION OF THE WASTES WITH SOUTHERNAREAN MEDIA, WERE ESTABLISHED. GENERAL CONDITIONS FOR THE SORPTION OF RADIOACTIVE ISOTOPES DURING BURIAL IN SOUTHERNAREAN WATER IN STRATA WITH HIGH-MINERAL WATER CONTENT WERE EXAMINED.

PUB DESC: AT. ENERG. (USSR), 24, PAGES 133-6 (FEB. 1968), (IN RUSSIAN)

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; ION EXCHANGE; SORPTION (SEE ALSO ADSORPTION); USSR; RADIOISOTOPE

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PUB DATE: 1968
AUTHOR: SPIITSU, V.I.; BALOGOVA, V.D.; BAGNETSOV, V.P.

TITLE: PHYSICOCHEMICAL CONDITIONS OF UNDEGROUND DISPOSAL OF RADIOACTIVE WASTES

ABSTRACT: THIS ARTICLE IS DEVOTED TO INVESTIGATIONS ASSOCIATED WITH THE SELECTION OF A WASTE BURIAL GROUND IN A ZONE OF COBRATE WATERS FEATURING A HIGH SALT CONTENT, WHEN THE WASTES ARE INTRODUCED IN THE GEOLOGICAL MEDIUM BY MEANS OF INJECTION WELLS.

PUB DESC: SOVIET ATOMIC ENERGY 2(2), PAGES 160-63 (FEB. 1968) 6 PAGES, 5 REFERENCES

KEYWORDS: CHEMICAL REACTION; BURIAL GROUND (SEE ALSO COMMERICAL BURIAL GROUND); WATER; SITING; WASTE DISPOSAL; SOIL, RADIOCLIDE MOVEMENT THROUGH; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; FILTRATION; PRECIPITATION; SORPTION (SEE ALSO ADSORPTION); RADIO-TTIC GAS; WASTE DISPOSAL, HYDRAULIC FRACTURING; GEOLOGY, GEOCHEMICAL; SEDIMENT

<363>

PUB DATE: 1972
AUTHOR: STRAUB, C.P.

TITLE: RADIOACTIVE WASTES

CORPORATE AUTHOR: UNIVERSITY OF MINNESOTA, MINNEAPOLIS

ABSTRACT: A REVIEW OF THE VARIOUS ASPECTS OF WASTE MANAGEMENT AND SUBSEQUENT DISPOSAL, INCLUDING PRECIPITATION, FOAM SEPARATION, SOLVENT EXTRACTION, ION EXCHANGE, FIXATION, AND DISPOSAL INTO SEWERS, OCEAN, AND THE GROUND. ALSO SOME WORK IS CITED ON ECOLOGICAL EFFECTS OF LOW-LEVEL CHRONIC DOSES.

PUB DESC: JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION, 44(6), PP. 1115-1123 REFERENCES, (JUNE 1972)

KEYWORDS: FISSION PRODUCT RELEASE; BEVIZU; PCAN; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FIXATION; WASTE MANAGEMENT

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PRECIPITATION; SOLVENT EXTRACTION

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AUTHOR: STRASS, C.F. PUB DATE: 1971

TITLE: RADIOACTIVE WASTES (LITERATURE REVIEW)

ABSTRACT: A NEW VOLUME IN THE PROGRESS IN NUCLEAR ENERGY SERIES CONTAINS FOUR CHAPTERS OF INTEREST - PRESENT STATUS OF RECOMMENDATIONS BY THE ICRP, NATIONAL COMMITTEE ON RADIATION PROTECTION, AND FEDERAL RESEARCH COUNCIL BY K.E. SOGARD, RADIATION QUANTITIES AND UNITS, BY L.S. TATICH; PROBLEMS OF HIGHLY ACTIVE WASTE MANAGEMENT, BY G.H. HADWICK AND J.R. COHEN; AND CONSEQUENCES OF RADIOACTIVE DISPOSALS INTO THE GROUND, BY C.A. HANSON.

PUB DESC: JOURNAL OF THE WATER POLLUTION CONTROL FEDERATION, 43(6), PAGE 1045-1048, FIGURES, TABLES, REFERENCES, (JUNE 1971)

KEYWORDS: BIOLOGY; STANDARDS; RADIATION (SEE ALSO REGULATION); GUIDE; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE TREATMENT, FIXATION; RADIATION UNIT; RIVER, COLUMBIA; WASTE MANAGEMENT; ION EXCHANGE; PRECIPITATION; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; SOLVENT EXTRACTION; REGULATION, FEDERAL; TOXICITY; BENEFICIAL USE

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AUTHOR: STRASS, C.F. PUB DATE: 1964

TITLE: LOW-LEVEL WASTES (TREATMENT, HANDLING, DISPOSAL)

CORPORATE AUTHOR: ROBERT A. TAPI SANITARY ENGINEERING CENTER

ABSTRACT: WASTES FROM NUCLEAR OPERATIONS FALL INTO TWO BROAD CATEGORIES--HIGH-LEVEL WASTES FROM CHEMICAL PROCESSING OF SPENT FUELS WHICH ARE STORED IN SPECIAL FACILITIES AND LOW-LEVEL WASTES WHICH ARISE IN ALL NUCLEAR ENERGY OPERATIONS AND IN SOME CASES ARE RELEASED INTO THE ENVIRONMENT. SINCE THE NEED FOR STRICT CONTROL OF THE HIGH-LEVEL WASTES IS RECOGNIZED, EVERY EFFORT IS MADE TO CONTAIN THESE WASTES AND TO AVOID ENVIRONMENTAL CONTAMINATION. THE RELEASE OF LOW-LEVEL WASTES MAY RESULT IN SOME RADIATION EXPOSURE TO MAN AND HIS SUBCORNINGS. THIS BOOK DESCRIBES TECHNIQUES OF HANDLING, TREATMENT, AND DISPOSAL OF THESE LOW-LEVEL WASTES AHEAD AT KEEPING RADIATION EXPOSURE TO A PRACTICABLE MINIMUM. IN THIS CONTEXT, WASTES ARE CONSIDERED LOW LEVEL IF THEY ARE RELEASED INTO THE ENVIRONMENT WITHOUT SUBSEQUENT CONTROL. THIS BOOK IS CONCERNED WITH PRACTICES RELATING ONLY TO CONTINUOUS OPERATIONS AND NOT TO ACCIDENTAL RELEASES OF RADIOACTIVE MATERIALS.

PUB DESC: TIF-20978 430 PAGES- 1964

KEYWORDS: DEPOSITION; EFFLUENT; GEOLOGY; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); MCHITON, GENERAL PRACTICE; HAZARD, RELATIVE; RIVER; SOIL, RADIONUCLIDE MOVEMENT THROUGH; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, RIVER; WASTE SOURCE AND TYPE; WASTE TREATMENT, GAS; GROUND WATES, NUCLEON OCCURRENCE; POPULATION EXPOSURE; SEDIMENT

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AUTHOR: STRASS, S.O. PUB DATE: 1973

TITLE: INDUSTRY ADOPTS SCIENTIONS TO PROBLEMS OF HIGH-LEVEL RADIOACTIVE-WASTE MANAGEMENT

ABSTRACT: RESPONSIBILITY FOR PROCESSING OF SPENT NUCLEAR FUEL FALLS WITHIN THE REALM OF PRIVATE INDUSTRY, NOT REGULATION BY ALC OF VITAL QUESTIONS IS KEY TO VIABILITY OF NEW COMMERCIAL PLANTS. THREE FUEL REPROCESSING FACILITIES, THEIR CAPACITIES, THE PROJECTED OUTFLOW, AND WASTE MANAGEMENT ARE DISCUSSED.

PUB DESC: POWER, 117(12), PP. 23-37 11 FIGURES, (DECEMBER 1973)

KEYWORDS: WASTE DISPOSAL; INDUSTRY; WASTE STORAGE; WASTE MANAGEMENT; DESIGN; FUEL REPROCESSING

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AUTHOR: STROINNESS, E.G.; CARRIGAN, P.H.; CHURCHILL, N.A.; COUSE, K.E.; MORTON, R.J.; NELSON, D.J.; PARRY, F.L. PUB DATE: 1967

TITLE: COMPREHENSIVE REPORT OF THE CLINCH RIVER STUDY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: SUMMARIZES THE STUDY MADE DURING THE PERIOD 1960-1964 OF THE EFFECT OF RELEASE OF RADIOACTIVE MATERIAL TO THE CLINCH RIVER AT OAK RIDGE NATIONAL LABORATORY BEGINNING IN 1943. THE STUDY WAS A JOINT EFFORT OF THE USAR, THE U. S. GEOLOGICAL SURVEY, THE U. S. PUBLIC HEALTH SERVICE, THE TENNESSEE VALLEY AUTHORITY, THE TENNESSEE DEPT. OF PUBLIC HEALTH, THE TENNESSEE STREAM POLLUTION CONTROL BOARD, THE TENNESSEE GAME AND FISH COMMISSION, AND THE OAK RIDGE NATIONAL LABORATORY.

PUB DESC: ORNL-4035, 126 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1967

KEYWORDS: CRUSTACEAN; DOSE; BIOTA; SURFACE WATER, NUCLEON OCCURRENCE; WASTE DISPOSAL, RIVER; DOSE CALCULATION, INTERNAL; MONITOR, ENVIRONMENTAL; ORNL; RIVER, CLINCH; WASTE MANAGEMENT; DOSE CALCULATION, INTERNAL; RIVER, TENNESSEE; RADIOBIOLOGY; CONCENTRATION; AQUATIC ORGANISM

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AUTHOR: STURBLEFIELD, F.E.; JACOBSON, E.B. PUB DATE: 1974

TITLE: IMPROVED CONTROL OF RADIOACTIVE WASTE AT HANFORD

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: HANFORD WASTE MANAGEMENT IS PURSUING A COURSE DESIGNED FOR AN IMPROVED POSTURE IN REGARD TO RADIOACTIVE WASTE WHICH IS AN INTERIM STEP IN SOME YET-TO-BE-DETERMINED, LONG-TERM DISPOSAL SCHEME.

PUB DESC: WASH-1315, 30 PAGES, 19 FIGURES, JUNE 1974

KEYWORDS: WASTE DISPOSAL, GAS; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; HANFORD SITE;

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AUTHOR: SUBODH NAJAN, N.S.; KUMRA, N.S.; THORAS, R.T. PUB DATE: 1972

TITLE: WASTE IMMOBILIZATION PLANT AT TARAPUR - A SURVEY OF PROCESS AND DESIGN FEATURES

CORPORATE AUTHOR: BHABHA ATOMIC RESEARCH CENTRE, BOMBAY (INDIA)

ABSTRACT: A SURVEY OF MAJOR FEATURES OF THE PLANT FOR IMMOBILIZATION OF THE HIGHLY RADIOACTIVE WASTES GENERATED AT THE FUEL REPROCESSING PLANT AT TARAPUR, DESIGNED TO REPROCESS SPENT FUELS FROM THE TARAPUR AND THE RAJASTHAN ATOMIC POWER STATIONS, IS PRESENTED. NATURE OF THE WASTES AND GLASS MATRICES USED FOR THEIR SOLIDIFICATION AND THEIR CHARACTERISTICS ARE DISCUSSED. PROCESS DETAILS AND DESIGN FEATURES OF THE FACILITY, WITH PARTICULAR REFERENCE TO THE PROCESS CELLS ARE REVIEWED. ALSO INCLUDED IS A GENERAL DESCRIPTION OF THE POST-PROCESS FACILITY FOR INTERIM STORAGE OF SOLIDIFIED WASTE PRODUCT CANISTERS UNDER CONTINUOUS SURVEILLANCE.

PUB DESC: CENF-721107, 19 PAGES, 1 TABLE, 9

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FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE
MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL
REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1,
1972

KEYWORDS: EFFLUENT; ELEMENTS AND ISOTOPES; OXIDE;
WASTE STORAGE; WASTE TREATMENT; WASTE TREATMENT;
FIXATION; WASTE SOURCE AND TYPE; WASTE TREATMENT;
SOLID; HIGH-LEVEL WASTE; GLASS (SEE ALSO
VITRIFICATION); INDIA; FUEL REPROCESSING; SURVEILLANCE
PROGRAM; SOLID

<370> PUB DATE: 1970
AUTHOR: SVABIC, A.; DOJIC, P.; JAKOVIC, O.

TITLE: CERTAIN ASPECTS OF THE MANAGEMENT OF
RADIOACTIVE LIQUID EFFLUENTS AT THE BORIS KIDRIC
INSTITUTE OF NUCLEAR SCIENCE, VIENNA, YUGOSLAVIA

CORPORATE AUTHOR: INSTITUT DES SCIENCES NUCLEAIRES
BORIS KIDRIC, VIENNA, YUGOSLAVIA

ABSTRACT: IN THIS COMMUNICATION, THE AUTHOR
PRESENTS THE DIRECTION AND RESULTS OF EXPERIMENTS AT
THE BORIS KIDRIC INSTITUTE OF NUCLEAR SCIENCE IN THE
MANAGEMENT OF RADIOACTIVE LIQUID WASTES. THE RESULTS
OF THEIR RELEASE TO THE ENVIRONMENT ARE DESCRIBED, AND A
PILOT PLANT FOR DECONTAMINATION OF THE EFFLUENT IS
DESCRIBED.

PUB DESC: SN-137/66, STI/PUB-264, COM-700905, 12
PAGES, 2 FIGURES, 12 REFERENCES, PAPER PRESENTED AT
THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND
INTERMEDIATE-LEVEL RADIOACTIVE WASTES,
AIX-LES-BAINS, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: DECONTAMINATION; RIVER, DANUBE; EFFLUENT;
IARN; WASTE TREATMENT; WASTE MANAGEMENT; YUGOSLAVIA

<371> PUB DATE: 1966
AUTHOR: TAGI, H.; LIN, E.E.

TITLE: FUNDAMENTAL STUDIES ON BEHAVIOR OF CESIUM IN
FIXATION OF RADIOACTIVITY IN CERAMIC SPONGES

CORPORATE AUTHOR: TOKYO INSTITUTE OF TECHNOLOGY

ABSTRACT: THE METHOD FOR DISPOSING OF
FISSION-PRODUCT WASTES FROM THE REPROCESSING OF THE
SHORT URANIUM FUELS IS THE FIXATION OF THE FISSION
PRODUCTS ON CERAMIC SPONGES, WHICH ARE THEN STORED
UNDERGROUND. THE FIXATION OF HIGH-LEVEL RADIOACTIVITY
IS DESCRIBED. STUDIES WERE MADE ON THE LEACHABILITY
FOR LONG-TERM UNDERGROUND STORAGE, MECHANISMS OF THE
FIXATION, AND ADSORPTIBILITY OF THE RADIOISOTOPES
CS-137. THE CONCLUSIONS ON THE BEHAVIOR OF CS-137 IN
THE FIXATION OF RADIOACTIVE WASTES IN CERAMIC SPONGES
ARE AS FOLLOWS - CERAMIC SPONGES HAVING 56 TO 65%
POROSITY WERE PREPARED FROM MATERIALS INCLUDING
DIATONITE, MONTONITE OR CLAY, AND FELDSPAR. THE
COMPOSITIONS FOUND TO BE PROMISING ARE 40 TO 70%
DIATONITE, 20 TO 30% MONTONITE, AND 10% FELDSPAR.

PUB DESC: BULL. TOKYO INST. TECHNOL. NO. 71, PAGES
1-66 (MARCH 1966)

KEYWORDS: CERAMICS; LEACHING; CLAY; CESIUM;
URANIUM; WASTE TREATMENT; FIXATION; WASTE DISPOSAL;
SOLID; FUEL ELEMENTS

<372> PUB DATE: 1972
AUTHOR: YAJIMA, E.

TITLE: ATOMIC ENERGY IN THE ENVIRONMENT

CORPORATE AUTHOR: BINKYO UNIVERSITY, TOKYO

ABSTRACT: WITH THE INCREASING DEMAND FOR ELECTRIC
POWER, THE ROLE OF NUCLEAR POWER HAS BECOME MORE AND
MORE IMPORTANT. BUT AS REGARDS POLLUTION, NUCLEAR
ENERGY IS NO EXCEPTION. IN ORDER TO RESPOND TO THIS
DEMAND IDEALLY, THE FOLLOWING THREE CONDITIONS MUST

BE SATISFIED: RADIOACTIVE WASTES MUST BE SAFELY AND
ECONOMICALLY TREATED AND DISPOSED; SAFETY OF
ENVIRONMENT MUST BE ASSURED; AND NATION-TO-
NATION AS WELL AS INTERNATIONAL UNDERSTANDING AND AGREEMENT ON THE
PRECEDING TWO POINTS MUST BE ACHIEVED. TREATMENT AND
DISPOSAL OF THE RADIOACTIVE WASTES ARE DIRECTLY
RELATED TO ENVIRONMENTAL PROBLEMS, BUT THESE PROBLEMS
REMAIN UNSOLVED, AND EVEN OVERLOOKED IN PRESENT
DEVELOPMENT PROGRAMS.

PUB DESC: ATOMS IN JAPAN, 16(5), PP. 35-47 (MAY
1972)

KEYWORDS: WASTE DISPOSAL; WASTE TREATMENT; WASTE
MANAGEMENT; JAPAN; ENVIRONMENT; SAFETY PRINCIPLES AND
PHILOSOPHY

<373> PUB DATE: 1969
AUTHOR: TANIUCHI, T.; ISHIGURO, T.

TITLE: WASTE DISPOSAL SYSTEM

ABSTRACT: WASTE DISPOSAL SYSTEMS FOR BWR PLANTS,
CONSTITUTING CIRCUITS INTRODUCING RADIOACTIVITY
DIRECTLY INTO TURBINE SYSTEMS, ARE GENERALLY
CONSTRUCTED IN LARGER SCALE THAN GENERAL DISPOSAL
SYSTEMS, IN VIEW OF THE MANAGEMENT OF RADIOACTIVITY
OVER THE WHOLE PLANT. FUNDAMENTAL CONCEPTS OF THE
SYSTEMS AS WELL AS THE IDEAS AND PROBLEMS CONCERNING
THEIR DESIGN ARE TREATED.

PUB DESC: ICSHIA REBYU, VOL. 24, PAGES 58-64
(JANUARY 1969) (IN JAPANESE)

KEYWORDS: REACTOR, BWR; DESIGN CRITERIA; REACTOR,
PWR; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; JAPAN

<374> PUB DATE: 1974
AUTHOR: TERPILAK, R.S.; JOHNSON, G.L.

TITLE: ENVIRONMENTAL RADIATION EFFECTS OF NUCLEAR
FACILITIES IN NEW YORK STATE

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION
AGENCY, OFFICE OF RADIATION PROGRAMS

ABSTRACT: THE ANNUAL QUANTITIES AND TYPES OF
RADIOACTIVE MATERIALS RELEASED FROM THREE OPERATING
NUCLEAR ELECTRIC GENERATING FACILITIES, A NATIONAL
LABORATORY, AND A NUCLEAR FUELS REPROCESSING FACILITY
ARE PRESENTED AND DISCUSSED. THE PERIOD OF INTEREST
SPANS THE YEARS 1969 THROUGH 1972 WITH SOME ADDITIONAL
DATA FOR THOSE FACILITIES OPERATING BEFORE 1969.
RELEASE QUANTITIES HAVE BEEN WELL CONTROLLED,
CONSIDERING THE NATURE AND VENTAGE OF THE OPERATIONS.
RESULTS OF ENVIRONMENTAL SURVEILLANCE REVEAL MOST
HEAVILY ON THE ACTIVITIES OF THE NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION, ARE
PRESENTED. OBSERVATIONS AT INDIAN POINT STATION UNIT
NO. 1 AND AT NUCLEAR FUEL SERVICES HAVE LED TO THE
DISCOVERY OF SEVERAL FACILITY-RELATED RADIOISOTOPES
IN ENVIRONMENTAL MEDIA. THESE TWO FACILITIES ARE OF
COMPARATIVELY EARLY VENTAGE, HAVE PRODUCED SLIGHTLY
LARGER AMOUNTS OF WASTE MATERIALS AND HAVE BEEN THE
SUBJECT OF MORE COMPREHENSIVE STUDIES THAN OTHERS IN
THE STATE. DOSE CONSEQUENCES TO HYPOTHETICAL
INDIVIDUALS ARE TO POPULATIONS WITHIN 50 MILES OF THE
FACILITIES ARE ADDRESSED. IT SHOULD BE STRESSED THAT
ALL INDIVIDUAL DOSES PRESENTED ARE HYPOTHETICAL.
DOSES VIA THE DRINKING WATER AND COW'S MILK PATHWAYS
ARE PARTICULARLY CONSERVATIVE. IN EACH CASE, THESE
HYPOTHETICAL DOSES ARE AT LEAST AN ORDER OF MAGNITUDE
70 MORE GREATER THAN THE KNOWN WORST CASE. NO
EXCESSIVE EXPOSURE LEVELS ARE KNOWN TO HAVE EXISTED.
ALL OPERATIONS HAVE RESULTED IN POSTULATED EXPOSURE
LEVELS WELL WITHIN APPLICABLE REGULATIONS OR
GUIDELINES, GENERALLY BEING A SMALL PERCENTAGE OF
THESE VALUES. POPULATION DOSES HAVE BEEN
SURPRISINGLY CONSISTENT THROUGH THE PERIOD OF
INTEREST. THEY ARE INSIGNIFICANT IN COMPARISON TO THE
DOSE TO THE REGULATION OF THE STATE FROM NATURAL OR
MEDICAL SOURCES. (AUTHOR)

PUB DESC: RADIATION DATA AND REPORTS, VOL. 15, NO.
1, JULY 1974. P. 375-400, 10 FIG., 32 TAB., 32 REF., 1

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AFFORD.

KEYWORDS: RADIATION; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); INVENTORY; INDIAN POINT 1 (IPWR); WATER, DRINKING; WASTEWATER; ENVIRONMENTAL EFFECT; IMPACT; POPULATION EXPOSURE; NEW YORK STATE; NUCLEAR POWER PLANTS; EFFLUENT; OPERATION; SURVEILLANCE; DISEASE; HYPOTHETICAL; WATER; MILE

<375>

PUB DATE: 1970
AUTHOR: THOMAS, E.T.; BALO, R.; KRAH, A.A.

TITLE: WASTE MANAGEMENT AT TROBRY - OPERATIONAL EXPERIENCE

CORPORATE AUTHOR: BHABHA ATOMIC RESEARCH CENTRE, MUMBAI (INDIA)

ABSTRACT: GIVES DETAILS OF A LIQUID-TREATMENT PLANT FOR LOW-ACTIVE WASTE WHICH HAS BEEN IN OPERATION SINCE JUNE 1966. CONSISTENTLY GOOD EFFICIENCIES HAVE BEEN OBTAINED WITH THIS PLANT, WHICH USES A CHEMICAL PRECIPITATION TECHNIQUE FOLLOWED BY ION EXCHANGE TREATMENT WITH VERMICULITE. THE PLANT HAS UNDERGONE SEVERAL MODIFICATIONS SINCE ITS COMMISSIONING. DETAILS OF THE MODIFICATIONS AND THE IMPROVEMENTS ACHIEVED ARE DISCUSSED. *** ACCOUNT IS ALSO GIVEN OF THE OPERATIONAL EXPERIENCE IN COLLECTION, TRANSPORTATION, AND STORAGE/DISPOSAL OF RADIOACTIVE WASTE.

PUB DESC: SN-137/30, STI/PWR-264, CONF-700905, 33 PAGES, 11 FIGURES, 7 REFERENCES. PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE LEVEL RADIOACTIVE WASTES, BRUXELLES-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: CHEMICAL REACTION; LOW-LEVEL WASTE; IAEA; TRANSPORTATION AND HANDLING; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; INDIA; ION EXCHANGE; PRECIPITATION; OPERATING EXPERIENCE

<376>

PUB DATE: 1963
AUTHOR: TONLISON, B.E.

TITLE: WASTE MANAGEMENT PROGRAM; CHEMICAL PROCESSING DEPARTMENT

CORPORATE AUTHOR: GENERAL ELECTRIC CO., RICHLAND, WASHINGTON. BARTFORD ATOMIC PRODUCTS OPERATION

ABSTRACT: ESSENTIALLY ALL THE FISSION PRODUCTS PRODUCED AT BARTFORD ARE CURRENTLY BEING STORED IN ABOUT SIXTY-FOUR MILLION GALLONS OF ALKALINE SLURRIES IN UNDERGROUND TANKS RANGING FROM EIGHT TO NINETEEN YEARS OLD. RESEARCH AND DEVELOPMENT PROGRAMS ARE BEING ACTIVELY PURSUED TO INCREASE THE CRYSTALLINITY OF COMPONENTS OF THESE RADIOACTIVE MATERIALS. THE PLANS PRESENTED HERE ARE BELIEVED TO BE OPTIMUM FOR BARTFORD, MAKING PRODUCTIVE USE OF THE ENVIRONMENTAL ADVANTAGES AND FACILITIES AVAILABLE.

PUB DESC: BN-76352, 58 PAGES, FEBRUARY 25, 1963

KEYWORDS: CONTAINER; UNDERGROUND; EFFLUENT; FISSION PRODUCT RELEASE; WASTE STORAGE; WASTE DISPOSAL; ECONOMICS; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; STORAGE CONTAINER; DISPERSION; SHELTERING; BARTFORD SITE; B AND D PROGRAM; GAS; LIQUID; SOLID

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PUB DATE: 1971
AUTHOR: TOTOTA, R.; MARAGUCHI, S.; SASADA, C.

TITLE: MANAGEMENT OF RADIOACTIVE EFFLUENTS FROM NUCLEAR POWER STATION CURRENTLY UNDER OPERATION IN JAPAN AND ENVIRONMENTAL MONITORING

CORPORATE AUTHOR: TOKYO ELECTRIC POWER COMPANY, INC., JAPAN; KANSAI ELECTRIC POWER COMPANY, INC., JAPAN; JAPAN ATOMIC POWER COMPANY, JAPAN

ABSTRACT: DISCHARGE OF RADIOACTIVE EFFLUENTS FROM NUCLEAR POWER PLANTS IN JAPAN IS GOVERNED REGULATED AND IS STIPULATED BASED UPON THE PERMISSIBLE VALUE OF ICRP RECOMMENDATION, BUT DESIGN AND OPERATION OF THESE PLANTS HAVE BEEN PERFORMED IN ACCORDANCE WITH THE BASIC PRINCIPLE OF AS LOW AS PRACTICABLE. AN OFF-GAS RELEASE LIMIT HAS BEEN DETERMINED SO AS TO KEEP THE ANNUAL EXPOSURE DOSE AT THE NATURAL BACKGROUND, FOR INSTANCE, BY ADOPTION OF THE OFF-GAS DECAY TANKS WITH A 16 HOURS HOLD UP CAPACITY AT OUR STATION. THE RADIOACTIVE LIQUID EFFLUENTS EXCEPT VERY LOW LEVEL EFFLUENTS HAVE BEEN SO SOLIDIFIED BY THE EVAPORATOR AND THEREFORE HAVE NOT BEEN DISCHARGED TO THE SEA WITH DUE CONSIDERATION GIVEN TO ITS POSSIBLE CONCENTRATION EFFECTS ON AQUATIC LIFE.

PUB DESC: A/CONF-69/7/253, CONF-710901-96, 10 PAGES, 1 TABLE, FROM THE FOURTH UNITED NATIONS INTERNATIONAL CONFERENCE OF THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, SEPTEMBER 6-16, 1971

KEYWORDS: STANDARDS, RADIATION (SEE ALSO REGULATION); ENVIRONMENT; DOMESTIC; EFFLUENT; REGULATION (SEE ALSO 5 IRRADIATION, RADIATION); WASTE DISPOSAL; WASTE STORAGE; REACTOR, POWER; MONITOR, ENVIRONMENTAL; WASTE MANAGEMENT; ICRP; JAPAN; AQUATIC ORGANISM; RADIATION EFFECT

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PUB DATE: 1972
AUTHOR: TRICE, V.C.; WALTON, D.D.

TITLE: PLANNING FOR THE MANAGEMENT OF RADIOACTIVE WASTE FROM PROCESSING OF FUEL IN ARC PROGRAMS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF WASTE MANAGEMENT AND TRANSPORTATION

ABSTRACT: THE FIRST EDITION OF THE PLAN FOR THE MANAGEMENT OF THE ARC'S WASTE (WASH-1202) WAS PUBLISHED IN JANUARY 1972. THIS PAPER DISCUSSES THE REASONS FOR THE PLAN, THE PROCEDURES USED IN ITS PREPARATION, ITS ROLE IN THE DEFINITION, SCHEDULING, AND FUNDING OF WASTE MANAGEMENT ACTIVITIES, AND THE PROVISIONS FOR UPDATING THE PLAN PERIODICALLY.

PUB DESC: CONF-721107, 10 PAGES, 3 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: ADMINISTRATIVE CONTROL; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE SOURCE AND TYPE; WASTE MANAGEMENT; FUEL REPROCESSING; AGENCY, ARC (SEE ALSO USARC); FUEL CYCLE; FUEL ELEMENTS

<379>

PUB DATE: 1970
AUTHOR: TSUTSUMI, T.; KAWAGUCHI, A.; KOTAWAKA, I.; SHIMIZU, H.; KISHIMOTO, S.; YOKOCHI, S.; OSHIMAKI, K.; KITAGAWA, I.; OGINO, K.; KAWA, I.

TITLE: MANAGEMENT OF RADIOACTIVE LIQUID AND SOLID WASTES

CORPORATE AUTHOR: KYOTO UNIVERSITY, JAPAN

ABSTRACT: THE RADIOACTIVE WASTE TREATMENT PLANT OF THE RESEARCH REACTOR INSTITUTE (KYOTO UNIVERSITY) HAS BEEN OPERATED SINCE JUNE 1964. IN 1968, 2000 M3 OF LOW- AND VERY-LOW-LEVEL LIQUID WASTES 10(-3M)-10(-6M) MICROCi/ML AND 1000 KG SOLID WASTES WERE PRODUCED AS A RESULT OF THE REACTOR OPERATION AND RESEARCH WORKS. THE WASTES ARE GRADUALLY INCREASED IN QUANTITY AND TOTAL ACTIVITY, BUT THE ACTIVITY LEVELS OF LOW- AND VERY-LOW-LEVEL LIQUID WASTES SHOW ALMOST CONSTANT. IN THIS PAPER, THE MANAGEMENT OF RADIOACTIVE LIQUID AND SOLID WASTES DURING THE PAST 5 YEARS (JUNE OF 1964 TO MARCH OF 1969) ARE REVIEWED.

PUB DESC: RU81-78-81, 14 PAGES, OCTOBER 7, 1970

KEYWORDS: REACTOR, RESEARCH (SEE ALSO B AND D PROGRAM); LOW-LEVEL WASTE; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; JAPAN; OPERATING EXPERIENCE

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PUB DATE: 1970

AUTHOR: TYROCHNICE, S.; TOMOCISE, U.

TITLE: ACTUAL STATUS OF RADIOACTIVE WASTE TREATMENT AT THE INSTITUTE OF NUCLEAR RESEARCH, POLAND

CORPORATE AUTHOR: INSTITUTE OF NUCLEAR RESEARCH, WARSAW (POLAND)

ABSTRACT: THE PROBLEM OF RADIOACTIVE WASTE IN OUR COUNTRY BECAME AFTER THE FIRST NUCLEAR REACTOR HAD BEEN PUT INTO OPERATION, AND CONSEQUENTLY, THE PRODUCTION AND WIDER UTILIZATION IN SCIENCE AND ECONOMY HAD BEEN INITIATED. IN 1969, THE RADIOACTIVE WASTE TREATMENT DIVISION WAS ESTABLISHED IN THE INSTITUTE OF NUCLEAR RESEARCH AT WARSAW WITH THE SCOPE OF THE TRANSPORT ORGANIZATION, PROCESSING AND STORAGE OF RADIOACTIVE WASTES, AND RESEARCH AND EXPERIMENTAL WORK ON THE TREATMENT OF RADIOACTIVE WASTES. FOR MANAGEMENT OF WASTES, THE PRECIPITATION RADIOISOTOPES WITH CALCIUM BIOSOPHITS AND PERDIC HYDROXIDE, AND COPPER FERMOXYANIDE, CONCENTRATION BY EVAPORATION PROCESS, AND CONCRETE OF SLUDGES AND CONCENTRATES WERE USED.

PUB DESC: INR-1165, 41 PAGES, 1970

KEYWORDS: WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; POLAND

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PUB DATE: 1972

AUTHOR: ULLMANN, U.; SCHUBERT, F.; SCHWARZBACH, R.

TITLE: REMOVAL OF RADIOACTIVE AEROSOLS AND GASES FROM EXHAUST AIR

CORPORATE AUTHOR: NATIONAL CENTRE FOR RADIATION PROTECTION OF THE GDR

ABSTRACT: THE SEPARATION OF RADIOACTIVE AEROSOLS, GASES AND VAPOURS FROM EXHAUST AIR OF NUCLEAR PLANTS IS OF GREAT IMPORTANCE WITH REGARD TO ENVIRONMENTAL PROTECTION. A REVIEW OF THE PROBLEMS OF PURIFICATION OF EXHAUST AIR IS GIVEN. THE STAGE OF DEVELOPMENT AND THE MAIN TRENDS OF REMOVAL OF RADIOACTIVE AEROSOLS, RADIOISOTOPES AND RADIOACTIVE NERVE GASES ARE DEALT WITH. FROM THIS IT IS CONCLUDED THAT THE TECHNICAL CONDITIONS PERMIT A SUFFICIENT PROTECTION OF THE ENVIRONMENT OF NUCLEAR POWER STATIONS AND REPROCESSING PLANTS. FOR THE FUTURE A FAVOURABLE PROGNOSIS CAN BE GIVEN TOO. (IN GERMAN)

PUB DESC: SIS-142, 14 PAGES, 5 TABLES, 2 FIGURES, 30 REFERENCES, PP. 1-14, SEPTEMBER 1972

KEYWORDS: DECONTAMINATION; AIR; FISSION GAS RELEASE; IODINE; KRYPTON (SEE ALSO NOBLE GAS); NOBLE GAS; ATMOSPHERIC POLLUTION; IENOW; REACTOR, POWER; WASTE TREATMENT; GAS; POPULATION EXPOSURE; AEROSOL, RADIOACTIVE; RADIATION SAFETY AND CONTROL; SAFETY EVALUATION; FUEL REPROCESSING; GAS

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PUB DATE: 1964

AUTHOR: UNITED KINGDOM ATOMIC ENERGY

TITLE: TENTH ANNUAL REPORT 1963-64 - FOR THE PERIOD 1ST APRIL, 1963-31ST MARCH, 1964

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY

ABSTRACT: THIS TENTH ANNUAL REPORT INCLUDES INFORMATION ON DISPOSAL OF HIGHLY RADIOACTIVE WASTE FROM REACTOR SYSTEMS AND HEALTH AND SAFETY RESEARCH. CHAPTER I, ON HEALTH AND SAFETY, EMBODIES STUDIES ON PROTECTION OF THE GENERAL PUBLIC, REACTOR AND PLANT SAFETY, EXPERIMENTAL AND THEORETICAL CRITICALITY STUDIES, AND FALLOUT.

PUB DESC: BP-14220- HNSO 89 PAGES, 1 FIGURE- JULY 15, 1964

KEYWORDS: CRITICALITY SAFETY; FALLOUT; WASTE DISPOSAL; SAFETY PROGRAM

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PUB DATE: 1966

AUTHOR: VAN DER, G.C.

TITLE: RADIOACTIVE WASTE DISPOSAL AND INVESTIGATIONS ON TURBULENCE DIFFUSION IN THE NETHERLANDS COASTAL AREAS.

PUB DESC: SM-72/14, COMP-640507, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS 2 PAGES 233-240 1966

KEYWORDS: DIFFUSION; WASTE DISPOSAL; WATER; NETHERLANDS; RADIOISOTOPE

<304>

PUB DATE: 1970

AUTHOR: VAN DE VOODE, H.; CASTILLON, G.E.; DE BAKKER, C.; D'ILLIUX, L.; SPIRIS, R.

TITLE: LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE MANAGEMENT IN BELGIUM AND IN PARTICULAR AT MOL

CORPORATE AUTHOR: BELGOMUCLEAIRE, MOL, BELGIUM

ABSTRACT: REPORTS PROBLEMS OF SOIL CHARACTERISTICS AND HYDROLOGICAL SIGNIFICANCE IN WASTE DISPOSAL. ALSO GIVEN IS A SUMMARY OF THE VARIOUS METHODS OF ACCUMULATION, TREATMENT, AND DISPOSAL OF RADIOACTIVE WASTES IN BELGIUM. OPERATING RESULTS OVER THE PAST SEVERAL YEARS ARE GIVEN.

PUB DESC: SM-137/53, STI/PUB-264, COMP-760905, 30 PAGES, 14 FIGURES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; BELGIUM; WASTE TRANSPORTATION; WASTE MANAGEMENT; CENTRE D'ETUDES NUCLEAIRES (CEA); OPERATING EXPERIENCE

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PUB DATE: 1967

AUTHOR: VALQUEZ BARTE, R.; DIAVO SUAREZ, R.

TITLE: ASSESSMENT OF THE VARIOUS FACTORS GOVERNING THE SITING OF A RADIOACTIVE WASTE BURIAL GROUND FOR THE MEXICAN NATIONAL NUCLEAR ENERGY COMMISSION

CORPORATE AUTHOR: COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO

ABSTRACT: REGIONS IN THE BACKGROUND OF MEXICO CITY WERE STUDIED WITH A VIEW TO FINDING SUITABLE SITES FOR A RADIOACTIVE-WASTE BURIAL GROUND. EACH REGION WAS ASSESSED FROM THE VIEWPOINTS OF LACKS OF COMMUNICATION, AIRFALL, PRE-INITIAL POPULATION CENTERS, PREVAILING WINDS AND THEIR VELOCITY, LIABILITY TO EARTHQUAKES, SOIL-SOIL STRUCTURE, FERTILITY, AND IN GENERAL ALL THE FACTORS WHICH MIGHT MAKE IT DESIRABLE OR UNDESIRABLE FOR HABITATION IN THE NEAR FUTURE. AFTER ASSESSMENT OF THE VARIOUS TECHNICAL, ECONOMIC, ADMINISTRATIVE, AND LEGAL ASPECTS AND CONSIDERATION OF THE POSSIBLE DISPERSAL OF RADIOACTIVE ELEMENTS INTO VARIOUS MEDIA, THE SITES MOST SUITABLE WERE PROPOSED.

PUB DESC: STI/PUB-156, COMP-670512, PAGES 367-42 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: LAW; MEXICO; DEMOGRAPHY (SEE ALSO POPULATION); ASSESSMENT; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); WASTE DISPOSAL, ECONOMIC; SITE CLIMATOLOGY; WASTE DISPOSAL, SOIL; POPULATION EXPOSURE; WASTE MANAGEMENT; PRECIPITATION; RADIATION SAFETY AND CONTROL; SOIL; METEOROLOGY (SEE ALSO AIR); SITING

<306>

PUB DATE: 1958

AUTHOR: VOPESS, R.E.; DAVIS, T.F.; HURDARD, T.W.

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TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL. AN ANNOTATED BIBLIOGRAPHY OF SELECTED LITERATURE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THIS ANNOTATED BIBLIOGRAPHY CONTAINS 690 REFERENCES TO UNCLASSIFIED REPORTS. REFERENCES INCLUDED COVER INFORMATION ON CURRENT AND PROPOSED RADIOACTIVE WASTE PROCESSING AND DISPOSAL PRACTICES FOR SOLUTIONS FROM RADIOCHEMICAL PROCESSING PLANTS AND LABORATORIES, DECONTAMINATION OF SURFACES, AIR CLEANING, AND OTHER RELATED SUBJECTS. AUTHOR, CORPORATE AUTHOR, SUBJECT, AND REPORT-NUMBER INDEXES ARE INCLUDED.

PUB DESC: TID-3311, 123 PAGES, 1958

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ECOLOGY; GEOLOGY; WASTE DISPOSAL; WASTE TREATMENT; HYDROLOGY; RADIOISOTOPE; RADIATION EFFECT

<307>

PUB DATE: 1961

AUTHOR: WALDICHOE, H.

TITLE: SEDIMENTATION OF RADIOACTIVE WASTES IN THE SEA.

PUB DESC: WP-9905, FISHERIES RESEARCH BOARD OF CANADA, GENERAL SERIES CIRCULAR 59 PAGES 1-96 IN 1961

KEYWORDS: ELEMENTS AND ISOTOPES; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL; ION EXCHANGE; RADIOISOTOPE; SEDIMENT; TRANSPORT

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PUB DATE: 1972

AUTHOR: VALLANDER

TITLE: RADIOACTIVE WASTE MANAGEMENT

ABSTRACT: AUTHOR REVIEWS TOPIC AND PRESENT STATE OF THE ART. NOTES THAT ALL INDUSTRIAL AND DOMESTIC PROCESSES GIVE RISE TO WASTE PRODUCTION. CONCERNING RADIATION, MAN HAS ALWAYS BEEN EXPOSED TO NATURAL SOURCES; IN LAST 2 DECADES MAN-INDUCED RADIATION HAS CONTRIBUTED ADDITIONALLY, E.G., TO MARINE ENVIRONMENT FROM NUCLEAR EXPLOSIONS AND SOME 100'S OF MEGACURIES AND TEN THOUSAND KILOCURIES FROM NUCLEAR OPERATIONS. HOWEVER, TOTAL NATURAL ACTIVITY IN MARINE ENVIRONMENT IS ESTIMATED AT 500,000 MEGACURIES. CONTRIBUTION FROM N-POWER, I.E., WASTE DISPOSAL, IS INSIGNIFICANT. BUT FUTURE POLICIES REGARDING THAT PRESENT PRACTICES DO NOT HAVE UNSOLVED PROBLEMS FOR FUTURE GENERATIONS. TO DATE THERE IS NO EVIDENCE OF UNACCEPTABLE CONTAMINATION OF THE ENVIRONMENT. PUBLIC HEALTH AUTHORITIES HAVE STRAS TO REGULATE. USE OF SEA, INTERNATIONAL DIVERS, AND MUTUAL SOLUTIONS BY NEIGHBORING COUNTRIES CLEARLY CALL FOR CLOSE COOPERATION.

PUB DESC: IAEA BULLETIN, 10(2), PP. 33-40 (APRIL 1972)

KEYWORDS: WASTE DISPOSAL; POPULATION EXPOSURE; WASTE MANAGEMENT; INTERNATIONAL (SEE ALSO ORGANIZATION); RADIATION EXPOSURE; INDUSTRY, NUCLEAR; SOCIAL PHILOSOPHY; FUEL CYCLE

<309>

PUB DATE: 1973

AUTHOR: VERBAAND, G.; RHODES, T.B.

TITLE: A COMPUTERISED RADIOACTIVE WASTE MANAGEMENT INFORMATION SYSTEM

ABSTRACT: A COMPUTERISED WASTE MANAGEMENT INFORMATION SYSTEM HAS BEEN UTILIZED AT THE NATIONAL REACTOR TESTING STATION, IDAHO, SINCE JANUARY 1972. THIS SYSTEM SERVES AS THE OFFICIAL RECORD OF ALL TYPES OF RADIOACTIVE WASTES STORED OR DISPOSED AT THE DFTS. THE INPUT DATA FROM EACH GENERATOR OF RADIOACTIVE WASTES IS RECORDED ON A SPECIALLY DESIGNED FORM. THIS FORM WAS DESIGNED TO MINIMIZE MANUAL CALCULATIONS AND

TO MAXIMIZE FLEXIBILITY IN REPORTING PROCEDURES. CONTRACTORS FROM FOUR AEC OPERATIONS OFFICES MONTHLY REPORT INFORMATION ON AIRBORNE, LIQUID AND SOLID RADIOACTIVE MATERIAL STORED OR DISPOSED AT THE DFTS.

KEYWORDS: COMPUTER PROGRAM; INFORMATION; DECAY HEAT; DFTS; WASTE DISPOSAL; WASTE STORAGE; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; ENERGY LEVEL; RECORDS

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PUB DATE: 1970

AUTHOR: WEST, P.J.

TITLE: OPERATIONAL EXPERIENCE IN THE HANDLING, TREATMENT, AND DISPOSAL OF RADIOACTIVE WASTES OF A RESEARCH AND DEVELOPMENT ESTABLISHMENT

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ALDERMASTON

ABSTRACT: REVIEWS OPERATIONAL EXPERIENCE IN THE HANDLING, PROCESSING, AND DISPOSAL OF RADIOACTIVE WASTES AT AERE, ALDERMASTON. MUCH OF THE WORK OF THE ESTABLISHMENT IS CONCERNED WITH LONG-LIFE ALPHA RADIOACTIVE MATERIALS, AND THESE FORM THE PRINCIPAL COMPONENTS OF THE WASTES FOR DISPOSAL. THE HAZARDS ASSOCIATED WITH THE HANDLING AND TREATMENT OF THE WASTES ARE THEREFORE MAINLY THOSE RELATED TO SUCH MATERIALS, ALTHOUGH THERE ARE SOME WASTES WITH A RADIATION HAZARD ARISING FROM THE OPERATION OF A 5 MEGAWATT LIGHT-WATER MODERATED RESEARCH REACTOR AND OTHER NUCLEAR ASSEMBLIES.

PUB DESC: SR-137/8, ST/PWR-240, COM-700905, 21 PAGES, 5 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, Aix-en-Provence, France, September 7-11, 1970

KEYWORDS: IAEA; REVIEW; UNITED KINGDOM; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT; OPERATING EXPERIENCE

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PUB DATE: 1972

AUTHOR: VICKS, G.

TITLE: A SALT GRAVEYARD FOR NUCLEAR WASTES

ABSTRACT: BY THE END OF THE CENTURY NUCLEAR POWER STATIONS WILL CREATE ENOUGH RADIOACTIVE WASTE EFFECTIVELY TO DESTROY LIFE ON EARTH. HOW TO DISPOSE OF THIS WASTE IS STILL AN OPEN QUESTION, BUT SOME NUCLEAR SCIENTISTS BELIEVE THAT THEY CAN SAFELY STOVE IT AWAY FOR BILLIONS OF YEARS IN BEDDED SALT DEPOSITS FOUND IN MANY COUNTRIES AROUND THE WORLD.

PUB DESC: NEW SCIENTIST, 53(787), PP. 507-509 (MARCH 16, 1972)

KEYWORDS: CONGRESSIONAL ACTIVITY; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSURE, AND POPULATION RESPONSE); WASTE STORAGE; WASTE DISPOSAL, SOLID; RADIATION SAFETY AND CONTROL; RADIATION, PUBLIC EDUCATION; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; SAFETY EVALUATION; POPULATION RESPONSE; AGENCY, AEC (SEE ALSO USARC); PUBLIC RELATIONS

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PUB DATE: 1967

AUTHOR: VITKOSKI, E.J.; WABNERSCHNIDT, J.P.

TITLE: THE DISPOSAL OF RADIOACTIVE LIQUID AND GASEOUS WASTE AT OAK RIDGE NATIONAL LABORATORY, DECEMBER 1966

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THIS REPORT, WHICH DESCRIBES THE ORNL RADIOACTIVE-WASTE-DISPOSAL SYSTEMS, IS A REVISION OF A SIMILARLY TITLED REPORT (OR-202) ISSUED IN 1962. SINCE THAT DATE, GROWTH OF THE LABORATORY HAS EXTENDED THE WASTE-DISPOSAL SYSTEMS AND THE ACCOMPANYING MONITORING DFTS TO THE NEW FACILITIES IN MELTON VALLEY. THE WHOLE CONCEPT OF INTERMEDIATE-LEVEL

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WASTE-DISPOSAL HAS CHANGED WITH THE ELIMINATION OF SOIL DISPOSAL PITS AND TRENCHES IN FAVOR OF DEEP-Well INJECTION OF AN EVAPORATOR CONCENTRATE. INCREASED DEMAND ON THE SYSTEMS HAS RESULTED IN CONTINUAL UPGRADING AND REPLACEMENT OF EQUIPMENT AND CHANGES IN OPERATING PROCEDURES. IN THIS REPORT AN EFFORT HAS BEEN MADE TO INCLUDE THE SIGNIFICANT CHANGES SEEN IN THE AREA OF WASTE DISPOSAL BY OBNL DURING THESE YEARS.

PUB DESC: OBNL-TN-1032, 53 PAGES, 10 FIGURES, REFERENCES, AUGUST 1967

KEYWORDS: WASTE DISPOSAL, ATMOSPHERIC; DEEP WELL (SEE ALSO WASTE DISPOSAL, DEEP WELL); INTERMEDIATE-LEVEL WASTE; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT; WASTE DISPOSAL, FIVE; OBNL; WASTE DISPOSAL, GAS; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE DISPOSAL, HYDRAULIC FRACTURING; MONITORING PROGRAM, ENVIRONMENTAL

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PUB DATE: 1968

AUTHOR: YUDIN, F.P.; PINENOV, S.K.; NAZAROV, A.I.; ZAKHAROV, S.I.; METALNIKOV, S.V.; SEMOV, V.N.

TITLE: EXPERIENCE IN BURIAL OF LIQUID RADIOACTIVE WASTES IN DEEP GEOLOGICAL FORMATIONS

ABSTRACT: INVESTIGATIONS WERE CONDUCTED ON INDUSTRIAL SCALES ON THE DISPOSAL OF LIQUID RADIOACTIVE WASTES INTO THE PLUTONIC FORMATIONS OF THE EARTH'S CRUST. THE EQUIPMENT SETUP AND THE MONITORING SYSTEM ASSURED THE UNINTERRUPTED FUNCTIONING OF THE INSTALLATION. THE ACCELERATING ABILITY OF THE FLOWING BOREHOLE, FOLLOWING THE STARTING-ADJUSTMENT PERIOD, WAS ESTABLISHED AS EQUALLING 1.2 M/DAY OF EXCESS PRESSURE. THE INVESTIGATIONS INDICATE THAT UNDER FAVORABLE HYDROGEOLOGICAL CONDITIONS, THE DISPOSAL OF RADIOACTIVE WASTES INTO THE PLUTONIC FORMATIONS CAN BE CONDUCTED ON AN INDUSTRIAL SCALE. BASED ON THE TECHNICAL-ECONOMIC CALCULATIONS AND THE OPERATING EXPERIENCE, IT WAS ESTABLISHED THAT THE UNDERGROUND BURIAL OF WASTES HAS ECONOMIC ADVANTAGES VIS-A-VIS THE EVAPORATION TECHNIQUE.

PUB DESC: JPNS-06535, 10 PAGES, 2 FIGURES, 10 REFERENCES, AUGUST 1968

KEYWORDS: GEOLOGY; GROUND WATER; HYDRAULIC FRACTURING; WASTE DISPOSAL, ECONOMICS; WASTE DISPOSAL, LIQUID; HYDROLOGY; OSSA; WASTE DISPOSAL, HYDRAULIC FRACTURING; MONITORING SYSTEM, RADIATION

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PUB DATE: 1971

AUTHOR: YUSA, H.; KAKITA, K.; MURATA, T.; MATSUSHI, T.; SUGIMOTO, S.; KADOTA, S.

TITLE: STUDIES ON THE FACTORIAL OF OCEAN AND ATMOSPHERE FROM CONTAMINATION BY RADIOACTIVE WASTE DISPOSAL

CORPORATE AUTHOR: EBARA MANUFACTURING COMPANY, TOKYO, JAPAN; HITACHI RESEARCH LABORATORY, JAPAN; IGUCHI REACTOR AND NUCLEAR FUEL DEVELOPMENT CORPORATION, JAPAN

ABSTRACT: STUDIES HAVE BEEN CARRIED OUT ON THE SOLIDIFICATION METHOD AND ON THE IMLEACHABILITY OF THE SOLIDIFIED PRODUCTS OF THE RADIOACTIVE CONCENTRATES FROM EVAPORATORS AND CHEMICAL SLAGS CONTAINING VARIOUS RADIONUCLIDES. ESPECIALLY, AN INTENSIVE STUDY WAS INITIATED FOR THE ASSURED DEEP SEA DUMPING DISPOSAL AND VARIOUS LEACHING TESTS BY SIMULATED HIGH PRESSURE AND LOW TEMPERATURE DEEP SEA WATER WERE CONDUCTED. IN THE FOLLOWING REPORT, PART I, A SERIES OF TEST RESULTS WITH CS-137, AS PART OF THE EXPERIMENTAL STUDIES ARE SUBMITTED. IN PART II, A SUMMARY OF THE EXPERIMENTAL STUDIES IN LINE WITH EFFORTS ON REDUCING THE ACTIVITIES TO BE RELEASED FROM THE OFF-GAS SYSTEMS OF A NUCLEAR REACTOR ARE PRESENTED.

PUB DESC: A/CONF-09/P/256, 25 PAGES, 10 FIGURES, 4 TABLES, FROM THE FOURTH UNITED NATIONS INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, SEPTEMBER 6-16, 1971

KEYWORDS: DESIGN; LEACHING; ECOLOGY; EFFLUENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, OCEAN; REACTOR, POWER; DEWITT, ENVIRONMENTAL; POPULATION EXPOSURE; WASTE MANAGEMENT; JAPAN; GAS; CONCENTRATION; FOOD CHAIN; AQUATIC ORGANISM

<395>

PUB DATE: 1969

AUTHOR: ZIEGLER, E.

TITLE: SOME PROBLEMS OF THE DISCHARGE OF RADIOACTIVE GASEOUS WASTES AND AEROSOLS FROM NUCLEAR INSTALLATIONS

CORPORATE AUTHOR: STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ, GERMANY

ABSTRACT: ON THE BASIS OF A MODEL FUTURE POSSIBILITIES FOR THE DISCHARGE OF GASEOUS RADIOACTIVE WASTES FROM NUCLEAR INSTALLATIONS AND FUEL REPROCESSING PLANTS ARE EVALUATED. THE NECESSITY OF DECREASING THE SPECIFIC RADIOACTIVE DISCHARGES IS POINTED OUT TAKING INTO CONSIDERATION THE INCREASING NUMBER OF NUCLEAR INSTALLATIONS AND THUS THE INCREASING PART OF THE POPULATION LIVING IN THE ENVIRONMENT OF SUCH INSTALLATIONS. THE PROBLEM OF THE DISCHARGE OF KR-85 IS DISCUSSED IN DETAIL. THE DISCHARGE OF KR-85 MUST OCCUR WITH REGARD TO THE MAXIMUM PERMISSIBLE EXPOSURE IN THE ENVIRONMENT OF THE INSTALLATION, THE MAXIMUM PERMISSIBLE CONCENTRATION IN FRESH AIR CROSSING AIR MASSES AND THE CAPACITY OF THE TOTAL ATMOSPHERE. IN THE GERMAN DEMOCRATIC REPUBLIC IT IS NECESSARY TO PROVIDE INSTALLATIONS CAPABLE OF STORING THE KR-85 ORIGINATED IN REPROCESSING PLANTS.

PUB DESC: SZS-17/69, 16 PAGES, 1 FIGURE, 2 TABLES, 12 REFERENCES, DECEMBER 1969 (IN GERMAN)

KEYWORDS: WASTE DISPOSAL, GAS; KRYPTON (SEE ALSO NITRILE GAS); FUEL REPROCESSING; AEROSOL, RADIOACTIVE; GERMANY; RADIOCHEMICAL PLANT SAFETY

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PUB DATE: 1970

TITLE: NUCLEAR DECONTAMINATION AND LOW-LEVEL WASTES

ABSTRACT: PRESENTS ABSTRACTS OF 5 PAPERS WITH THE FOLLOWING TITLES: (1) CONSIDERATIONS FOR TOTAL NUCLEAR PLANT DECONTAMINATION, (2) DECONTAMINATION OF OBSOLETE PROCESSING FACILITIES AT HANFORD, (3) DEMOLITION OF RADIOACTIVE AND CONTAMINATION CONCRETE STRUCTURES BY USE OF EXPLOSIVES, (4) THE HANFORD DECONTAMINATION FACILITY, AND (5) SHIPMENT AND DISPOSAL OF LOW-LEVEL WASTES.

PUB DESC: AMERICAN NUCLEAR SOCIETY, VOL. 10, PP. 77-81, PRESENTED AT THE 1970 ANNUAL MEETING, HELD IN PHILADELPHIA, PENNSYLVANIA, JUNE 23-27, 1970

KEYWORDS: CONCRETE; LOW-LEVEL WASTE; DECONTAMINATION; EXPLOSION; WASTE DISPOSAL; WASTE TRANSPORTATION; HANFORD SITE

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PUB DATE: 1970

TITLE: WASTE MANAGEMENT AND THE EFFECT ON THE FUEL CYCLE

ABSTRACT: PRESENTS 600 WORD ABSTRACTS OF SEVEN PAPERS PRESENTED AT THIS SESSION OF THE MEETING. TOPICS INCLUDE STORAGE FOR ANALYSIS FOR COMMERCIAL HIGH-LEVEL WASTES, WASTE DISPOSAL UTILIZING A GASEOUS-CORE REACTOR, WASTE MANAGEMENT ASSESSMENT, REFINITION OF WASTES AT KADLSBURG, IMMOBILIZATION OF SPENT-CLADDING BULLS BY CONVERSION TO SILICATE FORMS, HALF-DAY ANALYSIS OF THE SIMULATED RELEASE OF HIGH-LEVEL NUCLEAR WASTE DURING UNDERGROUND GEOLOGIC STORAGE, AND THERMAL SPECTRUM REACTORS - A SPENT FUEL AFTERMATH COMPARISON.

PUB DESC: AMERICAN NUCLEAR SOCIETY, VOL. 19, PP. 203-209 (OCTOBER 1970)

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SYNOPSIS: DUCT HEAT; ASPHALT; ECONOMICS (SEE ALSO WASTE DISPOSAL, RADIOACTIVITY); WASTE DISPOSAL; WASTE STORAGE; WASTE MANAGEMENT; REVIEW; FUEL CYCLE

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PUB DATE: 1974

TITLE: RESEARCH METHODS ON SANITARY-HYGEOLOGICAL AND RADIATION CONDITIONS FOR SAFETY OF BURNING RADIOACTIVE WASTES IN SALT FORMATIONS

ABSTRACT: A CONFERENCE OF SPECIALISTS ON PROBLEMS IN IMPROVING METHODS OF BURNING RADIOACTIVE WASTES IN GEOLOGICAL FORMATIONS OCCURRED FEBRUARY 5-9, 1974, IN PRIBREZHE (USSR). THE PROJECT DEVISED BY GDR SPECIALISTS, 'RESEARCH METHODS ON SANITARY-HYGEOLOGICAL AND RADIATION CONDITIONS FOR SAFETY OF BURNING RADIOACTIVE WASTES IN SALT FORMATIONS,' AND ONE PREPARED BY CZECHOSLOVAK SPECIALISTS, 'RESEARCH METHODS ON FOLLOWING RADIATION SAFETY FOR IN AIS SITE BEGINS WITH RESPECT TO POSSIBLE ACCIDENTS IN SURFACE DEPOSITS,' WERE DISCUSSED.

PUB DESC: SOVIET ATOMIC ENERGY, 1 PAGE, 36 (6) (DEC. 1974)

KEYWORDS: USSR; WASTE DISPOSAL, SALT; REVIEW

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PUB DATE: 1974

TITLE: RADIOACTIVE EFFLUENTS FROM NUCLEAR POWER STATIONS IN THE COMMUNITY

CORPORATE AUTHOR: COMMISSION OF THE EUROPEAN COMMUNITIES, LUXEMBOURG

ABSTRACT: THIS REPORT SUMMARIZES FOR 1969, 1970, 1971 AND 1972 THE ACTIVITIES OF GASEOUS AND LIQUID WASTE DISCHARGED FROM NUCLEAR POWER STATIONS IN THE COMMUNITY OF SIX AND THOSE RUN BY THE CENTRAL ELECTRICITY GENERATING BOARD IN GREAT BRITAIN. IT ALSO GIVES THE TYPICAL COMPOSITION OF RADIOISOTOPES IN THE GASES DISCHARGED BY THE VARIOUS POWER STATIONS. IN THE CASE OF LIQUID EFFLUENTS, IN ADDITION TO LISTING THE RADIOISOTOPES IDENTIFIED IN 1972, THE REPORT INDICATES THE METHODS OF ACTIVITY ASSESSMENT USED AND ALSO THE FRACTION OF THE VARIOUS PERMISSIBLE CONCENTRATION FOR DRINKING WATER BEACHED IN THE RECEIVING WATERBODIES, AS AN ANNUAL AVERAGE. ON THE BASIS OF THE DISCHARGES DATA, MAXIMUM EXPOSURE AROUND THE SITES IS ESTIMATED AND COMPARED WITH THE DOSE LIMITS FIXED BY RADIOLOGICAL PROTECTION STANDARDS AND WITH THE NATURAL LEVEL OF RADIATION.

PUB DESC: WP-20301, 46 PPS, 7 TABS, 23 ILLS, APRIL 1974

KEYWORDS: POPULATION EXPOSURE; ASSESSMENT; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; DISCHARGE; EFFLUENT; REVIEW; SURVEY, RADIOISOTOPE; MONITOR, ENVIRONMENTAL; ENVIRONMENT

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PUB DATE: 1973

TITLE: LEAKAGE OF HIGH-LEVEL RADIOACTIVE WASTE AT HARTFORD

ABSTRACT: ON JUNE 8 LEAKAGE FROM A WASTE TANK AT HARTFORD WAS REPORTED. 115,000 GALLONS LEAKED OUT OF A 400,000 GALLON TANK. INVOLVED IN THE LEAKAGE WERE 60,000 CUBES OF CESIUM AND 10,000 CUBES OF STRONTIUM. THE LIQUID IS 5" DEEP IN THE SOIL WITHIN A 25-50 FOOT AREA AROUND THE TANK AND THE WATER TABLE IS 250 FEET BELOW. THE TANK HAD BEEN BUILT IN 1940. THE PRESENT LEAK IS THE FOURTEENTH WITH THE PREVIOUS ONES TOTALING 307,000 GALLONS AND 200,000 CUBES OF CESIUM.

PUB DESC: JOURNAL ENERGY CLEANTECHNOLOGY, PAGE 1, 19(25), P. 1 (JUNE 10, 1973)

KEYWORDS: CESIUM; FAILURE; FISSION PRODUCT RELEASE;

STRONTIUM; WASTE STORAGE; SOIL; STORAGE CONTAINER; RADIOACTIVITY RELEASE; HARTFORD SITE; LEAK; CONCENTRATION

<401>

PUB DATE: 1973

TITLE: RADIOACTIVE WASTE GAS FILTERED BY CHARCOAL BED

ABSTRACT: ALTHOUGH RADIATION EMISSION FROM THE SAN ONOFRE NUCLEAR GENERATING STATION IN SOUTHERN CALIFORNIA WAS BELOW U.S. AND INTERNATIONAL STANDARDS, A WASTE-GAS TREATMENT SYSTEM WAS INSTALLED. THE SYSTEM REMOVES 99.9% OF RADIOACTIVE IODINE AND KRYPTON GASES DIFFUSING FROM THE FUEL ELEMENTS. THE GASES ARE PASSED THROUGH AN OXYGEN RECOMBINED WHERE SMALL AMOUNTS OF OXYGEN AND CHLORINE ARE COMBINED WITH HYDROGEN TO FORM WATER. GAS TEMPERATURE IS REDUCED BY A COOLER AND WATER VAPOR IS REMOVED BY A MOLECULAR SIEVE BEFORE THE GASES ENTER A SEQUESTRATIVE HEAT EXCHANGER AND A LIQUID-NITROGEN BATH FOR FURTHER COOLING TO -100 °C. FINALLY THE GASES GO THROUGH A CHARCOAL BED, WHICH TRAPS THE ACTIVE GASES. PASSING THE CHARCOAL RELEASES THE GASES TO STORAGE CONTAINERS WHICH ARE HELD AT THE STATION UNTIL MOST OF THE RADIOACTIVITY HAS DECAYED

PUB DESC: AEC. POWER ENG., 67(2), P. 40 (FEBRUARY 1973)

KEYWORDS: DECONTAMINATION; CALIFORNIA; EFFLUENT; KRYPTON (SEE ALSO MOLECULAR GAS); MOLECULAR SIEVE; WASTE TREATMENT; IODINE; CHARCOAL ADSORBENT; SAN ONOFRE 1 (PWR); GAS; COOLING; TEMPERATURE

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PUB DATE: 1973

TITLE: WASTE MANAGEMENT

ABSTRACT: REPORTS DETAILS OF THE RADIOACTIVE WASTE LEAK FROM STORAGE TANK #7 HARTFORD DURING JUNE 1973. ONE HUNDRED AND FIFTY THOUSAND GALLONS OF HIGH-LEVEL RADIOACTIVE WASTE CONTAINING 40,000 CUBES OF CESIUM-137, 14000 CUBES OF STRONTIUM-90, 4 CUBES OF PLUTONIUM, AND VARIOUS OTHER FISSION PRODUCTS LEAKED TO THE GROUND. AN INVESTIGATION OF THE INCIDENT IS REPORTED.

PUB DESC: NUCLEAR NEWS, 16(11), PP. 82-83 (SEPTEMBER 1973)

KEYWORDS: INCIDENT, CONSEQUENCE; WASTE STORAGE; WASTE MANAGEMENT; INCIDENT; STORAGE CONTAINER; INCIDENT, HUMAN ERROR; HARTFORD SITE; LEAK

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PUB DATE: 1973

TITLE: WASTE DIGESTION PILOT PLANT

ABSTRACT: A SOLID WASTE ACID DIGESTION PILOT PLANT HAS BEEN PLACED IN OPERATION AT THE HARTFORD ENGINEERING DEVELOPMENT LABORATORY AS PART OF A LONG-RANGE EFFORT TO DEVELOP A SIMPLE, DIRECT METHOD OF REDUCING THE VOLUME OF COMBUSTIBLE WASTES GENERATED IN THE NUCLEAR INDUSTRY. THE ACID DIGESTION PROCESS CONSISTS OF DECOMPOSING COMBUSTIBLE WASTES IN HOT, CONCENTRATED SULFURIC ACID IN THE PRESENCE OF NITRIC ACID. THE WASTES ARE CONVERTED INTO A LOW VOLUME, NON-COMBUSTIBLE RESIDUE. SAFE CONTAINMENT DURING HANDLING AND STORAGE OF THE WASTE IS REQUIRED DUE TO THE LONG HALF-LIFE AND TOXICITY OF THE ALPHA CONTAMINANTS.

PUB DESC: POWER ENGINEERING, 77(12), PG. 72 (DECEMBER 1973)

KEYWORDS: CHEMICAL REACTION; WASTE TREATMENT; WASTE TREATMENT, SOLID; HARTFORD SITE; REDUCTION

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PUB DATE: 1973

<000> CONF.
TITLE: WASTE MANAGEMENT AND CONTROLS

ABSTRACT: PRESENTS 600-0000 SUBMITTALS OF PA. 85 PRESENTED AT THIS SESSION OF THE AHS MEETING. TOPICS INCLUDE (1) WASTE MANAGEMENT - A BASIS FOR NATIONAL DECISION MAKING, (2) WASTE HANDLING AT GIBRA, (3) PERFORMANCE OF THE WASTE SYSTEM AT MONTICELLO, (4) EFFLUENTS FROM A LARGE PWR, (5) WASTE MANAGEMENT IN REPROCESSING PLANTS, (6) INTERIM STORAGE OF HIGHLY RADIOACTIVE LIQUID WASTE.

PUB DESC: AMERICAN NUCLEAR SOCIETY, VOL. 17, 5 PAGES, SUPPL. 1, PP. 5-9, PAPERS PRESENTED AT THE CONFERENCE ON REACTOR OPERATING EXPERIENCE, HELD IN MYSTLE BEACH, SOUTH CAROLINA, AUGUST 5-8, 1973 (SEE CONF-730019 FOR INDIVIDUAL PAPERS)

KEYWORDS: REACTOR, PWR; EFFLUENT; REACTOR, PWR; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; MONTICELLO (DUB); PWR REPROCESSING; OPERATING EXPERIENCE; GIBRA (PWR)

<005>
PUB DATE: 1973

TITLE: RADIOACTIVE WASTE MANAGEMENT: DISPOSAL IS DIFFICULT

ABSTRACT: UTILITY AND WASTE-MANAGEMENT EXECUTIVES MET AT AN ELECTRICAL WORLD ENGINEERING MANAGEMENT CONFERENCE ON 'WASTE DISPOSAL IN UTILITY ENVIRONMENTAL SYSTEMS: THE PROBLEM OF WASTE REMOVAL.' ALTHOUGH SOME DISCUSSIONS WERE HELD ON THE MANAGEMENT OF LOW-LEVEL RADIOACTIVE WASTES AT LOCAL POWER PLANTS, AND ON THE DISPOSITION AND POSSIBLE NEW USES OF WWT PLT ASH AND SLAG, THE PRIMARY FOCUS OF THE CONFERENCE WAS ON THE ULTIMATE DISPOSITION OF HIGH-LEVEL RADIOACTIVE WASTES AND OF THE VAST QUANTITIES OF SLOUGH FROM DESULFURIZATION UNITS ON STATIONS THAT BURN HIGH-SULFUR FUELS.

PUB DESC: ELECTRICAL WORLD, 100(12), PP. 40-43 2 FIGURES, (DEC. 15, 1973)

KEYWORDS: INDUSTRY, UTILITY; HIGH-LEVEL WASTE; WASTE MANAGEMENT; POWER PLANT, NUCLEAR; POWER PLANT, PCCSL FUEL; SULFUR; WASTE DISPOSAL, SOLID; SULFURIC ACID

<006>
PUB DATE: 1972

TITLE: RADIOACTIVE WASTE MANAGEMENT PRACTICES IN WESTERN EUROPE

ABSTRACT: REVIEWS POLICIES AND PRACTICES BOTH CURRENTLY AND IN RELATION TO THE INCREASING SCALE OF THE PROBLEMS TO BE SOLVED. THE EXISTING SITUATION IS STUDIED, CHANGES OF PRACTICES ARE RECOMMENDED AND PROBLEMS ARE IDENTIFIED FOR WHICH A FINAL SOLUTION IS STILL REQUIRED.

PUB DESC: CECO DIGEST, 20(6), P. 7 (JUNE 1972)

KEYWORDS: ADMINISTRATIVE CONTROL; REVIEW; WASTE MANAGEMENT; ; OPERATING EXPERIENCE; INTERNATIONAL (SEE ALSO ORGANIZATION)

<007>
PUB DATE: 1972

TITLE: TREATMENT AND STORAGE OF RADIOACTIVE SOLID WASTES DERIVED FROM THE NUCLEAR POWER STATIONS IN THE NETHERLANDS

ABSTRACT: FORECASTS THE AMOUNTS OF RADIOACTIVE WASTES TO ARISE FROM THE OPERATION OF NUCLEAR POWER STATIONS IN THE NETHERLANDS. VARIOUS TREATMENT AND STORAGE METHODS ARE COMPARED AND AS THE BEST SOLUTION FOR LOW AND MEDIUM LEVEL SOLID WASTES STORAGE IN A SOLUTION-HIGH, CAVITY IN ROCK SALT IS PROPOSED. POSSIBILITIES FOR STORAGE OF HIGH-LEVEL WASTES ARE ALSO INDICATED.

PUB DESC: ATOM. NIAU TOEF., NC. 10, PP. 235-242 (SEPTEMBER 1972)

KEYWORDS: WASTE TREATMENT; INTERMEDIATE-LEVEL WASTE; WASTE MANAGEMENT; FISSION PRODUCT ACTIVITY, GROSS; NETHERLANDS; WASTE DISPOSAL, SALT; FORECAST

<008>
PUB DATE: 1972

TITLE: RADIOACTIVE WASTE MANAGEMENT PRACTICES IN WESTERN EUROPE

CORPORATE AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY(ENEA), ORCD

ABSTRACT: THIS GENERAL REVIEW OF THE PRACTICES APPLIED TO THE MANAGEMENT OF RADIOACTIVE WASTE IN WESTERN EUROPE IS NECESSARILY SIMPLIFIED, BUT INDICATES BOTH THE COMPLEXITY AND THE MAGNITUDE OF THE PROBLEMS INVOLVED. THE GROUP WISHES TO EMPHASIZE THAT THESE PROBLEMS HAVE PROVED MANAGEABLE, AT THE VERY HIGH STANDARDS OF SAFETY AND CONSIDERATION FOR THE HUMAN ENVIRONMENT ADOPTED BY THE NUCLEAR INDUSTRY ITSELF, ONLY BECAUSE THERE EXISTS AN INTERNATIONALLY-RECOGNISED BASIS FOR RADIOLOGICAL PROTECTION. THIS BASIS IS DERIVED FROM THE RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP), WHICH ARE DISCUSSED IN CHAPTER III. THE EXISTENCE AND APPLICATION OF THE BASIC STANDARDS DERIVED FROM ICRP RECOMMENDATIONS PERMITS A FINE DEGREE OF SOPHISTICATION IN THE REGULATION OF NUCLEAR ENERGY ACTIVITIES, AS FOR EXAMPLE IS SHOWN BY THE APPLICATION OF THE "CRITICAL PATHWAY" ANALYSIS TO ASSESS THE SIGNIFICANCE OF ALL POSSIBLE ROUTES BY WHICH ENVIRONMENTAL RADIOACTIVITY MAY BE TRANSMITTED TO MAN. AT PRESENT THIS SORT OF THOROUGHNESS PROBABLY FINDS NO PARALLEL IN ANY OTHER COMPARABLE FIELD OF LARGE-SCALE SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT. (AUTH)

PUB DESC: OECD PUB. NO. 29, 979, 1972. 126 P. 5 FIG. 10 TAB., 17 REF.

KEYWORDS: NUCLEAR WASTES; WASTE DISPOSAL ALTERNATIVES; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); GLOSSARY; REVIEW; OECD (SEE ALSO ENEA); ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE MANAGEMENT; WASTE CLASSIFICATION (SEE ALSO STANDARDS, RADIATION); REVIEW; URANIUM; MINING; MILL TAILINGS (SEE ALSO TAILINGS); ENRICHMENT; PWR FUMIGATION (SEE ALSO PUBLICATION); NUCLEAR REACTORS; EFFLUENT; WASTE DISPOSAL; ICRP; LIQUID; SOLID; WASTE STORAGE; GAS; HIGH-LEVEL WASTE; ALPHA RITTER; LAND BURIAL (SEE ALSO BURIAL GROUND); BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); KRYPTON (SEE ALSO NOBLE GASES); IODINE; CRITICAL NUCLEIDE PATHWAY

<009>
PUB DATE: 1975
AUTHOR: AERJET ENERGY CONVERSION CO. (U.S.A.)

TITLE: FLUID BED DRYER AND AEROSOL SOLIDIFICATION SYSTEM

CORPORATE AUTHOR: AERJET ENERGY CONVERSION CO., SACRAMENTO, CALIF.

ABSTRACT: DESCRIBES THE DESIGN AND OPERATION OF THE AERJET ENERGY CONVERSION COMPANY RADIOACTIVE WASTE MANAGEMENT SYSTEM. THIS SYSTEM IS CAPABLE OF PROCESSING LOW-LEVEL LIQUID RADIOACTIVE WASTES THAT ARE GENERATED DURING THE NORMAL COURSE OF OPERATION OF BOTH PWR AND PWR POWER PLANTS. THE SYSTEM CONSISTS OF TWO DISTINCT SUB-SYSTEMS: THE FLUID BED DRYER AND THE AEROSOL SOLIDIFICATION SYSTEM. THE FLUID BED DRYER CONVERTS THE RADIOACTIVE LIQUID WASTES TO AN ANHYDROUS, FREE-FLUING SALT WHICH IS TRANSPARENT TO THE WASTE CONTAINED AND IMMOBILIZED BY THE AEROSOL SOLIDIFICATION AGENT, CREATING A WATER-FREE, HOMOGENEOUS, MONOLITHIC SOLID MASS EXHIBITING LOW LEACHABILITY CHARACTERISTICS.

PUB DESC: APCC-1, 101 PAGES, 10 TABLES, FEBRUARY 21, 1975

KEYWORDS: WASTE TREATMENT; LOW-LEVEL WASTE; FLUIDIZED BED; LEACHING; WASTE TREATMENT, LIQUID; WASTE MANAGEMENT; SYSTEM DESCRIPTION; WASTE

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SOLIDIFICATION

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PUB DATE: 1964
AUTHOR: ALLIANCE, R.T.; INCIDENTS, P.P.; OPSO, U.I.

TITLE: SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE FUEL REPROCESSING WASTES BY SPRAY AND POT CALCINATION--HOT-CELL PILOT PLANT STUDIES

CORPORATE AUTHOR: SAMPSON ATOMIC PRODUCTS CORPORATION, MCCLAND, WASHINGTON

ABSTRACT: CALCINATION OF FULL LEVEL PURE AND BEROX WASTE WAS CARRIED OUT SUCCESSFULLY IN A REMOTELY OPERATED PILOT PLANT CONSISTING OF A RADIANT-HEAT SPRAY CALCINER AND A POT CALCINER AND THEIR ASSOCIATED OFF-GAS EQUIPMENT. THE BEHAVIOR OF THE FISSION PRODUCTS UNDER CALCINATION CONDITIONS WAS STUDIED AS A FUNCTION OF FUEL ADDITIVES AND OFF-GAS EQUIPMENT. BEROXIN WAS THE MOST DIFFICULT FISSION PRODUCT TO CALCINATE BECAUSE OF ITS VOLATILITY. DECONTAMINATION FACTORS FROM FUEL TO OFF-GAS OF 10⁸ TO 10⁹ COULD BE OBTAINED BY USE OF ONLY A CONDENSER AND HIGH-EFFICIENCY FILTER. FISSION PRODUCT RELEASE DURING POT CALCINATION INCREASED CONSIDERABLY THROUGHOUT THE RUNS UNTIL FINAL SHUT-DOWN AND CALCINATION, WHEN STOCK BURSTS OCCURRED. THE CALCINED WASTE CONTAINERS DID NOT DEVELOP ANY EXCESS PRESSURE UPON STORAGE EXCEPT WHEN EXCESS SODIUM NITRATE WAS PRESENT IN THE WASTE.

PUB DESC: HW-83096 94 PAGES, 41 FIGURES, 6 TABLES, 21 REFERENCES-- SEPTEMBER 1964

KEYWORDS: CESIUM; SPRAY SOLIDIFICATION; POT CALCINATION; FISSION GAS RELEASE; FISSION PRODUCT, IODINE; BEROXIN; CALCINATION; WASTE TREATMENT, FISSION; WASTE SOURCE AND TYPE

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PUB DATE: 1964
AUTHOR: ARGONNE NATIONAL LABORATORY (U.S.A.)

TITLE: HIGH ACTIVITY WASTE

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: A 17-MIN COLOR FILM BY ARGONNE NATIONAL LAB. THIS TECHNICAL FILM DESCRIBES METHODS FOR SOLIDIFYING HIGH-ACTIVITY WASTES AND REDUCING THEIR VOLUME BY A FACTOR OF 10. PROCESS INCLUDES POT AND SPRAY CALCINATION, AND THE FLUORIDE-BED CALCINER WITH A 100-LITER/HR CAPACITY. USE OF SALT KINGS FOR WASTE DISPOSAL IS DISCUSSED.

PUB DESC: USARCS ARGONNE NATIONAL LABORATORY, THIS IS A 17 MINUTE FILM REFERENCED ON PAGE 64 OF THE USARCS 16 MM FILM CATALOG (PROFESSIONAL LEVEL) FOR 1966-67, PRODUCED BY USARCS ARGONNE NATIONAL LABORATORY, FOR SALE BY STROB MOTION PICTURES, IN ENGLISH, FRENCH, SPANISH, OR RUSSIAN, AT \$36.75 PER PRINT, INCLUDING SHIPPING CASE, P.O.B. WASHINGTON, D.C., IN COLOR

KEYWORDS: WASTE TREATMENT, LIQUID; HIGH-LEVEL WASTE; POT CALCINATION; FLUORIDE BED; SPRAY SOLIDIFICATION; EDUCATION (SEE ALSO RADIATION, PUBLIC EDUCATION); WASTE TREATMENT, SOLID; WASTE DISPOSAL, SALT

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PUB DATE: 1973
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DRAFT ENVIRONMENTAL STATEMENT - TRANSURANIUM SOLID WASTE DEVELOPMENT FACILITY - LOS ALAMOS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE PROPOSED PROJECT PROVIDES FOR FACILITIES AND AN ENGINEERING DESCRIPTION OF PROCESSES FOR RADIOACTIVE-SOLID-WASTE TREATMENT. THREE VOLUME-REDUCTION TECHNIQUES ARE TO BE DEMONSTRATED - SORTING, CORRECTION, AND INCINERATION.

MINOR CHANGES TO THE NATURAL BROUSE AREA WILL BE UNAVOIDABLE DUE TO THE CONSTRUCTION OF BUILDINGS, ROADS, AND PARKING AREAS. NO OTHER IMPACT IS CONSIDERED PROBABLE FROM ROUTINE OPERATION OF THE FACILITY.

PUB DESC: WASH-1527, 45 PAGES, APRIL 1973

KEYWORDS: WASTE STORAGE; ENVIRONMENT; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE TREATMENT; LASE; TRANSURANIUM PROGRAM; DRAFT STATEMENT, ENVIRONMENTAL;

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PUB DATE: 1964
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: CALCINATION AND/OR FISSION OF HIGH LEVEL WASTES IN STABLE, SOLID MEDIA

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION

ABSTRACT: PROGRESS SUMMARIES ON FISSION OF HIGH LEVEL WASTES IN STABLE, SOLID MEDIA ARE PRESENTED AS THE TRANSACTIONS OF AN AEC WORKING MEETING. PROGRESS IS REPORTED ON THE OPERATING FLUORIDE-BED CALCINER AT ICPP. PROGRESS ON OTHER FISSION SETTINGS UNDER DEVELOPMENT AT ICPP, ORNL, AND BAPF ARE ALSO PRESENTED.

PUB DESC: CALCINATION AND/OR FISSION OF HIGH LEVEL WASTES IN STABLE, SOLID MEDIA, OPTON, NEW YORK, FOURTH WORKING MEETING, 95 PAGES, 30 FIGURES, 13 TABLES, 30 REFERENCES, FEBRUARY 11-12, 1964

KEYWORDS: CESIUM; CESIUM; DEPOSITION; EFFLUENT; MONITOR, STACK; BEROXIN; STROBILIN; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FISSION

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PUB DATE: 1964
AUTHOR: ATOMIC ENERGY RESEARCH INSTITUTE (KOREA)

TITLE: USE OF KCHAUN CLAY MINERALS IN THE TREATMENT OF RADIOACTIVE LIQUID WASTES

CORPORATE AUTHOR: ATOMIC ENERGY RESEARCH INSTITUTE, SEOUL, KOREA

ABSTRACT: DISCUSSES THE SUPERIOR QUALITIES OF CLAY MINERALS IN KOREA, THE CHEMICAL AND PHYSICAL PROPERTIES, ION-EXCHANGE CAPACITIES, AND CHARACTERISTICS AND IDENTIFICATIONS OF SELECTED CLAYS.

PUB DESC: AERI-31, 24 PAGES, 11 FIGURES, 4 TABLES, 8 REFERENCES, MAY 9, 1964

KEYWORDS: ADSORPTION; FORM; CLAY; CESIUM; STROBILIN; WASTE TREATMENT, LIQUID; ION EXCHANGE; SOIL

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PUB DATE: 1969
AUTHOR: AOCRAFT, J.B.; GARDNER, J.P.

TITLE: DECONTAMINATION OF IRRADIATED-FUEL PROCESSING WASTE USING MANGANESE DIOXIDE HYDRATE

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, CHUSCLAS (FRANCE)

ABSTRACT: THE MANGANESE DIOXIDE PROCESS IS DESIGNED TO REPLACE THE CALCIUM CARBONATE TREATMENT FOR LCU AND BEROXIN ACTIVITY WASTES. THE OBJECTIVE TO ATTAIN DURING THE RESEARCH FOR A NEW PROCESS WAS THE REDUCTION OF THE VOLUME OF THE SLUDGE WITHOUT DECREASING THE DECONTAMINATION FACTOR OF THE WASTES. THE NEW PROCESS INVOLVES ADDITION IN SERIES OF TWICE OVER 100 PPM OF MANGANESE ION IN THE WASTE WHICH WAS PREVIOUSLY BEEN MADE BASIC AND OXIDIZING. THE PRECIPITATE FORMED IN SITU IS SEPARATED AFTER EACH ADDITION.

PUB DESC: CEA-A-3821, 33 PAGES, FIGURES, TABLES, REFERENCES, (IN FRENCH), JUNE 1969

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KEYWORDS: DECONTAMINATION; FRANCE; STRONTIUM; WASTE TREATMENT; LIQUID; HANDBOOKS; RADIOCHEMICAL PROCESSING; FUEL REPROCESSING

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PUB DATE: 1974

AUTHOR: AZAROVA, L.G.; LINA, T.G.; GOLOSOV, A.V.; KOSHEVNIKOV, A.N.; KROKHIN, B.A.; KUCHERIKOV, A.A.

TITLE: TECHNICAL AND ECONOMIC COMPARISON OF METHODS FOR SOLIDIFYING AND STORING HIGH-ACTIVITY LIQUID WASTE ARISING IN THE REPROCESSING OF IRRADIATED FUEL ELEMENTS FROM WATER-COOLED AND WATER MODERATED REACTORS

CORPORATE AUTHOR: USSR STATE COMMITTEE ON THE UTILIZATION OF ATOMIC ENERGY

ABSTRACT: IN THE SOVIET UNION SOME OF THE VITRIFICATION OF HIGH-LEVEL RADIOACTIVE SOLUTIONS IS BEING PERFORMED IN TWO DIRECTIONS, ONE INVOLVING THE USE OF A TWO-STAGE PROCESS AND THE OTHER A SINGLE-STAGE PROCESS. IN THE TWO-STAGE PROCESS, DRYING AND CALCINING ARE PERFORMED IN A FLUIDIZED BED APPARATUS WHILEST THE CONVERSION OF THE CALCINED PRODUCT IN TO GLASS TAKES PLACE IN A DISPOSABLE CONCRETE OR CERAMIC CRUCIBLE (SINGLE APPLICATION), IN WHICH IT IS THEN SENT TO THE BURIAL GROUND FOR STORAGE; IN THE SINGLE-STAGE PROCESS, DRYING, CALCINING AND MELTING ARE ALL PERFORMED IN THE SAME APPARATUS. THE GLASS MELT IS Poured DIRECTLY FROM THE APPARATUS INTO THE BURIAL GROUND, SITUATED BENEATH IT, OR INTO A SPECIAL CONTAINER, WHICH IS THEN TRANSPORTED TO A BURIAL GROUND. BOTH PROCESSES HAVE BEEN USED IN TESTS WITH MODEL SOLUTIONS ON EXPERIMENTAL-INDUSTRIAL INSTALLATIONS WITH A THROUGHPUT OF 50-100 L/HR, REFERRED TO THE INITIAL UNPUBLISHED SCIENTIFIC. IN THE COURSE OF THESE TESTS THE MAIN TECHNOLOGICAL PARAMETERS WERE OBTAINED, THE PRODUCTION OF THE BASIC EQUIPMENT AND THE GAS PURIFICATION SYSTEM WERE CHECKED AND DATA WERE OBTAINED FOR A FURTHER EXPERIMENTAL-INDUSTRIAL INSTALLATION. THE SPECIFIC CAPITAL COSTS, THE OPERATING COSTS AND THE OPTIMAL CONDITIONS FOR LONG-TERM STORAGE OF THE VITRIFIED MASS IN SPECIAL BURIAL GROUNDS WERE DETERMINED ON THE BASIS OF TECHNICAL AND ECONOMIC CALCULATIONS. IN ADDITION, A COMPARATIVE STUDY IS MADE OF THE TECHNICAL AND ECONOMIC CHARACTERISTICS OF AN OPTIMAL VARIANT OF THE VITRIFICATION METHOD IN WHICH HIGH-LEVEL WASTES ARE STORED AS SOLUTIONS IN STAINLESS STEEL CONTAINERS PROVIDED WITH COIL PIPES FOR HEAT REMOVAL. (AUTH)

PUB DESC: OECD-OCDE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 047-061 (1974)

KEYWORDS: WASTE TREATMENT; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); USSR; FLUIDIZED BED; CERAMICS; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); VITRIFICATION; SOLUTIONS; LIQUID WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); HIGH-LEVEL WASTE; CALCINATION; GLASS (SEE ALSO VITRIFICATION); BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); WASTE STORAGE; TECHNOLOGY; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS);

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PUB DATE: 1962

AUTHOR: BASTIE, L.

TITLE: RESEARCH PROGRAM ON THE TREATMENT AND STORAGE OF RADIOACTIVE WASTES.

PUB DESC: EUR-01.2, EURAC-295

KEYWORDS: WASTE DISPOSAL; WATER; ION EXCHANGE; SOIL; RADIOISOTOPE; THERAPY; TRANSPORT

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PUB DATE: 1970

AUTHOR: BARD, W.; BENFELD, W.; KRAUSE, H.; NEUFELD, C.

TITLE: EXPERIENCES IN THE TREATMENT OF LOW AND INTERMEDIATE RADIOACTIVE WASTES IN THE NUCLEAR RESEARCH CENTER KARLSRUHE

CORPORATE AUTHOR: KARLSRUHE NUCLEAR RESEARCH CENTER, GERMANY

ABSTRACT: ONLY A PART OF THE ARISING EFFLUENTS CAN BE DECONTAMINATED TO THE REQUIRED LOW ACTIVITY CONCENTRATIONS BY CHEMICAL PRECIPITATION, SO THE NEW PLANT USES MAINLY EXCLUSIVELY VAPOUR COMPRESSION EVAPORATION. ION EXCHANGE PROVED TO BE UNSUCCESSFUL DUE TO THE HIGH SALT CONCENTRATIONS. THE CONCENTRATES RESULTING FROM THE EVAPORATION ARE FILLED IN BOTTLES. THIS IS REPORTED ON THE EXPERIENCE IN THE OPERATION OF THE PILOT AND INDUSTRIAL PLANT. COSTS OF THE DIFFERENT METHODS ARE COMPARED. ALSO DEALS WITH THE TREATMENT OF LOW AND INTERMEDIATE RADIOACTIVE SOLID WASTE.

PUB DESC: SD-137/12, STL/PMB-264, CONT-700905, 40 PAGES, 15 FIGURES, 1 TABLE, 9 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: CHEMICAL REACTION; INTERMEDIATE-LEVEL WASTE; ASPHALT; DECONTAMINATION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; WASTE TREATMENT; WASTE MANAGEMENT; GERMANY; PRECIPITATION; CONCENTRATION

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PUB DATE: 1963

AUTHOR: BELTZ, R.C.

TITLE: THE USE OF INORGANIC EXCHANGE MATERIALS FOR RADIOACTIVE WASTE TREATMENT

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: IN A CONTINUING EFFORT TO BRING BORDERERS IN THE FIELD OF WASTE DISPOSAL RESEARCH AND DEVELOPMENT TOGETHER TO DISCUSS PROBLEMS AND MUTUAL PROBLEMS, THE ATOMIC ENERGY COMMISSION SUPPORTS SEVERAL SMALL WORKING GROUP MEETINGS EACH YEAR. IN THIS VEIN, APPROXIMATELY 20 WORKERS IN THE FIELD OF MINERAL EXCHANGE MET IN WASHINGTON, D. C. ON AUGUST 13-14, 1962 FOR JOURNAL DISCUSSION. THE CENTRAL THEME OF THE MEETING WAS FOCUSED ON: 1) THE USE OF VARIOUS NATURAL EARTH MATERIALS FOR WASTE TREATMENT AND DISPOSAL PROPOSED, 2) THE PROGRAMS BEING CONDUCTED TO OBTAIN PHYSICO-CHEMICAL AND RADIOLOGICAL DATA ON THE INTERACTIONS OF THESE MATERIALS AND RADIOISOTOPES, AND 3) THE FUTURE STUDIES REQUIRED TO DEVELOP FURTHER UNDERSTANDING OF THE MECHANISMS AND INTERRELATIONSHIPS INVOLVED IN MINERAL EXCHANGE. THE MEETING WAS ORGANIZED BY THE ENVIRONMENTAL AND SANITARY ENGINEERING BRANCH OF THE DIVISION OF REACTOR DEVELOPMENT AS PART OF ITS OVER-ALL WASTE DISPOSAL DEVELOPMENT PROGRAM. REPRESENTATIVES FROM AECL (CANADA), BANCORP, OAK RIDGE NATIONAL LABORATORY, UNIVERSITIES OF CALIFORNIA, NORTH CAROLINA, AND TEXAS; U. S. GEOLOGICAL SURVEY, U. S. DEPARTMENT OF AGRICULTURE AND THE MINERALS AND CHEMICALS PHILIFF CORP. PARTICIPATED.

PUB DESC: T.O-7644

KEYWORDS: MINERAL EXCHANGE; USAEC (SEE ALSO AGENCY, AEC); SOIL PROPERTY; UNIVERSITIES; LABORATORIES; 6 AND 0 PROGRAM; ONEL; BANCORP SITE; BUTS; FISSION PRODUCT

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PUB DATE: 1971

AUTHOR: BECKNER, C.L.; LOYSE, G.E.; HALE, H.F.

TITLE: TRIDE PROCESSING CAMPAIGN IN THE WASTE CALCINING FACILITY

CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION, IDAHO FALLS

ABSTRACT: IN THE THIRD PROCESSING CAMPAIGN, LASTING FROM AUGUST 1968 TO JUNE 1969, 312,000 GAL OF WASTE FROM ZIRCONIUM-ALLOYED FUELS AND 17,000 GAL FROM ALUMINUM-ALLOYED FUELS WERE CALCINED TO 0.464 CUBIC FEET OF SOLIDS IN AN AIR-FLUIDIZED BED MAINTAINED AT A TEMPERATURE OF 400 C. OFF-GAS CONSISTING OF FLUIDIZING AIR, ATCHIZING AIR, AND WASTE DECOMPOSITION

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PRODUCTS WAS SUCCESSFULLY DECONTAMINATED IN A SERIES OF AIR-CLEANING DEVICES INCLUDING A SPRAY QUENCH TOWER, A VENTURI SCUMMER AND ASSOCIATED EXTRAHEAVY SEPARATORS, SILICA-GEL ADSORBERS, AND HIGH-EFFICIENCY FILTERS BEFORE BEING DISCHARGED TO ATMOSPHERE.

PUB DESC: EN-1070, 50 PAGES, MAY 1967

KEYWORDS: WASTE STORAGE; CALCINATION; WASTE TREATMENT; FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE DISPOSAL, SALT

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PUB DATE: 1967

AUTHOR: BLANCO, R.E.; FLOUREN, J.O.; ROBERTS, J.T.

TITLE: SOLVING THE WASTE DISPOSAL PROBLEM

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: BY THE YEAR 2000, U.S. NUCLEAR POWER PLANTS WILL HAVE ACCUMULATED OVER 5000 TONS OF FISSION PRODUCTS. SOLIDIFICATION OF LIQUID WASTE FROM FUEL REPROCESSING FOLLOWED BY STORAGE IN SALT BINS REPRESENTS A SAFE AND ECONOMICAL METHOD OF DISPOSAL. COST OF SOLIDIFICATION, SHIPPING 1000 BILES, AND ULTIMATE DISPOSAL IN SALT IS ESTIMATED AT LESS THAN 1% OF THE TOTAL COST OF 3 BILES/TON OF NUCLEAR POWER. OTHER ADVANTAGES OF THE PROPOSED METHOD INCLUDE LOW MOBILITY OF THE SOLID WASTE, LOW SURVEILLANCE REQUIREMENTS, LOW SOLUBILITY, AND SAFER HEAT REMOVAL.

PUB DESC: ENCLONICS 25(2), PAGE 50 THRU 61 AND PAGE 60, (FEBRUARY 1967) 2 TABLES, 0 REFERENCES

KEYWORDS: TRITIUM; FORECAST; PRECIPITATION (SEE ALSO FORECAST); WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; ORE; WASTE DISPOSAL, GAS; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; WASTE DISPOSAL, SALT; VOLATILITY PROCESS

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PUB DATE: 1965

AUTHOR: BLANCO, R.E.; ALBIDE, G.J.; DAVIS, V.; COOPER, R.W.; IRISH, L.J.; KING, L.J.; MURPHY, R.W.; ROBERTS, J.T.; YER, W.C.

TITLE: RECENT DEVELOPMENTS IN TREATING LOW AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE IN THE UNITED STATES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: RECENT RESEARCH AND DEVELOPMENT WORK IN THE TREATMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES IS SURVEYED, AND BRIEF ECONOMIC EVALUATIONS OF NEW TREATMENT METHODS ARE INCLUDED. THE METHODS INCLUDE (1) SCAVENGING-PRECIPITATION ION-EXCHANGE PROCESS FOR LOW-LEVEL WASTE, (2) A SCAVENGING-PRECIPITATION FLOW-SEPARATION PROCESS, (3) A METHOD FOR TREATING PROCESS CONDENSATE WASTES CONTAINING AMMONIA AND ORGANIC MATERIALS BY USE OF A STEAM-STRIPPING COLUMN (STEAM STRIPPING, FILTRATION, AND EQUIPMENT SELECTION ON AION AND CATION EXCHANGE RESINS), AND (4) A METHOD FOR INCORPORATING INTERMEDIATE-LEVEL WASTES IN ASPHALT.

PUB DESC: OREL-TH-1209, CONF-651202-11, 51 PAGES, 17 FIGURES, 13 TABLES, 20 REFERENCES, DECEMBER 1965

KEYWORDS: CERIUM; ASPHALT; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; CERIUM; CRYSTAL; POLAR; HYDROGEN; STRONTIUM; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, ECONOMICS; FILTRATION; ION EXCHANGE; MINERAL EXCHANGE; PRECIPITATION

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PUB DATE: 1965

AUTHOR: BLANCO, R.E.; DAVIS, V.; COOPER, R.W.; KING, L.J.; ROBERTS, J.T.; YER, W.C.; ALBIDE, G.J.; IRISH, L.J.; MURPHY, R.W.

TITLE: RECENT DEVELOPMENTS IN TREATING LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE IN THE UNITED STATES OF AMERICA

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN; BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON; BATTILLE MEMORIAL INSTITUTE, COLORADO LABORATORIES

ABSTRACT: RECENT RESEARCH AND DEVELOPMENT WORK IN THE TREATMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES IS SURVEYED AND BRIEF ECONOMIC EVALUATIONS OF NEW TREATMENT METHODS ARE INCLUDED. A SCAVENGING-PRECIPITATION ION-EXCHANGE PROCESS WAS DEVELOPED FOR TREATING LOW-LEVEL WASTE WHICH PROVIDES DECONTAMINATION FACTORS OF GREATER THAN 1000 FOR STRONTIUM AND CERIUM (FOR 2000 RESIN COLUMN VOLUMES) AND SATISFACTORY DECONTAMINATION OF OTHER ACTIVITIES. A SCAVENGING-PRECIPITATION FLOW-SEPARATION PROCESS WAS DEVELOPED AND TESTED ON A LABORATORY AND PILOT-PLANT SCALE AS AN ALTERNATIVE TREATMENT METHOD. A PROCESS WAS DEVELOPED AND TESTED ON A SMALL ENGINEERING SCALE FOR TREATING PROCESS CONDENSATE WASTES CONTAINING AMMONIA AND ORGANIC MATERIALS. A PROCESS FOR INCORPORATING INTERMEDIATE-LEVEL WASTES IN ASPHALT WAS DEVELOPED IN THE LABORATORY, AND DESIGN OF A PILOT PLANT IS IN PROGRESS.

PUB DESC: SIX-PUB-116 (58-71-26), 46 PAGES, 20 REFERENCES, 17 FIGURES, 12 TABLES, DECEMBER 1965

KEYWORDS: FLOW; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; ION EXCHANGE; PRECIPITATION; UNITED STATES; R AND D PROGRAM

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PUB DATE: 1960

AUTHOR: BLANCO, R.E.; PARKER, P.L.

TITLE: WASTE TREATMENT AND DISPOSAL QUARTERLY PROGRESS REPORT NOVEMBER 1963-JANUARY 1964

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THIS REPORT IS THE THIRTEENTH OF A SERIES OF REPORTS ON PROGRESS IN THE OREL DEVELOPMENT PROGRAM, THE OBJECTIVE OF WHICH IS TO DEVELOP AND DEMONSTRATE ON A PILOT PLANT SCALE INTEGRATED PROCESSES FOR TREATMENT AND ULTIMATE DISPOSAL OF RADIOACTIVE WASTES RESULTING FROM REACTOR OPERATIONS AND REACTOR FUEL PROCESSING. EMPHASIS IS ON HIGH- AND LOW-ACTIVITY LIQUID WASTES. LOW-ACTIVITY WASTES WOULD BE TREATED BY SCAVENGING AND ION EXCHANGE PROCESSES FOR FLOW SEPARATION. THE WASTE SOLIDS OR SLURRIES WOULD BE COMBINED WITH THE HIGH-ACTIVITY WASTES OR BE DISCHARGED TO THE ENVIRONMENT IN BED GEOLOGIC FORMATIONS. THE HIGH-ACTIVITY WASTES WOULD BE STORED AT THEIR SITES OF ORIGIN FOR ECONOMIC PERIODS TO ALLOW FOR RADIOACTIVE DECAY AND ARTIFICIAL COOLING. METHODS FOR THE PERMANENT DISPOSAL OF HIGH-ACTIVITY WASTES INCLUDE CONVERSION OF THE WASTE LIQUIDS TO SOLIDS BY POT CALCINATION AND FORMATION OF A GLASS OR CERAMIC. THE SOLIDS WOULD BE STORED IN A SALT BIN. ANOTHER APPROACH IS THE DISPOSAL OF THE LIQUID DIRECTLY INTO SEALED OR VENTED SALT CAVITIES. TANK STORAGE OR HIGH-TEMPERATURE CALCINATION OF INTERMEDIATE-ACTIVITY WASTES MAY BE ATTRACTIVE BECAUSE OF THEIR LARGE VOLUMES. DIRECT DISPOSAL INTO IMPERMEABLE SHALE BY HYDROFRACTURING, IS UNDER INVESTIGATION. ENVIRONMENTAL RESEARCH ON THE CLINCH RIVER, MOTIVATED BY THE NEED FOR SAFE AND REALISTIC PERMISSIBLE LIMITS OF WASTE RELEASES, IS INCLUDED IN THIS PROGRAM.

PUB DESC: OREL-TH-030 133 PAGES, 20 TABLES, 33 FIGURES, 02 REFERENCES- AUGUST 1960

KEYWORDS: DEPOSITION; EFFLUENT; GEOLOGY; GROUND WATER; RIVER; SOIL; RADIOISOTOPE MOVEMENT THROUGH; STRONTIUM; SURFACE WATER; TRITIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, RIVER; WASTE SOURCE AND TYPE; SUBMITT

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PUB DATE: 1975

AUTHOR: BLAKE, R.E.; RUSSETT, R.L.

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TITLE: BOWEN LABORATORY ACTIVITIES ON THE REMOVAL OF RADIOISOTOPES FROM WASTEWATER USING BOWEN CHAR.

CORPORATE AUTHOR: BOWEN LAB., NIMMISBURG, OHIO

ABSTRACT: SUFFICIENT DATA HAS BEEN COLLECTED TO DESIGN COLUMNS OF BOWEN CHAR TO BE USED IN A TREATMENT OR POLISHING TREATMENT SYSTEM FOR BOWEN'S EFFLUENT STREAM. THESE COLUMNS ARE TO BE DESIGNED AND FABRICATED AND INCORPORATED IN THE CURRENT WASTEWATER TREATMENT FACILITY TO FURTHER REDUCE THE LEVEL OF RADIOACTIVITY IN THE EFFLUENT DISCHARGE. (NOTE)

PUB DESC: MLN-2244 (1975)

KEYWORDS: WASTE TREATMENT; BOWEN LABORATORY; FILTRATION; EFFLUENT; COLUMN STUDIES; BOWEN CHAR; DESIGN; FABRICATION; WASTEWATER TREATMENT; DECONTAMINATION

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PUB DATE: 1974

AUTHOR: BLASWITZ, A.G.; MICHAELSON, G.L.; MCLEOD, J.L.; SHUHL, J.R.; SCHUBERT, J.J.

TITLE: THE HIGH-LEVEL WASTE SOLIDIFICATION DEMONSTRATION PROGRAM

CORPORATE AUTHOR: WESTINGHOUSE BARTON CO.

ABSTRACT: THE HIGH LEVEL WASTE SOLIDIFICATION DEMONSTRATION PROGRAM HAS INVOLVED PILOT PLANT DEMONSTRATIONS WITH THREE ALTERNATIVE SOLIDIFICATION SYSTEMS: PHOSPHATE GLASS SOLIDIFICATION, SPRAY SOLIDIFICATION, AND POT CALCINATION. THE DEMONSTRATIONS HAVE BEEN PERFORMED WITH SOLUTIONS HAVING CHEMICAL COMPOSITIONS AND RADIOACTIVITY LEVELS COMPARABLE TO THOSE WHICH WILL FIND IN COMMERCIAL FUEL REPROCESSING PLANTS. EXTENSIVE STUDIES HAVE ALSO BEEN CONDUCTED TO DETERMINE THE REQUIREMENTS FOR TREATING THE EFFLUENTS FROM THE SOLIDIFICATION PROCESSES AND TO EVALUATE THE SOLIDIFIED WASTE PRODUCTS. THE PROGRAM DATA HAVE BEEN EVALUATED TO PROVIDE A COMPARISON OF THE PROCESSING PARAMETERS, PRODUCT CHARACTERISTICS, INDUSTRIAL APPLICATION POTENTIALITIES, AND ECONOMICS ASSOCIATED WITH THE SOLIDIFICATION SYSTEMS. (NOTE)

PUB DESC: OECB-OCBE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 615-654 (1974)

KEYWORDS: HIGH-LEVEL WASTE; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); PHOSPHATE GLASS; SPRAY; POT CALCINATION; DEMONSTRATION; EFFLUENT; FUEL REPROCESSING; EVALUATION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS)

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PUB DATE: 1970

AUTHOR: BLASWITZ, A.G.

TITLE: FIXATION OF RADIOACTIVE RESIDUES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: TO DATE, 27 RADIOACTIVE DEMONSTRATIONS IN USED HAVE BEEN COMPLETED WITH IRRADIATED WASTES CONTAINING APPROXIMATELY 41 HECACUBES OF MIXED RADIOISOTOPES BEING CONVERTED TO SLIDS.

PUB DESC: BNWL-1311, 54 PAGES, 4 FIGURES, 9 TABLES, FEBRUARY 1970

KEYWORDS: ABSORPTION; RUTHERGIUM; WASTE STORAGE; WASTE TREATMENT; FIXATION; PHOSPHATE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); BATTILLE NORTHWEST; FUEL REPROCESSING

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PUB DATE: 1969

AUTHOR: BLASWITZ, A.G.

TITLE: QUARTERLY PROGRESS REPORT, RESEARCH AND DEVELOPMENT ACTIVITIES, FIXATION OF RADIOACTIVE RESIDUES, AUGUST, SEPTEMBER, OCTOBER 1969

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: DURING THE REPORT PERIOD, NEARLY 6.2 HECACUBES OF RADIOACTIVITY WERE SUCCESSFULLY PROCESSED IN THREE PHOSPHATE GLASS SOLIDIFICATION BINS IN USED. A SIMULATED WASTE WASTE 40 (W-40) WAS PROCESSED DURING ALL THREE BINS AND WAS THE FIRST RADIOACTIVE DEMONSTRATION OF THE PHOSPHATE GLASS PROCESS WITH THIS WASTE (A LOW SALT, HIGH FISSION PRODUCT WASTE RESULTING FROM THE REPROCESSING OF A POWER REACTOR FUEL WITH AN EXPOSURE OF 45,000 MW/TONNE AT 30 KW/TONNE). IN THE FINAL BIN, A HEAT RATE DENSITY OF 315 W/LITER WAS ATTAINED IN THE PRODUCT. THIS IS EQUIVALENT TO THAT WHICH WOULD RESULT FROM SOLIDIFYING WASTE FROM THE REPROCESSING OF POWER REACTOR FUEL ACID 0.75 YEAR.

PUB DESC: BNWL-1263, 33 PAGES, 6 FIGURES, 9 TABLES, DECEMBER 1969

KEYWORDS: TESTING; FUEL (SEE ALSO PARTITIONING); PHOSPHATE GLASS; HEAT GENERATION; INTERNAL; WASTE TREATMENT; FIXATION; SAMPLING; PHOSPHATE; GLASS (SEE ALSO VITRIFICATION); REACTOR; STORAGE CONTAINER; OFF GAS; SIMULATION; FUEL REPROCESSING

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PUB DATE: 1970

AUTHOR: BOBACK, H.H.; DAVIS, J.O.; BOSS, K.A.; STEVENSON, J.R.

TITLE: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTES FROM PILOT PLANT OPERATIONS

CORPORATE AUTHOR: NATIONAL LEAD COMPANY OF OHIO, CINCINNATI

ABSTRACT: PILOT PLANT OPERATIONS AT THE NATIONAL LEAD COMPANY OF OHIO INCLUDE THE SOLVENT EXTRACTION OF THORIUM, THE TESTING OF NEW METHODS FOR THORIUM METAL PRODUCTION, AND VARIOUS OPERATIONS WITH URANIUM MATERIALS. MOST LIQUID WASTES FROM THESE OPERATIONS ARE GIVEN LOCAL TREATMENT AND THEN SENT TO A CENTRAL FACILITY FOR ADDITIONAL TREATMENT. NEUTRALIZED WASTES WITH SC SCRAP VALUE ARE THEN SENT TO A SETTLING BASIN. CLEAR EFFLUENT FROM THE BASIN IS DISCHARGED TO THE GREAT MIAMI RIVER. RESIDUES FROM ACID-DIGESTION PROCESSES MAY BE DUMPED FOR LATER URANIUM OR THORIUM RECOVERY. MOST SOLID WASTE IS SENT TO ON-SITE DISPOSAL PITS. HOWEVER, CERTAIN THORIUM RESIDUES ARE DUMPED FOR DISPOSAL AT AN OFF-SITE COMMERCIAL BURIAL GROUND.

PUB DESC: NICO-1075, 22 PAGES, FROM JOINT MEETING OF THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AND BRITISH INSTITUTE OF CHEMICAL ENGINEERS, JULY 7, 1970

KEYWORDS: EFFLUENT; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); LOW-LEVEL WASTE; RIVER, GREAT MIAMI; OHIO; COMMERCIAL BURIAL GROUND (SEE ALSO BURIAL GROUND); RIVER; THORIUM; URANIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; STORAGE CONTAINER; SOLVENT EXTRACTION

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PUB DATE: 1974

AUTHOR: BOCCIA, P.; DONATO, A.; SCALABINO, G.

TITLE: SURVEY OF THE PRESENT STATE OF STUDIES ON THE SOLIDIFICATION OF FISSION PRODUCT SOLUTIONS IN ITALY

CORPORATE AUTHOR: CNEN, LABORATORIE DI GENOVA, SABOTARE, CSN-CASACIA, ITALY

ABSTRACT: A POT-VITRIFICATION PROCESS HAS BEEN DEVELOPED IN ITALY FOR FIXATION OF FISSION PRODUCTS BOTH IN PHOSPHATE OR BOROSILICATE GLASSES. THE PROCESS HAS BEEN TESTED ON A BENCH-SCALE PLANT WITH SIMULATED FISSION PRODUCT SOLUTIONS. RED PHOSPHORUS

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HAS BEEN EMPLOYED AS A GLASS FORMING ADDITIVE IN ORDER TO STRENGTHEN PHOSPHATE VERY CLEAN WASTES, WHILE PHOSPHORIC ACID HAS BEEN USED IN THE TREATMENT OF DILUTE OR SULPHATE-RICH SOLUTIONS. IN REARMS OF RED PROCESSING, REDUCED LOSS FROM THE VITRIFICATION POT HAS BEEN LOWERED TO LESS THAN 1%. LABORATORY STUDIES HAVE BEEN CARRIED OUT TO INVESTIGATE BOTH THE EFFICIENCY OF A FERRIC OXIDE-SILICA FILTER FOR GASEOUS REMOVAL UNDER VARIOUS CONDITIONS AND THE REACTION OF RED SUBSTANCES WITH FISSION PRODUCT SOLUTIONS. A BENCH-SCALE SOLIDIFICATION PLANT, WITH SPECIAL PROVISIONS TO MONITOR CONTROL OPERATIONS IN ORDER TO ENABLE IT TO WORK IN A HOT CELL, HAS BEEN CONSTRUCTED AND TESTED WITH COLD BURN; IN THE NEAR FUTURE IT WILL BE OPERATING WITH FULLY RADIOACTIVE WASTES. (AUTH)

POB DESC: OCEAN-CECE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 009-007 (1974)

KEYWORDS: FISSION PRODUCT; DUTYHEIM; PHOSPHATE GLASS; HOT CELL; FISSION; WASTE TREATMENT; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); GLASS (SEE ALSO VITRIFICATION); FILTERS; GAS; VITRIFICATION

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POB DATE: 1972

AUTHOR: BOCCIA, V.; BOUATC, A.

TITLE: THE ESTER PROGRAM - HIGH-LEVEL RADIOACTIVE WASTE SOLIDIFICATION. BENCH-SCALE PHOSPHATE GLASS VITRIFICATION TESTS WITH SIMULATED FISSION PRODUCT SOLUTIONS

ABSTRACT: THE PROCESS STUDIES IN THE FRAME OF THIS PROGRAM IS THE FISSION OF FISSION PRODUCT SOLUTIONS IN STABLE AND INSOLUBLE GLASSES. THIS ARTICLE DESCRIBES THE RESULTS AND THE PRACTICAL EXPERIENCE ACHIEVED FROM 27 PHOSPHATE-GLASS VITRIFICATION BURN, CARRIED OUT IN A BENCH-SCALE PLANT WITH SIX DIFFERENT TYPES OF SIMULATED FISSION PRODUCT SOLUTIONS.

POB DESC: ENERGIA NUCLEARE, 19(2), PP. 390-401 (1972) (IN ITALIAN)

KEYWORDS: WASTE STORAGE; WASTE TREATMENT, FISSION; PHOSPHATE; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); TEST, BENCH

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POB DATE: 1972

AUTHOR: BOCCIA, V.; BOUATC, A.; SCALABINO, G.

TITLE: SURVEY OF THE PRESENT STATUS OF STUDIES ON THE SOLIDIFICATION OF FISSION PRODUCT SOLUTIONS IN ITALY

CORPORATE AUTHOR: COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROMA

ABSTRACT: A POT-VITRIFICATION PROCESS HAS BEEN DEVELOPED IN ITALY FOR FISSION OF FISSION PRODUCTS BOTH IN PHOSPHATE OR BORSILICATE GLASSES. LABORATORY STUDIES HAVE BEEN CARRIED OUT TO INVESTIGATE BOTH THE EFFICIENCY OF A FERRIC OXIDE-SILICA FILTER FOR GASEOUS REMOVAL UNDER VARIOUS CONDITIONS AND THE REACTION OF RED SUBSTANCES WITH FISSION PRODUCT SOLUTIONS. A BENCH-SCALE SOLIDIFICATION PLANT, WITH SPECIAL PROVISIONS TO MONITOR CONTROL OPERATIONS IN ORDER TO ENABLE IT TO WORK IN A HOT CELL, HAS BEEN CONSTRUCTED AND TESTED WITH COLD BURN.

POB DESC: CONF-721107, 17 PAGES, 14 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DECONTAMINATION; HOT CELL; WASTE TREATMENT, FISSION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, GAS; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; ITALY; SOLID; VITRIFICATION

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POB DATE: 1975

AUTHOR: BOCC, V.D.; LEVIE, R.E.

TITLE: FEASIBILITY STUDIES OF THE PARTITIONING OF COMMERCIAL HIGH-LEVEL WASTES GENERATED IN SPENT NUCLEAR FUEL REPROCESSING: ANNUAL PROG. REPT. FOR FISCAL 1974

CORPORATE AUTHOR: ONE BIDGE NATIONAL LABORATORY CHEMICAL TECHNOLOGY DIVISION

ABSTRACT: FEASIBILITY STUDIES FOR REMOVING LONG-LIVED ACTINIDES FROM HIGH-LEVEL WASTE HAS BEEN EVALUATED ON A PRELIMINARY BASIS. RESULTS INDICATE THAT IT MAY BE POSSIBLE TO REMOVE ACTINIDES TO A SUFFICIENTLY LOW LEVEL TO DECREASE THE POTENTIAL HAZARD OF HIGH-LEVEL WASTE AT 1000 YEARS TO VALUE COMPARABLE TO THAT OF NATURALLY OCCURRING URANIUM MINERALS. THE FEASIBILITY STUDY WAS DIRECTED PRIMARILY AT HIGH-LEVEL WASTE GENERATED BY THE COMMERCIAL REPROCESSING OF FUEL. A RESEARCH AND DEVELOPMENT PROGRAM OF CONSIDERABLE DEPTH IS REQUIRED TO DETERMINE WHETHER THESE SEPARATION PROCESSES CAN BE SUCCESSFULLY MODIFIED AND ADAPTED TO ACHIEVE THE NECESSARY SEPARATIONS AND, IN TURN, BE INTEGRATED INTO A FUNCTIONAL WASTE PROCESSING FACILITY AT THE EFFECTED LEVELS OF RADIOACTIVITY. DATA OBTAINED IN STUDIES CARRIED OUT THUS FAR INDICATE THAT THE MOST PROMISING CONCEPT FOR ACHIEVING THE DESIRED REDUCTIONS OF ACTINIDES WILL REQUIRE IMPROVED RECOVERY OF ACTINIDES IN CONVENTIONAL REPROCESSING OF FUELS AS WELL AS SECONDARY PROCESSING OF THE WASTE. POTENTIAL PROCESSES FOR THE NECESSARY ACTINIDE REMOVALS WERE STUDIED, AND SEVERAL PROBLEMS THAT MUST BE SOLVED TO DEVELOP SATISFACTORY PROCESS FLOWSHEETS WERE IDENTIFIED. PRESENT LABORATORY STUDIES ARE DESIGNED TO PINPOINT THE ADVANTAGES OF VARIOUS PROMISING POTENTIAL PROCESSES AND TO RESOLVE SOME OF THE DIFFICULT CHEMICAL PROBLEMS. (NOO. AUTH. ABST.)

POB DESC: CBRL-5012, (1975)

KEYWORDS: WASTE TREATMENT; FEASIBILITY; SPENT FUEL; EXTRACTION; SEPARATION TECHNIQUES; SOLVENT EXTRACTION; LOW ENRICHMENT; B AND D PROGRAM; HIGH-LEVEL WASTE; FUEL REPROCESSING; ACTINIDES (SEE ALSO TRANSURANIDS); WASTE PARTITIONING; FRACTIONATION; URANIUM; PLUTONIUM

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POB DATE: 1970

AUTHOR: BOOD, P.B.; HARTLEY, J.B.; REUBEL, J.E.; MELBOY, J.L.; SCHNEIDER, R.J.; SCHWAB, H.B.

TITLE: WASTE SOLIDIFICATION PROGRAM, VOL. 6, SPRAY SOLIDIFICATION PERFORMANCE DURING FIRST RADIOACTIVE TESTS IN WASTE SOLIDIFICATION ENGINEERING PROTOTYPES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: BATTILLE-NORTHWEST HAS SUCCESSFULLY DEMONSTRATED SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTE BY THE SPRAY SOLIDIFICATION PROCESS. APPROXIMATELY 7.0 MILLION CURIES OF RADIOISOTOPES WERE PROCESSED AND COLLECTED IN 8 AND 12-INCH DIAMETER CONTAINERS DURING SIX ENGINEERING-SCALE DEMONSTRATION BURNS IN WASTE SOLIDIFICATION ENGINEERING PROTOTYPES (USEP) AT THE PACIFIC NORTHWEST LABORATORY. RADIOACTIVITY PROCESSED WAS INCREASED FROM 63,000 CURIES IN THE FIRST RUN TO 3,000,000 CURIES IN THE SIXTH RUN.

POB DESC: BNWL-1391, 202 PAGES, FIGURES, TABLES, REFERENCES, AUGUST 1970

KEYWORDS: DECONTAMINATION; EFFLUENT; WASTE DISPOSAL; WASTE TREATMENT, FISSION; PHOSPHATE; GLASS (SEE ALSO VITRIFICATION); SPRAY; BATTILLE NORTHWEST; FUEL REPROCESSING; SOLID

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POB DATE: 1960

AUTHOR: BOUTARD, R.

TITLE: VITRIFICATION OF HIGH LEVEL WASTES

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ABSTRACT: IMPERATIVE SAFETY REASONS ENTAIL VITRIFICATION OF FISSION PRODUCT LIQUID WASTES. DIFFERENT KINDS OF GLASS ARE USED, ACCORDING TO THE COMPOSITION OF THE LIQUIDS. GLASS BLOCKS, WEIGHING SEVERAL KILOGRAMS AND HAVING A SPECIFIC RADIOACTIVITY OF 2 CI/ML, WERE PREPARED ON A LABORATORY SCALE. TWO INDUSTRIAL SCALE PROCESSES ARE UNDER STUDY - THE FIRST, A CONTINUOUS PROCESS, USES PRELIMINARY CALCINATION IN A ROTARY KILN. THE OTHER MORE ADVANCED DESIGN IS A SEMICONTINUOUS METHOD INVOLVING VITRIFICATION IN A METALLIC POT. A PILOT PLANT USING THE LATTER IS UNDER CONSTRUCTION AT HARWELL.

PUB DESC: BULL. INFORM. SCI. TECH. (PARIS), NO. 120, PAGES 13-30 (JULY 1966)

KEYWORDS: FRANCE; CALCINATION; WASTE TREATMENT; FISSION; WASTE DISPOSAL, LIQUID; HIGH-LEVEL WASTE; GLASS (SEE ALSO VITRIFICATION); RADIATION SAFETY AND CONTROL

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PUB DATE: 1976

AUTHOR: BRADY, R.J.; BOEKHOFF, A.A.

TITLE: SAFETY ANALYSIS REPORT-PLUG. 3544 PROCESS WASTE TREATMENT PLANT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A NEW PROCESS WASTE TREATMENT PLANT HAS BEEN CONSTRUCTED AT ORNL. THE WASTES ARE PROCESSED THROUGH A PRECIPITATION-CALCINATION STEP AND THEN THROUGH AN ION EXCHANGE STEP TO REMOVE THE LOW-LEVEL ACTIVITY IN THE WASTE BEFORE DISCHARGE INTO WHITE OAK CREEK. THERE ARE NO USUAL HAZARDS ASSOCIATED WITH THE OPERATION OF THE PLANT.

PUB DESC: ORNL/TN-5044 1976 (JUNE)

KEYWORDS: WASTE TREATMENT; PRECIPITATION; ION EXCHANGE; LOW-LEVEL WASTE; DISCHARGE; WHITE OAK CREEK; RIVER, CLINCH; EVAPORATION; ORNL;

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PUB DATE: 1972

AUTHOR: BRADY, R.J.; JARVIS, J.E.

TITLE: CONCEPTUAL DESIGN REPORT FOR THE PROPOSED ORNL PROCESS WASTE TREATMENT PLANT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: THE ORNL LOW-LEVEL, CS PROCESS, WASTE STREAMS, AVERAGING 150 GAL/DAY, CONTAINS ABOUT 0.3 MICROCURIE/GAL OF BETA-GAMMA ACTIVITY. THE PRESENT LINE-SODA TREATMENT FACILITY ACHIEVES A DECONTAMINATION FACTOR OF ONLY 4-5. IT IS PROPOSED TO REPLACE IT WITH A MUCH MORE EFFICIENT PROCESS USING ION EXCHANGE FOLLOWING A BEBE-IDE SCAVENGING STEP. THIS REPORT PRESENTS THE CONCEPTUAL DESIGN FOR THIS NEW FACILITY, INCLUDING A DETAILED DESCRIPTION, JUSTIFICATION, OUTLINE SPECIFICATIONS, PROPOSED SCHEDULE, AND COST ESTIMATES, WITH DESIGN DRAWINGS.

PUB DESC: ORNL/TN-0004, 89 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 1972

KEYWORDS: INSTRUMENTATION; LOW-LEVEL WASTE; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; ION EXCHANGE; TECHNICAL SPECIFICATIONS; WASTE TREATMENT, EQUIPMENT DESIGN; HEAD END; CONSTRUCTION SCHEDULE

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PUB DATE: 1966

AUTHOR: BRAY, L.A.; ROBERTS, F.P.

TITLE: PURIFICATION OF RARE EARTHS FROM HAFNIO WASTES BY SOLVENT EXTRACTION

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE CO-EXTRACTION OF CESIUM AND RARE EARTHS INTO 0.4 M DI(2-ETHYLHEXYL) PHOSPHORIC ACID (D2EHPA) PLUS 0.2M TRH-N-BUTYL PHOSPHATE (TBP) IS COMPLICATED IF LARGE QUANTITIES OF MANGANESE ARE PRESENT. ALTHOUGH THIS SITUATION MAY NOT OCCUR IN FUTURE RARE-EARTH PROCESSING, A SEPARATION SCHEME HAD TO BE FOUND FOR PROCESSING A LARGE BATCH OF CURRENT PEEK MATERIAL. BOTH LABORATORY AND POT-CELL EXPERIMENTS SHOWED THAT A GOOD SEPARATION OF MANGANESE AND THE RARE EARTHS IS POSSIBLE BY CONTROLLED-PH SOLVENT EXTRACTION. BECAUSE PH CONTROL IS VERY DIFFICULT IN THE PLANT, UNRELIABLE R: RLT5 AND HIGH PRODUCT LOSSES OCCURRED IN THE FULL-SCALE TESTS. THE D2EHPA SOLVENT EXTRACTION SCHEME FOR MANGANESE RECOVERY PROVED IMPRACTICAL. ANOTHER SCHEME, BASED ON SULFATE PRECIPITATION WAS DEVELOPED. THIS PROCESS, ALTHOUGH COMPLICATED BY THE LACK OF A CENTRIFUGE IN THE PLANT, DOES NOT REQUIRE PH CONTROL. PRELIMINARY RESULTS INDICATE 45 TO 95 PERCENT RARE-EARTH RECOVERY, AND AN ADEQUATE MANGANESE DECONTAMINATION FACTOR OF 50 TO 100.

PUB DESC: BNWL-107, 31 PAGES, 5 FIGURES, 6 REFERENCES, FEBRUARY 1966

KEYWORDS: CESIUM; SOLVENT EXTRACTION; WASTE TREATMENT, LIQUID; MANGANESE; RARE EARTH

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PUB DATE: 1960

AUTHOR: BRITISH PATENT OFFICE

TITLE: PROCESS FOR SOLIDIFYING RADIOACTIVE WASTES

CORPORATE AUTHOR: SOCIETE EUROPEENNE POUR LE TRAITEMENT CHIMIQUE DES COMBUSTIBLES IRRADIES EUROCHIMIC

ABSTRACT: DESCRIBES PROCESS FOR SOLIDIFYING RADIOACTIVE WASTES CONTAINING EITHER WATER-SOLUBLE FLUORIDE OR A WATER-SOLUBLE MIXTURE OF FLUORIDE AND SULFATE, WITH OR WITHOUT UP TO ABOUT 3 MOLAR EQUIVALENTS OF NITRATE FOR 1 MOLAR EQUIVALENT OF FLUORIDE AND/OR SULFATE. THE LEACHABILITY OF THE CAKE AS REDUCED WITH AN IMPERMEABLE AND INSOLUBLE MATERIAL, WHICH ACTS AS A BARRIER BETWEEN THE CAKE AND THE ENVIRONMENT.

PUB DESC: BRITISH PATENT 1,116,319, JUNE 6, 1960

KEYWORDS: CHEMICAL REACTION; LEACHING; WASTE STORAGE; WASTE TREATMENT, FISSION; WASTE DISPOSAL, SOLID; EVAPORATION; PATENT

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PUB DATE: 1966

AUTHOR: BROOKHAVEN NATIONAL LABORATORY (U.S.A.)

TITLE: ULTIMATE WASTE DISPOSAL

CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

ABSTRACT: REPORTS PROGRESS OF A PROCESS FOR CONVERTING HIGHLY RADIOACTIVE WASTES TO PHOSPHATE GLASS. PILOT-PLANT OPERATIONS INDICATE THAT A CRITICAL FACTOR IS CONTROL OF CONDITIONS IN THE EVAPORATOR. PHOSPHORIC ACID IS MIXED WITH THE WASTE. THE SOLUTION IS THEN REDUCED IN VOLUME BY EVAPORATION OF WATER AND NITRIC ACID AND CONVERTED TO GLASS BY HEATING TO 1200 C IN A PLATINUM CRUCIBLE.

PUB DESC: BNL-50,023, 4 PAGES, FIGURES, PAGES 45-64 OF BROOKHAVEN NATIONAL LAB. ANNUAL REPORT, DECEMBER 31, 1966

KEYWORDS: WASTE TREATMENT, FISSION; PHOSPHATE GLASS; RESEARCH AND DEVELOPMENT (SEE ALSO B AND E PROGRAM); FBI; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); B AND D PROGRAM

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PUB DATE: 1974

AUTHOR: BUDGER, L.L.; STAB, J.L.

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TITLE: THE TECHNOLOGY OF TRITIUM FIXATION AND STORAGE

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE TECHNOLOGY OF FIXATION OF TRITIUM IN A SOLID FORM HAS BEEN REVIEWED. IT HAS CONCLUDED THAT THE ROLE OF THE TRITIUM PRODUCER IN THE FUEL CYCLE RUNS UP IN THE FUELS PROCESSING PLANT, AND WITH CURRENT REPROCESSING PRACTICE, RUNS UP AS A VERY LARGE VOLUME OF LOW-LEVEL TRITIATED WATER. ALTERNATIVE PRACTICE MIGHT PRODUCE MUCH SMALLER VOLUMES. CRITERIA WERE ESTABLISHED FOR NARROWING THE VERY WIDE POSSIBLE CHOICE OF TRITIUM FIXATION METHODS AND THE MERITS OF VARIOUS CLASSES OF TRITIUM COMPOUNDS ARE DISCUSSED. CURRENT TRITIUM FIXATION TECHNOLOGY AND FIXATION RESEARCH WAS REVIEWED. CLAYS, PORTLAND CEMENT, AND HYDROXIDES ALL APPEAR TO HAVE MERIT, DEPENDING ON THE NATURE (PRINCIPALLY DEGREE OF DILUTION) OF THE TRITIUM WASTE.

PUB DESC: HWYL-1967, 34 PAGES, 54 REFERENCES, JANUARY 10, 1974

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); CLAY; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; TRITIUM; WASTE TREATMENT; FIXATION; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; HYDROXIDES; SOIL;

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PUB DATE: 1975

AUTHOR: FINKELBERG, E.C.; CLOPPING, R.O.; BAKER, D.A.; JENSEN, C.

TITLE: INCENTIVES FOR PARTITIONING HIGH-LEVEL WASTE

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE INCENTIVES FOR SEPARATING AND ELIMINATING VARIOUS ELEMENTS (NOT PARTICULARLY THE TRANSURANICS) FROM RADIOACTIVE WASTE PRIOR TO FINAL GEOLOGIC STORAGE WERE INVESTIGATED. EXPOSURE PATHWAYS TO MAN WERE DEFINED, AND POTENTIAL RADIATION DOSES TO AN INDIVIDUAL LIVING WITHIN THE REGION OF INFLUENCE OF THE UNDERGROUND STORAGE SITE WERE CALCULATED. THE ACCUMULATED HIGH-LEVEL WASTE (I.E., THE FISSION PRODUCT WASTE PRODUCED BY REPROCESSING SPENT FUEL) FROM THE U.S. NUCLEAR POWER ECONOMY THROUGH THE YEAR 2000 WAS THE ASSUMED RADIOISOTOPE SOURCE, AND WESTERN U.S. DESERT SUBSOIL WAS THE ASSUMED GEOLOGIC MEDIUM. THE RESULTS OF THE STUDY SHOWED THAT FOR REASONABLE STORAGE CONDITIONS THE POTENTIAL INCREMENTAL RADIATION DOSES WOULD BE OF THE SAME ORDER AS, OR LESS THAN, DOSES FROM NATURAL SOURCES. WE THEREFORE CONCLUDE THAT FOR THE SITUATIONS INVESTIGATED THE INCENTIVES FOR SPECIAL EFFORT TO REMOVE ANY ELEMENTS, INCLUDING THE TRANSURANICS, FROM HIGH-LEVEL WASTE ARE VANISHINGLY SMALL. THE STUDY RESULTS ALSO SHOWED THAT INCENTIVES EXIST FOR CONVERTING HIGH-LEVEL CALICHE INTO GLASS. THE STUDY REQUIRED NUMEROUS ASSUMPTIONS CONCERNED WITH THE TRANSPORT OF RADIOACTIVITY FROM THE GEOLOGIC STORAGE SITE TO MAN. THE ASSUMPTIONS USED, ON THE WHOLE, MAXIMIZED THE ESTIMATED POTENTIAL RADIATION DOSES. THUS INCENTIVES FOR REMOVING ELEMENTS FROM THE WASTE TENDED TO BE MAXIMIZED. INCENTIVES WERE ALSO MAXIMIZED BY ASSUMING THAT ELEMENTS REMOVED FROM THE WASTE COULD BE ELIMINATED FROM THE WASTE WITHOUT RISK. THE CONCLUSION THAT PARTITIONING INCENTIVES ARE NONEXISTENT--RESPITE ASSUMPTIONS TENDING TO MAXIMIZE THEM--IS BASED ON COMPARISON OF PREDICTED POTENTIAL RADIATION DOSES WITH ROUTINE DOSES FROM NATURAL SOURCES. THE STUDY FOUND THAT THERE ARE FEASIBLE CONDITIONS OF GEOLOGIC REPLACEMENT WHERE THE PREDICTED INCREMENTAL DOSE TO MAN IS CALCULATED TO BE AS LOW AS ONE TENTH OF "BACKGROUND". ALTHOUGH "BACKGROUND" VARIES WITH GEOGRAPHIC LOCATION AND CONSENSUS STANDARDS OF ALLOWABLE INCREMENTAL DOSE HAVE NOT YET BEEN FULLY ESTABLISHED, WE CONCLUDE THAT HIGH-LEVEL WASTE IN A GLASS FORM CAN SAFELY BE PLACED IN SELECTED GEOLOGIC MEDIA. THE METHODS USED IN THIS STUDY CAN BE APPLIED TO EVALUATE ANY COMBINATIONS OF WASTE TYPE AND GEOLOGIC MEDIA AT SITES THAT ARE CANDIDATES FOR FINAL GEOLOGIC STORAGE.

PUB DESC: HWYL-1927 1975 (NOV.)

KEYWORDS: SEPARATION; TRANSURANICS; WASTE STORAGE; PATHWAYS TO MAN; DOSE; VITRIFICATION; BACKGROUND RADIATION; COMPARISON; GEOLOGIC STORAGE; INCENTIVES; PARTITIONING (SEE ALSO SEPARATION, FRACTIONATION, AND WASTE PARTITIONING);

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PUB DATE: 1975

AUTHOR: BURNS, R.R.; HARTLEY, J.B.; LESTER, D.H.; ROBERTS, R.F.; SWANSON, J.L.; WHELFLEIGHT, E.J.

TITLE: TECHNICAL AND ECONOMIC FEASIBILITY OF PARTITIONING HANFORD PUREX PROCESS AND WASTE

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: SUMMARIZES A STUDY ON THE TECHNICAL AND ECONOMIC FEASIBILITY OF APPLYING THE CONCEPT OF PARTITIONING (REMOVAL OF LONG-LIVED RADIOISOTOPES, POSSIBLY ACTINIDES) TO HANFORD PUREX PROCESS ACIDIC HIGH LEVEL RADIOACTIVE WASTE. DISCUSSES THE AMOUNT AND COMPOSITION OF SUCH WASTE WHICH MAY BE PRODUCED, THE ACTINIDE ELEMENT SEPARATION FACTORS REQUIRED TO ATTAIN GIVEN CONCENTRATIONS OF ACTINIDE ELEMENTS IN THE SHORT-LIVED RESIDUAL WASTE AND SEPARATIONS SCHEMES WHICH HAVE POTENTIAL FOR ACHIEVING THE DESIRED REMOVAL OF ACTINIDE ELEMENTS. PRELIMINARY COST ESTIMATES ARE GIVEN.

PUB DESC: HWYL-1967, 46 PPS, 13 TABS, 10 REFS, MAY 1975

KEYWORDS: PUREX (SEE ALSO PARTITIONING); ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); PARTITIONING (SEE ALSO SEPARATION, FRACTIONATION, AND WASTE PARTITIONING); ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; HANFORD SITE; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT; WASTE TREATMENT

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PUB DATE: 1970

AUTHOR: CHADHA, U.

TITLE: REMOVAL OF RADIOISOTOPES FROM LIQUID WASTES BY ADSORPTION ON LOCAL MINERALS

CORPORATE AUTHOR: BARBARA ATOMIC RESEARCH CENTER, BOMBAY (INDIA)

ABSTRACT: VARIOUS NATURALLY OCCURRING MINERALS AVAILABLE IN INDIA HAVE BEEN EXTENSIVELY INVESTIGATED FOR THEIR SUITABILITY FOR TREATMENT OF RADIOACTIVE LIQUID WASTES AT TROMBAY. FOUR GENERAL CLASSES OF SUBSTANCES WERE TAKEN UP FOR STUDY AND CHIEFLY AMONG THE MINERALS ARE, VERMICULITE, ATTAPULGITE, BEAUFORTITE, AND LIGHTWEIGHT COAL PRODUCTS. IT IS CONCLUDED THAT THROUGH VERMICULITE HAS BEEN WIDELY USED AS FINE BED ION EXCHANGE MATERIAL, ATTAPULGITE IS A VERY POTENTIAL MINERAL BECAUSE OF ITS EXCEPTIONALLY HIGH SELECTIVITY FOR RADIOCESIUM EVEN IN PRESENCE OF MUCH AMOUNTS OF INACTIVE SODIUM IN THE WASTE SOLUTIONS.

PUB DESC: BARC-054, 29 PAGES, 1970

KEYWORDS: CESIUM; SODIUM; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; INDIA; ION EXCHANGE; SOIL; ADSORPTION (SEE ALSO ABSORPTION);

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PUB DATE: 1968

AUTHOR: CHRISTENSEN, C.W.

TITLE: TREATMENT OF HIGHLY RADIOACTIVE WASTES

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: THIS REPORT IS CONFINED TO THE WASTE GENERATED AND HANDLED AT HANFORD, U.S.A., BECAUSE THEY HAVE BEEN IN OPERATION THE LONGEST AND HAVE PROBABLY GENERATED MORE WASTES THAN AT ANY OTHER SITE. OF THE SEVERAL METHODS OF PROCESSING NUCLEAR FUEL, THE PUREX PROCESS IS THE MOST WIDELY USED. THE PUREX PROCESS INVOLVES SOLVENT EXTRACTION FROM A NITRIC ACID

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SOLUTION USING A SLURRY OF THIMOTYL PHOSPHATE AND KIDNEY. WITH THE CURRENT OPERATING EXPERIENCE AND SUCCESS OF THIS PROCESS AND ITS ECONOMIC ATTRACTIVENESS, INITIAL POWER FUEL REPROCESSING PLANTS WILL PROBABLY CONTINUE TO USE THE PURE PROCESS WITH SOME MINOR VARIATIONS, WHICH ARE ALSO DISCUSSED.

PUB DESC: LA-DC-10006, 28 P., OCTOBER 25, 1968

KEYWORDS: SOIL, RADIOCLIDE RECOVERY THROUGH; PUREX (SEE ALSO PARTITIONING); SOLVENT EXTRACTION; WASTE STORAGE; CALCINATION; WASTE TREATMENT, LIQUID; COMBUSTION; STACK; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; VAPOR PRESSURE; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; WASTE SITE; SOLVENT EXTRACTION; FUEL REPROCESSING; LEAK; FILTERS

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PUB DATE: 1968
AUTHOR: CHRISTENSEN, C.V.

TITLE: TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE CONCENTRATES

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: ALL TREATMENT PROCESSES FOR THE HANDLING OF LOW- AND INTERMEDIATE-LEVEL WASTES PRODUCE A CONCENTRATE WHICH GENERALLY HAS TO BE CONDITIONED BEFORE FINAL DISPOSAL. THESE CONCENTRATES MAY BE THE SOURCE FROM EVAPORATION PLANTS, CHEMICAL TREATMENT SLUDGES OR SPENT ION EXCHANGE MATERIAL. THE GENERALLY ACCEPTED METHODS DISCUSSED IN THIS PAPER ARE SOLAR EVAPORATION, FILTRATION (GRAVITY, PRESSURE AND VACUUM), CENTRIFUGATION, INCORPORATION INTO BITUMEN OR ASPHALT, AND INCORPORATION INTO CEMENT AND TERRAZZOLITE.

PUB DESC: LA-DC-10005, 63 P., OCTOBER 1968

KEYWORDS: CEMENT; INTERMEDIATE-LEVEL WASTE; ASPHALT; CEMENT; IAEA; WASTE TREATMENT, VITRIFICATION; WASTE MANAGEMENT; EVAPORATION; FILTRATION; SOIL

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PUB DATE: 1975
AUTHOR: CLAIBORNE, R.C.

TITLE: EFFECT OF ACTINIDE REMOVAL ON THE LONG-TERM HAZARD OF HIGH-LEVEL WASTE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A POSSIBLE METHOD FOR IMPROVING THE MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE INVOLVES THE REMOVAL OF ACTINIDES TO A VERY HIGH DEGREE TO REDUCE THE LONG-TERM HAZARD POTENTIAL OF WASTES STORED IN GEOLOGICAL FORMATIONS. IN THIS METHOD, ACTINIDES ARE REMOVED TO LEVELS WHERE THEIR CONTRIBUTION TO THE HAZARD POTENTIAL IS COMPARABLE TO THAT FROM THE LONG-LIVED FISSION PRODUCTS. REMOVAL OF ACTINIDES TO THIS EXTENT REDUCES THE LONG-TERM (GREATER THAN 1000 YEARS) HAZARD POTENTIAL OF HIGH-LEVEL WASTE TO ABOUT 5% OF THAT FOR DISCRETE MINERAL ON THE BASIS OF THE HAZARD INDEX. CALCULATIONS SHOW REMOVALS OF 99.99% PLUTONIUM, 99.9% URANIUM, 99.9% AMERICIUM, 99.9% CURIUM, AND 99% NEPTUNIUM FROM SPENT URANIUM-PLUTONIUM FUELS ACCOMPLISH THIS RESULT. HIGH TEMPERATURE GAS-COOLED REACTOR FUEL WILL ALSO REQUIRE REMOVAL OF 99.5% THORIUM AND 99% PROTACTINUM, AND INCREASING THE URANIUM REMOVAL TO 99.99%. ACHIEVING THESE ACTINIDE REMOVAL PERCENTAGES WILL REQUIRE REMOVAL FACTORS THAT ARE 10 TO 100 TIMES GREATER THAN HAVE BEEN ACHIEVED WITH EXISTING HIGH-RADIATION-LEVEL PROCESSING TECHNOLOGY. CONSIDERATION OF REMOVAL OF LONG-LIVED FISSION PRODUCTS AND ADDITIONAL ACTINIDES DOES NOT APPEAR TO BE WARRANTED UNTIL IT HAS BEEN DEMONSTRATED THAT ACTINIDES CAN BE REMOVED TO LEVELS APPROACHING THE PRESENT CALCULATED VALUES. THESE VALUES OF ACTINIDE REMOVALS SERVE AS A DESIRABLE GOAL IN PROCESS DEVELOPMENT STUDIES OF THE WASTE FRACTIONATION PROGRAM AT OAK RIDGE NATIONAL LABORATORY. (AUTH)

PUB DESC: OORL-TR-0720 (1975)

KEYWORDS: WASTE STORAGE; HIGH-LEVEL WASTE;

SEPARATION TECHNIQUES; ACTINIDES (SEE ALSO TRANSURANIDS); OORL; GEOLOGICAL FORMATIONS; HAZARDS ANALYSIS; PLUTONIUM; THORIUM; AMERICIUM; CURIUM; NEPTUNIUM; THORIUM; PROTACTINIUM; URANIUM; FRACTIONATION

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PUB DATE: 1967
AUTHOR: CLARK, R.E.; HISS, D.W.; HUGHES, P.D.; HUCE, L.; EDGLISH, J.L.

TITLE: LABORATORY DEVELOPMENT OF PROCESSES FOR FIXATION OF HIGH LEVEL RADIOACTIVE WASTES IN GLASSY SOLIDS. (4) COMPOSITION STUDIES ON CANDIDATE MATERIALS OF CONSTRUCTION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: LABORATORY TESTS INDICATE THAT AUSTENITIC STAINLESS STEELS, PARTICULARLY TYPE 304L, CAN BE USED AS THE SOLIDIFICATION AND STORAGE VESSEL FOR THE CALCINATION AND, WITH CAUTION, THE MELTING TO FORM A GLASS OR A CERAMIC SOLID OF ALUMINUM-CONTAINING (TWP-25) AND SULFATE-CONTAINING (PUREX) WASTE TYPES. TEMPERATURES OF OPERATION SHOULD BE KEPT ABOUT 900 C. WASTE AND ADDITIVE COMPOSITIONS MUST BE KNOWN, AND OPERATIONAL CONTROL MUST BE GOOD TO AVOID CORROSION. CORROSION DURING STORAGE IN A SALT BATH SHOULD BE NO PROBLEM PROVIDED THE SALT IS RELATIVELY DRY. TITANIUM WAS SUPERIOR TO STAINLESS STEELS AND NICKEL ALLOYS FOR SERVICE IN A WASTE EVAPORATOR AND ITS CONDENSER. STAINLESS STEEL AND NICKEL ALLOYS DEVELOPED INTERGRANULAR ATTACK, ACCELERATED BY THE PRESENCE OF FISSION-PRODUCT QUANTITIES OF BISMUTH. THE PRESENCE OF APPRECIABLE CONCENTRATIONS OF UNCOMPLETED FLOXIDE WOULD BE EXPECTED TO INCREASE THE CORROSION OF ALL THESE ALLOYS MARKEDLY, BUT ITS EFFECT ON TITANIUM WOULD BE GREATER.

PUB DESC: OORL-3016, 17 PAGES, 5 FIGURES, 15 TABLES, 16 REFERENCES, AUGUST, 1967

KEYWORDS: WASTE TREATMENT, FIXATION; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); CALCINATION; CERAMICS; SALT WASTE DISPOSAL (SEE ALSO WASTE DISPOSAL, SALT); OORL; COMPOSITION (SEE ALSO STRESS CORROSION); MATERIAL; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1966
AUTHOR: CLARK, R.E.

TITLE: ADDITION OF LITHIUM VALUES IN CORROSION OF FISSION-PRODUCT WASTES TO A GLASS-LIKE SOLID FOR DISPOSAL

ABSTRACT: RELATES TO METHODS OF DISPOSING OF RADIOACTIVE WASTES IN THE FORM OF A SOLID MASS. IN ACCORDANCE WITH THIS INVENTION, AN IMPROVED GLASS-LIKE COMPOSITION HAS BEEN PRODUCED BY ADDING LITHIUM AND SODIUM VALUES IN A LITHIUM-TO-SODIUM RATIO OF 0.75-1 TO 1.5-1 TO A GLASS-FORMING MIXTURE CONTAINING RADIOACTIVE WASTES AND THEN HEATING THE RESULTING MIXTURE TO ITS MELTING POINT. THE ADDITION OF LITHIUM AND SODIUM REDUCES THE MELTING TEMPERATURE OF THE SOLIDS AND DECREASES THE WATER-SOLUBILITY OF THE VITREOUS MASS PRODUCED.

PUB DESC: U.S. PATENT 3 264 627 P. 4 PAGES, 1 REFERENCES, AUGUST 9, 1966

KEYWORDS: WASTE TREATMENT, FIXATION; GLASS (SEE ALSO VITRIFICATION); WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID

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PUB DATE: 1966
AUTHOR: CLARK, R.E.; GODDARD, R.W.; FITZGERALD, C.L.

TITLE: LABORATORY DEVELOPMENT OF POT PROCESSES FOR SOLIDIFICATION OF RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

<450> COST.

ABSTRACT: THREE PCT PROCESSES FOR FIXATION OF HIGH LEVEL AQUEOUS WASTES HAVE BEEN DEVELOPED AT THE OAK RIDGE NATIONAL LABORATORY. ALL THREE PRODUCE SOLIDIFIED WASTE IN A CYLINDRICAL SIDE POT SUITABLE FOR PERMANENT STORAGE, AND ALL THREE PRODUCE ONLY DILUTE DITHIONIC ACID AS A SIDESTREAM. SINCE THE OFF-GAS VOLUME IS MINIMAL IN ALL THREE PROCESSES, CAPITAL COSTS FOR CONSTRUCTION OF THE PROCESSING FACILITY SHOULD BE MINIMAL. IN ALL THREE PROCESSES THE FIXATION VESSEL IS CONNECTED TO AN EVAPORATOR IN A LOOP, WITH THE EVAPORATOR SERVING BOTH TO CONCENTRATE THE FEED TO THE POT AND TO GIVE AN EXTRA DECONTAMINATION FACTOR FROM RADIOISOTOPES, PRINCIPALLY RUTHENIUM. THE EVAPORATOR WAS NOT OPERATED AS AN INTEGRAL PART OF THE LABORATORY TESTS.

PUB DESC: SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHMOND, WASHINGTON, FEBRUARY 14-16, 1966

KEYWORDS: CALCINATION; PCT CALCINATION; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; ORE; WASTE TREATMENT, SOLID; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1965
AUTHOR: CLARK, D.E.; GODFREY, E.W.; FITZGERALD, C.L.

TITLE: LABORATORY DEVELOPMENT OF PROCESSES FOR FIXATION OF HIGH-LEVEL RADIOACTIVE WASTE IN GLASSY SOLIDS. 3. WASTES FROM THE PUREX SOLVENT EXTRACTION PROCESS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: GLASSY SOLIDS SUITABLE FOR THE LONG-TERM STORAGE (ULTIMATE DISPOSAL) OF RADIOACTIVE WASTES WERE PREPARED FROM SOLUTIONS SIMULATING THOSE OBTAINED BY THE PUREX SOLVENT EXTRACTION PROCESS. STUDIES WERE APPLICABLE TO BOTH MIXING LEVEL (HL-POTGLASS) AND CONTINUOUS GLASS PROCESSES. MAXIMUM TEMPERATURES ALLOWABLE ARE ABOUT 1050 DEGREES AND 900 DEGREES C FOR THE MIXING LEVEL AND THE CONTINUOUS MELTING GLASS PROCESSES, RESPECTIVELY. LOWER OPERATING TEMPERATURES ARE DESIRABLE IN BOTH CASES. INCREASING THE CONTENT OF ALUMINUM OR OF FISSILE PRODUCTS GENERALLY INCREASED STRENGTH AND MELTING TEMPERATURES BUT RESULTED IN A MORE UNIFORM PRODUCT. TITANIUM WAS THE MOST RESISTANT MATERIAL TESTED FOR USE IN THE EVAPORATOR, CONDENSER, AND OFF-GAS LINES. STAINLESS STEEL IS SUFFICIENTLY RESISTANT TO SERVE AS THE FIXATION-STORAGE VESSEL FOR THE HL-POTGLASS PROCESS IN SPITE OF RELATIVELY HIGH CORROSION RATES.

PUB DESC: ORNL-3640 58 PAGES, TABLES, FIGURES, 22 REFERENCES- JUNE 1965

KEYWORDS: CESIUM; RUTHENIUM; WASTE STORAGE; WASTE TREATMENT, FIXATION; WASTE SOURCE AND TYPE; THERMAL CONSIDERATION; GLASS (SEE ALSO VITRIFICATION)

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PUB DATE: 1966
AUTHOR: COMANDEU, R.E.; LOESE, G.E.; BLACK, D.E.; COOPER, E.D.

TITLE: OPERATION OF THE WASTE CALCINING FACILITY WITH HIGHLY RADIOACTIVE AQUEOUS WASTE. REPORT OF THE FIRST PROCESSING CAMPAIGN

CORPORATE AUTHOR: PHILLIPS PETROLEUM COMPANY, IDAHO

ABSTRACT: THE WORLD'S FIRST MAJOR BREAKTHROUGH IN TREATING HIGH-LEVEL RADIOACTIVE AQUEOUS WASTE HAS BEEN ACHIEVED AT THE IDAHO CHEMICAL PROCESSING PLANT WHERE THE WASTE CALCINING FACILITY CONVERTS RADIOACTIVE WASTE SOLUTIONS TO SOLIDS. BY 3 DECEMBER 1963 TO OCTOBER 1964, ABOUT 512,000 GALLONS OF WASTE CONTAINING UP TO 40 COPIES OF VARIOUS RADIOISOTOPES PER GALLON WERE CALCINED IN AN AIR-FLUIDIZED BED HEATED TO 400 C BY BEAMS OF A LIQUID-METAL HEAT-TRANSFER SYSTEM. AN OPERATING FACTOR OF 99.2 PERCENT WAS ACHIEVED, AND DECONTAMINATION OF THE OFF-GAS FROM THE FLUIDIZED BED WAS EXCELLENT.

PUB DESC: IEO-14462, 70 PAGES, 13 FIGURES, 9 TABLES, 15 REFERENCES, JUNE 1966

KEYWORDS: DECONTAMINATION; HEAT TRANSFER; CALCINATION; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; MONITOR, GAS; WASTE DISPOSAL, SOLID; : : HEAT GENERATION, INTERNAL; WASTE TREATMENT, EQUIPMENT; INSTRUMENTS, DISC.

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PUB DATE: 1971
AUTHOR: CCHUBER, J.B.; HULL, M.L.

TITLE: LOW-TEMPERATURE WASTE SOLIDIFICATION

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, BIXEN, SOUTH CAROLINA

ABSTRACT: ASSESSES THE POSSIBILITY OF CONVERTING AQUEOUS RADIOACTIVE WASTES AT THE SAVANNAH RIVER PLANT TO WATER-FREE CASTABLE BELTS OR TO SOLIDS. A WASTE-BELT PROCESS IS PROPOSED THAT INCORPORATES DESIRABLE FEATURES FROM THREE ONE-STEP METHODS. THE PROPOSED SCHEME CONSISTS OF A FIRST-STAGE CONCENTRATION FROM 30 WT % TO 60 WT % SOLIDS USING A BERT-TUBE EVAPORATOR, SECOND-STAGE CONCENTRATION TO 90 WT % SOLIDS USING A WIPE-FILM EVAPORATOR, AND A THIRD-STAGE CONCENTRATION TO A BELT USING AN AUGER-AGITATED CALCINER OR AN ADDITIONAL WIPE-FILM EVAPORATOR.

PUB DESC: BEST-70-540, 20 PAGES, JANUARY 1971

KEYWORDS: CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; SAVANNAH RIVER PLANT; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE DISPOSAL, SALT

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PUB DATE: 1965
AUTHOR: CCUSEN, K.E.; LASHER, L.C.; GENHILL, L.; PEABODY, S.G.

TITLE: OPERATIONAL EXPERIENCE IN THE TREATMENT OF RADIOACTIVE WASTE AT OAK RIDGE NATIONAL LABORATORY AND BROOKHAVEN NATIONAL LABORATORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY ; BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

ABSTRACT: MANAGEMENT OF RADIOACTIVE LIQUID AND SOLID WASTES. (CATEGORIZED AS LOW-ACTIVITY LEVEL AND INTERMEDIATE-ACTIVITY LEVEL BY THIS SYMPOSIUM) AT OAK RIDGE NATIONAL LABORATORY AND BROOKHAVEN NATIONAL LABORATORY ARE REVIEWED. MODIFICATIONS EVOLVED FROM OPERATIONAL EXPERIENCE AND THE FINDINGS OF RESEARCH STUDIES ARE DISCUSSED, AND THEIR EFFECT ON EFFLUENT QUALITY AND COST OF OPERATION ARE DESCRIBED.

PUB DESC: PRACTICES IN THE TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES, SYMPOSIUM, VIENNA, DECEMBER 6-10, 1965 25 PAGES, 8 FIGURES, 6 TABLES, 26 REFERENCES

KEYWORDS: CESIUM; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; IODINE; MONITOR, LIQUID; SYMPOSIUM; WASTE TREATMENT, LIQUID; PHOSPHORUS; WASTE SOURCE AND TYPE; WASTE DISPOSAL, LIQUID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; WASTE DISPOSAL, HYDRAULIC FRACTURING

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PUB DATE: 1968
AUTHOR: DAGEN, A.; ALM, H.; SACUSE, G.; HARTZSCHUL, H.

TITLE: THE ECONOMY OF THE COLLECTION, TREATMENT AND DISPOSAL OF RADIOACTIVE WASTES IN THE G.D.R. DECONTAMINATION OF RADIOACTIVE WASTES BY CONTACT PRECIPITATION

CORPORATE AUTHOR: STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ, BERLIN (EAST GERMANY)

ABSTRACT: SOLID AND LIQUID RADIOACTIVE WASTES ARE EXCLUSIVELY COLLECTED BY THE RADIOACTIVE PROTECTION CENTRE AND TREATED IN A PILOT PLANT BY DISTILLATION, PRECIPITATION, ION EXCHANGE, OR BAILING. THE RESULTING

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CONCENTRATES ARE PACKED IN 200-L STEEL DRUMS AND STORED IN RINE GALLERIES. THE PARAMETERS OF THE PILOT PLANT AS WELL AS THE TREATMENT WASTES ARE DESCRIBED. TO ESTIMATE THE TOTAL COSTS OF THE DISPOSAL OF THE DIFFERENT WASTES, A COST EVALUATION IS PERFORMED OF THE SINGLE PROCESSES (COLLECTION, TREATMENT, AND DISPOSAL). THE TOTAL COSTS PER UNIT VOLUME OF WASTE ARE PRESENTED FOR THE SEVERAL TYPES OF WASTE.

PUB DESC: SES-10/68, 1968, 42P.

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; FALING; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; EVAPORATION; GEMMAY; ION EXCHANGE; PRECIPITATION; STORAGE CONTAINERS

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PUB DATE: 1970

AUTHOR: SAITEV, N.; DELCHEV, G.; TSELYAIKOV, V.; GRADY, G.; SIBOV, S.

TITLE: INCOF METHOD OF BITUMINIZATION OF RADIOACTIVE WASTES IN NATURAL SOLVENTS

ABSTRACT: DISCUSSES METHOD OF WASTE TREATMENT USING THE BITUMINIZATION PROCESS OF FIXATION.

PUB DESC: SM-137/3, STI/FRB-264, CONF-700905, 20 PAGES, 25 REFERENCES, PAPER PRESENTED AT THE SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIR-ED-EDROUVECT, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: DECONTAMINATION; ASPHALT; IAEA; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; GSSN; LEACHING

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PUB DATE: 1965

AUTHOR: DAVIS, W.; KIBBY, A.W.; SCHONFELD, E.

TITLE: LABORATORY DEMONSTRATION OF THE TWO-STEP PROCESS FOR DECONTAMINATING LOW-RADIOACTIVITY-LEVEL PROCESS WASTE WATER BY SCAVENGING-PRECIPITATION AND FOAM SEPARATION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE TWO-STEP PROCESS FOR DECONTAMINATING LOW-LEVEL RADIOACTIVE WASTE WATER WAS DEMONSTRATED IN TWO CONTINUOUS RUNS ON A LABORATORY SCALE. THE PROCESS CONSISTS IN FIRST PRECIPITATING AND ELIMINATING MOST OF THE SUSPENDED SOLIDS AND SOLUBLE MATERIALS IN A SUSPENDED-BED SLUDGE COLUMN AND THEN PRODUCING FURTHER DECONTAMINATION IN A COUNTER-CURRENT FOAM COLUMN.

PUB DESC: ORNL-3811- 32 PAGES, 7 FIGURES, 5 TABLES, 33 REFERENCES- OCTOBER 1965

KEYWORDS: CESIUM; LOW-LEVEL WASTE; CESIUM; COBALT; RUTHENIUM; STRONTIUM; WASTE TREATMENT, LIQUID; WASTE TREATMENT, ECONOMICS

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PUB DATE: 1966

AUTHOR: DE LOBA SORIA, F.; DIAZ HOGORINA, E.; LOPEZ FERRZ, D.

TITLE: TREATMENT OF RADIOACTIVE WASTES RESULTING FROM THE REPROCESSING OF IRRADIATED FUELS. SOLUTIONS ADOPTED BY J.E.N. I. LIQUID WASTES OF LOW AND MEDIUM RADIOACTIVITY

ABSTRACT: VARIOUS WAYS OF PROCESSING LIQUID RADIOACTIVE WASTES OF LOW AND MEDIUM RADIOACTIVITY ARE DESCRIBED. METHODS DESCRIBED INCLUDE HYDROXIDE FLOCCULATION, PHOSPHATE TREATMENTS, COPRECIPITATION OF SOLIDS, AND PERACETATE TREATMENTS. IONIC INTERCHANGES, BIOLOGICAL TREATMENTS, AND OTHER METHODS ARE ALSO CONSIDERED. THE METHODS ADOPTED BY THE JEN FOR THE CIES PLANT ARE GIVEN.

PUB DESC: ENERGY, NUCL. (RADRIC), 10, PAGE 280-295,

2 FIGURES, 9 TABLES, 56 REFERENCES, (JULY-AUGUST 1966) IN SPANISH

KEYWORDS: WASTE TREATMENT; INTERMEDIATE-LEVEL WASTE; WASTE TREATMENT, LIQUID; ION EXCHANGE; SPAIN

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PUB DATE: 1972

AUTHOR: DEBATO, A.; BOCOLA, W.

TITLE: TESTED PROGRAM - HIGH-LEVEL RADIOACTIVE WASTE SOLIDIFICATION. BOROSILICATE GLASS EXPERIMENTAL EVALUATION AND DEMO-SCALE VITRIFICATION WITH SIMULATED FISSION PRODUCT SOLUTIONS

CORPORATE AUTHOR: CERN, DIVISION DE PROTECTION SANITAIRE ET CONTINGLES, BONE, ITALY

ABSTRACT: A PHOSPHATE GLASS PROCESS FOR SOLIDIFICATION OF FISSION PRODUCT SOLUTIONS, DEVELOPED IN THE FRAME OF ESTER PROGRAM, WAS PREVIOUSLY REPORTED. STUDIES CARRIED OUT ON THE USE OF BOROSILICATE GLASSES AS AN ALTERNATIVE TO PHOSPHATE GLASSES, TO SOLIDIFY A SOLUTION OF THIS TYPE, ARE REPORTED. TWENTY GLASS SAMPLES, CONTAINING 3.6 TO 10.0 WT % AND 1.7 TO 12.0% IN MOLES OF FISSION PRODUCT OXIDES, WERE PREPARED IN BATCH. THROUGH EXPERIMENTAL EVALUATION OF THE MOST SIGNIFICANT GLASS PROPERTIES (WORKING TEMPERATURE, LEACHABILITY AND VOLUME REDUCTION FACTOR), A FEW COMPOSITIONS WERE SELECTED TO TEST THE BOROSILICATE GLASS SOLIDIFICATION PROCESS.

PUB DESC: ENERGIA NUCLEARE (MILAN), 19(7), PP. 459-469 (JULY 1972)

KEYWORDS: WASTE TREATMENT; PHOSPHATE; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); EXPERIMENT; SOLID

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PUB DATE: 1968

AUTHOR: DRAGER, R.P.; EMMA, L.C.; FEDELEN, J.J.; HATCH, L.F.; STRICKLAND, G.; TOTHILL, E.J.; WETH, G.C.

TITLE: DEVELOPMENT OF THE PHOSPHATE GLASS PROCESS FOR ULTIMATE DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

ABSTRACT: INCORPORATION, OR FIXATION, OF FISSION PRODUCTS IN STABLE SOLID MEDIA, FOLLOWED BY STORAGE OF THE SOLID IN GEOLOGICALLY STABLE REGIONS, OFFERS A HIGHLY PROMISING APPROACH TO THE PROBLEM OF ULTIMATE DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES. A NUMBER OF PRACTICAL PROCESSES FOR CARRYING OUT THE FIXATION STEP ARE UNDER INVESTIGATION AND DEVELOPMENT IN THE UNITED STATES AND OTHER COUNTRIES. ONE OF THESE, THE PHOSPHATE GLASS PROCESS, IS DISCUSSED IN DETAIL IN THE PRESENT REPORT.

PUB DESC: BNL-50130, 50 PAGES, 7 FIGURES, TABLES, JANUARY 1968

KEYWORDS: GEOLOGY; WASTE TREATMENT, FIXATION; BNL; PHOSPHATE; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; GLASS (SEE ALSO VITRIFICATION); SIMULATION

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PUB DATE: 1972

AUTHOR: DACHNIK, S.

TITLE: METHOD OF REMOVING NITRIC ACID, NITRATE IONS, AND NITRITE IONS OUT OF AQUEOUS WASTE SOLUTIONS

ABSTRACT: NITRIC ACID, NITRATE IONS, AND NITRITE IONS ARE REMOVED FROM AQUEOUS RADIOACTIVE WASTE SOLUTIONS BY TREATING SUCH SOLUTIONS WITH A REDUCING AGENT. THE AQUEOUS WASTE IS FED INTO A HEATED AQUEOUS SOLUTION OF THE REDUCING AGENT (ESSENTIALLY FORMIC ACID). THE OFF-GAS IS PREDOMINANTLY CO₂ AND H₂O.

PUB DESC: U.S. PATENT 3,673,046 +. JUNE 27, 1972

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KEYWORDS: DECONTAMINATION; CORROSION; WASTE TREATMENT, LIQUID; NITROGEN; NITRILE; OFF GAS; NITRATE; ACID

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PUB DATE: 1968
AUTHOR: BRODIE, S.; KLUGER, W.; REPP, R.

TITLE: REMOVAL OF CONDENSED PHOSPHATES FROM RADIOACTIVE WASTES

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG MBH, KARLSRUHE, GERMANY

ABSTRACT: DISCUSSES METHODS OF REMOVAL OF CONDENSED PHOSPHATES FROM WASTE BY ADSORPTION, ION EXCHANGE, CHEMICAL PRECIPITATION, ETC.

PUB DESC: KEP-917, OBL-10-2291, 35 PAGES, 13 FIGURES, 4 TABLES, 17 REFERENCES, ENGLISH 1968

KEYWORDS: ADSORPTION; CALCIUM; CHEMICAL REACTION; DECONTAMINATION; WASTE TREATMENT, LIQUID; PHOSPHATE; ION EXCHANGE; PRECIPITATION; HYDROXIDE

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PUB DATE: 1962
AUTHOR: BURSTER, H.J.

TITLE: A REVIEW OF PROCEDURES FOR DISPOSAL OF RADIOACTIVE WASTE, 1961

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, PARREL

ABSTRACT: PART I REVIEWS THE CURRENT PROCEDURES FOR THE TREATMENT AND DISPOSAL OF WASTES FROM ATOMIC ENERGY INSTALLATIONS AND FROM THE INDUSTRIAL AND RESEARCH USE OF RADIOACTIVE MATERIALS. PART II CONSIDERS THE QUANTITATIVE ASPECTS AND ASSESSES THE RISK TO WHICH IT IS POSSIBLE TO ESTIMATE THE RADIATION DOSE TO MAN RESULTING FROM WASTE DISPOSAL. IT IS CONCLUDED THAT PUBLISHED INFORMATION IS INSUFFICIENT TO MAKE ANY SUCH QUANTITATIVE ESTIMATE, EXCEPT IN TWO CASES: (1) THE DISCHARGE OF LIQUID RADIOACTIVE WASTE FROM THE WINDSCALE WORKS, SELLAFIELD, CUMBRIAN, TO THE IRISH SEA; AND (2) THE DISCHARGES OF LIQUID WASTE TO THE COLUMBIA RIVER FROM THE HANFORD ATOMIC PRODUCTS OPERATION IN THE STATE OF WASHINGTON, USA.

PUB DESC: DESR(P)829 - 35 PAGES, 3 TABLES, 46 REFERENCES- DECEMBER 1962

KEYWORDS: HAZARD, RELATIVE; WASTE DISPOSAL; WASTE HANDLING; WASTE TREATMENT

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PUB DATE: 1964
AUTHOR: EGDENLEY, R.; RAY, A.C.

TITLE: TREATMENT OF SYNOVIUM-90 BEARING ORGANIC WASTE BY ION EXCHANGE

CORPORATE AUTHOR: WASHINGTON UNIVERSITY ; UNIVERSITY OF MISSOURI

ABSTRACT: ION EXCHANGE IS BECOMING INCREASINGLY IMPORTANT AS A TREATMENT METHOD FOR WASTES. SINCE ITS INITIAL USE AS A TREATMENT METHOD FOR THE RECOVERY OF METALS FROM PLATING BATHS OTHER APPLICATIONS HAVE CONTINUED TO APPEAR. EXAMPLES ARE TO BE FOUND IN THE SEPARATION OF ORGANIC FROM INORGANIC CONSTITUENTS BY ION EXCLUSION AND IN SEPARATION AND RECOVERY OF RADIOISOTOPES. THE MOST RECENT APPLICATIONS UTILIZE THE ION EXCHANGE MEMBRANE TECHNIQUES.

PUB DESC: CONF-179-10, 23 PAGES, 8 FIGURES, 12 REFERENCES, APRIL 10, 1964

KEYWORDS: DECONTAMINATION; SYNOVIUM; WASTE TREATMENT, LIQUID; ION EXCHANGE; IRRADIATION SAFETY AND CONTROL; RADIOISOTOPE; RESIN; LEAD; FILTERS

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PUB DATE: 1969
AUTHOR: EDITORIAL, NUCLEAR NEWS (U.S.A.)

TITLE: ADDITIONAL SOLIDIFICATION PROJECT AT PACIFIC NORTHWEST LABORATORY

ABSTRACT: HIGH LEVEL RADIOACTIVE WASTE SOLIDIFICATION PROCESSES AT BROOKHAVEN NATIONAL LABORATORY (BNL), CAR WEDGE NATIONAL LABORATORY PROCESSING PLANT (ICPP), HARCOLE WASTE IN FRANCE AND THE FINGEL PROCESS IN ENGLAND ARE BRIEFLY DESCRIBED AND COMPARED.

PUB DESC: NUCLEAR NEWS, 12(4), PG 19-21 (APRIL 1969)

KEYWORDS: UNITED KINGDOM; COMPARISON; FRANCE; WASTE DISPOSAL; WASTE STORAGE; BNL; OBNL; HIGH-LEVEL WASTE; WASTE MANAGEMENT; IDAHO FALLS

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PUB DATE: 1965
AUTHOR: ENELITY, L.A.; CHRISTENSEN, C.W.; FOWLER, E.B.

TITLE: DISPOSAL OF AN 241 AND PU 239 NITRATE SOLUTIONS BY FIXATION WITH CEMENT

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: IN 1959 IT BECAME NECESSARY TO DEVELOP A METHOD FOR DISPOSAL OF A NITRATE SOLUTION CONTAINING AN 241 AND PU 239 WITH SOME PARENT MATERIALS AND DAUGHTER PRODUCTS. RESEARCH LED TO A DECISION TO NEUTRALIZE THE WASTE AND FIX IT IN CEMENT-VERMICULITE FOR LAND BURIAL. DEVELOPMENT OF THE PHYSICAL PLANT TO TREAT THE WASTES ON A CONTINUING BASIS IS DESCRIBED IN DETAIL. DATA ON THE FIRST 6-1/2 YEARS OPERATION ARE PRESENTED. LEACH RATE ACTIVITY DATA ARE PRESENTED WHICH DEMONSTRATE THE EXCELLENT DETENTION OF ACTIVITY BY THE MORTAR OVER PERIODS EXTENDING TO 2 YEARS. THE LEACH RATE DURING THE FIRST FEW WEEKS IMMERSION EXCEEDS THAT OF FOLLOWING PERIODS DUE TO THE ACCESSIBILITY OF BLOCK SURFACE ACTIVITY. THE PER GALLON COST OF MATERIAL FOR DISPOSAL OF THE NITRATE WASTE SOLUTION IS 0.900 (PRICES AS OF AUGUST 21, 1964).

PUB DESC: LA-3150-MS 20 PAGES, 6 TABLES, 5 FIGURES- MARCH 12, 1965

KEYWORDS: PLUTONIUM; NITRATE; WASTE TREATMENT, FIXATION; WASTE TREATMENT, ECONOMICS; AMERICIUM; DESORPTION

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PUB DATE: 1976
AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.)

TITLE: ALTERNATIVES FOR MANAGING WASTES FROM REACTORS AND POST-FISSION OPERATIONS IN THE LWR FUEL CYCLE. VOL. 2 - ALTERNATIVES FOR WASTE TREATMENT.

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: CONTAINED IN THIS VOLUME ARE DISCUSSIONS OF ALTERNATIVES FOR MODIFYING, TREATING AND IMMOBILIZING THE TRANSURANIC AND NONTRANSURANIC RADIOACTIVE WASTES IDENTIFIED IN VOLUME 1, SECTION 2.0 OF THIS DOCUMENT. TREATMENT AS USED HEREIN REFERS TO ANY ACTION PERFORMED FROM THE PRIMARY WASTE TO ALTER ITS FORM FOR TRANSPORT, STORAGE OR DISPOSAL. IMMOBILIZATION IMPLIES AN ALTERED FORM OF THE PRIMARY WASTE WHICH IS LESS SUBJECT TO ACTIONS OF THE ENVIRONMENT INTO WHICH IT IS PLACED THAN IS THE ORIGINAL FORM. FOR CERTAIN CASES TREATMENT AND IMMOBILIZATION MAY NOT BE REQUIRED. TREATMENT AND IMMOBILIZATION ARE CONSIDERED TO BE OF ADVANTAGE WHEN THEY EITHER PROTECT THE PUBLIC HEALTH AND SAFETY OR REDUCE COSTS WITHOUT COMPROMISING PUBLIC HEALTH AND SAFETY. THE ALTERNATIVES PRESENTED IN SECTIONS 5 THROUGH 16 DESCRIBE TREATMENTS FOR APPLICATION TO SPECIFIC TYPES OF WASTE GENERATED IN THE "BACK-END" OF THE FUEL CYCLE. IN ADDITION TO DESCRIPTIONS, TREATMENTS ARE DISCUSSED ON THE BASIS OF THEIR STATUS, WHETHER OR NOT THE TREATMENT IS AVAILABLE, FOR THOSE

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 PROCESSES NOT PRESENTLY AVAILABLE THE STAGE OF DEVELOPMENT IS IDENTIFIED, AND THE WORK REMAINING TO BE COMPLETED BEFORE THE PROCESS CAN BE APPLIED BY INDUSTRY IS UNLIMITED. THE INFORMATION CONTAINED PRESENTS ONLY THE TECHNOLOGY ASSOCIATED WITH THE INDIVIDUAL TREATMENT AND PROVIDES THE BASES FOR THE READER TO EVALUATE THE TECHNICAL ASPECTS AND STATUS OF EACH TREATMENT. THE TREATMENTS HAVE NOT BEEN OPTIMIZED, AND THE AUTHORS HAVE NOT ATTEMPTED TO DRAW CONCLUSIONS OR MAKE RECOMMENDATIONS REGARDING THE EFFICACY OF THE VARIOUS TREATMENTS. (DOO. AUTH ABST.)

PUB DESC: EREA - 76-03 VOL. 2, 1976

KEYWORDS: WASTE MODIFICATION; WASTE DISPOSAL ALTERNATIVES; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); DECOMMISSIONING; ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); FUEL REPROCESSING; SOLVENT EXTRACTION; WASTE DISPOSAL; OFF GAS TREATMENT; WASTE SOLIDIFICATION; HIGH-LEVEL WASTE; WASTE FIXATION; AQUEOUS WASTES (SEE ALSO WASTE DISPOSAL, LIQUID); ERYPTON (SEE ALSO DOOER GAS); IODINE; TRITIUM; WASTE PARTITIONING

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PUB DATE: 1968

AUTHOR: FINEBAW, P.

TITLE: PROGRESS IN WASTE-DISPOSAL RESEARCH AND DEVELOPMENT

ABSTRACT: AT PACIFIC NORTHWEST LABORATORY (PNL), A PROGRAM IS IN PROGRESS TO DEMONSTRATE ON AN ENGINEERING SCALE THE TECHNICAL, ECONOMIC, AND SAFETY ASPECTS OF VARIOUS SOLIDIFICATION PROCESSES FOR CONVERTING HIGH-LEVEL-ACTIVITY WASTES TO SOLID FORM. THREE PROCESSES HAVE BEEN SELECTED FOR TESTING IN A MULTIPURPOSE FACILITY KNOWN AS THE WASTE-SOLIDIFICATION ENGINEERING PROTOTYPES (WESP). THEY ARE (1) THE PNL SPRAY-SOLIDIFICATION PROCESS, (2) THE ORNL OAK RIDGE NATIONAL LABORATORY) PCT-CALCINATION AND DISING-LEVEL GLASS PROCESSES, AND (3) THE PNL (BROOKHAVEN NATIONAL LABORATORY) PHOSPHATE-GLASS PROCESS.

PUB DESC: REACTOR AND FUEL-PROCESSING TECHNOLOGY, 11(2), PAGES 107-116 5 FIGURES, 3 TABLES, 52 REFERENCES, (SPRING 1968)

KEYWORDS: WASTE STORAGE; PCT CALCINATION; SPRAY SOLIDIFICATION; PHOSPHATE GLASS; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT; FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, GAS; PHOSPHATE; WASTE DISPOSAL, SOLID; WASTE TREATMENT, ECONOMICS; GLASS (SEE ALSO VITRIFICATION); WASTE DISPOSAL, SALT

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PUB DATE: 1966

AUTHOR: FINEBAW, P.

TITLE: WASTE DISPOSAL. SECTION IV

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY, IDAHO FALLS, IDAHO

ABSTRACT: THIS ARTICLE REVIEWS CURRENT WORK ON WASTE DISPOSAL. INCLUDES TREATMENT OF INTERMEDIATE-LEVEL WASTES BY ION EXCHANGE RECRYSTALLIZATION, AND INCORPORATION IN ASPHALT. UNDER CONVERSION OF HIGH-LEVEL WASTE TO SOLIDS, THE ECONOMICS OF TANK STORAGE COMPARED CONVERSION TO SOLIDS, FLUORIDE-ICE CALCINATION, AND CONVERSION TO GLASSES. PLANS FOR THE RECOVERY OF MERCURIC AMOUNTS OF SELECTED FISSION PRODUCTS FROM BEDOX-AND PUREX-PLANT WASTE ARE DESCRIBED.

PUB DESC: REACTOR FUEL PROCESSING 9(3), PAGES 170 THRU 176, 36 REFERENCES, (SUMMER 1966)

KEYWORDS: WASTE STORAGE; PUREX (SEE ALSO PARTITIONING); ASPHALT; WASTE TREATMENT; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; FISSION PRODUCT; SEPARATION; ORNL; WASTE MANAGEMENT; IDAHO FALLS; BATTILLE NORTHWEST

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PUB DATE: 1966

AUTHOR: FINEBAW, P.

TITLE: SECTION IV. WASTE DISPOSAL. TREATMENT OF LOW-AND INTERMEDIATE-LEVEL-ACTIVITY WASTES

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: A SURVEY OF CURRENT WORK ON WASTE DISPOSAL. INCLUDES THE FOLLOWING INFORMATION - (1) ION-EXCHANGE TREATMENT OF LOW-LEVEL WASTE WATER BY IDAHO CHEMICAL PROCESSING PLANT, PACIFIC NORTHWEST LABORATORY, AND HANWELL, (2) FLUORIDE-ICE CALCINATION AND CONVERSION TO GLASS OF HIGH-LEVEL WASTES, (3) ECONOMIC STUDIES OF PRIMITIVE TANK STORAGE, AND (4) FISSION-PRODUCT RECOVERY.

PUB DESC: REACTOR FUEL PROCESSING 9(1), PAGES 80 THRU 90, 7 FIGURES, 32 REFERENCES

KEYWORDS: WASTE STORAGE; ION EXCHANGE; WASTE TREATMENT; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; FISSION PRODUCT; SEPARATION; ORNL; IDAHO FALLS; BATTILLE NORTHWEST

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PUB DATE: 1966

AUTHOR: FINEBAW, P.

TITLE: WASTE DISPOSAL. SECTION IV

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY, IDAHO FALLS, IDAHO

ABSTRACT: THE FOLLOWING SUBJECTS ARE COVERED IN THIS PROGRESS REVIEW - TREATMENT OF LOW-AND INTERMEDIATE-LEVEL WASTES BY ION EXCHANGE, ELECTRODIALYSIS, ELECTROLYSIS, AND BY INCORPORATION IN ASPHALT. CONVERSION OF HIGH-LEVEL-WASTES TO SOLIDS BY VITRIFICATION, CALCINATION, AND INCORPORATION IN GLASS. FINAL DISPOSAL METHODS - IN-TANK SOLIDIFICATION AND STORAGE IN SALT MINES, FISSION-PRODUCT RECOVERY BY ION EXCHANGE, AND OTHER PHASES SUCH AS SOLAR EVAPORATION AND INCINERATION.

PUB DESC: REACTOR FUEL PROCESSING 9(4), PAGES 225 THRU 236, 5 FIGURES, 49 REFERENCES (FALL 1966)

KEYWORDS: ASPHALT; EREA (SEE ALSO EUROPEAN NUCLEAR ENERGY AGENCY); WASTE TREATMENT; CALCINATION; WASTE TREATMENT, FIXATION; EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); ORNL; FISSION PRODUCT; SEPARATION; ORNL; WASTE DISPOSAL, SOLID; WASTE, CHALK; IDAHO FALLS; ION EXCHANGE; BATTILLE NORTHWEST; WASTE DISPOSAL, SALT; GREECE

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PUB DATE: 1976

AUTHOR: FINNEY, B.C.; BLANCO, B.E.; DANLHAN, S.C.; HILL, G.S.; KITT, F.G.; MOORE, B.E.; WITHEIMPOON, J.P.

TITLE: CORRELATION OF RADIOACTIVE WASTE TREATMENT COSTS AND THE ENVIRONMENTAL IMPACT OF WASTE EFFLUENTS IN THE NUCLEAR FUEL CYCLE - REPROCESSING LIGHT-WATER REACTOR FUEL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A COST/BENEFIT STUDY WAS MADE TO DETERMINE THE COST AND EFFECTIVENESS OF RADIOACTIVE WASTE (RADWASTE) TREATMENT SYSTEMS FOR DECREASING THE RELEASE OF RADIOACTIVE MATERIALS FROM A MODEL NUCLEAR FUEL REPROCESSING PLANT WHICH PROCESSES LIGHT-WATER REACTOR (LWR) FUELS, AND TO DETERMINE THE RADIOLOGICAL IMPACT (DOSE COMMITMENT) OF THE RELEASED MATERIALS ON THE ENVIRONMENT. THE STUDY IS DESIGNED TO ASSIST IN DEFINING THE TERM "AS LOW AS REASONABLY ACHIEVABLE" IN RELATION TO LIMITING THE RELEASE OF RADIOACTIVE MATERIALS FROM NUCLEAR FACILITIES. THE BASE CASE MODEL PLANT IS REPRESENTATIVE OF CURRENT PLANT TECHNOLOGY AND HAS AN ANNUAL CAPACITY OF 1500 METRIC TONS OF LWR FUEL. ADDITIONAL RADWASTE TREATMENT SYSTEMS ARE ADDED TO THE BASE CASE PLANT IN A SERIES OF CASE STUDIES TO DECREASE THE AMOUNTS OF RADIOACTIVE MATERIALS RELEASED

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AND TO REDUCE THE RADIOLOGICAL DOSE COMMITMENT TO THE POPULATION IN THE SUBPOUNDERING AREA. THE COST FOR THE AERIAL WASTE TREATMENT OPERATIONS ARE THE CORRESPONDING DOSE COMMITMENTS ARE CALCULATED FOR EACH CASE. IN THE FINAL ANALYSIS, RADIOLOGICAL DOSE IS PLOTTED VS THE ANNUAL COST FOR TREATMENT OF THE WASTES. THE STATUS OF THE RADIOACTIVE TREATMENT METHODS USED IN THE CASE STUDIES IS DISCUSSED. SOME OF THE TECHNOLOGY USED IN THE ADVANCED CASES IS IN AN EARLY STAGE OF DEVELOPMENT AND IS NOT SUITABLE FOR IMMEDIATE USE. THE METHODOLOGY USED IN ESTIMATING THE COSTS AND THE RADIOLOGICAL DOSES, DETAILED CALCULATIONS, AND TABULATIONS ARE PRESENTED IN APPENDIX A APR 08-1992. THIS REPORT IS A REVISION OF THE ORIGINAL STUDY (CRNL-TN-4901). (NOTE)

PUB DESC: CRNL/DOHC/TN-4; CRNL/TN-4901 FIRST REV.

KEYWORDS: COST-BENEFIT ANALYSIS; RADIOACTIVE WASTE; FUEL REPROCESSING; ENVIRONMENT; DOSE; FUEL CYCLE; EFFLUENT; HEALTH PHYSICS; DOSE COMMITMENT; AS LOW AS PRACTICABLE (ALAP); ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); GUIDE

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PUB DATE: 1970

AUTHOR: FITZGERALD, C.L.; COOPER, R.W.; ELANCO, R.E.; DAVIS, R.

TITLE: THE FEASIBILITY OF INCORPORATING RADIOACTIVE WASTES IN ASPHALT OR POLYETHYLENE

CORPORATE AUTHOR: CASE SINCE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: RESIDUES FROM AQUEOUS AND ORGANIC INTERMEDIATE-LEVEL RADIOACTIVE WASTE CAN BE INCORPORATED IN ASPHALT OR POLYETHYLENE TO REDUCE THE MOBILITY OF RADIONUCLIDES AFTER BURIAL OR STORAGE OF THE SOLIDIFIED WASTE PRODUCT. ASPHALT OR POLYETHYLENE PRODUCTS CONTAINING UP TO 60 BY PERCENT OF RADIOACTIVE INORGANIC SOLIDS HAVE A CHEMICAL RESISTANCE SIMILAR TO THAT OF PURE ASPHALT OR POLYETHYLENE. LEACH RATES EXTRACTED OVER 200 YEARS INDICATE THAT ABOUT 5 PERCENT OF A SOLUBLE ELEMENT (SODIUM OR CESIUM) OR 0.6 PERCENT OF AN INSOLUBLE NUCLIDE (RU-106) WOULD BE LEACHED FROM A 55-CAL DRUM OF PRODUCT SUBMERGED IN WATER. POLYETHYLENE ACCOMMODATES UP TO 40 BY PERCENT OF ORGANIC LIQUIDS, SUCH AS TRITIUM PHOSPHATE (TPH), WHILE ASPHALT PRODUCTS CONTAINING 25 PERCENT TPH WERE NOT ENTIRELY SATISFACTORY.

PUB DESC: NUCLEAR APPLICATIONS AND TECHNOLOGY, 1(6), PG. 821-829 5 FIGURES, 2 TABLES, 10 REFERENCES, (DECEMBER 1970)

KEYWORDS: INTERMEDIATE; ASPHALT; INTERMEDIATE-LEVEL WASTE; PLASTIC; ASPHALT; SODIUM; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, LIQUID; LEACHING

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PUB DATE: 1966

AUTHOR: FORIN, A.V.; KUZICHEVA, V.S.; FORIN, Y.K.

TITLE: PECULIARITIES AND PROSPECTS OF THE REPROCESSING OF LIQUID RADIOACTIVE WASTES USING OIL FLOTATION

ABSTRACT: A FLOTATION PROCESS HAS DEVELOPED FOR SEPARATING A SOLID PHASE CONTAINING RADIOACTIVE ISOTOPES FROM AQUEOUS POLYS (FIBRIC HYDROXYD, DICHLOROPHTHALIDE, AND OTHER COMPOUNDS). THE ISOTOPES ENTRAPPED PASS INTO THE OIL PHASE WITH A HIGH DEGREE OF RECOVERY (AS HIGH AS 90-99% IN ONE STAGE). AFTER DISTILLING THE OIL, THE SOLID MAY BE INCORPORATED WITH ORGANIC BINDERS SUCH AS BITUMEN OR SYNTHETIC RESINS. IN SOME CASES ORGANIC MONOMERS MAY BE USED BOTH AS THE OIL AND AS THE BASIS FOR A SOLID PLASTIC.

PUB DESC: RT. BURENITA 20(1), P. 65, (DECEMBER 1966)

KEYWORDS: WASTE DISPOSAL, THERMISTICAL; PLASTIC; FLOTATION; WASTE TREATMENT, FIXATION; WASTE TREATMENT, SOLID; BSSB

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PUB DATE: 1968

AUTHOR: FOWLER, R.B.; CHRISTENSEN, C.W.

TITLE: BIOLOGICAL TREATMENT OF LIQUIDS

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: THE STUDY OF THE BEHAVIOR OF RADIOISOTOPES IN BIOLOGICAL TREATMENT PROCESSES HAS BEEN OF CONSIDERABLE VALUE. IT HAS PROVIDED THE INFORMATION REQUIRED, FOR EXAMPLE - (A) IN SETTING LIMITS TO THE AMOUNTS OF RADIOACTIVE MATERIALS WHICH CAN BE DISCHARGED TO SEWERS OR RIVERS, (B) IN PLANNING MEASURES TO BE TAKEN TO PROTECT THE PUBLIC IN THE EVENT OF CATASTROPHIC RELEASES OF RADIOACTIVE MATERIAL, AND (C) IN SELECTING TRACERS FOR STUDYING THE HYDRAULICS OF TREATMENT PROCESSES AND RIVERS. THE MICROBIOLOGICAL POPULATION AND THE BIOCHEMICAL REACTIONS ARE DISCUSSED.

PUB DESC: LA-DC-10003, 10 PAGES, OCTOBER 25, 1968

KEYWORDS: CHEMICAL REACTION; EFFLUENT; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); OXIDATION; WASTE TREATMENT, LIQUID; ACCIDENT, HYPOTHETICAL; TRACER; POPULATION EXPOSURE; FILTER, BED; STORAGE CONTAINERS; RADIOBIOLOGY; CONCENTRATION; AQUATIC ORGANISMS; SEDIMENT

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PUB DATE: 1975

AUTHOR: FRAVE, J.R.; BUDGER, L.L.

TITLE: POLYMERIC MEDIA FOR TRITIUM FIXATION

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE SYNTHESIS AND LEACH TESTING OF SEVERAL POLYMERIC MEDIA FOR TRITIUM FIXATION ARE PRESENTED. INITIATED BAKELITE, POLY(ACRYLONITRILE) AND POLYSTYRENE SUCCESSFULLY FIXED TRITIUM. TRITIUM LEACH RATES AT THE TRACER LEVEL APPEAR TO BE UNLIMITED. ADVANTAGES AND DISADVANTAGES OF THE PROCESSES ARE DISCUSSED, AND FURTHER LARGE SCALE INVESTIGATIONS UNDERWAY ARE REPORTED. ROUGH COST ESTIMATES ARE PRESENTED FOR THE DIFFERENT MEDIA AND ARE COMPARED WITH ALTERNATE APPROACHES SUCH AS DEEP-WELL INJECTION AND LONG-TERM TANK STORAGE. POLYMERIC MEDIA COSTS ARE HIGH COMPARED TO DEEP-WELL STORAGE AND ARE OF THE SAME ORDER OF MAGNITUDE PER LITER OF WASTE AS FOR ISOTOPIC ENRICHMENT.

PUB DESC: BNWL-B-030, 24 PPS, 3 TABS, 3 FIGS, 31 REFS, MAY 15, 1975

KEYWORDS: PLASTIC; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; POLYMERIC; TRITIUM; WASTE TREATMENT, FIXATION; LEACHING; WASTE TREATMENT

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PUB DATE: 1967

AUTHOR: GABISON, C.

TITLE: THE PROBLEM OF RADIOACTIVE WASTE STORAGE IN THE COMMUNITY

ABSTRACT: WASTE DISPOSAL PROBLEMS IN THE NUCLEAR INDUSTRY ARE DISCUSSED, WHILE A LARGE PART OF THE LOW- AND MEDIUM-ACTIVITY EFFLUENTS ARE DISCHARGED INTO THE SUBPOUNDERING AIR OR WATER, THE RESIDUES LEFT AFTER THEIR DECONTAMINATION, SOLID WASTE AND CONTAMINATED OBJECTS ARE INCONVENIENTLY SIGHT ALTHOUGH GENERALLY OF LOW RADIOACTIVITY. IN MOST CASES THEY ARE STORED IN SPECIAL AREAS AT THE PRODUCTION CENTERS. THE RAPID, EXTENSIVE DEVELOPMENT OF NUCLEAR POWER WILL RESULT IN A GROWING OUTPUT OF WASTE WHOSE SPECIFIC RADIOACTIVITY WILL BEAR NO RELATION TO THAT OF TODAY'S WASTE. ALTHOUGH SATISFACTORY INDUSTRIAL SOLUTIONS HAVE BEEN FOUND FOR THE PROCESSING AND PACKAGING OF LOW-ACTIVITY RESIDUES, THE DIFFICULTIES INVOLVED WITH HIGHLY RADIOACTIVE WASTE ARE BEING WIDELY DISCUSSED AND THE SOLUTIONS RECOMMENDED FOLLOW SEVERAL LINES OF THOUGHT.

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 PUB DESC: BUDATOR BULL., 6, PAGES 84-8 (SEPT. 1967)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); GEOLOGY; SILICOLOGY; WASTE STORAGE; WASTE TREATMENT; WASTE SOURCE AND TYPE; POPULATION EXPOSURE; HYDROLOGY; MONITORING (SEE ALSO SURVEY); REACTOR POWER; SOIL

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 PUB DATE: 1974
 AUTHOR: GIRAUD, J.P.; LE FLAYE, G.

TITLE: DESIGN OF AN INDUSTRIAL FACILITY FOR THE INCORPORATION INTO GLASS OF FISSION PRODUCTS AND THE STORAGE OF HIGHLY RADIOACTIVE GLASS

CORPORATE AUTHOR: SAINT-COBAIN TECHNIQUES
 MCQUELLES, FRANCE

ABSTRACT: THE PRESENT DOCUMENT DESCRIBES AN INDUSTRIAL FACILITY FOR INCORPORATING FISSION PRODUCTS INTO GLASS (OR VITRIFICATION) THAT WAS DESIGNED TO BE ADAPTED FOR USE IN A PLANT TREATING LOW TYPE RADIOACTIVE WASTES. THE MAIN BASIC HYPOTHESES AND THE PRINCIPAL STAGES OF THE PROCESS ARE DEFINED. A DESCRIPTION IS GIVEN OF THE ARRANGEMENTS MADE FOR THE TEMPORARY STORAGE OF THE FISSION PRODUCT SOLUTIONS, THE UNIT FOR THE ACTUAL VITRIFICATION OF THE FISSION PRODUCTS, THE TREATMENT OF GASEOUS AND BODILY EFFLUENTS, THE TEMPORARY STORAGE OF THE GLASS ON THE SITE, AND THE UTILITIES. THE RELEASED ACTIVITIES ARE GIVEN AND AN ANALYSIS IS MADE OF THE DESIGN OF THE FACILITY FROM THE SAFETY POINT OF VIEW. FINALLY, A BRIEF INDICATION OF THE INVESTMENT COST IS GIVEN AND AN ANALYSIS IS MADE OF THE POSSIBLE APPLICATIONS OF THE PROCESS, WITH EMPHASIS ON ITS CONTRIBUTION TO SOLVING THE SAFETY PROBLEMS INVOLVED IN THE TEMPORARY OR LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES. (AUTH)

PUB DESC: OCEC-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 813-846 (1974)

KEYWORDS: GLASS (SEE ALSO VITRIFICATION); NUTRITION; HIGH-LEVEL WASTE; VITRIFICATION; FISSION PRODUCT; WASTE TREATMENT; WASTE STORAGE; GASEOUS WASTE; EFFLUENT; SAFETY EVALUATION; FACILITIES; COST ANALYSIS

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 PUB DATE: 1972
 AUTHOR: GIRAUD, J.P.; LE FLAYE, G.

TITLE: DESIGN OF AN INDUSTRIAL FACILITY FOR THE INCORPORATION INTO GLASS OF FISSION PRODUCTS AND THE STORAGE OF HIGHLY RADIOACTIVE GLASS

CORPORATE AUTHOR: SAINT-COBAIN TECHNIQUES
 MCQUELLES, FRANCE

ABSTRACT: DESCRIBES AN INDUSTRIAL FACILITY FOR INCORPORATING FISSION PRODUCTS INTO GLASS (VITRIFICATION) DESIGNED FOR USE IN A PLANT TREATING LOW TYPE RADIOACTIVE WASTES. THE MAIN HYPOTHESES AND THE PRINCIPAL STAGES OF THE PROCESS ARE DEFINED. A DESCRIPTION IS GIVEN OF THE ARRANGEMENTS MADE FOR TEMPORARY STORAGE OF FISSION PRODUCT SOLUTIONS, THE UNIT FOR ACTUAL VITRIFICATION OF THE FISSION PRODUCTS, TREATMENT OF GASEOUS AND BODILY EFFLUENTS, TEMPORARY STORAGE OF THE GLASS ON THE SITE, AND THE UTILITIES. THE RELEASED ACTIVITIES ARE GIVEN AND AN ANALYSIS IS MADE OF THE DESIGN OF THE FACILITY FROM THE SAFETY POINT OF VIEW.

PUB DESC: CONF-721107, 31 PAGES, 6 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DESIGN CRITERIA; EFFLUENT; BODILY EFFLUENT; WASTE STORAGE; WASTE TREATMENT; VITRIFICATION; WASTE TREATMENT; GAS; PHOSPHATE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); SAFETY EVALUATION; LIQUID; INDUSTRY, NUCLEAR; VITRIFICATION

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 PUB DATE: 1968
 AUTHOR: COOREL, H.V.; COOPER, J.R.

TITLE: DEVELOPMENT OF A PROCESS FOR INCORPORATION OF RADIOACTIVE WASTE SOLUTIONS AND SLURRIES IN EMULSIFIED ASPHALT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: INCORPORATION IN ASPHALT IS A PROMISING METHOD FOR PREPARING ALKALINE SOLUTIONS AND SLURRIES OF INTERMEDIATE-LEVEL RADIOACTIVE WASTES FOR STORAGE OR BURIAL. THE WASTES ARE MIXED WITH AN ASPHALT-WATER EMULSION, THE Mixture IS VOLATILIZED BY HEATING THE MIXTURE TO 160 C, AND THE RESIDUE CONTAINING THE RADIOACTIVE SOLIDS IS DRAINED INTO THE FINAL DISPOSAL CONTAINER. THE VOLUME OF WASTE TO BE STORED IS REDUCED BY A FACTOR OF ABOUT 2. PRODUCTS CONTAINING 60 BY % WASTE SOLIDS WERE HOMOGENEOUS AND SHOWED SATISFACTORILY LOW LEACH RATES IN WATER, WITH NO SIGNIFICANT INCREASE AT RADIATION (EXTERNAL CO-60) DOSES AS HIGH AS 10⁵ RAD. NO EVOLUTION OF GASES OR SWELLING WAS OBSERVED IN PRODUCTS THAT CONTAINED UP TO 52 CURIES PER GALLON AT RADIATION DOSES UP TO 7 X 10⁵ RAD.

PUB DESC: ORNL-R-3063, 20 PAGES, FIGURES, TABLES, 16 REFERENCES, 1968

KEYWORDS: WASTE STORAGE; INTERMEDIATE-LEVEL WASTE; LEACHING; ASPHALT; WASTE TREATMENT; FISSION; RADIATION SAFETY AND CONTROL; EXPERIMENT

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 PUB DATE: 1967
 AUTHOR: COOREL, H.V.; BLANCH, R.E.; FREDERICK, E.J.; CLARY, W.E.; RAJAN, R.S.S.

TITLE: LABORATORY DEVELOPMENT OF A PROCESS FOR INCORPORATION OF RADIOACTIVE WASTE SOLUTIONS AND SLURRIES IN EMULSIFIED ASPHALT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A PROCESS WAS DEVELOPED FOR INCORPORATING AQUEOUS INTERMEDIATE- AND LOW-LEVEL RADIOACTIVE WASTES IN ASPHALT. THE PROCESS IS DESIGNED TO PREPARE ALL THESE WASTE TYPES FOR ULTIMATE DISPOSAL BY BURIAL OR STORAGE. ASPHALT-SALT MIXTURES CONTAINING 10 TO 80 WTE SALTS WERE PREPARED FROM THREE SIMULATED WASTES (ORNL EVAPORATED CONCENTRATES, ALUMINUM CHLORIDE SOLUTIONS, AND A PURE SECOND-PLUTONIUM CYCLOHEXANECARBOXYLATE). AND THREE TYPES OF COMMERCIAL EMULSIFIED ASPHALTS). PRODUCTS CONTAINING 60% SALTS REPRESENTED A GOOD COMPROMISE OF PROPERTIES (VOLUME REDUCTION - ABOUT 2, HOMOGENEITY, AND VISCOSITY - FREE FLOWING AT 130 C). THE LEACH RATES WERE 50 TO 100 TIMES LESS THAN CEMENT PRODUCTS CONTAINING SIMILAR AMOUNTS OF WASTE SALTS.

PUB DESC: ORNL-4003, 45 PAGES, 9 FIGURES, 10 TABLES, 22 REFERENCES, JULY 1967

KEYWORDS: WASTE TREATMENT; PURE (SEE ALSO PARTITIONING); LEACHING; ASPHALT; WASTE TREATMENT; FISSION; WASTE SOURCE AND TYPE; ORNL; WASTE MANAGEMENT

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 PUB DATE: 1967
 AUTHOR: COOREL, H.V.; DAVIS, W.N.; SHOCKLEY, W.E.

TITLE: DISPERSION OF SIMULATED HIGH-LEVEL RADIOACTIVE WASTE POWDERS IN A GLASS MATRIX

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: HIGH-LEVEL WASTE POWDERS SUCH AS THOSE FROM THE PLUTONIZED-USED VOLATILITY PROCESS (PVVP) OR THOSE FROM SPENT CALCINATION OF WASTE SOLUTIONS FROM AQUEOUS FUEL REPROCESSING SCHEMES MAY REQUIRE SOME TREATMENT BEFORE SEALING THE UNHEATED POWDER IN A DISPOSAL POT. THESE POWDERS MAY BE DISPENSED (NOT DISSOLVED) IN A GLASS MATRIX TO YIELD A TWO-PHASE POWDER-GLASS SYSTEM WITH IMPROVED CHEMICAL AND

<002> CGMT.

PHYSICAL PROPERTIES. REPRESENTATIVE MATERIALS FROM THE SPRAY ALUMINATION OF PURE WASTE AND FROM THE FLOXIDIZED-AND VOLATILITY PROCESS HAVE CHANGED FROM FREE-FLOWING DUSTY POWDERS TO HARD, STRONG, VOID-FREE SOLIDS BY DISPENSING THEM IN LEAD SILICATE GLASSES.

PUB DESC: OBNL-78-1897, 15 PAGES, 4 FIGURES, 3 TABLES, AUGUST 8, 1967

KEYWORDS: WASTE TREATMENT; SPRAY SOLIDIFICATION; PURE (SEE ALSO PARTITIONING); GLASS (SEE ALSO VITRIFICATION); CALCINATION; WASTE TREATMENT, FIXATION; OBNL; WASTE TREATMENT, SOLID

<003>

PUB DATE: 1966

AUTHOR: GODDER, R.W.; CLARK, W.R.; FITZGERALD, C.L.

TITLE: PHYSICAL PROPERTIES OF SOLIDS INCORPORATING SIMULATED RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROPERTY MEASUREMENTS SHOW THAT STABLE SOLIDS INCORPORATING SIMULATED RADIOACTIVE WASTES CAN BE PREPARED WITH PHOSPHATES, SILICATES, OR BORATES AS THE MAIN MATRIX MATERIAL. THE SOLIDS ARE RELATIVELY LOW-MELTING, INSOLUBLE, POOR-FRUE, AND CRUEL. THEY CAN CONTAIN A LARGE FRACTION OF SOLIDS THAT ARE FROM WASTE. THE BETTER SOLIDS REPRESENT VOLUME REDUCTIONS COMPARABLE TO THOSE OBTAINED WITH CALCINED WASTE. THEIR THERMAL CONDUCTIVITIES ARE 2 TO 10 TIMES HIGHER THAN THOSE OF CALCINES OR POWDERS REPRESENTING TYPICAL VOLUME REDUCTIONS. THE VISCOSITIES OF THE PHOSPHATE MELTS MEASURED ARE SOME 100 TO 1000 TIMES LOWER THAN THOSE OF COMMERCIAL GLASSES. FOR THE BEST PRODUCTS, LEACH RATES ARE OF THE SAME MAGNITUDE AS THOSE OF COMMERCIAL GLASSES.

PUB DESC: SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, BICLARE, WASHINGTON, FEBRUARY 14-18, 1966

KEYWORDS: WASTE TREATMENT, FIXATION; GLASS (SEE ALSO VITRIFICATION); WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE TREATMENT, EQUIPMENT

<004>

PUB DATE: 1970

AUTHOR: GODFREY, R.L.; HANSON, G.L.; SMITH, P.W.

TITLE: SOLIDIFICATION AND IMPROVED TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES AT HANFORD

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CHEMIST, BICLARE, WASHINGTON

ABSTRACT: DISCUSSES OPERATIONAL EXPERIENCE IN LARGE SCALE PRODUCTION TECHNIQUES USED TO SOLIDIFY INTERMEDIATE LEVEL RADIOACTIVE LIQUID WASTES AND TO IMPROVE THE TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE LIQUID WASTES AT HANFORD.

PUB DESC: SN-137/50, STE/ 64, CONF-700905, 16 PAGES, 4 FIGURES, 8 DECEMBER 1969 PRESENTED AT THE IAEA SYMPOSIUM ON HANFORD, CN- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIS-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; WASTE TREATMENT; WASTE MANAGEMENT; EVAPORATION; HANFORD SITE; MONITOR, AREA; OPERATING EXPERIENCE

<005>

PUB DATE: 1968

AUTHOR: GODDE, J.W.; FLAHERTY, J.D.

TITLE: FIXATION OF INTERMEDIATE-LEVEL RADIOACTIVE WASTE CONCENTRATES IN ASPHALT HOT-CELL EVALUATION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: HOT-CELL TESTS WERE MADE TO DETERMINE THE

EFFECTS OF INTERNAL IRRADIATION ON THE LEACHING RATES OF SODIUM AND FISSION PRODUCTS FROM ASPHALT-WASTE PRODUCTS CONTAINING 60 WT % SOLIDS AND AS MUCH AS 52 COUNTS OF AGED BIKED FISSION PRODUCTS PER GALLON OF ASPHALT PRODUCT. THESE PRODUCTS WERE PREPARED BY INCORPORATING THREE TYPICAL VARIETIES OF INTERMEDIATE-LEVEL RADIOACTIVE LIQUID WASTES - OBNL WASTE EVAPORATION CONCENTRATE (ILW), SIMULATED ALUMINUM CLADDING SOLUTION (ACS), AND VITRIFIED SAVANNAH RIVER PLANT PURE SECOND-FLUTONION-CYCLE WASTE FROM HANFORD, INTO TYPE HS-2 EMULSIFIED ASPHALT. BOTH WATER AND WATER CONTAINING 100 PPM OF NaCl WERE USED TO LEACH SAMPLES OF THESE PRODUCTS. NO SIGNIFICANT DIFFERENCE WAS NOTED BETWEEN THE RATES OBTAINED FOR EACH LEACHANT.

PUB DESC: OBNL-0059, 32 PAGES, FIGURES, JANUARY 1969

KEYWORDS: HOT CELL; INTERMEDIATE-LEVEL WASTE; LEACHING; OBNL; ASPHALT; PLUTONIUM; DUTERIUM; WASTE TREATMENT, FIXATION; DATA ENTRY; WASTE DISPOSAL, LIQUID; WASTE TREATMENT, ECONOMICS; GAMMA ENTRY

<006>

PUB DATE: 1962

AUTHOR: GOSILLIC, J.L.

TITLE: CONSIDERATIONS REGARDING TREATMENT OF THE WASTE OF A CONVERTIBLE NUCLEAR REACTOR

CORPORATE AUTHOR: COMISION NACIONAL DE ENERGIA NUCLEAR, MEXICO

ABSTRACT: THIS PAPER IS DIVIDED INTO THREE PARTS, AS FOLLOWS- 1. GENERALITIES ON THE TREATMENT OF WASTE FOR REACTORS, 2. TREATMENT OF WASTE IN THE SUBCRITICAL PHASE OF THE CONVERTIBLE REACTOR, AND 3. TREATMENT OF THE WASTE IN THE CRITICAL PHASE. A SYSTEM OF TREATMENT IS PROPOSED FOR HEAVY WASTE AS WELL AS FOR THE CATIONIC RESID (DUTERIATION), RELEVANT TO MAKE USE OF THE EQUIPMENT INSTALLED DURING THE SUBCRITICAL PHASE SO FAR AS POSSIBLE, FOR REASONS OF ECONOMY. CONSIDERATION IS GIVEN TO THE MOST FEASIBLE TYPE OF RESID AMONG THOSE AVAILABLE ON THE MARKET, ALONG WITH AN ESTIMATE OF COSTS.

PUB DESC: INTER-AMERICAN SYMPOSIUM 4TH ON THE PEACEFUL APPLICATION OF NUCLEAR ENERGY, MEXICO CITY, APRIL 9-13, 1962, VOL. 1, PUBLISHED BY INTER-AMERICAN NUCLEAR ENERGY COMMISSION

KEYWORDS: WASTE TREATMENT, LIQUID; ACTIVATION PRODUCT; WASTE SOURCE AND TYPE; ION EXCHANGE; MEXICO; WATER TREATMENT

<007>

PUB DATE: 1969

AUTHOR: GRAY, V.; LUND, E.

TITLE: THE TREATMENT AND DISPOSAL OF RADIOACTIVE WASTE

CORPORATE AUTHOR: BOTOR-COLUMBUS AG, BASEL, SWITZERLAND

ABSTRACT: PARALLEL TO THE CONSTRUCTION OF NUCLEAR POWER STATIONS IN SWITZERLAND THERE WILL BE A GROWTH IN RADIOACTIVE WASTE OUTPUT. THE CRUCIAL PROBLEMS OF WASTE MANAGEMENT CONSIST IN FINDING APPROPRIATE METHODS OF WASTE TREATMENT AND STORAGE THAT ENSURE THE SAFETY OF THE POPULATION FROM IONIZING RADIATION BUT ARE REASONABLY ECONOMIC AT THE SAME TIME. THE MOST IMPORTANT PROVED PROCESSES ARE REVIEWED AND THE POSSIBILITIES OF APPLYING THEM IN THE SPECIAL SITUATION OF SWITZERLAND ARE DISCUSSED.

PUB DESC: NEW TECHNIQUE, 11(3), PP. 112-127 (JUNE 1969) (IN GERMAN)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; SWITZERLAND

<008>

PUB DATE: 1975

AUTHOR: GROENING, B.S.; BLASCO, B.E.; DANLHAS,

<488> CONT.
D.C.; FIDNEY, D.C.; HIBBY, A.N.; WITHERSPOON, J.P.

TITLE: CORRELATION OF RADIOACTIVE WASTE TREATMENT COSTS AND THE ENVIRONMENTAL IMPACT OF WASTE EFFLUENTS IN THE NUCLEAR FUEL CYCLE FOR USE IN ESTABLISHING "AS LOW AS PRACTICABLE" GUIDES - FABRICATION OF LIGHT-WATER REACTOR FUELS CONTAINING PLUTONIUM

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A COST-BENEFIT STUDY WAS MADE TO DETERMINE THE COST AND EFFECTIVENESS OF RADIOACTIVE WASTE (RADWASTE) TREATMENT SYSTEMS FOR DECREASING THE RELEASE OF RADIOACTIVE MATERIALS FROM A MODEL LIGHT-WATER PLUTONIUM RECYCLE REACTOR FUEL FABRICATION PLANT, AND TO DETERMINE THE RADIOLOGICAL IMPACT (DOSE COMMITMENT) OF THE RELEASED MATERIALS ON THE ENVIRONMENT. THE STUDY IS DESIGNED TO ASSIST IN DEFINING THE TERM "AS LOW AS PRACTICABLE" IN RELATION TO LIMITING THE RELEASE OF RADIOACTIVE MATERIALS FROM NUCLEAR FACILITIES. THE BASE CASE MODEL PLANT IS REPRESENTATIVE OF CURRENT PLANT TECHNOLOGY AND HAS AN ANNUAL CAPACITY OF 300 METRIC TONS OF THE PLUTONIUM RECYCLE FUEL. ADDITIONAL RADWASTE TREATMENT EQUIPMENT IS ADDED TO THE BASE CASE PLANTS IN A SERIES OF CASE STUDIES TO DECREASE THE AMOUNTS OF RADIOACTIVE MATERIALS RELEASED AND TO REDUCE THE RADIOLOGICAL DOSE COMMITMENT TO THE POPULATION IN THE SURROUNDING AREA. THE COST FOR THE ADDED WASTE TREATMENT OPERATIONS AND THE CORRESPONDING DOSE COMMITMENT ARE CALCULATED FOR EACH CASE. IN THE FINAL ANALYSIS, RADIOLOGICAL DOSE IS ELICITED VS THE ANNUAL COST FOR TREATMENT OF THE RADWASTES. THE STATUS OF THE RADWASTE TREATMENT METHODS USED IN THE CASE STUDIES IS DISCUSSED. SOME OF THE TECHNOLOGY USED IN THE ADVANCED CASES IS IN AN EARLY STAGE OF DEVELOPMENT AND IS NOT SUITABLE FOR IMMEDIATE USE. THE METHODOLOGY USED IN ESTIMATING THE COSTS AND THE RADIOLOGICAL DOSES, DETAILED CALCULATIONS, AND TABULATIONS ARE PRESENTED IN APPENDICES A AND B. (AUTH)

PUB DESC: OBNL-TR-4994 1975 (241)

KEYWORDS: PLUTONIUM; RADWASTE SYSTEM; FUEL FABRICATION (SEE ALSO FABRICATION); RECYCLING; EFFLUENT; GUIDE; AS LOW AS PRACTICABLE (ALAP); ENVIRONMENTAL IMPACT; DOSE COMMITMENT; COST-BENEFIT ANALYSIS; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); HEALTH PHYSICS; DOSIMETRY

<489> PUB DATE: 1974
AUTHOR: GROVER, J.E.

TITLE: GLASSES FOR THE FIXATION OF HIGH LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: UKAEA, ATOMIC ENERGY RESEARCH ESTABLISHMENT

ABSTRACT: GLASSES FOR THE FIXATION OF HIGH LEVEL RADIOACTIVE WASTES MUST MAINTAIN THEIR INTEGRITY IN STORAGE FOR CENTURIES IN SPITE OF SEVERE CONDITIONS OF TEMPERATURE AND RADIATION. IN ADDITION THEY MUST BE CAPABLE OF EASY FORMATION IN A FIXATION PROCESS SUCH AS FUSING. PRELIMINARY RESULTS WERE PRESENTED AT THE RICHLAND SYMPOSIUM IN 1966 AND THIS PAPER DESCRIBES THE ENTIRE PROGRAMME, IN WHICH AN ADDITIONAL TWO YEARS WORK ON BOTH LEACHING AND VOLATILIZATION WERE CARRIED OUT. BOTH PHOSPHATE AND BORO-SILICATE GLASS COMPOSITIONS WERE USED AND THE EFFECT OF RADIATION DOSES UP TO 10(11) RAD WERE DETERMINED FOR SAMPLES MELT AT TEMPERATURES FROM ROOM TEMPERATURE UP TO 900 DEGREES C. DETAILED EXPERIMENTS WERE ALSO CARRIED OUT TO STUDY THE EFFECTS OF TEMPERATURES AND RATES OF COOLING ON THE STABILITY OF THE GLASSES. ACTIVITY CAN BE RELEASED FROM GLASSES BY VOLATILIZATION AS WELL AS LEACHING, SO THE EFFECT OF POSSIBLE STORAGE ENVIRONMENTS ON THE RELEASE OF BOTH FISSION PRODUCTS AND THE MAJOR GLASS FORMING CONSTITUENTS WERE EXAMINED. THE RESULTS CONFIRM THAT A BORO-SILICATE GLASS IS PREFERABLE TO A PHOSPHATE GLASS FOR THE FIXATION OF HIGH LEVEL WASTES AND CERTAIN LIMITATIONS ON STORAGE CONDITIONS ARE INDICATED. (AUTH)

PUB DESC: OCRE-OCLE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF

SYMPOSIUM, 593-612 (1974)

KEYWORDS: WASTE FIXATION; THERMAL EFFECTS; HIGH-LEVEL WASTE; WASTE TREATMENT; GLASS (SEE ALSO VITRIFICATION); CONTAINMENT INTEGRITY; WASTE STORAGE; TEMPERATURE; RADIATION; LEACHING; VOLATILITY PROCESS; RADIATION EFFECT

<490> PUB DATE: 1972
AUTHOR: GROVER, J.E.

TITLE: GLASSES FOR THE FIXATION OF HIGH LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARBELL

ABSTRACT: GLASSES FOR THE FIXATION OF HIGH LEVEL RADIOACTIVE WASTES MUST MAINTAIN THEIR INTEGRITY IN STORAGE FOR CENTURIES IN SPITE OF SEVERE CONDITIONS OF TEMPERATURE AND RADIATION. IN ADDITION THEY MUST BE CAPABLE OF EASY FORMATION IN A FIXATION PROCESS SUCH AS FUSING. PRELIMINARY RESULTS WERE PRESENTED AT THE RICHLAND SYMPOSIUM IN 1966 AND THIS PAPER DESCRIBES THE ENTIRE PROGRAMME, IN WHICH AN ADDITIONAL TWO YEARS WORK ON BOTH LEACHING AND VOLATILIZATION WERE CARRIED OUT. THE RESULTS CONFIRM THAT A BORO-SILICATE GLASS IS PREFERABLE TO A PHOSPHATE GLASS FOR THE FIXATION OF HIGH LEVEL WASTES AND CERTAIN LIMITATIONS ON STORAGE CONDITIONS ARE INDICATED.

PUB DESC: CCRF-721107, 21 PAGES, 11 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: UNITED KINGDOM; LEACHING; WASTE STORAGE; WASTE TREATMENT; FIXATION; WASTE TREATMENT, SOLID; HIGH-LEVEL WASTE; GLASS (SEE ALSO VITRIFICATION); VOLATILITY PROCESS; FUEL REPROCESSING; LEACHING; COMPARISON; VITRIFICATION

<491> PUB DATE: 1966
AUTHOR: GROVER, J.E.

TITLE: SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES

CORPORATE AUTHOR: ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARBELL, ENGLAND

ABSTRACT: WHILE THE STORAGE OF LIQUID RADIOACTIVE WASTES IS SATISFACTORY FOR THE NEAR FUTURE, AS THE NUCLEAR POWER INDUSTRY EXPANDS THROUGHOUT THE WORLD, THE STORAGE OF HUNDREDS OF MILLIONS OF GALLONS OF LIQUID WASTES IN TANKS WHICH MUST MAINTAIN THEIR INTEGRITY FOR CENTURIES, BECOMES LESS ATTRACTIVE. CONSIDERABLE EFFORT HAS BEEN DEVOTED THEREFORE TO DEvisING METHODS FOR THE CONVERSION OF THESE HIGHLY RADIOACTIVE LIQUID WASTES INTO SOLIDS FOR PERMANENT DISPOSAL. THE PROPOSED METHODS AND PROCESSES ARE DISCUSSED.

PUB DESC: CCRF-671072-1, 10 PAGES, 10 REFERENCES, FROM SYMPOSIUM ON WASTE DISPOSAL, LONDON, ENGLAND, OCTOBER 5-6, 1967

KEYWORDS: DECAT HEAT; RADIATION IN PERSPECTIVE; HAZARD, RELATIVE; WASTE STORAGE; CALCINATION; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; BNL; OBNL; PHOSPHATE; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; EVAPORATION; GLASS (SEE ALSO VITRIFICATION); SHIELDING; WASTE DISPOSAL, SALT; HANFORD SITE

<492> PUB DATE: 1974
AUTHOR: GURIN, M.; DIEFFENBACHER, M.; HILD, M.; KRAUSE, M.; SCHREIBER, E.; SCHUBERT, G.

TITLE: PILOT PLANT EXPERIENCE ON HIGH LEVEL WASTE SOLIDIFICATION AND DESIGN OF THE ENGINEERING PROTOTYPE VERA

<492> CONT.
CORPORATE AUTHOR: FEDERAL REPUBLIC OF GERMANY

ABSTRACT: A GENERAL DESCRIPTION OF THE SOLIDIFICATION PROCESS DEVELOPED BY THE KARLSRUHE NUCLEAR RESEARCH CENTER IS GIVEN TOGETHER WITH A SHORT REVIEW OF THE MAIN INACTIVE PILOT PLANT EXPERIENCE GAINED. THE BASIC FEATURES OF THE MULTI-PURPOSE ENGINEERING PROTOTYPE SOLIDIFICATION PLANT VERA 2 ACTUALLY UNDER DESIGN ARE PRESENTED. IN THIS PLANT THE HIGH-LEVEL WASTE SOLIDIFIED FROM THE FIRST GERMAN REPROCESSING PLANT ARE SHALL BE PROCESSED. (AUTH)

PUB DESC: OCEAN-OCER, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEDURES OF SYMPOSIUM, 409-514 (1974)

KEYWORDS: WASTE SOLIDIFICATION; GERMANY; REPROCESSING; OPERATING EXPERIENCE; DESIGN CRITERIA; LIQUID WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); HIGH-LEVEL WASTE

<493>
PUB DATE: 1972
AUTHOR: GUMB, D.; BARSZ, H.; BEIC, W.;

TITLE: PILOT PLANT EXPERIENCE ON HIGH LEVEL WASTE SOLIDIFICATION AND DESIGN OF THE ENGINEERING PROTOTYPE VERA

CORPORATE AUTHOR: GESELLSCHAFT FÜR FERNFORSCHUNG GMBH, KARLSRUHE, GERMANY

ABSTRACT: A GENERAL DESCRIPTION OF THE SOLIDIFICATION PROCESS DEVELOPED AT THE KARLSRUHE NUCLEAR RESEARCH CENTER IS GIVEN TOGETHER WITH A SHORT REVIEW OF THE MAIN INACTIVE PILOT PLANT EXPERIENCE GAINED. THE BASIC FEATURES OF THE MULTIPURPOSE ENGINEERING PROTOTYPE SOLIDIFICATION PLANT VERA 2 ACTUALLY UNDER DESIGN FOR THE SOLIDIFICATION OF THE FISSION PRODUCT CONTAINING HIGH LEVEL WASTE FROM THE FIRST GERMAN REPROCESSING PLANT ARE PRESENTED.

PUB DESC: CONF-721907, 23 PAGES, 7 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DESIGN CRITERIA; CALCINATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; GERMANY; FUEL REPROCESSING; SOLID; OPERATING EXPERIENCE; VITRIFICATION

<494>
PUB DATE: 1964
AUTHOR: BARNES, C.W.

TITLE: ENGINEERING STUDIES ON POT CALCINATION FOR FORMALIZED DISPOSAL OF NUCLEAR WASTE.

FORMALIZED-TREATED NUCLEAR WASTE FOR 1965 (FTW-65).

PUB DESC: OWE-78-715

KEYWORDS: WASTE DISPOSAL; PUREX (SEE ALSO PARTITIONING); POT CALCINATION; CALCINATION; REACTOR

<495>
PUB DATE: 1972
AUTHOR: BARNES, C.W.

TITLE: RADIOACTIVE EFFLUENT REDUCTION FROM 200 AREA FACILITIES PHASE II

CORPORATE AUTHOR: ATLANTIC RECHFIELD HANFORD CO.

ABSTRACT: A COMPREHENSIVE STUDY OF RADIOACTIVE WASTES DISCHARGED TO THE ENVIRONMENT IN THE 200 AREA WAS MADE IN 1967 (1). A FOLLOW-UP STUDY WAS COMPLETED IN 1971(2). BOTH STUDIES FOUND THAT GASEOUS WASTE EMISSION GUIDES (3) WERE BEING MET FOR THE DISCHARGE OF RADIOACTIVE, HIGH FISSION PRODUCTS, U 230, PO 230, AND SO 90 FROM THE 200 AREA FACILITIES. SIGNIFICANT REDUCTIONS OF RADIOACTIVITY TO THE GROUND HAVE ALSO BEEN REALIZED BY CHANGES IN OPERATING PROCEDURES AND OTHER EXPENDITURES OF FUNDS FOR PROCESS AND EQUIPMENT IMPROVEMENTS. HOWEVER, SEVERAL WASTE STREAMS CONTINUE

TO DISCHARGE THE MAJOR QUANTITY OF PLUTONIUM AND/OR TOTAL BETA EMITTERS TO THE GROUND. RECOMMENDATIONS HAVE BEEN MADE TO PROVIDE FACILITIES AND/OR MODIFICATIONS TO EXISTING FACILITIES WHICH WILL REDUCE THE RADIOACTIVITY DISCHARGED VIA THESE STREAMS. (AUTH)

PUB DESC: ADM-2419 (1972)

KEYWORDS: WASTE DISCHARGE; ARMO; ENVIRONMENT; GASE; GASEOUS EMISSIONS; RADIOACTIVE; URANIUM; PLUTONIUM; STORAGE; GEOLOGY; WASTE STREAMS

<496>
PUB DATE: 1973
AUTHOR: BECK, E.C.; HARRIS, T.R.

TITLE: GASEOUS WASTE TREATMENT SYSTEM

CORPORATE AUTHOR: BADCOCK & WILCOX

ABSTRACT: THE GASEOUS WASTE TREATMENT SYSTEM IS BASED ON THE SELECTIVE ADSORPTION PROCESS DEVELOPED AT THE OAK RIDGE GASEOUS DIFFUSION PLANT. PILOT PLANT TESTS INDICATE THAT THE RADIOACTIVE LEVEL OF OFF-GAS STREAMS OF CURRENT PRESSURIZED WATER REACTORS MAY BE REDUCED BY A FACTOR AS LARGE AS 1000. BY ISOLATING THE PROBLEM ISOTOPES, KRYPTON AND XENON, AND COLLECTING THEM IN A CONCENTRATED VOLUME FOR DISPOSAL, THE GASEOUS WASTE TREATMENT SYSTEM PROVIDES AN EFFICIENT AND RELIABLE METHOD OF REDUCING THE RADIOACTIVE LEVELS OF THE EFFLUENT RELEASED TO THE ENVIRONMENT.

PUB DESC: BAW-10050, 75 PAGES, FIGURES, MAY 1973

KEYWORDS: KRYPTON (SEE ALSO NOBLE GAS); REACTOR, PWR; XENON; WASTE TREATMENT, GAS; CHEMISORPTION; DECONTAMINATION FACTOR; SYSTEM DESCRIPTION; WASTE TREATMENT, EQUIPMENT; SOLVENT EXTRACTION; SYSTEM CAPABILITY; CHEMICAL

<497>
PUB DATE: 1971
AUTHOR: BIESE, E.D.

TITLE: LEACH TESTING OF IMMOBILIZED RADIOACTIVE WASTE SOLIDS. A PROPOSAL FOR A STANDARD METHOD.

CORPORATE AUTHOR: IAEA

ABSTRACT: AN IMPORTANT TREATMENT PRELIMINARY TO THE DISPOSAL OF RADIOACTIVE WASTE IS ITS SOLIDIFICATION AND INCORPORATION INTO A STABLE MEDIUM FROM WHICH THE RADIOACTIVE COMPONENTS CANNOT EASILY BE LEACHED BY WATERS WHICH MAY COME IN CONTACT WITH THE WASTE AFTER DISPOSAL. IN ORDER TO TEST THE QUALITY OF ANY SOLIDIFIED FORM OF WASTE AND TO INTERCOMPARE VARIOUS PRODUCTS FROM DIFFERENT PROCESSES OR DIFFERENT LABORATORIES IT IS DESIRABLE TO HAVE A STANDARD METHOD OF MEASURING THE LEACH RATE BY WATER OF THE RADIOACTIVE COMPONENTS IN THE SOLID WASTE. TWO LEACH RATE TESTS ARE PRESENTED WHICH WERE THE RESULT OF RECOMMENDATIONS BY A PANEL OF EXPERTS CONVENED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN AUGUST 1969. ONE METHOD IS FOR INTERCOMPARISON PURPOSES AND THE OTHER TO APPROXIMATE THE BEHAVIOUR OF AN IMMOBILIZED SOLID UNDER THE CONDITIONS OF THE STORAGE ENVIRONMENT. THE DETAILS OF THE METHODS INCLUDE SPECIMEN PREPARATION, LEACHANT CONTAINERS, LEACHANT SPECIFICATIONS, EXPERIMENTAL CONDITIONS AND REPORTING OF RESULTS. A SECTION IS GIVEN ON EXTRAPOLATION OF TEST RESULTS TO A DISPOSAL PROGRAM. ALTHOUGH THESE LEACH RATE TESTS ARE NOT OFFICIAL IT IS HOPED THAT THEY WILL FIND ACCEPTANCE BY WORKERS IN THE FIELD AND LEAD TO RECOGNIZED STANDARD METHODS. THE METHODS PROPOSED IN THIS REPORT ARE SUBJECT TO REVISION AS EXPERIENCE IS GAINED IN THEIR APPLICATION.

PUB DESC: ATOMIC ENERGY REVIEW, VOL. 9, NO. 1
P195-207, 1971

KEYWORDS: WASTE TREATMENT; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); WASTE DISPOSAL; LEACHING; TESTING; STANDARDS; RADIATION (SEE ALSO REGULATION);

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PUB DATE: 1975

AUTHOR: MUSAID, S.L.; MUEGLER, G.; HILL, W.

TITLE: EXPERIMENTAL STUDIES ON THE POSSIBILITY OF USING A CERAMIC MATRIX FOR FIXING THE HIGH LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: A CERAMIC PRODUCT HAS BEEN DEVELOPED TO FIX HIGH LEVEL RADIOACTIVE WASTES FOR STORAGE AND FINAL DISPOSAL. IN THE PRESENT EXPERIMENTS SOME OF THE PROPERTIES, E.G. VISUAL CHANGE, CHANGE IN SIZE OR SHAPE, CHANGE IN WEIGHT, CHANGE IN STRUCTURE, DENSITY AND LEACHABILITY, ARE STUDIED FOR THE LONG TERM STABILITY OF THE PRODUCT UNDER HEAT AND RADIATION TREATMENT. THE PROPERTIES ARE NOT SEVERELY AFFECTED BY RADIATION OR BY HEAT TREATMENT. THE LEACHING PROPERTY IS SLIGHTLY AFFECTED DUE TO HEATING. FROM THE RESULTS IT APPEARS THAT THE HEATING HAS A DOMINANT EFFECT OVER THE RADIATION ON THE PROPERTIES OF THE CERAMIC PRODUCT.

PUB DESC: KFK-2162 +. 31 PPS, 7 FIGS, 7 REFS, JUNE 1975

KEYWORDS: RADIATION DAMAGE; LEACHING; WASTE TREATMENT; WASTE TREATMENT, SOLID; WASTE STORAGE; THERMAL PROPERTY; ALUMINUM; MANGANESE; SILICON; SODIUM; CERAMICS; THERMAL EXPERIMENT; OLIVE

<499>

PUB DATE: 1970

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: SITUATIONIZATION OF RADIOACTIVE WASTES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA (AUSTRIA)

ABSTRACT: THE PROCEEDINGS OF THIS IAEA RESEARCH CO-ORDINATION MEETING TOGETHER WITH OTHER REPORTS AND PUBLICATIONS WERE SUMMARIZED TO PROVIDE A REVIEW FOR MEMBER STATES. THE REVIEW IS A SUMMARY OF MUCH RESEARCH AND DEVELOPMENT WORK CARRIED OUT IN SEVERAL COUNTRIES WITH VARIOUS MATERIALS AND UNDER DIFFERENT CONDITIONS RESULTING IN MANY TERRIBLY CONTRADICTORY STATEMENTS. THE RESULTS REPORT DO NOT NECESSARILY APPLY UNDER ALL CONDITIONS BUT SHOULD ENABLE RECOMMENDATIONS FOR FURTHER STUDIES ON IMPROVING THE PROCESS TO BE OBTAINED.

PUB DESC: STI/DOC-90/116, 137 PAGES, FIGURES, TABLES, REFERENCES, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); REVIEW; ASPHALT; IAEA; HEAT TRANSFER; WASTE TREATMENT; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; ION EXCHANGE; LEACHING; TEMPERATURE; RADIATION EFFECT

<500>

PUB DATE: 1967

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 3

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: THIS DOCUMENT IS A COMPILATION OF ABSTRACTS OF WASTE-MANAGEMENT RESEARCH COMPLETED IN 1966 AND FORWARDED TO THE IAEA. INCLUDES CONTRIBUTIONS FROM 10 COUNTRIES. GENERAL AREAS COVERED ARE - GASEOUS WASTES TREATMENT AND DISPOSAL, LIQUID WASTE TREATMENT, SOLID WASTE TREATMENT, STORAGE AND DISCHARGE STUDIES, AND ECONOMIC STUDIES.

PUB DESC: INTERNATIONAL ATOMIC ENERGY AGENCY, 103 PAGES, 1967

KEYWORDS: IAEA; BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, DIVER; WASTE TREATMENT, GAS; WASTE DISPOSAL,

GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; MONITORING PROGRAM, ENVIRONMENTAL

<501>

PUB DATE: 1966

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 2

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: ABSTRACTS FROM ELEVEN NATIONS ARE INCLUDED IN THIS COMPILATION. GENERAL AREAS INCLUDE - GASEOUS WASTES TREATMENT AND DISPOSAL, LIQUID WASTES TREATMENT, SOLID WASTES TREATMENT, STORAGE AND DISCHARGE STUDIES, AND ECONOMIC STUDIES.

PUB DESC: IAEA-ABSTRACTS NO. 2, 90 PAGES (1966)

KEYWORDS: CECALT; IAEA; TRITIUM; WASTE DISPOSAL, OCEAN; WASTE TREATMENT; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; LEAD; POLODIUM; WASTE DISPOSAL, DIVER; WASTE TREATMENT, GAS; ZINC; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; RADIOISOTOPE; WASTE DISPOSAL, BEDROCK

<502>

PUB DATE: 1963

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: TREATMENT AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: IAEA

ABSTRACT: THE INHERENT RESTRICTIONS OF TANK STORAGE FOR HIGH ACTIVITY WASTE, SUCH AS POTENTIAL LEAKAGE AND THE NECESSITY OF LIQUID-WASTE TRANSFER FOR PERIODS OF HUNDREDS OF YEARS, HAS RESULTED IN A VIGOROUS RESEARCH AND DEVELOPMENT PROGRAMME IN THE UNITED STATES DIRECTED AT ENGINEERING PRACTICAL SYSTEMS FOR THE ULTIMATE DISPOSAL OF THESE MATERIALS. THE PROGRAMME IN THE ATOMIC ENERGY COMMISSION REACTOR DEVELOPMENT DIVISION IS DESCRIBED AS IT RELATES TO THE DEVELOPMENT OF A FUTURE NUCLEAR POWER ECONOMY. A LONG RANGE WASTE MANAGEMENT PROGRAMME AT THE PLUTONIUM PRODUCTION CENTRES, HAWFORD AND SAVANNAH RIVER, WITH THEIR PARTICULAR SITE REQUIREMENTS, ARE BRIEFLY SUMMARIZED. SEVERAL "CONVERSION TO SOLIDS" METHODS, INCLUDING THE USE OF FLUID BEDS, HEATED FOTS, RADIANT-HEATED SPRAY COLUMNS, OCTARY KILNS AND CERAMIC STORAGE ARE UNDER STUDY. THE ADDITION OF GLASS-FORMING MATERIALS TO THE WASTE FOR THE PURPOSE OF PROVIDING A MORE STABLE FINAL PRODUCT IS ALSO BEING INVESTIGATED. SOME OF THE ADVANTAGES AND DISADVANTAGES OF EACH PROCESS ARE NOTED. THE PRESENT STATUS OF THESE DEVELOPMENT PROJECTS IS SUMMARIZED AND THE PROPOSED FUTURE PROGRAMME PLANS ARE STATED. THE INVESTIGATION OF SPECIFIC GEOLOGIC FORMATION SUCH AS SALT STRUCTURES, DEEP PENETRABLE BASINS, AND IMPENETRABLE CRYSTALLINE ROCK FOR THE ULTIMATE STORAGE OR DISPOSAL OF CALCINED SOLIDS OR CERTAIN TYPES OF LIQUID WASTES IS DESCRIBED. PLANS FOR A PROPOSED FIELD EXPERIMENT IN SALT WITH FULL-SCALE ACTIVITY ARE DISCUSSED. THE EXPLORATORY DRILLING PROGRAMME AT THE SAVANNAH RIVER PLANT TO DETERMINE THE FEASIBILITY OF STORING AGED, FIRST-CYCLE WASTES IN THE BASEMENT ROCK BELOW SHIP IS BRIEFLY DESCRIBED AND PRELIMINARY RESULTS NOTED. BRIEF REFERENCE IS MADE OF THE LONG-RANGE ENGINEERING STUDIES BEING CONDUCTED AT OAK RIDGE TO EVALUATE THE HAZARDS AND ECONOMICS OF VARIOUS METHODS FOR HANDLING, STORAGE, AND/OR ULTIMATE DISPOSAL OF HIGHLY RADIOACTIVE LIQUID AND SOLID WASTES. THE ROLE OF THIS ENGINEERING EVALUATION PROGRAMME IN RELATION TO FUTURE PROGRAMME PLANNING IN WASTE MANAGEMENT IS DISCUSSED. (AUTHOR)

PUB DESC: STI/PUB/63, 666 P., FEB 1963

KEYWORDS: WASTE MANAGEMENT; SUMMARY REPORT; GLASS (SEE ALSO VITRIFICATION); CERAMICS; HAZARDS ANALYSIS; ORE; SAVANNAH RIVER PLANT; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); FLUIDIZED BED; WASTE DISPOSAL; WASTE STORAGE; CONCENTRATION; WASTE SOLIDIFICATION; WASTE FIXATION; CALCINATION; VITRIFICATION; LIQUID;

<502> CONT.
SCL17; SHIPPING

<503>

AUTHOR: DODD, G. PUB DATE: 1958

TITLE: AN INVESTIGATION ON THE USE OF BOHAIAN CLAYS AS ION EXCHANGERS IN THE DECONTAMINATION OF RADIOACTIVE WASTES.

PUB DESC: ACONF. 15/9/1315, PRCC. INTERN. CONF. ON THE PEACEFUL USES OF ATOMIC ENERGY, 2ND, GENEVA, 1958 18 PAGES 590-604 1958

KEYWORDS: CESIUM; CLAY; DECONTAMINATION; STRONTIUM; WASTE DISPOSAL; ION EXCHANGE; SOIL; RADIOISOTOPE

<504>

AUTHOR: IRISH, R.B.; REIL, W.F. PUB DATE: 1957

TITLE: THE PUREX PROCESS - A SOLVENT EXTRACTION PROCESSING METHOD FOR IRRADIATED URANIUM

CORPORATE AUTHOR: GENERAL ELECTRIC COMPANY; HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON

ABSTRACT: THIS PAPER DESCRIBES THE PUREX PROCESS, WHICH EMPLOYS SOLVENT EXTRACTION TO SEPARATE AND PURIFY URANIUM AND PLUTONIUM FROM EACH OTHER AND FROM FISSION PRODUCTS CONTAINED IN IRRADIATED URANIUM FUEL ELEMENTS. A DESCRIPTION OF THE OVER-ALL PROCESS, UTILIZING TETRA-BUTYL PHOSPHATE SOLVENT (IN A KEROSENE-TYPE DILUENT) AND NITRIC ACID SALTING AGENT, IS PROVIDED ALONG WITH CHEMICAL PROCESS FLOWSHEETS. THE PROCESS CHEMISTRY OF URANIUM, PLUTONIUM, AND FISSION PRODUCTS IS DISCUSSED AS AFFECTED BY PROCESS VARIABLES. METHODS OF RECOVERY OF SPENT SOLVENT AND ACID ARE BRIEFLY DISCUSSED. ALTERNATE PROCESS ARRANGEMENTS ARE SUGGESTED.

PUB DESC: HW-69483A 1957 (APRIL)

KEYWORDS: WASTE TREATMENT; SOLVENT EXTRACTION; SEPARATION; URANIUM; PLUTONIUM; SEPARATION TECHNIQUES; PUREX (SEE ALSO PARTITIONING); FUEL ELEMENTS; SPENT FUEL; ACID; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES);

<505>

AUTHOR: ISAACSON, L.E.; BROWNELL, L.E. PUB DATE: 1975

TITLE: CONTINUOUS PROCESS FOR IMMOBILIZING RADIOISOTOPES, INCLUDING CESIUM AND RUTHENIUM FISSION PRODUCTS

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CO., RICHLAND, WASH.

ABSTRACT: RADIOISOTOPE WASTES ARE CONTINUOUSLY CONVERTED TO A GLASS IN AN ELECTRO-HEATED FURNACE. THE PROCESS INCORPORATES AN EXOTHERMIC REACTION USING SILICON OR ALUMINUM TO FORM ALUMINOSILICATES OF LOW-MELT VISCOSITY AND HIGH-PRODUCT DURABILITY. THE REACTING CONDITIONS IN THE MELT PREVENT LOSS OF RUTHENIUM, AND CESIUM IS CAPTURED IN AN ALUMINOSILICATE LATTICE.

PUB DESC: AEC-54-222, CONF-750542-5, 18 PPS, FROM 77TH ANNUAL MEETING OF THE AMERICAN CERAMIC SOCIETY, WASHINGTON, D.C., MAY 3, 1975

KEYWORDS: WASTE DISPOSAL, SOLID; WASTE TREATMENT; HIGH TEMPERATURE; WASTE TREATMENT, VITRIFICATION; PLUTONIUM; SILICON; ALUMINUM; RUTHENIUM; CESIUM

<506>

AUTHOR: ISAACSON, L.E.; BROWNELL, L.E. PUB DATE: 1974

TITLE: CONTINUOUS PROCESS FOR IMMOBILIZING RADIOISOTOPES, INCLUDING CESIUM AND RUTHENIUM FISSION PRODUCTS

ABSTRACT: THIS PATENT DESCRIBES A CONTINUOUS PROCESS FOR IMMOBILIZING CESIUM-AND RUTHENIUM-CONTAINING RADIOISOTOPE WASTES AS A COMPLEX METALOSILICATE PRODUCT WHICH IS VIRTUALLY INSOLUBLE AND NON-LEACHABLE IN ALKALINE OR NEUTRAL ENVIRONMENTS.

PUB DESC: U.S. PATENT, 3,849,330, NOVEMBER 19, 1974

KEYWORDS: CERAMICS; METAL; WASTE TREATMENT; UNITED STATES; PATENT

<507>

AUTHOR: IMAI, S.; TSUTSUMI, T.; TAKAGISHI, T.; OSHIO, T.; SHIMOMURA, Y. PUB DATE: 1960

TITLE: TREATMENT AND DISPOSAL OF RADIOACTIVE LIQUID- AND SOLID-WASTES AT THE KYOTO UNIVERSITY RESEARCH REACTOR INSTITUTE

ABSTRACT: TO DISPOSE OF THE RADIOACTIVE LIQUID AND SOLID WASTES, A TREATMENT PLANT WAS INSTALLED IN THE KYOTO UNIVERSITY RESEARCH REACTOR INSTITUTE. THE BASIC PRINCIPLES AND SCOPE OF THESE WASTES ARE DISCUSSED.

PUB DESC: ANNUAL REPORT OF THE RESEARCH REACTOR INSTITUTE, KYOTO UNIVERSITY, VOL. 1, PG 171-186 (OCTOBER 1960)

KEYWORDS: REACTOR, RESEARCH (SEE ALSO B AND D PROGRAM); WASTE DISPOSAL; WASTE TREATMENT; JAPAN

<508>

AUTHOR: KALCYA, S.; MABUNATSU, T. PUB DATE: 1967

TITLE: INCINERATION AND OPERATION OF THE RADIOACTIVE WASTE TREATMENT FACILITIES AT THE JAPC TOKAI POWER STATION

ABSTRACT: DESCRIBES THE RADIOACTIVE LIQUID WASTE TREATMENT PLANT AT THE JAPC TOKAI POWER STATION, WHERE SUCH WASTES COME MAINLY FROM THE SPENT FUEL STORAGE POND AND THE EQUIPMENT DECONTAMINATION FACILITIES. THE PLANT CONSISTS OF A CO₂ COOLED, GRAPHITE MODERATED, CALLED HALL TYPE REACTOR. WATER FROM THE SPENT FUEL STORAGE POND IS TREATED BY NEUTRALIZATION WITH CO₂ GAS AND CONDENSATION-PRECIPITATION AND SAND BED FILTRATION AND ION-EXCHANGE. TREATMENT OF MISCELLANEOUS LIQUID WASTES BY CONDENSATION-PRECIPITATION, SAND BED FILTRATION AND ION EXCHANGE, AND EVAPORATION ARE DESCRIBED

PUB DESC: YCSOI TO OHSOI, 9, PAGES 20-5 (JULY 1967)

KEYWORDS: REACTOR, LIQUID; SPENT FUEL; WASTE TREATMENT, LIQUID; JAPAN; OPERATING EXPERIENCE; RADIATION MONITORING; INCINERATORS, DISC.; INCINERATION

<509>

AUTHOR: KALCYA, S.; DOI, B. PUB DATE: 1967

TITLE: RADIOACTIVE-WASTE TREATMENT FACILITIES

CORPORATE AUTHOR: EBARA MANUFACTURING COMPANY, TOKYO, JAPAN

ABSTRACT: DESCRIBES DESIGN AND CONSTRUCTION OF RADIOACTIVE WASTE TREATMENT FACILITIES. RADIOACTIVE WASTE TREATMENT FACILITIES ARE DISCUSSED IN THE FOLLOWING SECTIONS - MEDIUM-LEVEL LIQUID WASTE TREATMENT FACILITIES. LOW-LEVEL LIQUID WASTE TREATMENT FACILITIES. RADIOACTIVE LIQUID-WASTE TREATMENT FACILITIES IN THE JAPC TOKAI POWER STATION, INCINERATORS FOR TREATMENT OF SOLID RADIOACTIVE WASTES, AND RESEARCH AND DEVELOPMENT ACTIVITIES.

PUB DESC: EBARA JIMO 16 (43), PAGES 112-17 (SEPTEMBER 1967)

KEYWORDS: DESIGN CRITERIA; INTERMEDIATE-LEVEL WASTE; WASTE TREATMENT; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; INCINERATION; JAPAN; REACTOR POWER;

<509> CONT.
WASTE TREATMENT, EQUIPMENT; R AND D PROGRAM

<510>

PUB DATE: 1974

AUTHOR: KASHADOVA, K.P.; MELICHENKO, V.V.;
BARTHOV, YE.P.; SOBOLEV, I.A.; BACHNIK, L.U.

TITLE: STUDY OF BITUMINIZATION AS A METHOD OF
TREATING HIGH-ACTIVITY WASTE

CORPORATE AUTHOR: USSR STATE COMMITTEE ON THE
UTILIZATION OF ATOMIC ENERGY

ABSTRACT: THE PAPER DEALS WITH TWO FACTORS WHICH
LIMIT THE USE OF BITUMENS FOR TREATING HIGH-LEVEL
WASTES: RADIATION STABILITY AND THE POSSIBILITY OF
HEAT RELEASE. INVESTIGATION OF THE CHANGES IN
CHEMICAL COMPOSITION AND IN PHYSICO-CHEMICAL AND
STRUCTURAL-MECHANICAL PROPERTIES UNDER THERMAL
STRESS SHOWED THAT THE COMPOSITION OF BITUMEN MATERIALS IS
CHANGED AS A RESULT OF RADIATION-INDUCED OXIDATION AND
POLYMERIZATION. THE EFFECT OF THE SPECIFIC ACTIVITY
AND COMPOSITION OF THE WASTES ON THESE PROCESSES IS
DETERMINED. THE PAPER INCLUDES RESULTS OBTAINED IN
THE EXPERIMENTAL STORAGE OF BITUMEN BLOCKS WITH A
SPECIFIC ACTIVITY BETWEEN 0.1 AND 50 CI/L. THE
POSSIBILITY OF HEAT REMOVAL FROM STORED BITUMEN BLOCKS
WITH A SPECIFIC ACTIVITY OF UP TO 300 CI/L AND WAYS OF
ACHIEVING IT ARE DEMONSTRATED ON THE BASIS OF
THERMO-PHYSICAL STUDIES. (AUTH)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE
WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF
SYMPOSIUM, 763-788 (1974)

KEYWORDS: HIGH-LEVEL WASTE; ASPHALT; WASTE
TREATMENT; RADIATION STABILITY; HEAT RELEASE;
PROPERTIES; CHEMICAL COMPOSITION; CRYSTALLIZATION;
POLYMERIZATION; RADIATION EFFECT

<511>

PUB DATE: 1968

AUTHOR: KELLY, V.P.

TITLE: WASTE SOLIDIFICATION PROGRAM - VOL. III -
DESIGN FEATURES OF THE FACILITIES AND EQUIPMENT FOR
THE WASTE PRODUCT EVALUATION PROGRAM

CORPORATE AUTHOR: BATTYLLIE NORTHWEST LABORATORY,
BICKLEBO, WASHINGTON

ABSTRACT: A PROGRAM WAS IMPLEMENTED WITHIN PACIFIC
NORTHWEST LABORATORY TO STUDY THE WASTE POTS FILLED
WITH SOLIDIFIED HIGHLY RADIOACTIVE WASTES IN THE WASTE
SOLIDIFICATION ENGINEERING PROTOTYPES. THE PROGRAM,
TERMED THE WASTE PRODUCT EVALUATION PROGRAM, WAS
ESTABLISHED TO EVALUATE PROPERTIES SUCH AS WASTE POT
INTEGRITY AND SOLIDIFIED WASTE STABILITY RELATING
PARTICULARLY TO THE NUCLEAR SAFETY ASPECTS OF WASTE
MANAGEMENT.

PUB DESC: BNWL-832, 50 PAGES, FIGURES, TABLES,
REFERENCES, DECEMBER 1968

KEYWORDS: DESIGN CRITERIA; SOLIDIFICATION (SEE ALSO
CALCINATION, INCINERATION, VITRIFICATION, ETC.); WASTE
TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; WASTE
TREATMENT, SOLID; EQUIPMENT; EQUIPMENT; FUEL
REPROCESSING

<512>

PUB DATE: 1970

AUTHOR: KENT, C.E.; LEVY, S.; SMITH, J.M.

TITLE: EFFLUENT CONTROL FOR BOILING WATER REACTORS

CORPORATE AUTHOR: GENERAL ELECTRIC COMPANY, SAN
JOSE, CALIFORNIA

ABSTRACT: MORE THAN A DECADE OF OPERATING
EXPERIENCE IS AVAILABLE FOR REFERENCE FROM COMMERCIAL
BOILING-WATER REACTOR NUCLEAR POWER PLANTS. PLANNED
RELEASES OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT
HAVE BEEN BASED ON A CONSERVATIVE DESIGN OBJECTIVE.
COST-PLANT RADIATION COSTS ARE VERY SMALL COMPARED TO

PERMISSIBLE OR NATURAL BACKGROUND DOSE. THE SOURCES
OF WASTES FROM THE VARIOUS PORTIONS OF THE PLANT ARE
CLASSIFIED BY PHYSICAL AND RADIOACTIVE
CHARACTERISTICS. TREATMENT PROCESSES ARE PROVIDED
ACCORDINGLY. THE OBJECTIVE IS TO PROCESS AND RECYCLE
THESE STREAMS SO AS TO MINIMIZE BOTH VOLUME AND
RADIOACTIVITY OF EFFLUENTS.

PUB DESC: SW-186/21, CONF-700813-23, 14 PAGES,
PAPER PRESENTED AT THE INTERNATIONAL ATOMIC ENERGY
AGENCY SYMPOSIUM ON ENVIRONMENTAL ASPECTS OF NUCLEAR
POWER STATIONS, NEW YORK, AUGUST 16-18, 1970

KEYWORDS: REACTOR, BWR; DESIGN CRITERIA; DOSE;
EFFLUENT; IAEA; WASTE TREATMENT; WASTE DISPOSAL,
LIQUID; RADIATION SAFETY AND CONTROL; RADIOACTIVITY
RELEASE; OPERATING EXPERIENCE; OFF SITE; CONCENTRATION

<513>

PUB DATE: 1968

AUTHOR: KFFAK, P.

TITLE: DECONTAMINATION OF RADIUM-226 FROM
RADIOACTIVE WASTES BY ADSORPTION ON INORGANIC AND
ORGANIC SOLVENTS

CORPORATE AUTHOR: INST. OF NUCLEAR RESEARCH, BRN,
CZECH

ABSTRACT: ECONOMIC ASPECTS OF TREATING RADIOACTIVE
WASTES BY ADSORPTION ARE DISCUSSED. A BRIEF REVIEW IS
GIVEN OF METHODS FOR DECONTAMINATION OF RADIUM-226
ISOTOPES FROM RADIOACTIVE WASTE WATER BY ADSORPTION ON
INORGANIC ADSORBENTS SUCH AS INSOLUBLE METAL SULFIDES
AND HYDRATES, HYDRATED OXIDES, PHOSPHATES, POWDERED
METALS, AND NATURAL ADSORBENTS AND ON CELLULOSE BASED OR
NUCLEIC ACID ADSORBENTS, AND ORGANIC ION EXCHANGERS.

PUB DESC: JAD. ENERG., 14, PAGES 131-133 (APRIL
1968) (IN CZECH)

KEYWORDS: ADSORPTION; CZECHOSLOVAKIA; REVIEW; ;
DECONTAMINATION; METAL; OXIDE; RADIUM-226; WASTE
TREATMENT, LIQUID; PHOSPHATE; WASTE TREATMENT,
ECONOMIC; ION EXCHANGE; ADSORPTION (SEE ALSO ADSORPTION)

<514>

PUB DATE: 1974

AUTHOR: KILIAN, D.C.

TITLE: A CALCINATION PROCESS FOR RADIOACTIVE WASTES

ABSTRACT: THE PRESENT INVENTION PROVIDES A METHOD
FOR MINIMIZING THE VOLATILIZATION OF CHLORIDES DURING
SOLIDIFICATION IN A FLUIDIZED-BED CALCINER OF LIQUID
CONTAINING SODIUM, NITRATE AND CHLORIDE IONS.
ZINC OXIDE AND FLUORIDE ARE INTRODUCED INTO THE LIQUID,
AND ONE-HALF MOLE OF CALCIUM NITRATE IS ADDED PER MOLE
OF FLUORIDE PRESENT IN THE LIQUID MIXTURE. THE
MIXTURE IS CALCINED IN THE FLUIDIZED-BED CALCINER AT
ABOUT 500 C., PRODUCING A HIGH DENSITY CALCINE
PRODUCT CONTAINING THE CHLORIDE.

PUB DESC: U.S. PATENT APPLICATION 504,789,
SEPTEMBER 10, 1974

KEYWORDS: WASTE TREATMENT; FLUIDIZED BED;
CALCINATION; WASTE TREATMENT, SOLID; UNITED STATES;
PATENT

<515>

PUB DATE: 1965

AUTHOR: KING, L.J.; ICHIKAWA, H.

TITLE: PILOT PLANT DEMONSTRATION OF THE
DECONTAMINATION OF LOW-LEVEL PROCESS WASTES BY A
RECYCLE SCAVENGING-PRECIPITATION ION-EXCHANGE PROCESS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: LOW RADIOACTIVITY-LEVEL WASTE (LLW) CAN
BE TREATED BY AN IMPROVED SCAVENGING-PRECIPITATION
ION-EXCHANGE PROCESS TO REDUCE STRONTIUM AND CESIUM
ACTIVITY LEVELS, BY FACTORS OF ABOUT 1000 AT A COST OF
74.6 CENTS PER 1000 GAL IN A 750,000 GAL-PER-DAY
PLANT. THE IMPROVED PROCESS WAS DEMONSTRATED IN THE

<515> CONT.
CERL PILOT PLANT USING ORNL LHV AT A RATE OF 15,000 GAL/DAY.

PUB DESC: ORNL 3063 +. 37 PAGES, 4 TABLES, 11 FIGURES, 9 REFERENCES- DECEMBER 1965

KEYWORDS: CESIUM; COBALT; DITHIONITE; STRONTIUM; WASTE TREATMENT, LIQUID; BARE FANT; GROSS META; GROSS GAMMA; ORNL; WASTE DISPOSAL, LIQUID; WASTE TREATMENT, ECONOMICS; WASTE TREATMENT, EQUIPMENT

<516> PUB DATE: 1965
AUTHOR: KINGSLEY, B.S.

TITLE: SOLVENT EXTRACTION RECOVERY OF AMERICIUM WITH DIMETHYL ETHER EXTRACTANT

CORPORATE AUTHOR: BANCORP ATOMIC PRODUCTS CORPORATION, RICHLAND, WASHINGTON

ABSTRACT: THIS DOCUMENT DESCRIBES THE SOLVENT EXTRACTION PROCESS CHEMISTRY AND PICO SHEETS DEVELOPED TO RECOVER AMERICIUM FROM THE BANCORP PLUTONIUM RECLAMATION FACILITY'S AQUEOUS WASTE STREAM.

PUB DESC: RL-SEP-516 33 PAGES, 11 FIGURES, 5 TABLES, 7 REFERENCES- SEPTEMBER 29, 1965

KEYWORDS: WASTE TREATMENT; AMERICIUM; BATTELLE NORTHWEST; RECOVERY PROCESS

<517> PUB DATE: 1969
AUTHOR: KLOGER, V.; KRAUSE, H.; SEUTWICH, O.

TITLE: FIXING OF RADIOACTIVE RESIDUES IN BITUMEN

CORPORATE AUTHOR: KERKPOUSCHUNGZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: PRESENTS EXPERIMENTS CARRIED OUT ON SIMULATED EVAPORATOR CONCENTRATE SCIENTISTS TO FIX THE RESIDUES IN BITUMEN. REPORTS FIXATION OF SALT SOLUTIONS, CRITICAL SLUDGES, PLASTICS, ORGANIC ION EXCHANGERS, AND ORGANIC WASTE SOLUTIONS.

PUB DESC: KFK-1037, 62 PAGES, FIGURES, TABLES, 16 REFERENCES, AUGUST 1969

KEYWORDS: DECONTAMINATION; ASPHALT, PLASTIC; ION EXCHANGE; EQUIPMENT; WASTE TREATMENT, FIXATION; EVAPORATION; FUEL REPROCESSING

<518> PUB DATE: 1972
AUTHOR: ROCH, G.; ROZABIE, Z.; SIIF, B.

TITLE: RECOVERY OF TRANSPLUTONIUM ELEMENTS FROM FUEL REPROCESSING HIGH-LEVEL WASTE SOLUTIONS

CORPORATE AUTHOR: KERKPOUSCHUNGZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: A PROCESS FOR THE RECOVERY OF AMERICIUM AND CURIUM VALUES FROM PUREX-TYPE HIGH-LEVEL WASTE SOLUTIONS IS UNDER DEVELOPMENT AT KARLSRUHE. THE HIGH-LEVEL WASTE IS OXIDIZED AND THE RESULTING FISSION PRODUCT PRECIPITATE SENT TO HL-SOLIDIFICATION. THE ACTINIDE/LANTHANIDE FRACTION WHICH HAS BEEN KEPT IN SOLUTION IS SEPARATED BY A NEWER SOLVENT EXTRACTION CYCLE. THE LANTHANIDES ARE SENT TO WASTE SOLIDIFICATION, WHILE THE AM/CM IS FURTHER PURIFIED BY CATION EXCHANGE. RESULTS OF 'COLD' FLOWMETER TESTS ARE REPORTED.

PUB DESC: CONF-721107-5, KFK-1651, 29 PAGES, 12 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DECONTAMINATION; PUREX (SEE ALSO PARTITIONING); PARTITIONING (SEE ALSO SEPARATION, FRACTIONATION, AND WASTE PARTITIONING); HIGH-LEVEL

WASTE; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; GERMANY; ION EXCHANGE; SOLVENT EXTRACTION; FUEL REPROCESSING; SCIENTISTS

<519> PUB DATE: 1965
AUTHOR: KCCR, H.; OTTO, R.; JACHT, P.

TITLE: THE METHOD FOR THE DECONTAMINATION OF WASTES EMPLOYED BY THE INSTITUTE OF APPLIED RADIOCHEMISTRY AT LEIPZIG

CORPORATE AUTHOR: INSTITUT FÜR ANGEWANDTE RADIOAKTIVITÄT, LEIPZIG

ABSTRACT: DISCUSSES THE METHOD DEVELOPED FOR PRECIPITATING RADIOACTIVE WASTES. DECONTAMINATION TAKES PLACE BY ADDITION OF CaCl₂, Fe(SO₄)₃, Na₂SO₄ AND FOLLOWS FLOCCULATION AT PH 10 TO 11. RES IS PRECIPITATED. THE METHOD PERMITS PURIFICATION OF TO 99% THAT ATTAINED DURING PLANT OPERATION IS 90%.

PUB DESC: FORTSCHR. WASSERFORSCH. INDER GEBIET., NO. 3, PAGES 137-43 (1965), IN GERMAN

KEYWORDS: CALCIUM; DECONTAMINATION; SODIUM; WASTE TREATMENT; IRON; PRECIPITATION; RADIOCHEMICAL PROCESSING; CHLORIDE

<520> PUB DATE: 1969
AUTHOR: HOLYCARP, J.S.; KULICHENKO, V.V.; KRONIKOVICH, A.A.; SEDOV, V.N.

TITLE: INCORPORATION OF RADIOACTIVE WASTES INTO BITUMEN

ABSTRACT: SURVEYED RESEARCH ON INCORPORATION OF RADIOACTIVE WASTES INTO BITUMEN. NEW TRENDS AND DEVELOPMENTS IN THIS FIELD WERE ALSO ANALYZED. COMPARATIVE ADVANTAGES AS WELL AS LIMITATIONS OF THIS METHOD ARE DISCUSSED.

PUB DESC: ATOMIC ENERGY/USSR, VOL. 26, PP. 530-534 (JUNE 1969)

KEYWORDS: WASTE STORAGE; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; USSR; B AND C FUGGWAR

<521> PUB DATE: 1970
AUTHOR: KOPELATYEV, A.D.; RYBALCHENKO, I.L.; SEDOV, V.N.; KRONIKOVICH, A.A.

TITLE: ENGINEERING AND ECONOMIC ASPECTS OF THE TREATMENT OF RADIOACTIVE WASTES OF RESEARCH CENTERS AND ATOMIC POWER PLANTS

CORPORATE AUTHOR: V. G. KROLOV RADIATION INSTITUTE, USSR

ABSTRACT: THIS REPORT CONTAINS A BRIEF ANALYSIS OF THE TECHNICAL AND ECONOMIC INDICES OF THREE TREATMENT METHODS AND THE COST OF TREATMENT FOR PLANTS WITH CAPACITIES OF 100, 200, AND 500 M3/DAY. THE POSSIBILITY OF EMPLOYING THE THREE STATED METHODS FOR DESALINATED WATER AND RADIOACTIVE SOLUTIONS WITH A TOTAL SALINITY OF 0.5-7 G/LITER, IS EXAMINED. THE TECHNICAL AND ECONOMIC INDICES ARE TAKEN ON THE BASIS OF EXPERIENCE IN THE OPERATION OF WORKING INSTALLATIONS FOR THE TREATMENT OF RADIOACTIVE WASTES AT THE SCIENTIFIC RESEARCH INSTITUTE OF ATOMIC REACTORS (NIIR), MOSCOW DECONTAMINATION AND RADIATION SAFETY STATIONS, LEBINGRAD DISPOSAL STATION, BELOTAPSKA AND NOVY-VORONEZH ATOMIC STATIONS.

PUB DESC: SN-117/82, STI/PUB-264, CONF-700905, 21 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, ALL-EX-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; WASTE TREATMENT; EVAPORATION; ION EXCHANGE; USSR; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, DEEP WELL

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PUB DATE: 1971

AUTHOR: EGNER, W.; DAGEN, A.

TITLE: SAFETY ASPECTS OF BITUMINIZATION WASTES

CORPORATE AUTHOR: STAATLICHE ZENTRALE FÜR SYMBIOTISCHES, GERMANY

ABSTRACT: AFTER AN INTRODUCTORY REVIEW OF LITERATURE ON RADIATION RESISTANCE OF BITUMEN, LEACHING AND REDOX REACTIONS THE RESULTS OF SOME INVESTIGATIONS ON THESE PROBLEMS ARE PRESENTED. THE HYDROGEN PORENATION RATE CAUSED BY INTERNAL GAMMA AND INTERNAL BETA IRRADIATION OF BITUMEN B 45 AND BITUMEN B 45-BAD03 MIXTURES WAS 0.01 CM³ PER CM PER HRAD. THE EXPANSION RATE WAS 0.002 CM³ PER CM PER HRAD. BITUMEN B 45-BAD03 MIXTURES (10 TO 60% BAD03) SHOWED A LEACHING RATE OF ABOUT 10⁻⁴ GCM⁻² D⁻¹, WHEREAS THE LEACHING RATE OF CEMENT-BAD03 MIXTURES (% TO 22% BAD03) WAS ABOUT 2.10⁻³ GCM⁻² D⁻¹. IT WAS FOUND BY THERMAL ANALYSIS THAT IN BITUMEN B 45-BAD03 MIXTURES (40% BAD03) REDOX REACTIONS OCCUR ABOVE 300 DEG C.

PUB DESC: SZS-8/71, 26 PAGES, 8 FIGURES, 9 TABLES, 20 REFERENCES, AUGUST 1971 (IN GERMAN)

KEYWORDS: THERMAL ANALYSIS; ASSEMBLY; RADIATION EFFECT; WASTE TREATMENT; FISSION; BETA RITTER; WASTE DISPOSAL; LIQUID; GAMMA RITTER; LEACHING

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PUB DATE: 1969

AUTHOR: NOVAKA, Y.

TITLE: FUNDAMENTAL STUDY ON THE TREATMENT OF NUCLEAR FUEL REPROCESSING WASTES BY PLANTATION METHOD. PREPREFERENTIAL DECOAL OF MIXED FISSION PRODUCTS.

CORPORATE AUTHOR: KYOTU UNIVERSITY, JAPAN

ABSTRACT: STUDIES ON THE TREATMENT OF NUCLEAR FUEL REPROCESSING WASTES WITH THE APPLICATION OF PLANTATION TECHNIQUES, WERE UNDERTAKEN ON THE PREPREFERENTIAL REMOVAL OF LONG-LIVED FISSION PRODUCTS SUCH AS CS-137, SB-90, RU-106, CE-140, AND IS-95 FROM SIMULATED LOW-AND INTERMEDIATE-LEVEL RADIOACTIVE LIQUID WASTES. USING EITHER SODIUM CEARATE OR OCTYLACRYLAMIDE ACETATE AS THE PLANTATION COLLECTOR, AND CERIC PEROXYACETATE OR FERRIC HYDROXIDE AS THE COPRECIPITANT, THREE-STAGE PREPREFERENTIAL PLANTATION WAS APPLIED, RESULTING IN THE REMOVAL OF 95 PERCENT OF CS-137, 87 PERCENT OF SB-90, AND OVER 90 PERCENT OF A MIXTURE OF CE-140, RU-106, AND IS-95.

PUB DESC: BIPPO GENSIBYCHU GERRAISNI, 8 PAGES, VOL. 11, PAGES 198-205 (APRIL 1969)

KEYWORDS: CESIUM; CESIUM; RUTHERGIUM; STRONTIUM; ZINCION; WASTE TREATMENT; LIQUID; JAPAN; FUEL REPROCESSING; B AND D PROGRAM

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PUB DATE: 1972

AUTHOR: KRAUSE, R.; RADEL, R.

TITLE: TREATMENT AND FINAL DISPOSAL OF RADIOACTIVE WASTES FROM FUEL REPROCESSING IN THE FEDERAL REPUBLIC OF GERMANY-A SURVEY ON POLICY AND F & D WORK

CORPORATE AUTHOR: FEDERAL REPUBLIC OF GERMANY: NUCLEAR RESEARCH

ABSTRACT: IN THE FEDERAL REPUBLIC OF GERMANY THE HIGH-LEVEL WASTES (HLW) WILL BE SOLIDIFIED AFTER A LIMITED INTERIM STORAGE AS LIQUIDS AND THE SOLIDIFIED RESIDUES WILL BE DISPOSED OF IN A SALT MINE. AT THE KARLSRUHE NUCLEAR RESEARCH CENTER THE SOLIDIFICATION OF HLW FROM THE REPROCESSING OF LIGHT WATER PUELS HAS BEEN STUDIED. AN INACTIVE PILOT PLANT IS IN OPERATION. THE CORRESPONDING HOT CELL FACILITY (VERA) IS UNDER CONSTRUCTION. ITS PARTICULAR LAYOUT ALLOWS ALSO TESTING OF ADVANCED PROCESSES AND PRODUCTS BEING DEVELOPED NOW. (AUTH)

PUB DESC: OECD-NEA AND THE IEA, PARIS, FRANCE, NOV. 27-DEC. 1, 1972, PP 199-231

KEYWORDS: WASTE TREATMENT; HIGH-LEVEL WASTE; CECB (SEE ALSO 5224); WASTE DISPOSAL; SALT; WASTE STORAGE; RADIOACTIVE WASTE; FUEL REPROCESSING; WASTE DISPOSAL; MINING; SALT (SEE ALSO 5220 SALT AND WASTE DISPOSAL, SALT); WASTE SOLIDIFICATION; SAFETY EVALUATION; B AND D PROGRAM; GERMANY

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PUB DATE: 1972

AUTHOR: KRAUSE, R.; RADEL, R.

TITLE: TREATMENT AND FINAL DISPOSAL OF RADIOACTIVE WASTES FROM FUEL REPROCESSING IN THE FEDERAL REPUBLIC OF GERMANY - A SURVEY OF POLICY AND F & D WORK

CORPORATE AUTHOR: NUCLEAR RESEARCH CENTER, KARLSRUHE ; FÖDERALMINISTERIUM FÜR KERNENERGIE UND KISSENACHFART BCB, GERMANY

ABSTRACT: HIGH-LEVEL WASTES (HLW) WILL BE SOLIDIFIED AFTER A LIMITED INTERIM STORAGE AS LIQUIDS AND THE SOLIDIFIED RESIDUES WILL BE DISPOSED OF IN A SALT MINE. AT THE KARLSRUHE NUCLEAR RESEARCH CENTER THE SOLIDIFICATION OF HLW FROM THE REPROCESSING OF LIGHT WATER PUELS HAS BEEN STUDIED. AN INACTIVE PILOT PLANT IS IN OPERATION. THE CORRESPONDING HOT CELL FACILITY (VERA) IS UNDER CONSTRUCTION. ITS PARTICULAR LAYOUT ALLOWS ALSO TESTING OF ADVANCED PROCESSES AND PRODUCTS BEING DEVELOPED NOW. AT THE JULICH NUCLEAR RESEARCH CENTER B & D WORK IS CARRIED OUT ON THE REPROCESSING OF HTW-PUELS AND THE SOLIDIFICATION OF THIS PARTICULAR HLW.

PUB DESC: COM-721107, 23 PAGES, 3 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: EFFLUENT; HOT CELL; WASTE STORAGE; WASTE DISPOSAL; SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; GERMANY; WASTE DISPOSAL; SALT; FUEL REPROCESSING; B AND D PROGRAM; SOLID; VITRIFICATION

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PUB DATE: 1971

AUTHOR: KRAUSE, R.

TITLE: TREATMENT AND FINAL STORAGE OF RADIOACTIVE RESIDUES

ABSTRACT: PROGRESS REVIEW OF SAFETY WITH RESPECT TO OPERATIONS CONCERNING CONTAINMENT, TREATMENT, HANDLING, STORAGE, AND DISPOSAL OF RADIOACTIVE WASTES.

PUB DESC: ATOMKRAFT-ATOMKRAFT, 16(8/9), PP. 461-467 (AUGUST-SEPTEMBER 1971) (IN GERMAN)

KEYWORDS: CESIUM; DECONTAMINATION; EFFLUENT; STRONTIUM; TITANIUM; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; INCINERATION; WASTE DISPOSAL; SALT

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PUB DATE: 1970

AUTHOR: KATKOVA, N.V.; KULICHENKO, V.V.; KARTYUCY, V.P.

TITLE: DEVELOPMENT OF TECHNIQUES FOR THE PRE-DISPOSAL TREATMENT OF WASTE ARISING IN NUCLEAR FUEL REPROCESSING BY THE HEXAFLUORIDE METHOD

CORPORATE AUTHOR: USSR STATE COMMITTEE ON THE UTILIZATION OF ATOMIC ENERGY

ABSTRACT: THE PAPER DEALS WITH THE METHOD OF WASTES RESULTING FROM THE REPROCESSING OF NUCLEAR FUEL BY THE METHOD OF VOLATILE FLUORIDE SUBLIMATION AND SUBSEQUENT FRACTIONAL DISTILLATION OR ADSORPTION TO FREE THE URANIUM AND PLUTONIUM FROM FISSION PRODUCTS. TWO TYPES OF WASTES ARE CONSIDERED: (1) THOSE CONTAINING FLUORIDE FISSION PRODUCTS OF LOW VOLATILITY AND (2) THOSE CONTAINING FLUORIDE FISSION PRODUCTS OF HIGH VOLATILITY. THE SUITABILITY OF THE TWO TYPES OF WASTE FOR BURIAL IS CONSIDERED. IT IS SUGGESTED THAT WASTES CONTAINING FLUORIDES OF LOW VOLATILITY CAN BE

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CONVERTED INTO DISCRETE BLOCKS OF THE CRYOLITE TYPE. VARIOUS COMPOSITIONS ARE CONSIDERED AND THE MOST SUITABLE SYSTEM FOR LONG-TERM BURIAL IS SELECTED. THE AUTHORS DISCUSS THE REQUIREMENTS FOR THE BURIAL, WITHOUT SPECIAL THERMAL TREATMENT, OF A SECOND TYPE OF WASTE. THE CONDITIONS LAID DOWN FOR THE BURIAL OF OTHER TYPES OF WASTE ARE BASED ON THERMO-PHYSICAL CALCULATIONS. (AUTH)

PUB DESC: OECD-OCED, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 1985-1985 (1974)

KEYWORDS: WASTE TREATMENT; FLUORIDE; USSR; REPROCESSING; FUEL REPROCESSING; HYDROLYSIS; SUBSTITUTION; DISTILLATION; URANIUM; PLUTONIUM; WASTE BURIAL (SEE ALSO LAND BURIAL); THERMO-PHYSICAL CALCULATIONS

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PUB DATE: 1967
AUTHOR: KULBASHEVA, N.V.; PORIB, Y.K.
TITLE: CONCERNING INFLUENCE OF SURFACE ACTIVE AGENTS ON BITUMINIZATION PROCESS OF RADIOACTIVE WASTE

ABSTRACT: IN THE BITUMINIZATION OF RADIOACTIVE WASTES, THE PRESENCE OF SURFACE-ACTIVE SUBSTANCES CAUSED A CROSS-LINKING OF THE SYSTEM AND AN INCREASE IN VISCOSITY. THE MAXIMUM AMOUNT OF SURFACE-ACTIVE SUBSTANCE THAT COULD BE TOLERATED IN THE COMPOUND WAS 24%. IT WAS POSSIBLE TO EXPOSE THE COMPOUNDS TO 140-190 C FOR 2 TO 3 HR WITHOUT SIGNIFICANTLY INCREASING THEIR VISCOSITY OR THE DIFFICULTY OF REMOVING THE BITUMEN COMPOUND FROM THE APPARATUS.

PUB DESC: AT. ENERGIA 32(5), PAGE 397-399, 3 FIGURES, 8 REFERENCES, (1967), IN RUSSIAN

KEYWORDS: WASTE TREATMENT; ASPHALT; WASTE TREATMENT; FIXATION; USSR

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PUB DATE: 1970
AUTHOR: KULICHENKO, V.V.; VOLKOVA, O.I.; ZAKHAROVA, L.P.; SOBOLEV, I.S.; KACHURIK, L.R.; SOLOV, V.V.; ROSENBERG, G.B.; DAVYDOV, V.I.

TITLE: BITUMINIZATION OF RADIOACTIVE WASTES CONTAINING SODIUM NITRATE

CORPORATE AUTHOR: INSTITUTE OF PHYSICAL CHEMISTRY, USSR ACADEMY OF SCIENCES, CENTRAL STATION OF RADIATION SHIELDING

ABSTRACT: THE RESULTS OF RESEARCH ON THE FEATURES OF BITUMINIZATION OF WASTES CONTAINING SODIUM NITRATE ARE PRESENTED IN THIS REPORT. IT IS ESTABLISHED THAT DETAILER REDOX REACTIONS OCCUR IN THE SODIUM NITRATE-BITUMEN SYSTEM ONLY AT TEMPERATURES EXCEEDING THE MELTING POINT OF SODIUM NITRATE. THE REACTION MAY BE OF AN EXPLOSIVE CHARACTER. AT LOWER TEMPERATURES SODIUM NITRATE IS BOUND TO THE BITUMEN BASICALLY BY WEAK ADSORPTION FORCES, WHICH CAN RESULT IN IRREGULAR DISTRIBUTION OF THE SALT WITHIN THE BITUMINOUS MASS. THE CONDITIONS THAT PREVENT THESE PHENOMENA WERE INVESTIGATED IN THE LABORATORY AND IN A PILOT PLANT.

PUB DESC: SN-137/79, 321/PBB-244, CONT-700905, 20 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIS-BU-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: EXPLOSIVE; ASPHALT; IAEA; BURNING, RELATIVE; SODIUM; WASTE TREATMENT; FIXATION; WASTE DISPOSAL, LIQUID; USSR; NITRATE; TEMPERATURE

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PUB DATE: 1974
AUTHOR: LANEY, L.T.; BREZLER, R.A.
TITLE: SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES AT THE IDAHO CHEMICAL PROCESSING PLANT
CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION,

NATIONAL REACTOR TESTING STATION

ABSTRACT: SINCE 1963, HIGH-LEVEL RADIOACTIVE WASTES AT THE U.S.A.E.C. IDAHO CHEMICAL PROCESSING PLANT HAVE BEEN SOLIDIFIED BY THE FLUIDIZED-BED CALCINATION PROCESS. ABOUT 9 X 10⁶ LITRES OF LIQUID WASTES FROM THE REPROCESSING OF ALUMINUM- AND ZIRCONIUM-ALLOY FUELS HAVE BEEN CALCINED TO PRODUCE ABOUT 1,000 M³ OF GRANULAR SOLIDS. DECONTAMINATION FACTORS OF 10⁷ OF PARTICULATES AND 10⁶ ON 106Ru, WHICH CAN VOLATILIZE AT THE CALCINATION TEMPERATURE, ARE BEING ATTAINED. THE SOLIDS PRODUCED IN THE PROCESS ARE CARRIED PNEUMATICALLY TO STAINLESS-STEEL RIMS WITHIN UNDERGROUND CONCRETE VAULTS. THOUGH THE GRANULAR PRODUCT CAN BE RETRIEVED, THE STORAGE SYSTEM IS DESIGNED FOR A LIFETIME OF OVER 500 YEARS. SEVERAL IMPROVEMENTS HAVE BEEN MADE WHICH HAVE INCREASED PLANT CAPACITY 50% ABOVE THE DESIGN RATE, AND ON-STREAM FACTORS OF 75 TO 100% HAVE BEEN ACHIEVED IN FIVE OPERATING CAMPAIGNS. IN ADDITION, SUPPORTING WORK IS DIRECTED AT DEVELOPING FLOW-SHEETS FOR OTHER WASTES--E.G., HIGH-SALT WASTES FROM SECURD- AND THIRD-CYCLE EXTRACTION PROCESSING, NEUTRALIZED PUREX WASTES, AND CONTAMINATED ORGANIC WASTES. (AUTH)

PUB DESC: OECD-OCED, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 131-761 (1974)

KEYWORDS: HIGH-LEVEL WASTE; IDAHO; FLUIDIZED BED; PUREX (SEE ALSO PARTITIONING); FUEL REPROCESSING; EFFLUENT; LIQUID; CALCINATION; SOLID; DECONTAMINATION; VOLATILITY PROCESS; WASTE STORAGE; STORAGE CONTAINER

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PUB DATE: 1972
AUTHOR: LANEY, L.T.; BREZLER, R.A.
TITLE: SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES AT THE IDAHO CHEMICAL PROCESSING PLANT
CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION

ABSTRACT: SINCE 1963, HIGH-LEVEL RADIOACTIVE WASTES AT THE U.S.A.E.C. IDAHO CHEMICAL PROCESSING PLANT HAVE BEEN SOLIDIFIED BY THE FLUIDIZED-BED CALCINATION PROCESS. ABOUT 9-BILLION LITRES OF LIQUID WASTES FROM THE REPROCESSING OF ALUMINUM- AND ZIRCONIUM-ALLOY FUELS HAVE BEEN CALCINED TO PRODUCE ABOUT 1000 M³ OF GRANULAR SOLIDS. DECONTAMINATION FACTORS OF 10-BILLION ON PARTICULATES AND 1-BILLION ON Ru-106, WHICH CAN VOLATILIZE AT THE CALCINATION TEMPERATURE, ARE BEING ATTAINED. THE SOLIDS PRODUCED IN THE PROCESS ARE CARRIED PNEUMATICALLY TO STAINLESS-STEEL RIMS WITHIN UNDERGROUND CONCRETE VAULTS. THOUGH THE GRANULAR PRODUCT CAN BE RETRIEVED, THE STORAGE SYSTEM IS DESIGNED FOR A LIFETIME OF OVER 500 YEARS.

PUB DESC: CCBP-721167-6, 27 PAGES, 8 TABLES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: CONCRETE; DECONTAMINATION; WASTE STORAGE; CALCINATION; WASTE TREATMENT, FIXATION; WASTE SODIUM AND TYPE; WASTE TREATMENT, SOLID; HIGH-LEVEL WASTE; FLUIDIZED BED; SOLID

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PUB DATE: 1965
AUTHOR: LANEY, L.T.; LONSE, G.E.; PALICA, W.P.
TITLE: DEVELOPMENT OF FLUIDIZED BED CALCINATION OF ALUMINUM NITRATE WASTES IN THE WASTE CALCINING FACILITY
CORPORATE AUTHOR: PHILLIPS PETROLEUM COMPANY, IDAHO

ABSTRACT: DEVELOPMENT OF THE FLUIDIZED BED PROCESS FOR CONVERTING NUCLEAR FUEL REPROCESSING WASTES TO GRANULAR SOLIDS DURING THE 3700 HOURS OF NON-RADIOACTIVE TEST OPERATION OF THE PLANT-SCALE ICPP WASTE CALCINING FACILITY IS DESCRIBED.

PUB DESC: ICR-14608- 140 PAGES, 58 FIGURES, 10 TABLES, 24 REFERENCES- MAY, 1965

KEYWORDS: AIR CLEANING; PARTICLE SIZE; WASTE

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HANDLING; WASTE STORAGE; CALCINATION; WASTE TREATMENT;
FIXATION; WASTE TREATMENT, LIQUID; WASTE SOURCE AND
TYPE; PARTICLE SIZE DISTRIBUTION

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PUB DATE: 1963
AUTHOR: LANEY, L.T.; BOURN, J.B.;
TITLE: ICPP WASTE CALCINING FACILITY - SAFETY
ANALYSIS REPORT

CORPORATE AUTHOR: PHILLIPS PETROLEUM COMPANY

ABSTRACT: THE ICPP WASTE CALCINING FACILITY (WCF) IS SCHEDULED TO BEGIN PROCESSING EXISTING ICPP HIGH-LEVEL RADIOACTIVE WASTES IN LATE 1963. IN PREPARATION FOR THIS OPERATION, AN ANALYSIS OF THE RADIOLOGICAL HAZARDS ASSOCIATED WITH OPERATION OF THE FACILITY HAS BEEN MADE. NO MAJOR SAFETY PROBLEMS, ONLY THE NEED FOR SEVERAL SAFETY EQUIPMENT AND PROCEDURE CHANGES TO MINIMIZE POSSIBLE HAZARDS, WERE UNCOVERED DURING THE COURSE OF THE ANALYSIS. A SUMMARY OF THE RADIOLOGICAL PROBLEMS CONSIDERED AND SAFETY ASPECTS OF THE FACILITY IS GIVEN.

PUB DESC: IDO-14620 427 PAGES, 14 FIGURES, 53 TABLES, 133 REFERENCES DECEMBER 1963

KEYWORDS: CRITICAL ASSEMBLY; WASTE HANDLING; WASTE TREATMENT; WASTE TREATMENT, LIQUID

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PUB DATE: 1972
AUTHOR: LASSER, I.

TITLE: INCORPORATION IN BITUMEN OF LOW-LEVEL RADIOACTIVE WASTE WATER EVAPORATOR CONCENTRATE AT THE DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT RISO

CORPORATE AUTHOR: DANISH ATOMIC ENERGY COMMISSION, RISO

ABSTRACT: THE PLANT FOR EVAPORATION OF RADIOACTIVE WASTE WATER AT THE RESEARCH ESTABLISHMENT RISO HAS BEEN IN OPERATION SINCE 1955. THE CONCENTRATE FROM THIS PLANT IS STORED AS A SEMI-LIQUID, SOLUBLE SLUDGE. SINCE NOVEMBER 1970 THE CONCENTRATE HAS BEEN INCORPORATED IN BITUMEN TO FORM AN INSOLUBLE SOLID. A DESCRIPTION IS GIVEN OF THE NECESSARY LABORATORY EXPERIMENTS. THE DESIGN PRINCIPLES FOR AND EXPERIENCES OF OPERATION WITH THE FINISHED BITUMINIZATION PLANT ARE GIVEN.

PUB DESC: RISO-276, 10 PAGES, 7 FIGURES, 6 REFERENCES, OCT. 1972

KEYWORDS: DESIGN CRITERIA; ASPHALT; WASTE STORAGE; WASTE TREATMENT; FIXATION; WASTE MANAGEMENT; DEMONSTRATION; EVAPORATION; WASTE PROGRAM; OPERATING EXPERIENCE

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PUB DATE: 1969
AUTHOR: LARSON, D.L.; SMITH, P.B.

TITLE: TREATMENT OF HANFORD NUCLEAR PROCESSING WASTES TO PERMIT LONG-TERM STORAGE

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

ABSTRACT: DESCRIBES WASTE PROCESSING TECHNOLOGY FOR REMOVAL OF CESIUM AND STRONTIUM FROM BULK SALT WASTES PRODUCING CESIUM AND STRONTIUM PRODUCT SUITABLE FOR FINAL PURIFICATION AND ENCAPSULATION, AND WASTE RESIDUES AMENABLE TO IN-PLANT SOLIDIFICATION TO SALT CAKES.

PUB DESC: ARN-SA-51, CNF-69C819-1, 20 PAGES, AUGUST 4, 1969, FROM THE 66TH MEETING OF THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, PORTLAND, OREGON, AUGUST 24-27, 1969

KEYWORDS: CESIUM; CONTAINERS (SEE ALSO PACKAGING); STRONTIUM; WASTE STORAGE; WASTE TREATMENT; WASTE

TREATMENT, LIQUID; HANFORD SITE; FUEL REPROCESSING

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PUB DATE: 1972
AUTHOR: LASSER, I.; DEANJEAN, R.; POMERESTING, J.; FELD, P.; REIDENHART, H.; MASTERA, S.; REZE, R.; VIGOR, H.

TITLE: OFF-GAS TREATMENT AND KRYPTON DISPOSAL IN RTGD-FUEL ELEMENT REPROCESSING

CORPORATE AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT PARIS, FRANCE; INTERNATIONAL ATOMIC ENERGY AGENCY, PARIS, FRANCE

ABSTRACT: KRYPTON, TRITIUM AND IODINE ARE SEPARATED FROM BURDED OFF-GAS BY CO(2)-LIQUEFACTION AND RECTIFICATION AT ROOM TEMPERATURE. KRYPTON IS CONCENTRATED IN THE LOWER BOILING FRACTION, WHILE TRITIUM AND IODINE ARE CONCENTRATED IN THE HIGHER BOILING FRACTION (AET-PROCESS). THE DISSOLVED OFF-GAS IS DECONTAMINATED BY A CRYOGENIC PROCESS. BASED ON SAFETY AND ECONOMY, THE DISPOSAL OF COMPRESSED KRYPTON CONTAINED IN STEEL CYLINDERS BY DUMPING IN THE DEEP SEA IS PREFERRED TO THE LONG TERM OVERGROUND BUNKER STORAGE. THE ESTIMATED COSTS ARE: 1.3 X 10⁻³ DFF/KUL FOR CLEANING THE BURNER OFF-GAS; 1 X 10⁻⁴ DFF/KUL FOR DISSOLVER OFF-GAS CLEANUP; 2.0 X 10⁻⁵ DFF/KUL FOR KRYPTON DISPOSAL INTO THE DEEP SEA, AND 2.4 X 10⁻⁴ DFF/KUL FOR THE LONG TERM OVER-GROUND KRYPTON STORAGE. (AET)

PUB DESC: OECD-PARIS OECD-PARIS IAEA NOV. 27-DEC 1, 1972 PROCEEDINGS OF 77-98. INSTITUTE OF CHEM. TECH., JUELICH, GERM.

KEYWORDS: WASTE TREATMENT; OECD (SEE ALSO ENER); OFF GAS; WASTE DISPOSAL; KRYPTON (SEE ALSO BOMBE GAS); FUEL ELEMENTS; FUEL REPROCESSING; DISSOLUTION; CRYOGENIC; CONDENSED; STORAGE TANKS; OCEAN DISPOSAL; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); TRITIUM; IODINE; LIQUEFACTION; RECTIFICATION

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PUB DATE: 1970
AUTHOR: LEPEVRE, C.

TITLE: INCINERATOR FOR RECOVERY OF PU FROM FUEL WASTE

CORPORATE AUTHOR: COMMISSARIAT L'ENERGIE ATOMIQUE, CENTRE DE SAACLAY, FRANCE

ABSTRACT: DISCUSSES RECOVERY OF PU FROM FUEL WASTE IN INCINERATION. THE PROCESS IS DESCRIBED AS HAVING GIVEN COMPLETE SATISFACTION

PUB DESC: SN-137/17, STI/PUR-244, CNF-700905, 12 PAGES, 3 FIGURES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: FRANCE; IAEA; PLUTONIUM; WASTE TREATMENT; INCINERATION; FUEL REPROCESSING

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PUB DATE: 1973
AUTHOR: LEFILLATRE, G.; BOU, L.; CHAMPEAU, J.

TITLE: SOLIDIFICATION OF RADIOACTIVE LIQUID RESIDUES WITH BITUMEN

CORPORATE AUTHOR: COMMISSARIAT L'ENERGIE ATOMIQUE, SAACLAY, FRANCE

ABSTRACT: SEVERAL NUCLEAR FUEL REPROCESSING WASTES INCLUDING ION EXCHANGE RESINS AND DIACETIC ACID WERE INCORPORATED INTO ASPHALT MATRICES IN PILET-PLANT STUDIES. PRECISE LEACHABILITY WAS OBTAINED BY PRIOR COPRECIPITATION WITH BARIUM SULFATE AND NICKEL PEROXYACETATE. FURTHER TREATMENT OF THE PRODUCT BY DIRECT-DISTILLATION COATING WAS A 6-MM LAYER OF ASPHALT PRECISE LEACHABILITY FROM ABOUT 0.14 AFTER 2 YEARS OF IMMERSION IN WATER TO ZERO AFTER 3 YEARS OF IMMERSION. PRODUCTS OF LOW LEACHABILITY WERE PRODUCED

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BY USING ANIONIC OR NON-IONIC ASPHALT EMULSIONS OR SOLIDS ASPHALT, BUT A CATIONIC ADHESIVE AGENT WAS UNFAVORABLE WITH ONE WASTE TYPE. SPECIFICATION OF THE PRODUCTS WAS STUDIED AT ELEVATED TEMPERATURE, AND FLAMMABILITY AND ACIDITY STABILITY WERE TESTED.

PUB DESC: CER-8-4378, 96 PAGES, 18 TABLES, 53 FIGURES, 8 REFERENCES, APRIL 1973

KEYWORDS: FRANCE; ASPHALT; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; PRECIPITATION; LEACHING; RADIATION EFFECT; FIRE PROTECTION

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PUB DATE: 1973

AUTHOR: LERCH, R.E.; COOLEY, C.D.

TITLE: TREATMENT OF LOW-LEVEL, ALPHA-CONTAMINATED SOLID WASTE BY ACID DIGESTION

CORPORATE AUTHOR: RANDOLPH ENGINEERING DEVELOPMENT LABORATORY RICHLAND, WASHINGTON

ABSTRACT: ACID DIGESTION IS BEING DEVELOPED AT THE RANDOLPH ENGINEERING DEVELOPMENT LABORATORY (REDL) AS A METHOD FOR REDUCING THE VOLUME OF HEAVY LOW-LEVEL ALPHA CONTAMINATED WASTES WHILE CONVERTING THE WASTES TO NONCOMBUSTIBLE RESIDUES. THE PROCESS CONSISTS OF DECOMPOSING COMBUSTIBLE WASTE MATERIALS IN HOT (230-270 C) CONCENTRATED SULFURIC ACID IN THE PRESENCE OF NITRIC ACID OXIDANT. ACID DIGESTION READILY CONVERTS SUCH WASTES AS ION EXCHANGE RESIN, POLYETHYLENE, PVC, POLYETHYLENE, WOOD, PAPER, BAGS, STYROFOAM, TYGON, LATEX RUBBER AND STYROPHEX RUBBER INTO A LOW VOLUME, NONCOMBUSTIBLE (CHEMICAL RESIDUE) CONSISTING MAINLY OF INORGANIC SULFATES. PLUTONIUM CAN BE READILY RECOVERED FROM THE SULFATE RESIDUE.

PUB DESC: REDL-TR-73-22 +. 52 PAGES, 10 TABLES, 10 FIGURES, APRIL 1973

KEYWORDS: ALPHA EMITTER; LOW-LEVEL WASTE; OXIDE; PLUTONIUM; CARBON DIOXIDE; WASTE TREATMENT; NITROGEN; CONTAMINATION; CARBON MONOXIDE; OFF GAS; SULFUR DIOXIDE; DECOMPOSITION; ACID; SULFURIC ACID; INORGANIC; SULFATE

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PUB DATE: 1970

AUTHOR: LOUSE, G.E.; MORDEN, D.L.; WHEELER, D.D.

TITLE: NUCLEAR-WASTE DISPOSAL - FORMING SOLIDS SAVES SPACE

CORPORATE AUTHOR: IDACO NUCLEAR CORPORATION, IDAHO FALLS

ABSTRACT: DESCRIBES THE FIRST FULL-SCALE SOLID-WASTE-FORMING TEST TO CONVERT LIQUID RADIOACTIVE WASTES TO SOLIDS. IT FEATURES CONTINUOUS FLUIDIZED-BED CALCINATION AND AN ELIMONATE SYSTEM TO CLEAN GASES.

PUB DESC: CHEMICAL ENGINEERING, 77(3), PG 94-96 3 REFERENCES, (FEBRUARY 5, 1970)

KEYWORDS: ALUMINUM; FLUIDIZED BED; DECONTAMINATION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE STORAGE; WASTE TREATMENT; ZIRCONIUM; CALCINATION; STACK; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; IDAHO FALLS; WASTE DISPOSAL, SALT; VOLATILITY PROCESS; FUEL REPROCESSING; GAS; OXYGEN

<541>

PUB DATE: 1967

AUTHOR: LOMA SOLIA, F.; YEE, W.C.

TITLE: DECONTAMINATION OF RADIOACTIVE WASTES BY MEANS OF ION EXCHANGE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: DESCRIBES A PROCESS FOR THE DECONTAMINATION OF WASTES OF LOW-LEVEL RADIOACTIVITY

BY COAGULATION-CLARIFICATION-ABSORPTION OR ACTIVATED CARBON ION EXCHANGE. THE EFFLUENT OF THE PROCESS IS DECONTAMINATED AND DESALINIZED WATER WHICH CAN BE REUSED. THE RADIOISOTOPES STUDIED WERE CE-144, RU-106, CA-137, RU-95, MO-95, SB-125, CO-60, I-131, SR-90, AND TOTAL RARE EARTHS. THE TOTAL DECONTAMINATION FACTORS RANGE FROM 100 TO 10,000.

PUB DESC: ORO-TR-1771, CONF-670652-1, 16 PAGES, JUNE 1967

KEYWORDS: ADSORPTION; LOW-LEVEL WASTE; CERIUM; CESIUM; COBALT; DECONTAMINATION; EFFLUENT; IODINE; SODIUM; RUTHENIUM; STRONTIUM; ZIRCONIUM; WASTE TREATMENT, LIQUID; ANTIMONY; ION EXCHANGE; WATER TREATMENT; FILTERS

<542>

PUB DATE: 1970

AUTHOR: NAGHASC, J.; VENGARA, R.

TITLE: METHODS OF TREATING EFFLUENT AT THE NATIONAL CENTER OF NUCLEAR STUDIES AT SANTIAGO DE CHILE

CORPORATE AUTHOR: CENTRO NACIONAL DE ESTUDIOS NUCLEARES DE SANTIAGO DE CHILE, COMISIÓN Chilena DE ENERGÍA Nuclear

ABSTRACT: DESCRIBES THE TREATMENT OF RADIOACTIVE WASTES AT THE CENTER AND THE ACTIVITIES PLANNED TO ESTABLISH A NATIONAL POLICY IN RELATION TO THE TREATMENT AND REMOVAL OF RADIOACTIVE WASTES.

PUB DESC: SN-137/5, STI/PUB-264, CONF-700905, 13 PAGES, PAGES PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ADMINISTRATIVE CONTROL; CHILE; STANDARDS, RADIATION (SEE ALSO REGULATION); IAEA; PROCEDURES AND MANUALS; WASTE TREATMENT

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PUB DATE: 1968

AUTHOR: HADISS, B.F.; MCLEOD, J.L.; HARTLEY, J.W.; SCHWAB, R.B.

TITLE: FIXATION OF RADIOACTIVE RESIDUES

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: DISCUSSION OF EFFORTS AND RESULTS ARE GIVEN IN EACH OF THE FOLLOWING - PHOSPHATE-GLASS SOLIDIFICATION, SPRAY SOLIDIFICATION, ADVANCED SOLIDIFICATION TECHNIQUES, DEVELOPMENT STUDIES ON SOLIDIFICATION PROCESSES AND HEAT TRANSFER, WASTE FROM CHEMICAL PROCESSING, LOW-LEVEL WASTE TREATMENT, AND AN EVALUATION OF THE STUDY OF SOLIDIFIED WASTE PRODUCTS.

P.B. DESC: BNWL-894, OCTOBER 1968

KEYWORDS: HEAT TRANSFER; PHOSPHATE GLASS; SPRAY SOLIDIFICATION; WASTE DISPOSAL; WASTE TREATMENT; WASTE TREATMENT, FIXATION; GLASS (SEE ALSO VITRIFICATION); SPRAY; BATTELLE NORTHWEST; FUEL REPROCESSING; R AND D PROGRAM

<544>

PUB DATE: 1969

AUTHOR: MATSUMURA, T.; SOGINOTO, S.

TITLE: INCUBATION TREATMENT OF COMBUSTIBLE RADIOACTIVE WASTE

CORPORATE AUTHOR: EMURA MANUFACTURING COMPANY, TOKYO, JAPAN

ABSTRACT: AN INCUBATOR WITH A CAPACITY OF 100 KG/HR WAS BUILT. THE EFFECTS OF FURNACE TEMPERATURE, GAS FLOW RATE, BY POTENTIAL, AND THE RELATION BETWEEN LIQUID VOLUME IN THE SCRUBBER AND THE DECONTAMINATION FACTOR (DF) WERE MEASURED RESPECTIVELY. OVERALL DECONTAMINATION FACTOR OF 1 BILLION WAS OBTAINED, WHICH IS SATISFACTORY.

<544> CONT.
 PUB DESC: PAPIC (TOKYO), 5 PAGES, NO. 53, PP. 62-66
 (MAY 1969) (IN JAPANESE)

KEYWORDS: DECONTAMINATION; WASTE DISPOSAL; WASTE
 MANAGEMENT; INCINERATION

<545>

PUB DATE: 1972
 AUTHOR: MATSUZAKI, R.

TITLE: TREATMENT OF PLUTONIUM LIQUID WASTES BY
 FLOCCULATION

CORPORATE AUTHOR: JAPAN ATOMIC ENERGY RESEARCH
 INST., TOKYO

ABSTRACT: THE TREATMENT CONDITIONS FOR ALKALINE
 FLOCCULATION OF ACIDIC PLUTONIUM LIQUID WASTES WERE
 STUDIED, USING FERRIC HYDROXIDE AND CALCIUM PHOSPHATE
 AS FLOCCULANTS. IT WAS FOUND THAT THE
 DECONTAMINATION FACTOR FOR ^{239}Pu HYDROXIDE OR
 CALCIUM PHOSPHATE FLOCCULATION IS ABOUT 1000 WHEN THE
 PLUTONIUM CONCENTRATION IS 0.006% MICROCURIE/ML UNDER
 THE TREATMENT CONDITIONS OF 500 FPR FLOCCULANT
 CONCENTRATION, PH 10 TO 13, AND 0.1N SALT
 CONCENTRATION. IN ORDER TO OBTAIN HIGHER OF,
 REPEATED TREATMENT IS PROPOSED.

PUB DESC: NIPPON GENSHIYOKU GAKKAISHI, 15(6), PP.
 290-294 (JUNE 1972)

KEYWORDS: CALCIUM; DECONTAMINATION; PLUTONIUM;
 WASTE TREATMENT; LIQUID; INCU; PRECIPITATION;
 HYDROXIDE; ACID; EFFECT, PH

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PUB DATE: 1961
 AUTHOR: BAUSCH, C.A.

TITLE: PROCESSING OF RADIOACTIVE WASTES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: THIS REVIEW COVERS THE DEVELOPMENT OF
 TECHNIQUES FOR PROCESSING RADIOACTIVE WASTES BETWEEN
 1955 AND THE END OF 1960. REFERENCE MADE TO SOURCES
 LIKELY TO BE AVAILABLE IN GENERAL SCIENTIFIC
 LITERATURE, RATHER THAN TO INDIVIDUAL REPORTS PUBLISHED
 ONLY IN SPECIAL SERIES. MAIN BODY OF REVIEW DEALS
 WITH ALL ASPECTS OF WASTE TREATMENT, WITH LITTLE
 REFERENCE TO METHODS OF DISPOSAL, BUT AN ANNOTATED
 SUPPLEMENTARY BIBLIOGRAPHY IS PROVIDED WHICH INCLUDES
 PAPERS ON WASTE DISPOSAL, METHODS, MONITORING, AND
 ALLIED SUBJECTS. THE PAPERS QUOTED ARE USUALLY THE
 LATEST PUBLISHED WORK ON ANY PARTICULAR SUBJECT, AND
 ONLY THE LAST PAPER IN A SERIES IS DEALT WITH IF THIS
 DOES NOT entail sacrifice of important information.
 IN SOME CASES A REPORT IS QUOTED PARTLY BECAUSE IT
 CONTAINS A GOOD BIBLIOGRAPHY. THE POLICY THROUGHOUT
 HAS BEEN TO PROVIDE A SOURCE FROM WHICH THE READER CAN
 EASILY BUILD UP HIS OWN BIBLIOGRAPHY ON ANY SPECIAL
 SECTION OF THE WHOLE FIELD.

PUB DESC: STI/PUB/15-1P, 84 PAGES 134 REFERENCES,
 1961

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); REVIEW;
 IAEA; WASTE DISPOSAL; WASTE TREATMENT; WASTE
 MANAGEMENT; RIVER, CHALK; INCINERATION (SEE ALSO SURVEY)

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PUB DATE: 1972
 AUTHOR: MCLEOD, J.L.; PLASEWITZ, A.C.; MENDALL, J.E.

TITLE: THE HIGH LEVEL WASTE SOLIDIFICATION
 DEMONSTRATION PROGRAM

CORPORATE AUTHOR: WESTINGHOUSE HARTFORD CO. ;
 BATTELLE NORTHEAST LABORATORY, RICHMOND, WASHINGTON

ABSTRACT: THE HIGH LEVEL WASTE SOLIDIFICATION
 DEMONSTRATION PROGRAM HAS INVOLVED PILOT PLANT
 DEMONSTRATIONS WITH THREE ALTERNATIVE SOLIDIFICATION
 SYSTEMS: PHOSPHATE GLASS SOLIDIFICATION, SPRAY
 SOLIDIFICATION, AND POT CALCINATION. THE

DEMONSTRATIONS HAVE BEEN PERFORMED WITH SOLUTIONS
 HAVING CHEMICAL COMPOSITIONS AND RADIOACTIVITY LEVELS
 COMPARABLE TO THOSE WHICH WILL EXIST IN COMMERCIAL
 FUEL REPROCESSING PLANTS. EXTENSIVE STUDIES HAVE ALSO
 BEEN CONDUCTED TO DETERMINE THE REQUIREMENTS FOR
 TREATING THE EFFLUENTS FROM THE SOLIDIFICATION
 PROCESSES AND TO EVALUATE THE SOLIDIFIED WASTE
 PRODUCTS. THE PROGRAM DATA HAVE BEEN EVALUATED TO
 PROVIDE A COMPARISON OF THE PROCESSING PARAMETERS,
 PRODUCT CHARACTERISTICS, INDUSTRIAL APPLICATION
 POTENTIALITIES, AND ECONOMICS ASSOCIATED WITH THE
 SOLIDIFICATION SYSTEMS.

PUB DESC: CONF-721107, 30 PAGES, 10 FIGURES, PAPER
 PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF
 RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN
 PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL,
 ECONOMICS); EFFLUENT; WASTE TREATMENT; CALCINATION;
 WASTE SOURCE AND TYPE; PHOSPHATE; WASTE TREATMENT;
 SOLID; HIGH-LEVEL WASTE; GLASS (SEE ALSO
 VITRIFICATION); SPRAY; FUEL REPROCESSING; SOLID;
 COMPARISON; VITRIFICATION

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PUB DATE: 1972
 AUTHOR: MCLEOD, J.L.; HARTLEY, J.B.; MENDALL, J.E.; WICKARDSON, G.L.

TITLE: WASTE SOLIDIFICATION PROGRAM, VOL. 9, POT
 SOLIDIFICATION PERFORMANCE DURING FINAL RADIOACTIVE
 TESTS IN WASTE SOLIDIFICATION ENGINEERING PROTOTYPES,
 JANUARY 1972

CORPORATE AUTHOR: BATTELLE NORTHEAST LABORATORY,
 RICHMOND, WASHINGTON

ABSTRACT: BATTELLE-NORTHEAST SUCCESSFULLY COMPLETED
 DEMONSTRATION OF SOLIDIFICATION OF HIGH-LEVEL
 RADIOACTIVE WASTE BY THE POT SOLIDIFICATION PROCESSES.
 NEARLY 8 MILLION COPIES OF RADIOISOTOPES WERE
 PROCESSED AND COLLECTED IN 6- AND 8-INCH DIAM
 CONTAINERS DURING THE FINAL THREE ENGINEERING-SCALE
 RUNS IN THE WASTE SOLIDIFICATION ENGINEERING
 PROTOTYPES (USEP) AT THE PACIFIC NORTHWEST LABORATORY.
 THE SEALED CONTAINERS OF RADIOACTIVE SOLIDS ARE
 UNDERGOING FURTHER TESTING IN THE SOLIDS STORAGE
 ENGINEERING TEST FACILITY.

PUB DESC: BNWL-1620, 197 PAGES, FIGURES, TABLES,
 REFERENCES, JANUARY 1972

KEYWORDS: TESTING; POT CALCINATION; WASTE STORAGE;
 CALCINATION; WASTE TREATMENT, FIXATION; WASTE
 DISPOSAL, SOLID; WASTE MANAGEMENT; BATTELLE NORTHEAST;
 EFFLUENT; FUEL REPROCESSING; A AND B PROGRAM

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PUB DATE: 1972
 AUTHOR: MCLEOD, J.L.; SCHNEIDER, R.J.; HARTLEY, J.B.

TITLE: WASTE SOLIDIFICATION PROGRAM SUMMARY REPORT,
 VOLUME 11, EVALUATION OF USEP HIGH LEVEL WASTE
 SOLIDIFICATION PROCESSES

CORPORATE AUTHOR: BATTELLE NORTHEAST LABORATORY,
 RICHMOND, WASHINGTON

ABSTRACT: SUCCESSFUL DEMONSTRATIONS OF THE
 SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTE BY THE
 POT, SPRAY, AND PHOSPHATE GLASS SOLIDIFICATION
 PROCESSES HAVE BEEN PERFORMED IN USEP. A TOTAL OF 33
 DEMONSTRATIONS HAVE BEEN COMPLETED. MORE THAN 50
 MILLION COPIES OF RADIOISOTOPES HAVE BEEN PROCESSED
 AND COLLECTED IN 6-, 8- AND 12-INCH DIAMETER
 CONTAINERS. THE RESULTS OF THESE RUNS HAVE BEEN
 EVALUATED AND ARE PRESENTED IN THIS REPORT.

PUB DESC: BNWL-1667, 500 PAGES, FIGURES, TABLES,
 REFERENCES, JULY 1972

KEYWORDS: WASTE STORAGE; WASTE TREATMENT;
 CALCINATION; WASTE DISPOSAL, ECONOMICS; PHOSPHATE;
 WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GLASS (SEE
 ALSO VITRIFICATION); SPRAY; SOLVENT EXTRACTION; SOLID

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PUB DATE: 1971
 AUTHOR: MCLEARY, J.L.; BLASEWITZ, A.G.

TITLE: STATUS OF THE WASTE SOLIDIFICATION
 DEMONSTRATION PROGRAM

CORPORATE AUTHOR: BATTILLE MEMORIAL INSTITUTE,
 COLLEGE LABORATORIES; BATTILLE NORTHWEST LABORATORY,
 RICHLAND, WASHINGTON

ABSTRACT: DEMONSTRATION OF THE SOLIDIFICATION OF
 HIGH-LEVEL RADIOACTIVE WASTE BY THE POT, SPRAY, AND
 PHOSPHATE GLASS SOLIDIFICATION PROCESSES HAS BEEN
 SUCCESSFULLY COMPLETED BY BATTILLE-NORTHWEST. MORE
 THAN 50 BILLION CURIES OF RADIOISOTOPES WERE PROCESSED
 AND COLLECTED IN 6-, 8-, AND 12-IN. DIAM CONTAINERS
 DURING 33 ENGINEERING-SCALE DEMONSTRATION RUNS IN THE
 WASTE SOLIDIFICATION ENGINEERING PROTOTYPES (WSEP).
 THE MAXIMUM SELF-GENERATING HEAT RATE VALUES IN THE
 SOLIDIFIED WASTES FOR AN 8-IN.-DIAM POT RANGED FROM
 205 W/LITER FOR THE SPRAY SCHEM TO 85 W/LITER FOR THE
 POT CALCIN. WASTES EQUIVALENT TO THOSE FROM THERMAL
 POWER REACTORS WITH EXPOSURES AS HIGH AS 45000 MW/MT
 AT 30 MW/MT WERE DEMONSTRATED.

PUB DESC: NUCLEAR TECHNOLOGY, 12(1), PAGE 69-82,
 SEPTEMBER 1971

KEYWORDS: EFFLUENT; POT CALCINATION; SPRAY
 SOLIDIFICATION; PHOSPHATE GLASS; THERMAL PROPERTY;
 MAXIMUM PERMISSIBLE CONCENTRATION (MPC); CALCINATION;
 PHOSPHATE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL,
 SOLID; GLASS (SEE ALSO VITRIFICATION); RADIATION
 SAFETY AND CONTROL; SPRAY; EQUIPMENT; SAFETY
 EVALUATION; SOLID

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PUB DATE: 1971
 AUTHOR: MCLEARY, J.L.; BARTLEY, J.B.; SCHWAB,
 R.B.; THOMPSON, R.J.; BRAGG, R.F.

TITLE: WASTE SOLIDIFICATION PROGRAM - VOLUME 7.
 PHOSPHATE GLASS SOLIDIFICATION PERFORMANCE DURING
 FINAL RADIOACTIVE TESTS IN WASTE SOLIDIFICATION
 ENGINEERING PROTOTYPES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
 RICHLAND, WASHINGTON

ABSTRACT: TESTING OF HIGH LEVEL RADIOACTIVE WASTE
 SOLIDIFICATION BY THE BROOKHAVEN NATIONAL LABORATORY
 PHOSPHATE GLASS PROCESS HAS BEEN SUCCESSFULLY
 COMPLETED BY BATTILLE-NORTHWEST. MORE THAN 12 BILLION
 CURIES OF RADIOISOTOPES WERE PROCESSED AND COLLECTED
 IN 6- AND 8-INCH DIAMETER CONTAINERS DURING THE FINAL
 PIV? ENGINEERING-SCALE DEMONSTRATION RUNS IN USED AT
 THE PACIFIC NORTHWEST LABORATORY. DETAILED RESULTS
 ARE GIVEN.

PUB DESC: BNWL-1507, 125 PAGES, JANUARY 1971

KEYWORDS: CALCINATION; STACK; SOL; PHOSPHATE;
 REGULATION, ARC; WASTE DISPOSAL, LIQUID; WASTE
 DISPOSAL, SOLID; EVAPORATION; GLASS (SEE ALSO
 VITRIFICATION); BATTILLE NORTHWEST; RADIOACTIVITY
 RELEASE; GAS; SOLID

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PUB DATE: 1970
 AUTHOR: MCLEARY, J.L.; BARTLEY, J.B.; SCHWAB,
 R.B.; BRAGG, R.F.

TITLE: WASTE SOLIDIFICATION PROGRAM, VOL. 5.
 PHOSPHATE GLASS SOLIDIFICATION PERFORMANCE DURING
 FIRST RADIOACTIVE TESTS IN WASTE SOLIDIFICATION
 ENGINEERING PROTOTYPES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
 RICHLAND, WASHINGTON

ABSTRACT: SOLIDIFICATION OF HIGH LEVEL RADIOACTIVE
 WASTE HAS BEEN SUCCESSFULLY DEMONSTRATED BY
 BATTILLE-NORTHWEST. SEVEN BILLION CURIES OF
 RADIOISOTOPES WERE PROCESSED AND COLLECTED IN
 CONTAINERS DURING SIX ENGINEERING-SCALE DEMONSTRATION
 RUNS. RADIOACTIVITY PROCESSED WAS INCREASED FROM

350,000 CURIES IN THE FIRST RUN TO 2,400,000 CURIES IN
 THE SIXTH RUN. THE SELF-GENERATING HEAT RATE WITHIN
 EACH REACTOR POT FULL OF SOLIDIFIED WASTE WAS
 INCREASED FROM 1.6 TO 9.6 KILOWATTS RESPECTIVELY.
 FURTHER DETAILS ARE GIVEN.

PUB DESC: BNWL-1185, 134 PAGES, FIGURES, TABLES, 30
 REFERENCES, JANUARY 1970

KEYWORDS: EFFLUENT; HEAT GENERATION, INTERNAL;
 WASTE TREATMENT, LIQUID; STACK; BNWL; DEMONSTRATION;
 EVAPORATION; GLASS (SEE ALSO VITRIFICATION); GAS;
 CONCENTRATION; FILTERS

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PUB DATE: 1968
 AUTHOR: MCLEARY, J.L.; COOLEY, C.R.; TRIFER,
 R.V.; BRIDEL, J.E.; SUDARTH, J.C.; BLOMERT, J.O.

TITLE: POT CALCINATION PERFORMANCE DURING FIRST
 RADIOACTIVE TESTS IN WASTE SOLIDIFICATION ENGINEERING
 PROTOTYPES - WASTE SOLIDIFICATION PROGRAM, VOL. IV

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
 RICHLAND, WASHINGTON; OAK RIDGE NATIONAL LABORATORY

ABSTRACT: SOLIDIFICATION OF HIGH LEVEL RADIOACTIVE
 WASTE BY THE OAK RIDGE NATIONAL LABORATORY POT
 CALCINATION PROCESS WAS SUCCESSFULLY DEMONSTRATED.
 NEARLY 8 BILLION CURIES OF RADIOACTIVITY WERE
 PROCESSED IN SIX FULL SCALE TESTS AT PACIFIC NORTHWEST
 LABORATORY. RADIOACTIVITY WAS INCREASED FROM 85,000
 CURIES IN THE FIRST RUN TO 1.3 MILLION CURIES IN THE
 SIXTH RUN. THE RATE OF HEAT GENERATION WITHIN THE POT
 INCREASED FROM 600 TO 5100 WATTS, RESPECTIVELY. THE
 CALCINED WASTE IN AN 8 INCH DIAMETER POT REPRESENTED
 1.2 TONNES OF POWER REACTOR FUEL (20,000 MW/TON AT 15
 MW/TON SPECIFIC POWER) AFTER 1 YEAR COY OF REACTOR.

PUB DESC: BNWL-810, 60 PAGES, FIGURES, TABLES,
 REFERENCES, DECEMBER 1968

KEYWORDS: CALCINATION; POT CALCINATION; WASTE
 TREATMENT, LIQUID; EXPERIMENT; EQUIPMENT; FUEL
 REPROCESSING

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PUB DATE: 1972
 AUTHOR: BRIDEL, J.E.; MCLEARY, J.L.

TITLE: WASTE SOLIDIFICATION PROGRAM, VOLUME 10.
 EVALUATION OF SOLIDIFIED WASTE PRODUCTS

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
 RICHLAND, WASHINGTON

ABSTRACT: DEMONSTRATIONS OF THE SOLIDIFICATION OF
 HIGH LEVEL RADIOACTIVE WASTES HAVE BEEN SUCCESSFULLY
 CONDUCTED ON AN ENGINEERING SCALE IN THE WASTE
 SOLIDIFICATION ENGINEERING PROTOTYPES (WSEP) AT THE
 PACIFIC NORTHWEST LABORATORY. THE PROCESSES
 DEMONSTRATED IN THE WSEP PRODUCED HIGHLY RADIOACTIVE
 SOLIDIFIED WASTE IN THE FORM OF (1) CHLOR CALCIUM, (2)
 PHOSPHATE MICROCRYSTALLINE CERAMIC, (3) PHOSPHATE
 GLASS, AND (4) MONOSILICATE GLASS. A TOTAL OF 6,930
 KG OF SOLIDIFIED WASTE, CONTAINING 51,000,000 CURIES
 INITIALLY, WAS ENCAPSULATED IN 22 CONTAINERS (POTS).
 THE BULK STEEL, 304L AND 316 STAINLESS STEEL POTS
 CONTAINING THE SOLIDIFIED WASTES, EACH 8 FEET LONG,
 RANGE FROM 6 TO 12 INCHES IN DIAMETER, AND ARE VERY
 REPRESENTATIVE OF THE SOLIDIFIED WASTE POTS WHICH WILL
 BE PRODUCED BY POWER REACTOR FUEL REPROCESSORS FOR
 MANY YEARS TO COME.

PUB DESC: BNWL-1666, 125 PAGES, FIGURES, TABLES,
 REFERENCES, JUNE 1972

KEYWORDS: CERAMICS; WASTE TREATMENT; CALCINATION;
 REACTOR, POWER; STEEL, STAINLESS; PHOSPHATE; WASTE
 DISPOSAL, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT;
 GLASS (SEE ALSO VITRIFICATION); SINTERING; STORAGE
 CONTAINER; FUEL REPROCESSING

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PUB DATE: 1971
 AUTHOR: BRAGG, R.F.; SCHWAB, R.B.; ARNS, L.L.

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TITLE: FIXTION OF RADIOACTIVE WASTES IN SOIL AND SALT CAGES WITH ORGANIC POLYMERS

CORPORATE AUTHOR: BATTIELE NORTHWEST LABORATORY, RICHLAND, WASHINGTON;

ABSTRACT: ORGANIC POLYMERS OF THE TYPE USED IN FIBERGLASS LAMINATES WERE EVALUATED FOR USE IN THE FIXTION OF RADIOACTIVITY IN SOIL AND PREPARED SALT CAGES. IN SITU FIXTION OF THE RADIOACTIVITY IS TO BE ACCOMPLISHED BY INJECTION OF THE POLYMERS INTO SOIL OR PREPARED SALT CAGES. THE RESULTS OF LABORATORY STUDIES SHOW THAT WATER LEACH RATES OF RADIOISOTOPES ON LOES FROM THE SOIL AND SALT CAGES WERE REDUCED BY 99.9% OR MORE BY INCORPORATION OF THE SOIL OR SALT IN A SUITABLE RESIN MATRIX. INJECTION OF CATALYZED LIQUID R²³⁵U INTO SOIL WITH SUBSEQUENT POLYMERIZATION TO FORM A HARD MATRIX WAS SUCCESSFULLY DEMONSTRATED IN BOTH LABORATORY AND FIELD EXPERIMENTS.

PUB DESC: HW-1220, 47 PAGES, 3 REFERENCES, 15 FIGURES, 5 TABLES, APRIL 1971

KEYWORDS: WASTE DISPOSAL; WASTE TREATMENT; FIXTION; GLASS (SEE ALSO VITRIFICATION); SOIL; RADIOISOTOPES; RESIN; LEACHING; LABORATORY EXPERIMENT; FIELD EXPERIMENT; POLYMERIC; ORGANIC

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PUB DATE: 1972

AUTHOR: HERRMAN, J.R.; STEPHENSON, R.J.; DUTHOIS, R.L.; PASHLEY, J.R.

TITLE: REMOVAL OF KRYPTON FROM REPROCESSING PLANT OFF-GAS BY SELECTIVE ADSORPTION

CORPORATE AUTHOR: ONE RIDGE GASEOUS DIFFUSION PLANT

ABSTRACT: ONE METHOD OF REMOVING KR AND Xe FROM GAS STREAMS WHICH THEIR RADIOACTIVE ISOTOPES CONTAMINATE IS SELECTIVE ADSORPTION, USING LIQUID SOLVENTS SUCH AS FLUOROCARBONS. IN THIS CONTINUOUS PROCESS, THE NOBLE GASES ARE PREFERENTIALLY SCORBED FROM THE GAS STREAM AND DISSOLVED IN THE LIQUID IN AN ADSORPTION OPERATION AND THEN DESORBED FROM THE SOLVENT IN A FINAL STRIPPING STEP. EXTENSIVE PILOT PLANT TESTING, INCLUDING COLLECTION OF MASS TRANSFER DATA AND DETERMINATION OF THE EFFECTS OF KEY IMPURITIES, HAS SHOWN THAT THE PROCESS HAS CONSIDERABLE POTENTIAL FOR OFF-GAS TREATMENT AT FUEL REPROCESSING PLANTS. (AUTH)

PUB DESC: ORCO-204 AND TPE 126A, PARIS, FRANCE, NOV. 27-DEC. 1, 1972, PP 153-177

KEYWORDS: WASTE TREATMENT; ORCO (SEE ALSO 204); OFF GAS; KRYPTON (SEE ALSO NOBLE GAS); XENON; ADSORPTION (SEE ALSO SORPTION); FLUOROCARBONS; DESORPTION; FUEL REPROCESSING; EFFLUENT

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PUB DATE: 1972

AUTHOR: HERRMAN, J.R.; STEPHENSON, R.J.; PASHLEY, J.R.

TITLE: REMOVAL OF KRYPTON FROM REPROCESSING PLANT OFF-GAS BY SELECTIVE ADSORPTION

CORPORATE AUTHOR: UNION CARBIDE CORPORATION, ONE RIDGE GASEOUS DIFFUSION PLANT

ABSTRACT: ONE METHOD OF REMOVING KR AND Xe FROM GAS STREAMS WHICH THEIR RADIOACTIVE ISOTOPES CONTAMINATE IS SELECTIVE ADSORPTION, USING LIQUID SOLVENTS SUCH AS FLUOROCARBONS. IN THIS CONTINUOUS PROCESS, THE NOBLE GASES ARE PREFERENTIALLY SCORBED FROM THE GAS STREAM AND DISSOLVED IN THE LIQUID IN AN ADSORPTION OPERATION AND THEN DESORBED FROM THE SOLVENT IN A FINAL STRIPPING STEP. EXTENSIVE PILOT PLANT TESTING, INCLUDING COLLECTION OF MASS TRANSFER DATA AND DETERMINATION OF THE EFFECTS OF KEY IMPURITIES, HAS SHOWN THAT THE PROCESS HAS CONSIDERABLE POTENTIAL FOR OFF-GAS TREATMENT AT FUEL REPROCESSING PLANTS.

PUB DESC: CONF-721107, 26 PAGES, 4 TABLES, 4 PAGES

PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DECONTAMINATION; FISSION GAS RELEASE; KRYPTON (SEE ALSO NOBLE GAS); XENON; WASTE MANAGEMENT; OFF GAS; FISSION PRODUCT RETENTION; SOLVENT EXTRACTION; FUEL REPROCESSING; ADSORPTION (SEE ALSO SORPTION);

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PUB DATE: 1965

AUTHOR: BCLIB, C.P.

TITLE: RECOVERY OF PLUTONIUM FROM MISCELLANEOUS ANALYTICAL LABORATORY WASTES

CORPORATE AUTHOR: ROY CHEMICAL COMPANY, ROCKY PLATS

ABSTRACT: A METHOD FOR THE RECOVERY OF PLUTONIUM FROM MISCELLANEOUS ANALYTICAL LABORATORY WASTES IS DESCRIBED. BOTH OXALATE PRECIPITATION AND ANION EXCHANGE WERE INVESTIGATED AS MEANS OF RECOVERY. OXALATE PRECIPITATION IS THE PREFERRED METHOD OF RECOVERY.

PUB DESC: RFP-551, 26 PAGES, 11 TABLES, 4 REFERENCES- SEPTEMBER 24, 1965

KEYWORDS: PLUTONIUM; WASTE TREATMENT; ROCKY PLATS; RECOVERY PROCESSES

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PUB DATE: 1969

AUTHOR: MOORE, J.D.

TITLE: WASTE SOLIDIFICATION ENGINEERING PROTOTYPES, DESIGN VERIFICATION TESTING OF SPRAY SOLIDIFICATION EQUIPMENT

CORPORATE AUTHOR: BATTIELE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: WASTE SPRAY-SOLIDIFICATION EQUIPMENT WHICH WILL ULTIMATELY BE USED FOR REDUCING LIQUID HIGH-LEVEL RADIOACTIVE WASTE TO ROCK-LIKE SOLIDS WAS TESTED IN A SERIES OF ASSES WITH NONRADIOACTIVE SIMULATED WASTES. OPERABLE FEED COMPOSITIONS FOR TWO PUMPER-TYPE WASTES WERE DEVELOPED. PERFORMANCE OF EACH SOLIDIFIER COMPONENT WAS ANALYZED. MINOR DESIGN CHANGES WERE MADE, AND THE EQUIPMENT WAS COMMISSIONED FOR RADIOACTIVE SERVICE. SPRAY-SOLIDIFIED OPERATING PROCEDURES AND OPERATING LIMITS WERE DEFINED.

PUB DESC: HW-1117, 25 PAGES, 15 FIGURES, 5 TABLES, 24 REFERENCES, JULY, 1969

KEYWORDS: PROCEDURES AND MANUALS; PUMPER (SEE ALSO PARTITIONING); WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; SPRAY; SIMULATION; SOLID

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PUB DATE: 1975

AUTHOR: MOORE, J.G.; GODFREY, N.W.; RIBBEY, A.H.; JOY, J.

TITLE: DEVELOPMENT OF CEMENTITIONS GROUTS FOR THE INCORPORATION OF RADIOACTIVE WASTES. PART I LEACH STUDIES

CORPORATE AUTHOR: ONE RIDGE NATIONAL LABORATORY CHEMICAL TECHNOLOGY DIVISION

ABSTRACT: THE GROUTS USED IN THE HYDROPHRACTURE FACILITY AT ONE RGE ARE MADE BY BLENDING ONE INTERMEDIATE-LEVEL RADIOACTIVE WASTE SOLUTION WITH A DRY MIXTURE OF CEMENTITIOUS MATERIALS AND SELECTED CLAYS. LABORATORY LEACH STUDIES WERE MADE WITH SIMULATED GROUTS CONTAINING SR-90, CS-137, PU-239, OR CM-244 IN ORDER TO DETERMINE HOW EFFECTIVELY THE GROUTS WOULD RETAIN RADIOISOTOPES IN THE UNLIKELY EVENT THAT THEY WERE TO COME IN CONTACT WITH WATER. IN GENERAL, THE METHOD OF LEACH TESTING PROPOSED BY IAEA WAS FOLLOWED. THE FRACTION OF EACH ISOTOPE LEACHED VARIED WITH THE SQUARE ROOT OF TIME IF THE LEACHANT WAS REPLACED MORE FREQUENTLY THAN ONCE PER

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DAY. LESS FREQUENT REPLACEMENT OF THE LEACHANT DEPOSED OR INDICATE THE FRACTURE LEACHED AS A FUNCTION OF TIME. FOR THE COMBIS MADE WITH GUNITE (A CLAY TO OBTAIN CEMENT), THE LEACH RATES FOR THE ISOTOPES USED IN THIS STUDY WERE FOUND TO BE IN THE ORDER: $CS > SR > CN > PU$. OVERALL RESULTS INDICATE THAT THE COMBIS CAN GIVE LEACH RATES COMPARABLE TO THOSE OBTAINED FOR WASTES INCORPORATED IN BOROSILICATE GLASSES. (AUTHOR)

PUB DESC: ORNL-8962, APRIL 1975, 116 P., 27 FIG., 16 TAB., 30 REF., 3 APPEND.

KEYWORDS: WASTE DISPOSAL; COMB; CLAY; HYDRAULIC FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); CEMENT; COMB; LEACHING; STRONTIUM; CESIUM; COBALT; PLUTONIUM; ASSESSMENT; EVALUATION

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PUB DATE: 1966

AUTHOR: MOORE, B.L.

TITLE: HOT-CELL STUDIES OF THE SPRAY AND POT CALCINATION OF FULLY RADIOACTIVE FUEL REPROCESSING WASTES

CORPORATE AUTHOR: BATTIE SCIENTIFIC LABORATORY, PICKLEBURGH, WASHINGTON

ABSTRACT: A SMALL PILOT PLANT FOR THE EXPERIMENTAL STUDY OF THE CALCINATION OF FULL-LEVEL RADIOACTIVE WASTES WAS CONSTRUCTED IN A LARGE HOT CELL AT HANFORD AND OPERATION INITIATED IN 1962. FUEL RADIANT-HEAT SPRAY CALCINATION AND POT CALCINATION WERE PROVEN FEASIBLE. THE RADIOACTIVE EFF-GAS WAS FOUND TO BE HEAVILY DECONTAMINATED TO SAFE DISCHARGE LEVELS. THE RESULTS OBTAINED AND IMPLICATIONS FOR A FULL-SIZE PLANT ARE DISCUSSED, AS ARE TECHNIQUES USED FOR DECONTAMINATING THE CELL FOLLOWING OVER TWO YEARS OF OPERATION.

PUB DESC: HWL-SA-569, CCRF-660200-13, 15 PAGES, MARCH 4, 1966, PRESENTED AT SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, BETHLEHEM, WASHINGTON

KEYWORDS: DECONTAMINATION; POT CALCINATION; SPRAY SOLIDIFICATION; WASTE DISPOSAL; CALCINATION; WASTE TREATMENT; FIXATION; WASTE TREATMENT; LIQUID; WASTE TREATMENT; SOLID; BATTIE SCIENTIFIC; WASTE TREATMENT EQUIPMENT

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PUB DATE: 1968

AUTHOR: NUKAI, S.; MOTABARA, T.

TITLE: BASIC STUDIES ON THE TREATMENT OF FUEL-REPROCESSING LIQUID WASTES BY THE FLOTATION METHOD. VII. SELECTIVE REMOVAL OF MIXED FISSION PRODUCTS

CORPORATE AUTHOR: KYOTU UNIVERSITY, JAPAN

ABSTRACT: BASIC STUDIES WERE MADE ON THE SELECTIVE REMOVAL OF GROUPS OF FISSION PRODUCTS FROM LIQUID WASTES. CS-137, SR-90, CE-144, RU-106, AND ZR-95 WERE GROUPED ON THE BASIS OF RESULTS PREVIOUSLY OBTAINED BY THE FLOTATION METHOD. THE EXPERIMENTS WERE MADE WITH IONIZED LIQUID WASTES, AND THE FEASIBILITY OF SUCH REMOVAL BY THE FLOTATION METHOD WAS CLEARLY DEMONSTRATED. ALTHOUGH FURTHER INVESTIGATION NEEDS TO BE MADE ON HOW IT BODIES IN PRACTICE, THE PROCEDURE PROVIDES A CLUE TO THE DEVELOPMENT OF A NEW TREATMENT METHOD FOR FUEL-REPROCESSING LIQUID WASTES.

PUB DESC: NIPPON KOGYO KAISHI, 2 PAGES, 84, PAGES 341-342 (MARCH 1968) (IN JAPANESE)

KEYWORDS: CESIUM; CESIUM; POSE; RUTHENIUM; STRONTIUM; RUTHENIUM; WASTE TREATMENT, LIQUID; FISSION PRODUCT; SEPARATION; SEPARATION TECHNIQUES; JAPAN; SIMULATION; FUEL REPROCESSING

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PUB DATE: 1971

AUTHOR: HAFSAVNIK, J.; BALKOVA, J.

TITLE: PLANT PROJECT FOR FIXATION OF RADIOACTIVE WASTES INTO BITUMEN

ABSTRACT: BASED ON THEORETICAL CALCULATIONS AND LABORATORY RESULTS WHICH PROVED THE USEFULNESS OF ASPHALT EMULSIONS FOR THE FIXATION OF HIGH LEVEL RADIOACTIVE WASTES, A PILOT PLANT WAS DESIGNED, THE PRINCIPAL UNIT OF WHICH IS THE MIXER-EVAPORATOR.

PUB DESC: JADERNA ENERGIJE (CZECHOSLOVAKIA), 17(4), PP. 180-191 (1971) (IN CZECH)

KEYWORDS: WASTE DISPOSAL, TERRISTRAL; ASPHALT; WASTE TREATMENT, FIXATION; RADIOCHEMICAL PROCESSING

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PUB DATE: 1968

AUTHOR: HAFSAVNIK, J.; VERBER, B.

TITLE: FIXATION OF CONCENTRATED WASTES IN CEMENT BY THE METHOD OF VACUUM EXHAUSTION FROM CEMENT-WATER MIXTURES

CORPORATE AUTHOR: CZECHOSLOVENSKA AKADEMIE VED. BEZ., USTAV JADERNEHO VYZKUMU

ABSTRACT: REPORTS ON A NEW METHOD OF FIXATION OF CONCENTRATED RADIOACTIVE WASTES INTO CEMENT, BASED ON THE METHOD OF VACUUM EXHAUSTION OF WATER FROM A CEMENT-WATER MIXTURE THAT YIELDS A CONSIDERABLY SOLID CEMENT BLOCK. THE VACUUM PROCEDURE HAS BEEN TESTED ON A PILOT PLANT SCALE AND COMPARED WITH THE CEMENTATION METHOD PRESENTLY UNDER USE IN SLOVAKIA.

PUB DESC: RJV-2097-CN, 16 PAGES, NOVEMBER 1968

KEYWORDS: CONCRETE; WASTE TREATMENT, FIXATION; VACUUM PELLET; WASTE DISPOSAL, LIQUID; HIGH-LEVEL WASTE

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PUB DATE: 1970

AUTHOR: BESET, K.B.; LUNDY, J.E.; BERLESE, P.O.

TITLE: DEVELOPMENTS IN THE TREATMENT AND DISPOSAL OF LOW AND INTERMEDIATE LEVEL WASTES AT THE INSTITUTE FOR ATOMIC ENERGY, BODVAAY

CORPORATE AUTHOR: INSTITUTE FOR ATOMIC ENERGY, KJELLER, NORWAY; ROBATON-ROBONTROL N/S, OSLO, NORWAY

ABSTRACT: THE DEVELOPMENTS IN WASTE MANAGEMENT AND TREATMENT IN THE PERIOD 1948-65 WAS PRESENTED AT THE IAEA SYMPOSIUM IN VIENNA, IN DECEMBER 1965. *** IN THE LAST FIVE YEAR PERIOD THE INCREASED ACTIVITIES ON PROJECTS CONCERNED WITH PROTOTYPE FUEL TREATING, POST IRRADIATION EXAMINATION, REPROCESSING PILOT PLANT AND ISOTOPE PRODUCTION NECESSITATED IMPROVEMENTS IN WASTE TREATMENT AND DISPOSAL. THESE ARE DISCUSSED.

PUB DESC: SR-137/60, STI/PUB-264, CCRF-700905, 20 PAGES, 4 FIGURES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT; NORWAY; RADIATION SAFETY AND CONTROL

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PUB DATE: 1972

AUTHOR: NUCLEAR FUEL SERVICES, INC. (U.S.A.)

TITLE: NUCLEAR FUEL SERVICES LOW LEVEL WASTE TREATMENT FACILITY SUMMARY REPORT NO. 2

CORPORATE AUTHOR: NUCLEAR FUEL SERVICES, INC.

ABSTRACT: THE LOW-LEVEL-WASTE TREATMENT FACILITY TREATED ALL DISCHARGES EXCEPT THOSE FROM THE LAUNDRY. DURING THE REPORT PERIOD, THE FACILITY REMOVED 905 CS-137, 945 SR-90, 465 RU-106, AND 755 GROSS RTA. EXCEPT FOR SR, THE AVERAGE WAS LOWER THAN FOR THE PREVIOUS 3 MONTHS. WORK IS CONTINUING ON THE DEVELOPMENT OF MORE EFFICIENT METHODS OF REDUCING SR

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AND CS RADIOACTIVITY IN THE LIQUID EFFLUENTS.

PUB DESC: DOCKET-50201-104, 15 PAGES, LETTER -
NUCLEAR FUEL SERVICES, INC. TO DIVISION OF MATERIALS
LICENSING (ARC) - JANUARY 10, 1972, DOCKET 50-201

KEYWORDS: REPORT, OPERATIONS; WEST VALLEY;
LOW-LEVEL WASTE; CESIUM; STRONTIUM; BUTYRIUM; WASTE
TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; LOW
LEVEL WASTE; RADIOACTIVITY RELEASE; FUEL REPROCESSING; R
AND D PROGRAM; OPERATING EXPERIENCE

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PUB DATE: 1972
AUTHOR: NUCLEAR FUEL SERVICES, INC. (U.S.A.)

TITLE: LOW LEVEL LIQUID WASTE TREATMENT FACILITY,
SUMMARY REPORT 5 (NUCLEAR FUEL SERVICES, INC.)

CORPORATE AUTHOR: NUCLEAR FUEL SERVICES, INC.

ABSTRACT: ALL DISCHARGES WERE FROM LAGOONS 4 AND 5
AND WERE BELOW 0.00002 MICRCCI OF CS-137 PER ML.
AVERAGE DECONTAMINATION FACTORS ARE IMPROVING.

PUB DESC: DOCKET-50201-117, 1 PAGE, LETTER TO
DIVISION OF MATERIALS LICENSING FROM NUCLEAR FUEL
SERVICES, INC., WEST VALLEY, N. Y., APRIL 17, 1972,
DOCKET 50-201

KEYWORDS: WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT;
DECONTAMINATION FACTOR; BFS

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PUB DATE: 1973
AUTHOR: OTTINGER, B.S.; ELBERTHAL, J.L.; DAL
PORTO, D.P.; GUNTER, G.L.; SARTY, B. J.; SHIB, C.C.

TITLE: RECOMMENDED METHODS OF REDUCTION,
NEUTRALIZATION, RECOVERY OR DISPOSAL OF HAZARDOUS
WASTE. VOLUME II NATIONAL DISPOSAL SITE CANDIDATE
WASTE STREAM CONSTITUENT PROFILE REPORTS - RADIOACTIVE
MATERIALS.

CORPORATE AUTHOR: THE SYSTEMS GROUP, ONE SPACE PARK

ABSTRACT: THIS VOLUME CONTAINS SUMMARY INFORMATION
AND EVALUATION OF WASTE MANAGEMENT METHODS IN THE FORM
OF PROFILE REPORTS FOR RADIOACTIVE MATERIALS. THESE
PROFILE REPORTS WERE PREPARED FOR EITHER A PARTICULAR
HAZARDOUS WASTE STREAM CONSTITUENT OR A GROUP OF
RELATED CONSTITUENTS. EACH PROFILE REPORT CONTAINS A
DISCUSSION OF THE GENERAL CHARACTERISTICS OF THE WASTE
STREAM CONSTITUENTS, THEIR TOXICOLOGY AND OTHER
ASSOCIATED HAZARDS, THE DEFINITION OF ADEQUATE
MANAGEMENT FOR THE WASTE MATERIAL, AN EVALUATION OF
THE CURRENT WASTE MANAGEMENT PRACTICES WITH REGARD TO
THEIR ADEQUACY, AND RECOMMENDATION AS TO THE MOST
APPROPRIATE PROCESSING METHODS AVAILABLE AND WHETHER
THE WASTE MATERIAL SHOULD BE CONSIDERED AS A CANDIDATE
FOR NATIONAL DISPOSAL, INDUSTRIAL DISPOSAL OR
MUNICIPAL DISPOSAL. (AUTH)

PUB DESC: EPA-670/2-73-053-1 (1973) PB-224-503

KEYWORDS: WASTE DISPOSAL; REPOSITORY; ENVIRONMENTAL
PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH);
SUMMARY REPORT; EVALUATION; PROFILE REPORTS;
RADIOISOTOPE; ELEMENTS AND ISOTOPES; HAZARDS (SEE ALSO
SAFETY); TOXICOLOGY; CARCINOGEN; COBALT; IODINE; RADIUM;
CESIUM; HYDROGEN; IODINE; KRYPTON (SEE ALSO NOBLE
GAS); PLUTONIUM; AMERICIUM; CURIUM; BUTYRIUM; CESIUM;
FRONTINIUM; STRONTIUM

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PUB DATE: 1967
AUTHOR: PARSONS, F.J.

TITLE: SYMPOSIUM ON WASTE DISPOSAL INTO SURFACE
WATERS

CORPORATE AUTHOR: LONDON UNIVERSITY, ENGLAND

ABSTRACT: THE SYMPOSIUM WAS CONCERNED WITH THE
BEHAVIOR OF RADIOACTIVE WASTES RELEASED INTO SURFACE

WATERS. THE FIRST SESSION COVERED THE PHYSICAL AND
BIOLOGICAL TRANSPORT OF RADIOISOTOPES THROUGH SUCH
MECHANISMS AS ELUTION, SEDIMENTATION, AND CURRENT
MOVEMENTS OR BY UPTAKE BY BIOLOGICAL ORGANISMS. IT
COVERED ALSO THE BEHAVIOR OF RADIOISOTOPES IN SURFACE
AND DEEP LAYERS OF WATER. THE SECOND SESSION WAS
DEVOTED TO THE WAYS IN WHICH RADIOISOTOPES, RELEASED
AS WASTE, MAY CAUSE A RADIATION DOSE TO MAN. THIS MAY
BE THROUGH MOVEMENT INTO THE FOOD CHAIN, BY
INTRODUCTION INTO SUCH CHAINS BY IRRIGATION, OR BY
EXTERNAL RADIATION. THE EVALUATION OF THESE MAIN
ROUTES OF EXPOSURE WAS ACCOMPANIED BY A DESCRIPTION OF
ENVIRONMENTAL INVESTIGATIONS CONCERNING RELEASE. THE
THIRD AND FINAL SESSION DEALT WITH THE POSSIBLE
EFFECTS WASTES MAY HAVE ON THE RESOURCES OF THE SEAS
THROUGH SOMATIC EFFECTS ON ORGANISMS OR GENETIC
EFFECTS ON POPULATIONS OF SUCH ORGANISMS.

PUB DESC: NUCLEAR SAFETY 8(3), PAGES 249-257 9
PAGES, 1 TABLE (SPRING 1967)

KEYWORDS: CESIUM; COBALT; DIFFUSION; DILUTION;
EFFLUENT; FALLOUT; PARTICLE SIZE; PARTICLES; BUTYRIUM;
STRONTIUM; SURFACE WATER; WASTE DISPOSAL, OCEAN;
FISSION PRODUCT TRANSPORT; RIOTA; CHROMIUM; MANGANESE;
ASTORIA; PHOSPHORUS; SAMPLING; SURFACE WATER, NUCLEAR
OCCURRENCE; SURFACE WATER, SUSPENDED MATERIAL; SURFACE
WATER, TRACER; WASTE DISPOSAL, RIVER; IODINE; BUTYRIUM
HABIT; ESTUARY; CROSS META; RIVER, CLIMAX; RIVER,
COLUMBIA; SURFACE WATER, DISPOSAL MEDIA; SURFACE
WATER, SEDIMENT; POPULATION EXPOSURE; CONCENTRATION,
AREA; ADSORPTION (SEE ALSO ABSORPTION); DISPERSION;
RADIOACTIVITY RELEASE; RIVER, RHOSE; CONCENTRATION;
AQUATIC ORGANISM

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PUB DATE: 1975
AUTHOR: PECHIN, U.H.; BLANCO, B.E.; DANLHAN, B.C.;
FINNEY, B.C.; LINDAVER, R.E.; WITKINSFOOD, J.P.

TITLE: CORRELATION OF RADIOACTIVE WASTE TREATMENT
COSTS AND THE ENVIRONMENTAL IMPACT OF WASTE EFFLUENTS
IN THE NUCLEAR FUEL CYCLE FOR USE IN ESTABLISHING "AS
LOW AS PRACTICABLE" GUIDES - FABRICATING OF
LIGHT-WATER REACTOR FUEL FROM ENRICHED URANIUM DIOXIDE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A COST-BENEFIT STUDY WAS MADE TO
DETERMINE THE COST AND EFFECTIVENESS OF RADIOACTIVE
WASTE (RADWASTE) TREATMENT SYSTEMS FOR DECREASING THE
RELEASE OF RADIOACTIVE MATERIALS FROM A MODEL
ENRICHED-URANIUM, LIGHT-WATER REACTOR (LWR) FUEL
FABRICATION PLANT, AND TO DETERMINE THE RADIOLOGICAL
IMPACT (DOSE COMMITMENT) OF THE RELEASED MATERIALS ON
THE ENVIRONMENT. THE STUDY IS DESIGNED TO ASSIST IN
DEFINING THE TERM "AS LOW AS PRACTICABLE" IN RELATION
TO LIMITING THE RELEASE OF RADIOACTIVE MATERIALS FROM
NUCLEAR FACILITIES. THE BASE CASE MODEL PLANT IS
REPRESENTATIVE OF CURRENT PLANT TECHNOLOGY AND HAS AN
ANNUAL CAPACITY OF 1500 METRIC TONS OF LWR FUEL.
ADDITIONAL RADWASTE TREATMENT EQUIPMENT IS ADDED TO
THE BASE CASE PLANTS IN A SERIES OF CASE STUDIES TO
DECREASE THE AMOUNTS OF RADIOACTIVE MATERIALS RELEASED
AND TO REDUCE THE RADIOLOGICAL DOSE COMMITMENT TO THE
POPULATION IN THE SURROUNDING AREA. THE COST FOR THE
ADDED WASTE TREATMENT OPERATIONS AND THE CORRESPONDING
DOSE COMMITMENT ARE CALCULATED FOR EACH CASE. IN THE
FINAL ANALYSIS, RADIOLOGICAL DOSE IS PLOTTED VS THE
ANNUAL COST TREATMENT OF THE RADWASTES. THE STATUS OF
THE RADWASTE TREATMENT METHODS USED IN THE CASE
STUDIES IS DISCUSSED. SOME OF THE TECHNOLOGY USED IN
THE ADVANCED CASES IS IN AN EARLY STAGE OF DEVELOPMENT
AND IS NOT SUITABLE FOR IMMEDIATE USE. THE METHODOLOGY
USED IN ESTIMATING THE COSTS AND THE RADIOLOGICAL
DOSES, DETAILED CALCULATIONS, AND TABULATIONS ARE
PRESENTED IN APPENDIX A AND ORNL-4992. (AUTH)

PUB DESC: ORNL-TM-4902 1975 (HAT)

KEYWORDS: URANIUM DIOXIDE; RADWASTE SYSTEM; FUEL
FABRICATION (SEE ALSO FABRICATION); EFFLUENT; FUEL
CYCLE; ENVIRONMENTAL IMPACT; COST BENEFIT; DOSE
COMMITMENT; AS LOW AS PRACTICABLE (ALAP); ECONOMIC
STUDY; HEALTH PHYSICS

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PUB DATE: 1962
 AUTHOR: PEROLA, J.J.; FRANKMAN, B.L.; MORRIS, J.C.; ROBERTS, J.T.

TITLE: EVALUATION OF ULTIMATE DISPOSAL METHODS FOR LIQUID AND SOLID RADIOACTIVE WASTES. IV. SHIPPING OF CALCINED SOLIDS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: THE COSTS OF SHIPPING CALCINED PUREX AND THORON WASTES WERE CALCULATED. CALCULATIONS WERE MADE FOR PUREX WASTE CALCINED IN ACIDIC AND NEUTRALIZED (AFTER ALKALINE STORAGE) FORMS AND FOR THORON WASTE CALCINED IN ACIDIC AND NEUTRALIZED FORMS AND WITH CONSTITUENTS ADDED FOR PRECIPITATING AN ACIDIC THORON GLASS. SHIPPING CASES OF 1000, 1500, 2000 AND 2500 LBS. WERE CONSIDERED AT \$0.25, 0.75 AND \$5.00/LB. CASE WEIGHTS RANGED UP TO 100 TONS. THE CASE DESIGN DID NOT INCLUDE LIQUID COOLANTS OR MECHANICAL COOLING EQUIPMENT, AND CONDITIONS WERE ASSUMED NOT REQUIRED. RAIL FREIGHT RATES OF \$20, \$40 AND \$65/TON WERE ASSUMED FOR DISTANCES OF 500, 1000 AND 1500 MILES WITH RATES 30 PERCENT LESS FOR THE RETURN OF THE EMPTY CASES. TOTAL COSTS WERE LOWEST IN ALL CASES FOR LEAD CASES.

PUB DESC: ORNL-3356, 23 PAGES, 10 FIGURES, 3 TABLES, 12 REFERENCES- OCTOBER 4, 1962

KEYWORDS: WASTE HANDLING; CALCINATION; WASTE TREATMENT; FIXATION; WASTE SOURCE AND TYPE; FISSION PRODUCT; SEPARATION; THERMAL CONSIDERATION; WASTE TRANSPORTATION; WASTE TREATMENT; ECONOMICS; GLASS (SEE ALSO VITRIFICATION); RADIOCHEMICAL PROCESSING

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PUB DATE: 1966
 AUTHOR: FLATT, A.M.; COOLEY, C.B.

TITLE: WASTE SOLIDIFICATION PROTOTYPE PROGRAM

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, BICBLAND, WASHINGTON

ABSTRACT: DESCRIBES THE WASTE-SOLIDIFICATION-PROTOTYPE PROGRAM INCORPORATING THE DEMONSTRATION OF SPRAY SOLIDIFICATION, POT CALCINATION, AND PHOSPHATE-GLASS SOLIDIFICATION.

PUB DESC: ATCHICS 10 (4), PAGE 22-25, 5 FIGURES, 6 REFERENCES, (JULY 8, 1966)

KEYWORDS: WASTE DISPOSAL; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); POT CALCINATION; SPRAY SOLIDIFICATION; PHOSPHATE GLASS; WASTE TREATMENT; CALCINATION; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; GLASS (SEE ALSO VITRIFICATION); BATTIE NORTHWEST

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PUB DATE: 1960
 AUTHOR: POTTIER, E.E.

TITLE: CHEMICAL TREATMENT OF RADIOACTIVE WASTES

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE

ABSTRACT: THIS IS THE THIRD ANNUAL OF THREE COMMISSIONED BY THE IAEA ON THE THREE PRINCIPAL TECHNIQUES USED IN CONCENTRATING RADIOACTIVE LIQUID WASTES, NAMELY CHEMICAL PRECIPITATION, EVAPORATION AND ION EXCHANGE. COVERS - 10"RODUCTION, PRINCIPLES OF COAGULATION-FLOCCULATION AND SEDIMENTATION AND ASSOCIATED PROCESSES, PROCESSES AND EQUIPMENT, CONTRIBUTING AND DISPOSAL OF FLOCCULANT SLUDGE, SAMPLING, LABORATORY WORK, FACTORS GOVERNING THE SELECTION OF PROCESSES, APPENDIX I (GLOSSARY), APPENDIX II (CONVERSION TABLE). ENTIRELY IN ENGLISH.

PUB DESC: STI/DOC/10/69, 80 PAGES, 17 FIGURES, 4 TABLES, 99 REFERENCES, 1968

KEYWORDS: CHEMICAL REACTION; DECONTAMINATION; DESIGN CRITERIA; IAEA; OXIDATION; WASTE TREATMENT,

LIQUID; SAMPLING; WASTE DISPOSAL, LIQUID; WASTE TREATMENT, ECONOMICS; PRECIPITATION; EQUIPMENT; SEDIMENT

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PUB DATE: 1969
 AUTHOR: POZITYCH, S.; CIECH, S.

TITLE: DECONTAMINATION OF THORIUM WASTES

CORPORATE AUTHOR: INSTYTUT BADAN JADROWYCH, WARSAW

ABSTRACT: WASTES OBTAINED FROM THE ISOLATION OF THORIUM FROM SOLUTIONS AFTER LEACHING OF THORIUM ORES WERE DECONTAMINATED BY THE METHOD OF COPRECIPITATION WITH CALCIUM OXALATE. THE INFLUENCE OF THE PH OF THE SOLUTION AND THE QUANTITY OF ADDED OXALIC ACID ON THE ISOLATION OF THE THORIUM FROM THE WASTES INVESTIGATED WERE EXAMINED. CONDITIONS LEADING TO HIGH DECONTAMINATION OF THORIUM WASTES WERE ESTABLISHED.

PUB DESC: BUKLEOBINA, VOL. 14, PG. 41-47 (1969) (IN POLISH)

KEYWORDS: CALCIN; LEACHING; ORE PROCESSING; DECONTAMINATION; THORIUM; WASTE TREATMENT; PRECIPITATION; ACID; EFFECT, PH

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PUB DATE: 1969
 AUTHOR: BALUCHA, J.; SAIDL, J.

TITLE: SOLIDIFICATION OF HIGH LEVEL WASTES, PART 3. DIFFUSION AND ELUTION RATES OF RADIOISOTOPES INCORPORATED IN BASALTS

ABSTRACT: PURSUES A STUDY OF THE DIFFUSION AND ELUTION OF RADIOISOTOPES IN GLASS AND IN THE BELTIC BASALT.

PUB DESC: BNU-18-49, 9 PAGES, TRANSLATED FROM KERNENERGIE, VOL. 10, PP. 161-164 (1969)

KEYWORDS: CESIUM; BASALT; LEACHING; DIFFUSION; IAEA; STRONTIUM; WASTE STORAGE; WASTE TREATMENT, FIXATION; AUSTRIA; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; GLASS (SEE ALSO VITRIFICATION);

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PUB DATE: 1969
 AUTHOR: BALUCHA, J.; SAIDL, J.

TITLE: SOLIDIFICATION OF HIGH-LEVEL WASTE, PART 4. DIFFUSION IN BASALT IN A RADIATION FIELD

ABSTRACT: THE DIFFUSION OF STRONTIUM IN FUSED BASALT WAS CARRIED OUT UNDER THE INFLUENCE OF RADIATION. THE DOSE RATE IN THE DIFFUSION ZONE AMOUNTED TO ABOUT 100,000 R/HR. THE DIFFUSION COEFFICIENT IN THE GLASS PHASE OF THE FUSED BASALT AGREES OVERALL WITH THAT FOUND UNDER SIMILAR CONDITIONS WITHOUT THE RADIATION INFLUENCE. USING THE GRINDING-OFF METHOD IT WAS POSSIBLE TO EVALUATE SINGLE DIFFUSION PROCESSES IN HETEROGENEOUS CRYSTALLIZED BASALT. NO CHANGE OF TRANSFORMATION INTERVAL OR CRYSTALLIZATION TEMPERATURE WAS OBSERVED. THE MECHANICAL PROPERTIES OF BASALT REMAIN UNCHANGED BY THE EFFECT OF RADIATION.

PUB DESC: BNU-18-50, 9 PAGES, TRANSLATED FROM KERNENERGIE, VOL. 10, PG. 340-343 (1969)

KEYWORDS: DIFFUSION; BASALT; ROCK MECHANICS; STRONTIUM; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, SOLID; DIFFUSION COEFFICIENT; GLASS (SEE ALSO VITRIFICATION); EFFECT, DOSE RATE

<577>

PUB DATE: 1967
 AUTHOR: BALUCHA, J.; SAIDL, J.

TITLE: FISSION OF HIGH ACTIVITY WASTES, 5TH REPORT. HEAT GENERATION AND TEMPERATURE DISTRIBUTION IN BASALT AFTER FISSION WITH HIGH ACTIVITY WASTE

<577> COPY.

ABSTRACT: THE TEMPERATURE INCREASE IN BASALT MELT PARTICLES WHICH RESULTS FROM THE ACCUMULATED DECAY HEAT OF FUSED RADIOISOTOPES IS CALCULATED. IN ADDITION TO PRACTICAL APPLICATIONS, THE LIMITING AMOUNT OF RADIOISOTOPES WHICH CAN BE FUSED IN A DEFINITE GEOMETRIC-BODY WITHOUT ENDANGERING THE COMPLETE SOLIDIFICATION OF THE BASALT IS SIMULTANEOUSLY DETERMINED. HOWEVER, THE EFFECT OF INACTIVE ADDITIONS AS WELL AS THE STRUCTURAL CHANGE OF THE BASALT BY MELTED RADIOACTIVE ELEMENTS IS CONSIDERED.

PUB DESC: DUVL-TR-05, 9 PAGES, TRANSLATED FROM KERNENERGIE, VOL. 10, PG. 372-376 (1967)

KEYWORDS: CESIUM; BASALT; TEMPERATURE COEFFICIENT; WASTE TREATMENT; FIXATION; MEASUREMENT; TEMPERATURE; HIGH TEMPERATURE; PROPERTY, CHEMICAL; SOLID

<578>

PUB DATE: 1969

AUTHOR: PASTOGLI, B.C.; SERGAL, J.R.; CHAUDHA, K.; THOMAS, E.T.

TITLE: INVESTIGATION OF MATERIALS AND METHODS FOR FIXATION OF LOW AND MEDIUM LEVEL RADIOACTIVE WASTE IN STABLE SOLID MEDIA

CORPORATE AUTHOR: CHAUDHA ATOMIC RESEARCH CENTER, BOMBAY (INDIA)

ABSTRACT: REPORTS DEVELOPMENT OF A NEW PROCESS CALLED THE THERMAL GLASS PROCESS TO CONDITION SECONDARY WASTES BY FIXING THEM IN GLASS PRIOR TO THEIR DISPOSAL. THE PROCESS DEVELOPMENT IS GIVEN IN DETAIL.

PUB DESC: BARC-400, 262 PAGES, 1969

KEYWORDS: CESIUM; INTERMEDIATE-LEVEL WASTE; POTENTIUM; WASTE TREATMENT; FIXATION; WASTE DISPOSAL, SOLID; HIGH TEMPERATURE; GLASS (SEE ALSO VITRIFICATION); INDIA; RETENTION FUNCTION

<579>

PUB DATE: 1972

AUTHOR: RATTAY, E.R.; LASEB, H.; PERC, E.

TITLE: INTERIOR STORAGE AND SOLIDIFICATION FOR TANKER-TYPE FISSION PRODUCT SOLUTIONS

CORPORATE AUTHOR: KERNFORSCHUNGSANLAGE, INSTITUT FÜR CHEMISCHE TECHNOLOGIE, JÜLICH, GERMANY

ABSTRACT: HIGHLY RADIOACTIVE FISSION PRODUCT SOLUTIONS RESULTING FROM REPROCESSING OF THORIUM-CONTAINING FUEL ELEMENTS (THORDEX-PROCESS) ARE INTERIM STORED IN A SPECIAL TANK EQUIPMENT AT KFA JÜLICH. SIX CYLINDRICAL TANKS (1 M³ VOLUME EACH) ARE INSTALLED IN CRIBS BUILT OF CONCRETE BLOCKS. THE TANKS HAVE A CONICAL BOTTOM, A COOLANT JACKET AND A LID IN WHICH ALL PIPES ARE FIRED. IN THE COURSE OF REPROCESSING SPENT HTGR-FUEL, A RATHER SERIOUS PROBLEM IS THE SOLIDIFICATION AND FINAL DISPOSAL OF THE HIGHLY RADIOACTIVE FISSION PRODUCT WASTE SOLUTIONS. A SURVEY IS GIVEN ON THE CHOICE OF A SUITABLE PROCESS. DESCRIPTION OF THE PROPOSED FLOWSHEET AS WELL AS LONG-TERM STORAGE AND SAFETY CONSIDERATIONS ARE INCLUDED.

PUB DESC: CONF-721107, 24 PAGES, 2 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: WASTE STORAGE; THORDEX; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; STORAGE CONTAINER; SOLVENT EXTRACTION; FUEL REPROCESSING; FUEL ELEMENTS

<580>

PUB DATE: 1967

AUTHOR: BAUER, F.V.

TITLE: DECONTAMINATING LOW ACTIVITY EFFLUENTS BY ELECTRODIALYSIS WITH ION-EXCHANGE MEMBRANES

ABSTRACT: THE RESULTS OBTAINED IN STUDIES ON THE POSSIBILITY OF USING ELECTRODIALYSIS FOR PROCESSING LOW-ACTIVITY WASTE WATER ARE PRESENTED. IT WAS SHOWN THAT ELECTRODIALYSIS MAY BE USED FOR PURIFYING, TO PERMISSIBLE CONCENTRATION LEVELS, SOLUTIONS CONTAINING LESS THAN 100 MG OF SALTS PER LITER AND FOR DESALTING MORE CONCENTRATED SOLUTIONS. IF THE WASTE WATERS CONTAIN MORE THAN 5 G OF SALT PER LITER, DESALTING WITH SIMULTANEOUS PRODUCTION OF ACID AND ALKALI NEEDED FOR THE PROCESS IS RECOMMENDED.

PUB DESC: AT. ENERGIA 22(5), PAGE 393-396, 2 FIGURES, 3 TABLES, 5 REFERENCES, (1967), IN RUSSIAN

KEYWORDS: WASTE TREATMENT; ELECTRODIALYSIS; LOW-LEVEL WASTE; WASTE TREATMENT, LIQUID; OSEK

<581>

PUB DATE: 1959

AUTHOR: REISCHAUER, A.E.

TITLE: LABORATORY STUDIES OF HANFORD WASTE CRISIS

CORPORATE AUTHOR: GENERAL ELECTRIC CO., RICHLAND, WASHINGTON. HANFORD ATOMIC PRODUCTS OPERATION

ABSTRACT: GROUND DISPOSAL OF LOW AND INTERMEDIATE WASTE SOLUTIONS FROM HANFORD CHEMICAL SEPARATIONS PLANTS WAS RESPONSIBLE FOR EARLY INITIATION OF LABORATORY RESEARCH ON THE FIXATION AND RETENTION OF RADIOACTIVE MATERIALS ON SOILS. THESE EARLY SOIL-CHEMISTRY STUDIES ULTIMATELY LIE TO LABORATORY ESTIMATES OF SOIL CAPACITY FOR THE RETENTION OF LONG-LIVED RADIOISOTOPES BY A SOIL COLUMN TECHNIQUE. THIS WORK FOUND MAJOR APPLICATION IN STUDYING THE DISPOSAL POSSIBILITIES OF SUPERSATURATED SOLUTIONS FROM WASTE SCAVENGING OPERATIONS. THE STANDARD TECHNIQUE EVOLVED PERMITS THE ESTIMATION FROM EXPERIMENTAL DATA OF WASTE VOLUMES WHICH WOULD PRODUCE A LIMITING BREAKTHROUGH OF LONG-LIVED ISOTOPES INTO THE GROUND WATER FOR A GIVEN CRIB AND TYPE OF WASTE. IT HAS THUS FOUND CONSIDERABLE APPLICATION AS A BASIS FOR RECOMMENDATION OF WASTE-DISPOSAL PRACTICE.

PUB DESC: HW-63121, 15 PAGES, TABLES, NOVEMBER 1959

KEYWORDS: GROUND WATER; SOIL; RADIOISOTOPE MOVEMENT THROUGH; WASTE TREATMENT; FIXATION; WASTE DISPOSAL, LIQUID; SORPTION (SEE ALSO ADSORPTION); FISSION PRODUCT RETENTION

<582>

PUB DATE: 1971

AUTHOR: BRICES, D.W.; LENSE, G.E.

TITLE: TREATMENT OF RADIOACTIVE WASTE STREAMS AT THE IDAHO CHEMICAL PROCESSING PLANT BY EVAPORATION AND ION EXCHANGE

CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION, IDAHO FALLS

ABSTRACT: AT THE ICPP, THE ANNUAL INPUT OF SR-90 TO THE PLANT IS ABOUT $1 \times 10^{(6)} \text{ CI}$ IN IRRADIATED FUEL ELEMENTS. MOST OF THIS EVENTUALLY IS STORED IN CALCINED SOLIDS, BUT SOME FINDS ITS WAY TO THE INTERMEDIATE- AND LOW-LEVEL WASTES. WITH AN EVAPORATION AND ION EXCHANGE SYSTEM FOR FINAL CLEANUP OF THESE WASTES, LESS THAN $5 \times 10^{(4)} \text{ CI}$ OF SR-90 IS RELEASED IN THE APPROXIMATELY 36,000,000 GALLONS OF WATER RETURNED ANNUALLY TO THE GROUND WATER TABLE.

PUB DESC: CONF-710509-1, 15 PAGES, MAY 1971

KEYWORDS: GROUND WATER; IDAHO; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT; CALCINATION; WASTE MANAGEMENT; EVAPORATION; ION EXCHANGE; FUEL REPROCESSING

<583>

PUB DATE: 1969

AUTHOR: BRICES, D.W.

TITLE: POST-CALCINATION TREATMENT POSSIBILITIES FOR CALCINE FROM FLUIDIZED BED CALCINATION

<583> COST.
CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION, IDAHO FALLS

ABSTRACT: THE DRY, GRANULAR CALCIUM PRODUCED BY FLUIDIZED-BED CALCINATION OF HIGHLY RADIOACTIVE WASTE IN THE WASTE CALCINING FACILITY AT THE IDAHO CHEMICAL PROCESSING PLANT CAN BE RECOVERED READILY FROM STORAGE AND TREATED TO MODIFY SOME OF ITS PROPERTIES IF DESIRED. METHODS ARE DISCUSSED THAT HAVE BEEN INVESTIGATED, TOGETHER WITH OTHER METHODS THAT HAVE BEEN CONSIDERED BUT NOT YET TRIED, TO MODIFY THE LEACHABILITY, THERMAL CONDUCTIVITY, AND PHYSICAL DISPERSABILITY OF CALCIUM.

PUB DESC: IN-1322, 16 PAGES, SEPTEMBER 1969

KEYWORDS: WASTE STORAGE; FLUIDIZED BED; CALCINATION; WASTE TREATMENT; FISSION; THERMAL CONDUCTIVITY; DISPERSION; RECOVERY PROCESS; VOLATILITY PROCESS; OXIDE

<584>

PUB DATE: 1968
AUTHOR: RICHIES, J.W.

TITLE: ENCAPSULATION OF HIGH-LEVEL NUCLEAR WASTES

CORPORATE AUTHOR: DOW OLIVER INC., STAMFORD, CONNECTICUT

ABSTRACT: THE REQUIREMENTS FOR PRACTICAL ECONOMIC ENCAPSULATION SYSTEMS FOR THE LONG-TERM PERMANENT STORAGE OF HIGH-LEVEL NUCLEAR WASTES ARE DISCUSSED. THE PRESENT STATUS OF RESEARCH AND DEVELOPMENT EFFORTS IN THIS AREA IS REVIEWED. A LOGICAL APPLICATION OF THESE REQUIREMENTS TO PRESENT DEVELOPMENT PROGRAMS INDICATES THAT THEY DO NOT RECOGNIZE THE OVERALL REQUIREMENTS FOR SAFE AND PRACTICAL DISPOSAL OF THESE WASTES. FURTHERMORE, THESE REQUIREMENTS INDICATE THAT CERTAIN DIRECTIONS SHOULD BE FOLLOWED IN THE DEVELOPMENT OF OPTIMUM PROCESSES. SEVERAL NEW PROPOSALS FOR DEVELOPMENT EFFORTS ARE PRESENTED TOGETHER WITH DEFINING TECHNOLOGICAL AND ECONOMIC PARAMETERS.

PUB DESC: CONF-641137, 20 PAGES, PG. 107-136 OF THE PROCEEDINGS OF THE SYMPOSIUM ON DISPOSAL OF PROCESS WASTES, PRINCETON AN RAIN, GERMANY, 1968

KEYWORDS: WASTE STORAGE; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE TREATMENT; FISSION; GERMANY; RADIATION SAFETY AND CONTROL; B AND D PROGRAM

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PUB DATE: 1970
AUTHOR: BITTER, C.L.; SCHMIDSON, R.E.

TITLE: TREATMENT AND STORAGE OF HANFORDS HIGH SALT INTERMEDIATE-LEVEL, LIQUID WASTES

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD GERMANY, RICHLAND, WASHINGTON

ABSTRACT: DISCUSSES THE 10-YEAR SOLIDIFICATION PROGRAM, ALTERNATIVE STORAGE MODES, LONG-TERM SAFETY CONSIDERATIONS, SITE CHARACTERISTICS, CLIMATE, SOILS, RADIOCLIDE MIGRATION IN SOIL, GEOLOGY, CRISMOLOGY, GEOGRAPHY, CHARACTERISTICS OF SOLIDIFIED WASTE, AND SAFETY ANALYSIS.

PUB DESC: SH-137/49, STI/PDB-264, CONF-700905, 12 PAGES, 3 FIGURES, 8 REFERENCES, PAPER PRESENTED AT THE 1970 SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: GEOLOGY; INTERMEDIATE-LEVEL WASTE; IAEA; SEISMOLOGY; SITING; WASTE DISPOSAL; SOIL; RADIOCLIDE MIGRATION THROUGH; WASTE STORAGE; SITE CLIMATOLOGY; WASTE MANAGEMENT; HANFORD SITE; SAFETY ANALYSIS

<586>

PUB DATE: 1970
AUTHOR: DUDOLPH, G.; SAIBL, J.; DUDOLPH, S.; GUBER, W.; HILD, W.; KRAUSE, H.; RULLER, W.

TITLE: LAB-SCALE BED WORK ON FISSION PRODUCT SOLIDIFICATION BY VITRIFICATION AND THERMITE PROCESSES

CORPORATE AUTHOR: FEDERAL REPUBLIC OF GERMANY

ABSTRACT: SEVERAL KINDS OF VITRIFIED PRODUCTS WITH INCORPORATED SIMULATED HIGH-LEVEL WASTES WERE SYNTHESIZED AND THEIR PHYSICAL AND CHEMICAL PROPERTIES WERE STUDIED, ESPECIALLY THOSE IMPORTANT FOR PROCESSING AND HANDLING OF THE PRODUCTS AND FOR SECULAR STORAGE. FROM THE INVESTIGATIONS A GLASS TYPE HAS BEEN SELECTED FOR PRACTICAL APPLICATION IN BED SOLIDIFICATION. A LABORATORY-SCALE PLANT WAS BUILT AND TESTED WITH INACTIVE AND HIGH-LEVEL MATERIAL. A THERMITE PROCESS FOR THE SOLIDIFICATION OF HIGH-LEVEL FISSION PRODUCT SCIENTIFICS IS UNDER DEVELOPMENT AS A POTENTIAL ALTERNATIVE TO VITRIFICATION. MODEL TESTS WITH INACTIVE MATERIALS PRODUCED THE BEST RESULTS WITH THERMITE MIXTURES CONTAINING CALCINED FISSION PRODUCTS, MANGANESE DIOXIDE, ALUMINUM, AND SILICON DIOXIDE. (AUTH)

PUB DESC: OICE-OCED, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 655-681 (1970)

KEYWORDS: LABORATORIES; THERMITE; B AND D PROGRAM; VITRIFICATION; THERMITE; GERMANY; PHYSICAL PROPERTIES; GLASS (SEE ALSO VITRIFICATION); CHEMICAL PROPERTIES; HIGH-LEVEL WASTE; WASTE STORAGE

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PUB DATE: 1970
AUTHOR: BYAN, L.P.; LINDB, L.

TITLE: CONDENSATE TREATMENT CONSIDERATIONS FOR BOILING-WATER REACTOR SYSTEMS

CORPORATE AUTHOR: GRAVER WATER CONDITIONING CO., ECOVAC CORP., N.J.

ABSTRACT: DISCUSSES CONSIDERATIONS PECULIAR TO BOILING-WATER REACTOR SYSTEMS THAT AFFECT THE EVALUATION AND CHOICE OF CONDENSATE TREATMENT SYSTEMS. ECONOMIC EVALUATIONS, THE EFFECT OF RADIOACTIVE WASTES ON EVALUATIONS, AND THE BURDEN OF OPERATING WITH CONDENSATE LEAKS ARE ESTABLISHED.

PUB DESC: AMERICAN POWER CONFERENCE, CHICAGO, ILL., APRIL 21-23, 1970, P. 757-770

KEYWORDS: REACTOR, BWR; EFFLUENT; WASTE TREATMENT; WATER TREATMENT; ECONOMIC STUDY

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PUB DATE: 1967
AUTHOR: SACHSE, G.; ROSENBERGER, R.

TITLE: SOLIDIFICATION OF RADIOACTIVE CONCENTRATES IN GLASSES OR CERAMICS. PART 1. SURVEY OF THE PAPERS PUBLISHED TILL 1965

CORPORATE AUTHOR: CENTRALINSTITUT FÜR KERNFORSCHUNG, BOSENDOF, GER. INSTITUT FÜR ANGEWANDTE MINERALOGIE, DUESSEN

ABSTRACT: RESEARCH IN THE FIELD OF SAFE STORAGE OF HIGH-LEVEL RADIOACTIVE CONCENTRATES BY MELTING INTO GLASSES OR CERAMIC MATERIALS IS DESCRIBED. THE ACCESSIBLE RECENT LITERATURE AS WELL AS THE RESULTS OF THE CONFERENCE ON THE TREATMENT AND STORAGE OF HIGH-LEVEL RADIOACTIVE WASTES (VIENNA, 1963) AND THE 3RD CONFERENCE OF THE PEACEFUL USES OF ATOMIC ENERGY (GENEVA, 1964) WERE TAKEN INTO CONSIDERATION. SUBJECTS COVERED INCLUDE NATURALLY OCCURRING MINERAL RAW MATERIALS, INVESTIGATIONS OF GLASS SYSTEMS, TECHNOLOGICAL STUDIES, PROBLEMS OF THE STORAGE OF VITRIFIED HIGH-LEVEL RADIOACTIVE MATERIALS, AND COST OF THE PROCESSES.

PUB DESC: KERNENERGIE, 10, PAGE 205 THRU 210, (JULY 1967), (IN GERMANY)

KEYWORDS: CERAMICS; HIGH-LEVEL WASTE; GERMANY; INTERNATIONAL (SEE ALSO ORGANIZATION); REVIEW; WASTE TREATMENT; FISSION; GLASS (SEE ALSO VITRIFICATION);

<588> COST.
RADIATION SAFETY AND CONTROL

<589> PUB DATE: 1961
AUTHOR: SAIDINCTCH, E.
TITLE: RADIOACTIVE WASTES, THEIR TREATMENT AND DISPOSAL.
PUB DESC: CHEMICAL INDUSTRIES 1961 PAGES 2030-2034 1961
KEYWORDS: WASTE DISPOSAL; REACTOR; RADIOISOTOPE; THERMITE

<590> PUB DATE: 1972
AUTHOR: SAIDL, J.; BUDOLPH, G.; GERD, V.
TITLE: LAB-SCALE B AND B WORK ON FISSION PRODUCT SOLIDIFICATION BY VITRIFICATION AND THERMITE PROCESS
CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG MBH, KARLSRUHE, GERMANY

ABSTRACT: SEVERAL KINDS OF VITRIFIED PRODUCTS WITH INCORPORATED SIMULATED HIGH-LEVEL WASTES WERE SYNTHESIZED AND THEIR PHYSICAL AND CHEMICAL PROPERTIES WERE STUDIED, ESPECIALLY THEIR INERTNESS FOR PROCESSING AND HANDLING OF THE PRODUCTS AND FOR SECULAR STORAGE. FROM THE INVESTIGATIONS A GLASS TYPE HAS BEEN SELECTED FOR PRACTICAL APPLICATION IN BULK SOLIDIFICATION. A LABORATORY-SCALE PLANT WAS BUILT AND TESTED WITH INACTIVE AND HIGH-LEVEL MATERIAL. A THERMITE PROCESS FOR THE SOLIDIFICATION OF HIGH-LEVEL FISSION PRODUCT SOLUTIONS IS UNDER DEVELOPMENT AS A POTENTIAL ALTERNATIVE TO VITRIFICATION. MODEL TESTS WITH INACTIVE MATERIALS PROVIDED THE BEST RESULTS WITH THERMITE MIXTURES CONTAINING CALCINED FISSION PRODUCTS, NUCLEAR GLASS, ALUMINA, AND SILICON DIOXIDE.

PUB DESC: CONF-721107, 25 PAGES, 9 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: WASTE TREATMENT; FISSION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; HIGH TEMPERATURE; HIGH-LEVEL WASTE; WASTE MANAGEMENT; GERMANY; GLASS (SEE ALSO VITRIFICATION); SOLID; VITRIFICATION

<591> PUB DATE: 1967
AUTHOR: SAIDL, J.; BALCOVA, J.
TITLE: SOLIDIFICATION OF HIGH-LEVEL RADIOACTIVE WASTES. PART 2. BASALT AS THE FAVORABLE INCORPORATION AND FISSION PRODUCT

CORPORATE AUTHOR: INST. OF NUCLEAR RESEARCH, CZECHOSLOVAK ACADEMY OF SCIENCES

ABSTRACT: SILICATE GLASSES SHOWED GOOD PROPERTIES, ESPECIALLY HIGH CHEMICAL RESISTANCE, FOR FISSION OF HIGH-LEVEL RADIOACTIVE WASTES. FROM DETAILED INVESTIGATIONS OF THE SILICATE MATERIALS IT WAS FOUND THAT BASALT HAS ESSENTIAL ADVANTAGES COMPARED WITH CONVENTIONAL GLASS. AFTER THERMAL TREATMENT, THE BASALTS ARE TRANSFORMED FROM THE VITREOUS STATE INTO THE RECRYSTALLIZED ONE. DUE TO THIS RECRYSTALLIZATION, PHYSICAL AND CHEMICAL CHANGES OCCURRED, RESULTING IN THE IMPROVEMENT OF THE CHEMICAL RESISTIVITY, MECHANICAL STRENGTH, HARDNESS, ETC.

PUB DESC: RESEARCHER 10, PAGES 128-31, 1 FIGURE, 7 TABLES, 8 REFERENCES, (APRIL 1967) IN GERMAN

KEYWORDS: WASTE TREATMENT; FISSION; GLASS (SEE ALSO VITRIFICATION); BASALT; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; CZECHOSLOVAKIA

<592> PUB DATE: 1963
AUTHOR: SARACI, M.; ITO, M.P.; KITSUISHI, M.

TITLE: TEST OPERATION AND COST ESTIMATION ON THE RADIOACTIVE WASTE TREATMENT PLANT AT JAERI

CORPORATE AUTHOR: JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO

ABSTRACT: PERFORMANCE DATA ON TEST OPERATIONS CONDUCTED THROUGH APRIL 1960 AND TREATMENT COST ESTIMATES CONCERNING THE RADIOACTIVE WASTE TREATMENT PLANT AT JAERI ARE GIVEN. TEST OPERATIONS WERE FIRST CONDUCTED WITH NONRADIOACTIVE MATERIALS AND THEN WITH PLANT RADIOACTIVE WASTES FROM JAERI. THE FLOCCULATION AND ION EXCHANGE UNIT, EVAPORATION UNIT, AND INCUBATION UNIT WERE EXAMINED. THE PERFORMANCE DATA SHOWED THAT THE FACILITIES FULFILLED THEIR SPECIFICATIONS AND FUNCTIONS EXPECTED FROM THE INITIAL PLANNING. CONSIDERING THAT THE PLANT IS THE FIRST OF THE KIND IN JAPAN, SOME PECULIARITIES AND OPERATIONAL TROUBLES WERE ALSO POINTED OUT FROM THE VIEWPOINT OF RADIOACTIVE WASTE TREATMENT. BRIEF COST ESTIMATES ON EACH FACILITY HAVE BEEN CARRIED OUT WITH TWO PURPOSES AS FOLLOWS- (1) TO FIND OUT THE OPTIMUM NATURES OF WASTES FOR EACH TREATMENT PROCESS ARE, CONSEQUENTLY, TO SERVE AS A REFERENCE OF THE SELECTION OF A SUITABLE TREATMENT PROCESS FOR A SPECIFIED WASTE- (2) TO SUGGEST PRACTICAL WAYS FOR REALIZATION OF MORE ECONOMICAL WASTE TREATMENT. FOR THE LIQUID TREATMENT, IT IS SHOWN THAT SOLID CONTENT IS ONE OF THE MOST IMPORTANT INDICES IN THIS SYSTEM. SOME REASONABLE COMBINATIONS OF VARIOUS ION EXCHANGES AND EVAPORATIONS WERE EXAMINED TO CLARIFY THEIR OPTIMUM REGIONS IN CONNECTION WITH SOLID CONTENT. FOR THE SOLID PROCESSING, INCUBATION IS MORE FAVORABLE THAN DIRECT STORAGE.

PUB DESC: BSJ-72-10 (JAERI-1000) 55 PAGES, OCT. 1963

KEYWORDS: WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; WASTE TREATMENT, ECONOMICS; EVAPORATION; INCUBATION; ION EXCHANGE

<593> PUB DATE: 1960
AUTHOR: SCHEJBALOVA, L.

TITLE: FISSION OF RADIOACTIVE WASTES IN CEMENT

CORPORATE AUTHOR: INST. OF NUCLEAR RESEARCH, BRZ, CZECH.

ABSTRACT: STUDIES WERE CARRIED OUT TO FIND A COMPOSITION OF CONCRETE THAT WOULD ENSURE BOTH THE DEGREE OF STRENGTH NEEDED FOR SAFE TRANSPORT AND A HIGHLY EFFICIENT FISSION OF THE RADIOACTIVE MATERIALS. COMPARATIVE STUDIES PROVED THE ADVANTAGES OF PORTLAND CEMENT. DATA ARE PRESENTED IN TABLES AND GRAPHS. OTHER CEMENTS WERE BETTER THAN PORTLAND CEMENT AT OBTAINING THE RADIOACTIVITY BUT THEIR LONG-TERM STABILITY AFTER LONG AGING TIMES WAS NOT SUFFICIENT TO PERMIT THEIR PRACTICAL USE.

PUB DESC: JOURNAL OF GEOPHYSICAL RESEARCH 73, PAGES 2715-19 FIGURES, 1 TABLE, REFERENCES, (APRIL 15, 1968)

KEYWORDS: CONCRETE; CEMENT; WASTE HANDLING; WASTE TREATMENT; FISSION; WASTE TRANSPORTATION; CZECHOSLOVAKIA; STORAGE CONTAINERS

<594> PUB DATE: 1967
AUTHOR: SCHEJBALOVA, L.

TITLE: FISSION OF RADIOACTIVE WASTES IN CONCRETE

CORPORATE AUTHOR: INST. FOR NUCLEAR RESEARCH, CZECHOSLOVAK ACADEMY OF SCIENCES, BRZ, NOVOTNY, JAROSLAV

ABSTRACT: FISSION OF RADIOACTIVE WASTE CONCENTRATES AND SLURRIES IN VARIOUS TYPES OF CONCRETE WAS ANALYZED. THE INFLUENCE OF THE CRITICAL COMPOSITION OF THE CONCENTRATES AND SLURRIES ON THE

<590> CONF.

Mechanical properties of the hardened cement and on basing out of the radioactive substances was analyzed. The best results were obtained with Portland cement 350. Aging of the hardened cement caused a decrease in the elution of the radioactive substances.

PUB DESC: JND. ENRG., 13, PAGE 07 YEAR 92. (MARCH 1967), (IN CERN)

KEYWORDS: CONCRETE; LEACHING; CZECHOSLOVAKIA; WASTE TREATMENT; FISSION; WASTE DISPOSAL, LIQUID; RADIATION SAFETY AND CONTROL

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PUB DATE: 1971

AUTHOR: SCHNEIDER, R.J.

TITLE: SOLIDIFICATION AND DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN THE UNITED STATES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: IN NUCLEAR FUEL CYCLES THE IRRADIATED FUEL IS DISCHARGED FROM THE REACTOR WITH ENOUGH FISSILE OR OTHER VALUABLE MATERIALS REMAINING TO WARRANT THEIR RECOVERY FOR REUSE. THESE SPENT FUELS ARE USED FOR A FEW MONTHS TO A YEAR TO PERMIT DECAY OF THE SHORT-LIVED RADIOISOTOPES. THE FUELS ARE THEN SHIPPED TO A FUEL-REPROCESSING PLANT UNDER THE VALUABLE FISSILE AND FERTILE FUEL MATERIALS ARE SEPARATED FROM THE FISSION PRODUCTS. THE RECOVERED FUEL MATERIALS ARE RETURNED TO THE FUEL CYCLE FOR REUSE. THE GASES MUST BE STORED FOR CENTURIES TO PERMIT DECAY OF THE MAJOR LONG-LIVED RADIOACTIVE FISSION PRODUCTS (PRIMAIRY CS 137 AND SR 90) TO BENIGN LEVELS; THE SMALL AMOUNT OF PLUTONIUM PRESENT AS A WASTE LOSS (USUALLY ABOUT 0.1 TO 0.5% OF THAT IN THE ORIGINAL FUEL) AND SOME LONG-LIVED FISSION-PRODUCT RADIOISOTOPES REQUIRING THOUSANDS OF CENTURIES TO DECAY TO BENIGN LEVELS. THE CONTROL OF THESE WASTES TO PREVENT THEM FROM ENTERING MAN'S BIOSPHERE IS SIGNIFICANT. QUANTITIES FOR THE LONG TIME PERIODS INVOLVED IS A FORTHRIGHT TASK. CURRENTLY THE ONLY PRACTICAL MEANS TO PREVENT THE RADIOACTIVITY FROM LEAKING OUT ENVIRONMENT IS TO STORE THE MATERIAL UNDER CAREFULLY CONTROLLED CONDITIONS UNTIL THE RADIOACTIVITY HAS DECAYED TO BENIGN LEVELS. METHODS THAT MAY BE BETTER THAN STORAGE MIGHT SOME DAY BE DEVELOPED. AT THIS TIME, HOWEVER, MAJOR TECHNOLOGICAL ADVANCES ARE REQUIRED FOR DEVELOPMENT OF NEW SCHEMES. (AUTH)

PUB DESC: REACTOR TECHNOLOGY 13: 307-315 (1971)

KEYWORDS: WASTE SOLIDIFICATION; STORAGE (SEE ALSO RETRIEVABLE SURFACE STORAGE); SPENT FUEL; BASEMENT ROCK (SEE ALSO GROUNDWATER); WASTE DISPOSAL, SEALED (SEE ALSO SEALED DISPOSAL AND OCEAN AND SEA); WASTE DISPOSAL, OCEAN; TRANSPORTATION; SPACECRAFT; EXTRA-TERRRESTRIAL DISPOSAL; WASTE TREATMENT; WASTE DISPOSAL, UNITED STATES; FUEL REPROCESSING; IODINE; KRYPTON (SEE ALSO NOBLE GAS); NEPTUN; CESIUM; STRONTIUM; TRITIUM

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PUB DATE: 1970

AUTHOR: SCHNEIDER, R.J.; RABOONAN, D.L.; BLASEVITS, A.G.; BLOMBERG, J.O.; MCCLAIN, W.C.

TITLE: STATUS OF SOLIDIFICATION AND DISPOSAL OF HIGHLY RADIOACTIVE LIQUID WASTES FROM NUCLEAR POWER IN THE U.S.A.

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON; OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: SOLIDIFICATION OF STABLE RADIOACTIVE LIQUID WASTES FROM REPROCESSING OF SPENT NUCLEAR FUELS WILL SOON BE REQUIRED IN THE USA FOR ADDITIONAL IMPROVEMENT IN SAFETY DURING INTERIM STORAGE, DURING TRANSPORTATION TO FINAL DISPOSAL, AND DURING FINAL DISPOSAL AT A FINAL REPOSITORY. RESEARCH AND DEVELOPMENT HAS BEEN CARRIED OUT TO DEVELOP FOUR

BASIC PROCESSES FOR CONVERTING THE HIGH LEVEL LIQUID WASTES TO ENCAPSULATED SOLIDS. THESE PROCESSES ARE - SPRAY SOLIDIFICATION, POT CALCINATION, PHOSPHATE GLASS SOLIDIFICATION, AND FLUIDIZED BED CALCINATION. ALL PROCESSES ARE BEING DEMONSTRATED ON AN ENGINEERING-SCALE WITH RADIOACTIVE WASTES. DISPOSAL OF THESE RADIOACTIVE WASTES REQUIRES ISOLATION FROM THE BIOLOGICAL ENVIRONMENT FOR HUNDREDS OF THOUSANDS OF YEARS. AFTER CONSIDERABLE STUDY, NATURAL SALT DEPOSITS WERE CONCLUDED TO BE THE MOST PROMISING DISPOSAL LOCATIONS IN THE USA FOR SITTING THESE WASTES.

PUB DESC: SN-104/23 + CONF-700310-80 V. 30 PAGES, PAPER PRESENTED AT THE INTERNATIONAL ATOMIC ENERGY AGENCY SYMPOSIUM ON ENVIRONMENTAL ASPECTS OF NUCLEAR POWER STATIONS, GENEVA, AUGUST 10-16, 1970

KEYWORDS: DESIGN CONCEPTS; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IAEA; WASTE TREATMENT; CALCINATION; PHOSPHATE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); SPRAY; WASTE DISPOSAL, SALT; FLUIDIZED BED; SOLID; AGENCY, AEC (SEE ALSO ISAEK)

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PUB DATE: 1969

AUTHOR: SCHNEIDER, R.J.

TITLE: WASTE SOLIDIFICATION PROGRAM. VOL. I. PROCESS TECHNOLOGY - POT, SPRAY, AND PHOSPHATE GLASS SOLIDIFICATION PROCESSES

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS REPORT BRINGS TOGETHER THE MAJORITY OF THE PERTINENT WASTE SOLIDIFICATION TECHNOLOGY EXISTING TO DATE FOR THE POT CALCINATION, SPRAY SOLIDIFICATION, AND PHOSPHATE GLASS SOLIDIFICATION PROCESSES FOR CONVERTING HIGHLY RADIOACTIVE LIQUID WASTES TO MORE REFRACTORY SOLIDS. PERTINENT TECHNOLOGY REGARDING CHARACTERIZATION OF HIGH LEVEL LIQUID WASTES, THE SOLIDIFIED PRODUCTS, AND THE EFFLUENTS FROM THE THREE SOLIDIFICATION PROCESSES IS PRESENTED.

PUB DESC: BNWL-1073, 371 PAGES, FIGURES, TABLES, AUGUST 1969

KEYWORDS: WASTE STORAGE; SPRAY SOLIDIFICATION; POT CALCINATION; PHOSPHATE GLASS; CALCINATION; WASTE TREATMENT, FISSION; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; BATTILLE NORTHWEST; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1965

AUTHOR: SCHULTZ, B.R.

TITLE: REMOVAL OF LOW-LEVEL RADIOACTIVE WASTES BY A SANITARY WATER TREATMENT PROCESS

CORPORATE AUTHOR: OAK RIDGE GASEOUS DIFFUSION PLANT

ABSTRACT: THIS PAPER PRESENTS A SUMMARY OF THE CLEANUP FACTORS WHICH WERE OBTAINED ACROSS A POTABLE WATER TREATMENT PLANT USING NORMAL TREATMENT METHODS. IT HAS NOTED THAT THE AVERAGE GROSS BETA RADIOACTIVITY WAS REDUCED BY 15 PERCENT AND THE STRONTIUM BETA CONCENTRATIONS BY 6 PERCENT. A SUMMARY AND EVALUATION OF SIX MONTHS DATA OBTAINED FROM DAILY FIELD SAMPLES OF THE RAW WATER SUPPLY, AS WELL AS THE FINISHED WATER PRODUCT, IS INCLUDED. SAMPLE ANALYSIS INCLUDED DETERMINATIONS FOR GROSS BETA RADIOACTIVITY AND RADIOSTRONTIUM. THE RAW WATER CONCENTRATIONS WERE LESS THAN HALF OF THE GDC (WATER) RECOMMENDED BY THE NATIONAL COMMITTEE ON RADIATION PROTECTION.

PUB DESC: E-C-705, CONF-650943-1, 10 PAGES, 1965, PRESENTED AT THE TECHNICAL MEETING OF THE LOCAL CHAPTERS OF THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, INDUSTRIAL MEDICAL ASSOCIATION, AND THE HEALTH PHYSICS SOCIETY, GASTINGUNG, TENNESSEE, SEPTEMBER 10 - OCTOBER 1, 1965

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KEYWORDS: STRIPPING; MAXIMUM FEASIBLE CONCENTRATION (MFC); WASTE TREATMENT, LIQUID; WATER, DRINKING; GROSS WASTE; WATER TREATMENT

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PUB DATE: 1975

AUTHOR: SCOTTER, R.C.

TITLE: SOLVER - A COMPUTER PROGRAM FOR SIMULATION OF SOLVENT EXTRACTION PROCESSES

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: SOLVER IS A FORTRAN IV COMPUTER PROGRAM THAT SIMULATES THE DYNAMIC BEHAVIOR OF SOLVENT EXTRACTION PROCESSES CONDUCTED IN MIXER-SETTLERS AND CENTRIFUGAL CONTACTORS. TWO OPTIONS PERMIT TERMINATING DYNAMIC PHASES BY TIME OR BY ACHIEVING STEADY STATE, AND A THIRD OPTION FORBIDS ARTIFICIAL RAPID CLOSE TO STEADY STATE. THUS THE PROGRAM IS WELL SUITED TO MULTIPLE PHASES OF DYNAMIC PROBLEMS AND MULTIPLE INPUT OF STEADY STATE PROBLEMS. CHANGES FROM THE PREVIOUS PROGRAM ARE THE ONLY INPUTS REQUIRED FOR EACH SUCCEEDING PROBLEM. DISTRIBUTION DATA CAN BE SUPPLIED BY TWO VARIABLE THIRD-POWER POLYNOMIAL EQUATIONS OR BY THREE-VARIABLE TABLES IN ANY ONE OF 16 DIFFERENT COMBINATIONS INVOLVING PHASE CONCENTRATIONS OR DISTRIBUTION COEFFICIENTS (RATIO OF PHASE CONCENTRATIONS) OR THEIR LOGARITHMS. (AUTH)

PUB DESC: WP-1391 (1975)

KEYWORDS: WASTE MANAGEMENT; WASTE SOLIDIFICATION; A AND B PROGRAM; COMPUTER PROGRAM; SIMULATION; CALCULATION METHOD; BEHAVIOR, DYNAMIC; BEHAVIOR, STEADY STATE

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PUB DATE: 1975

AUTHOR: SEARS, R.B.; BLANCO, P.E.; DANLAW, R.C.; HILL, G.S.; FTON, A.B.; WITBENSOCH, J.F.

TITLE: CORRELATION OF RADIOACTIVE WASTE TREATMENT COSTS AND THE ENVIRONMENTAL IMPACT OF WASTE EFFLUENTS IN THE NUCLEAR FUEL CYCLE FOR USE IN ESTABLISHING "AS LOW AS PRACTICABLE" GUIDES - MILLING OF URANIUM ORES.

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A COST-BENEFIT STUDY HAS MADE TO DETERMINE THE COST AND EFFECTIVENESS OF RADIOACTIVE WASTE (RADWASTE) TREATMENT SYSTEMS FOR DECREASING THE RELEASE OF RADIOACTIVE MATERIALS FROM MODEL URANIUM ORE PROCESSING MILLS, AND TO DETERMINE THE RADIOLOGICAL IMPACT (DOSE COMMITMENT) OF THE RELEASED MATERIALS ON THE ENVIRONMENT. THE STUDY IS DESIGNED TO ASSIST IN DEFINING THE TERM "AS LOW AS PRACTICABLE" IN RELATION TO LIMITING THE RELEASE OF RADIOACTIVE MATERIALS FROM NUCLEAR FACILITIES. THE BASE CASE MODEL MILLS ARE REPRESENTATIVE OF MILLS WHICH WILL PROCESS A MAJOR FRACTION OF THE ORE IN THE NEXT 20 YEARS. EACH MILL PROCESS 2,000 SHORT TONS OF ORE PER DAY. ADDITIONAL RADWASTE TREATMENT TECHNIQUES ARE APPLIED TO THE BASE CASE MILL AND THE WASTE TAILINGS AREA IN A SERIES OF CASE STUDIES TO DECREASE THE AMOUNTS OF RADIOACTIVE MATERIALS RELEASED AND TO REDUCE THE RADIOLOGICAL DOSE COMMITMENT TO THE POPULATION IN THE SURROUNDING AREA. THE COST FOR THE ADDED WASTE TREATMENT OPERATIONS AND THE CORRESPONDING COMMITMENT ARE CALCULATED FOR EACH CASE. IN THE FINAL ANALYSIS, RADIOLOGICAL DOSE IS PLOTTED VS THE ANNUAL COST FOR TREATMENT OF THE RADWASTE. THE STATUS OF THE RADWASTE TREATMENT METHODS USED IN THE CASE STUDIES IS DISCUSSED. MUCH OF THE TECHNOLOGY USED IN THE ADVANCED CASES WILL REQUIRE DEVELOPMENT AND DEMONSTRATION AND IS NOT SUITABLE FOR IMMEDIATE USE. THE METHODOLOGY USED IN ESTIMATING THE COSTS, DETAILED CALCULATIONS, AND TABULATIONS ARE PRESENTED IN ORNL-TM-4903, VOLUME 2. THE METHODOLOGY AND ASSUMPTIONS FOR THE RADIOLOGICAL DOSES ARE FOUND IN ORNL-4992. (AUTH)

PUB DESC: ORNL-TM-4903, VOL. 1 1975 (MAY)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); RADWASTE SYSTEM; ENVIRONMENT; COST-BENEFIT

ANALYSIS; AS LOW AS PRACTICABLE (ALAP); MILL TAILINGS (SEE ALSO TAILINGS); DOSE COMMITMENT; POPULATION EXPOSURE; EFFLUENT; GUIDE; DOSIMETRY

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PUB DATE: 1966

AUTHOR: SHEPHER, J.J.

TITLE: OPERATING EXPERIENCE ON IN-TANK SOLIDIFICATION OF RADIOCHEMICAL WASTES

CORPORATE AUTHOR: ISOCHEM INC., RICHLAND, WASHINGTON

ABSTRACT: THE OPERATION OF THE FIRST IN-TANK SOLIDIFICATION UNIT IS DESCRIBED. RADIOCHEMICAL WASTE SOLUTIONS ARE EVAPORATED WITHIN A 750,000-GALLON SUBMERGIBLE TANK BY SPARGING WITH AIR ELECTRICALLY HEATED TO 1200 F. THE AIR SPARGER IS ALSO AN AIR-LIFT CIRCULATOR USED FOR AGITATION. TO MINIMIZE SUBMERGEMENT, MOST OF THE HEAT IS TRANSFERRED TO THE SOLUTION BY PASSING THE AIR DOWN THE BELLOW WALL OF THE CIRCULATOR-SPARGER. STUD FINDS IMPROVE HEAT TRANSFER. THE OFF-GAS IS FILTERED AND DEMONSTRATED, PRODUCING EFFLUENT STREAMS LOW IN RESIDUAL RADIOACTIVITY. DECONTAMINATION FACTORS LARGER THAN 10,000 ARE OBTAINED.

PUB DESC: ISO-SA-1, CONF-660208-8, 19 PAGES, FEBRUARY 1966, PRESENTED AT THE INTERNATIONAL SYMPOSIUM ON THE SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, HELD IN RICHLAND, WASHINGTON, FEBRUARY 14 - 18, 1966

KEYWORDS: DECONTAMINATION; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); WASTE DISPOSAL; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; EVAPORATION; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1970

AUTHOR: SCHULEV, I.A.; KRONCHIK, L.R.; SUKHIN, N.A.; SOLOLOV, E.B.

TITLE: THE TREATMENT OF SOLID RADIOACTIVE WASTES WITH A LOW LEVEL OF ACTIVITY

CORPORATE AUTHOR: CENTRAL STATION OF RADIATION SHIELDING

ABSTRACT: THE CHIEF METHODS OF REDUCING THE VOLUMES OF SOLID RADIOACTIVE WASTES ARE PRELIMINARY DRESSING AND PRESSING. THE USE OF THESE METHODS AT THE FACILITIES OF THE CENTRAL RADIATION SAFETY STATION IS DISCUSSED IN THIS REPORT.

PUB DESC: SU-137/73, ST/PUB-269, CONF-700905, 22 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; LOW-LEVEL WASTE; SALING; WASTE TREATMENT, SOLID; COMPACTION; INCINERATION; USSR

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PUB DATE: 1975

AUTHOR: SCHWARTZ, H.; ROSEN, I.; JAFUSCH, H.

TITLE: LEACHING PROPERTIES OF BITUMEN-SALT MIXTURES PRODUCED BY SEDIMENTATION IN WATER

ABSTRACT: AFTER THE SELECTION OF HIGHLY RADIATION RESISTANT TYPES OF BITUMEN FOR APPLICATION IN RADIOACTIVE WASTE MANAGEMENT, BACL GRAINS WERE INTRODUCED INTO HEATED BITUMEN BY A NEW SEDIMENTATION TECHNIQUE. PREPARED SAMPLES WERE LEACHED WITH DISTILLED WATER AND THE INFLUENCE OF THE AMOUNT OF BACL, SAMPLE GEOMETRY, TEMPERATURE AND PREIRRADIATION WERE STUDIED. THESE EXPERIMENTS SHOWED THAT A LARGE AMOUNT OF SALT CAN BE EMBEDDED IN BITUMEN BY THE PROPOSED SEDIMENTATION METHODS. LEACHING RATES DEPEND ON THE SALT CONTENT AND DECREASED WITH TIME AND PROBABLY WITH THE GRAIN SIZE AND WERE INFLUENCED BY PREVIOUS RADIATION TREATMENT OF THE BITUMEN. A DYNAMIC LEACHING PROCEDURE YIELDED HIGHER LEACHING RATES THAN STATIC METHODS; LEACHING RATES WERE,

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HOWEVER, HIGHER THAN THOSE CALCULATED BY DIFFUSION MODELS. DISCREPANCIES CAN BE EXPLAINED BY THE EXISTENCE OF MICROCRACKS AND MICROSCALES IN THE BITUMEN MATRIX. ALTHOUGH THE DETERMINED LEACHING RATES AGREE WELL WITH PUBLISHED VALUES OBTAINED BY OTHER BITUMENIZED SAMPLES, BETTER DETECTION OF FISSURED SITES MAY BE EXPECTED BY USING SOFTER KINDS OF BITUMEN WHICH REDUCE THE NUMBER OF DEFECTS

PUB DESC: NUCLEAR ENGINEERING & DESIGN, 34(3), PP. 439-46, 7 FIGS, 8 REFS, (NOV. 1975)

KEYWORDS: LEACHING; ASPHALT; WASTE MANAGEMENT; WASTE TREATMENT; WASTE TREATMENT, LIQUID; CARBON; COAL

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PUB DATE: 1971

AUTHOR: STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ (GERMANY)

TITLE: FLOCCULATION AND SEDIMENTATION OF RADIOACTIVE FINELY DIVIDED SUSPENDED MATERIAL IN WATER BY CONTROLLING THE ZETA POTENTIAL

CORPORATE AUTHOR: STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ, GERMANY

ABSTRACT: THE DECONTAMINATION OF WASTE WATER FROM NUCLEAR PLANTS WAS PERFORMED BY COAGULATION WITH ALUMINIUM SULFATE AND FLOCCULATION WITH ORGANIC POLYMERS OF THE STYPIX SERIES CONTROLLING THE ZETA POTENTIAL ACCORDING TO BIDICK. THE ZETA POTENTIAL, THE SINKING SPEED OF THE FLOCS AND THE RESIDUAL TURBIDITY WERE DETERMINED IN DEPENDENCE ON THE PH VALUE AND THE QUANTITY OF FLOCCULATING AGENT. THE RESULTS WERE DISCUSSED AND THE USEFULNESS OF CONTROLLING THE FLOCCULATION BY MEASURING THE ZETA POTENTIAL IS CRITICALLY EVALUATED.

PUB DESC: SES-3/71, 32 PAGES, FEBRUARY 1971

KEYWORDS: CHEMICAL REACTION; DECONTAMINATION; WASTE DISPOSAL; WASTE TREATMENT; FRACED, POWER; WASTE MANAGEMENT; GERMANY; EFFECT, PH

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PUB DATE: 1966

AUTHOR: SUDATH, J.C.; BARNER, C.W.; HOLMES, J.H.

TITLE: ENGINEERING DEVELOPMENT OF THE POT PROCESSES FOR SOLIDIFICATION OF RADIOACTIVE WASTE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: THE POT-CALCINATION PROCESS IS USED TO SOLIDIFY RADIOACTIVE WASTE SOLUTIONS BY DRYING AND CALCINING OR MELTING IN POTS WHICH CAN BE SEALED FOR STORAGE. EXPERIMENTAL DATA FROM RUNS USING SIMULATED WASTE SOLUTIONS HAVE BEEN CORRELATING USING A MATHEMATICAL MODEL WHICH WILL ALLOW THE PREDICTION OF PLANT CAPACITY WHEN RADIOACTIVE DECAY HEAT IS PRESENT. SEVERAL RUNS WERE MADE USING PHOSPHATE FLUX SUCH THAT THE CALCINED SOLIDS WOULD MELT TO GIVE A GLASSY SOLID WHEN COOLED. PROBLEMS IN CONTROL OF A CLOSELY COUPLED EVAPORATOR-POT SYSTEM WERE INVESTIGATED AND A SATISFACTORY CONTROL SYSTEM WAS ENCLOSED. ENGINEERING TECHNIQUES HAVE BEEN DEVELOPED AND TESTED FOR LABELING AND SEALING THE POTS.

PUB DESC: SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, EICHLADE, WASHINGTON, FEBRUARY 15-18, 1966, 7 PAGES, 20 FIGURES, 7 TABLES, 10 REFERENCES

KEYWORDS: CALCINATION; POT CALCINATION; WASTE TREATMENT; FIXATION; WASTE TREATMENT, LIQUID; ORNL; WASTE TREATMENT, SOLID; MATHEMATICAL TREATMENT

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PUB DATE: 1967

AUTHOR: TACHOB, J.; COUSER, E.E.

TITLE: UNDERGROUND DISPOSAL OF K2-85 FROM NUCLEAR FUEL REPROCESSING PLANTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: EVALUATES THE DIFFERENT METHODS FOR LARGE-SCALE REMOVAL OF K2-85 FROM THE OFF-GAS STREAM OF A REPROCESSING PLANT AND THE FEASIBILITY OF UNDERGROUND DISPOSAL OF K2-85. ALTHOUGH THE APPARENT ADVANTAGES OF UNDERGROUND DISPOSAL ARE ITS RELATIVE SIMPLICITY AND EFFECTIVENESS, ONE SEVERE REQUIREMENT IS THAT THE DISPOSAL FORMATION MUST BE ESSENTIALLY FREE OF VERTICAL CHANNELS. THE PRINCIPAL MECHANISMS BY WHICH K2-85 MAY BE DETAINED OR RETAINED UNDERGROUND INCLUDE ADSORPTION AND TRAPPING. IN THE ABSENCE OF CONVECTIVE TRANSPORT, VERTICAL UNDERGROUND MOVEMENT IS INFLUENCED BY MOLECULAR DIFFUSION. THESE MECHANISMS ARE EVALUATED FOR QUANTITIES OF K2-85 AND VOLUMES OF OFF-GAS ASSURED TO BE PRODUCED AT A 10 TON/DAY REPROCESSING PLANT.

PUB DESC: ORNL-P-3246, 23 PAGES, 1 FIGURE, 36 REFERENCES, OCTOBER 10, 1967

KEYWORDS: ADSORPTION; DIFFUSION; DOSE; GEOLOGY; KRYPTON (SEE ALSO MOLE GAS); CONTAINMENT INTEGRITY; WASTE DISPOSAL, GAS; RADIATION SAFETY AND CONTROL; FUEL REPROCESSING; FUEL ELEMENTS

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PUB DATE: 1964

AUTHOR: TABURA, T.

TITLE: REACTIONS OF CESIUM-137 AND STRONTIUM-90 WITH SOIL MINERALS AND SESQUIOXIDES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: SELECTIVE ADSORPTION OF CESIUM IN HIGH CONCENTRATION RANGE IS STRONGLY FAVORED BY A 100 001 SPACING OF THE 2/1 LAYER LATTICE SILICATES. CHEMICAL AND HEAT TREATMENTS WHICH ALTER THE 001 SPACING OF THESE MINERALS CAN DRASTICALLY CHANGE THE DISTRIBUTION COEFFICIENT FOR CESIUM. THE INFLUENCE OF POTASSIUM TREATMENTS ON CESIUM ADSORPTION IN SOILS IS EXPLAINED ON THE BASIS OF THE LATTICE CONCEPT OF SELECTIVITY. ADSORPTION DATA FOR STRONTIUM ARE PRESENTED FOR SEVERAL REFERENCE CLAY MINERALS AND ACTIVATED ALUMINA. THE POSSIBLE SIGNIFICANT INFLUENCE OF SOIL SESQUIOXIDES IN ADSORPTION OF STRONTIUM FROM RADIOACTIVE WASTE SOLUTIONS IS SUGGESTED FROM DATA ON SOIL MATERIALS.

PUB DESC: ORNL-R-438, CONF-712-1, 25 PAGES, REFERENCES, AUGUST 31, 1964 FROM 6TH INTERNATIONAL CONGRESS ON SOIL SCIENCE, BUCHAREST, ROMANIA, AUGUST - SEPTEMBER 1964

KEYWORDS: CESIUM; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); STRONTIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE TREATMENT, LIQUID; ORNL; WASTE DISPOSAL, LIQUID; ION EXCHANGE; MINERAL EXCHANGE; ADSORPTION (SEE ALSO ADSORPTION)

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PUB DATE: 1967

AUTHOR: TAYLOR, R.W.; HOLOGER, A.B.

TITLE: RAPID SEPARATION OF STRONTIUM AND BARIUM

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: AN ANALYTICAL PROCEDURE IS DESCRIBED FOR THE RAPID DETERMINATION OF SR-89/90 IN THE PRESENCE OF BA/LA-140 AND OTHER FISSION PRODUCTS IN WASTE WATER FROM REACTOR ISOLATION BASINS, WHEN THE BA-140 CONCENTRATION IS GREATER THAN 25% OF THE SR-89/90 CONCENTRATION. THE METHOD CONSISTS OF A RAPID INORGANIC ION EXCHANGE SEPARATION OF BARIUM FROM STRONTIUM WITH PRECIPITATION OF SR(NO3)2 FROM FUMING NITRIC ACID INTO A 4-BE METHOD SUITABLE FOR PRE-RELEASE ANALYSIS OF WASTE WATER. DECONTAMINATION FACTORS FOR THE COMMON FISSION PRODUCTS ARE BETTER THAN 1000. THE RECOVERY OF ADDED STRONTIUM IS 95%, WITH A RELATIVE STANDARD DEVIATION OF +7% AT THE 90% CONFIDENCE LEVEL.

PUB DESC: HEALTH PHYSICS, 15(10), PAGES 25-29 3 FIGURES, TABLE, 6 REFERENCES, (JULY, 1968)

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KEYWORDS: DECONTAMINATION; SEPARATION; BARIUM;
STIMULATION; EFFLUENT; REACTOR; OPERATION; NITRIC ACID;
HEALTH PHYSICS; WASTE TREATMENT, LIQUID; ANALYTICAL
TECHNIQUE; ION EXCHANGE; PRECIPITATION; RADIATION
SAFETY AND CONTROL; REACTOR POWER; ENVIRONMENT

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PUB DATE: 1972

AUTHOR: TEO, B.P.

TITLE: THE TREATMENT OF CHEMICAL WASTE FROM A
PULPS PLANT

CORPORATE AUTHOR: DOUGLAS UNITED NUCLEAR, INC.

ABSTRACT: A METHOD FOR HANDLING AND DISPOSING OF PULPS PLANT LIQUID CHEMICAL WASTE WAS DEVELOPED IN WHICH SOLAR ENERGY IS USED FOR POOL VOLUME REDUCTION. THE BASIS UPON WHICH THE DESIGN OF SOLAR EVAPORATION PONDS WAS ESTABLISHED IS DISCUSSED. EXISTING, UNUSED FACILITIES WHICH WERE PLANNED FOR USE IN THE WASTE DISPOSAL SCHEME ARE DESCRIBED. ONE OF THE DESCRIBED TREATMENT AND FACILITIES PROVIDED COOLED OR SEMI-BOILED SLUDGS WHICH ARE RETAINED AND FULLY ISOLATED FROM THE ENVIRONMENT AND WHICH MAY BE READILY RECOVERED.

PUB DESC: CONF-721030, 4 TABLES, PP. 361-375, PAPER
PRESENTED AT THE AEC POLLUTIC CONTROL CONFERENCE,
HELD IN OAK, RIDGE, TENN. ON OCTOBER 25, 1972

KEYWORDS: WASTE HANDLING; WASTE TREATMENT, LIQUID;
WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; EVAPORATION;
FUEL REPROCESSING

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PUB DATE: 1971

AUTHOR: THIENE, A.; GOPP, D.L.; EICORE, E.W.

TITLE: A RADIOACTIVE LIQUID WASTE TREATMENT
FACILITY UTILIZING A WIPED-FILM EVAPORATOR

CORPORATE AUTHOR: U.S. ARMY ARSENAL RESEARCH AND
DEVELOPMENT CENTER, BALLISTIC RESEARCH LABORATORIES,
ARENBERG PROVING GROUND, MARYLAND

ABSTRACT: A RADIOACTIVE LIQUID WASTE CONCENTRATION
FACILITY UTILIZING WIPED-FILM EVAPORATION AND
MIXED-BED ION EXCHANGE TREATMENT HAS BEEN CONSTRUCTED
AND EVALUATED FOR THE U.S. ARMY. LOW-LEVEL WASTES TO
BE TREATED INCLUDE REACTOR PRIMARY COOLANT WATER,
LIQUID DECONTAMINATION WASTE GENERATED AT REACTOR
SITES, AND DECONTAMINATION, LABORATORY, AND LAUNDRY
WASTE GENERATED BY RESEARCH LABORATORIES UTILIZING
RADIOACTIVE ISOTOPES.

PUB DESC: AD-726901, 75 PAGES, FIGURES, TABLES,
REFERENCES, MARCH 1971

KEYWORDS: DECONTAMINATION; WASTE TREATMENT, LIQUID;
WASTE MANAGEMENT; EVAPORATION; ION EXCHANGE; SAFETY
EVALUATION; MILITARY; REACTOR, MILITARY

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PUB DATE: 1971

AUTHOR: THIENE, A.; GOPP, D.L.; EICORE, E.W.

TITLE: A RADIOACTIVE LIQUID WASTE TREATMENT
FACILITY UTILIZING A WIPED-FILM EVAPORATOR

CORPORATE AUTHOR: ARSENAL PROVING GROUND, MARYLAND

ABSTRACT: A RADIOACTIVE LIQUID WASTE CONCENTRATION
FACILITY UTILIZING WIPED-FILM EVAPORATION AND
MIXED-BED ION EXCHANGE TREATMENT HAS BEEN CONSTRUCTED
AND EVALUATED FOR THE U.S. ARMY. LOW-LEVEL WASTES TO
BE TREATED INCLUDE REACTOR PRIMARY COOLANT WATER,
LIQUID DECONTAMINATION WASTE GENERATED AT REACTOR
SITES, AND DECONTAMINATION, LABORATORY, AND LAUNDRY
WASTE GENERATED BY RESEARCH LABORATORIES UTILIZING
RADIOACTIVE ISOTOPES.

PUB DESC: BRL-1538, 100 PAGES, FIGURES, TABLES,
REFERENCES, MARCH 1971

KEYWORDS: DECONTAMINATION; LOW-LEVEL WASTE;

EFFLUENT; WASTE TREATMENT, LIQUID; REACTOR COOLANT;
WASTE SOURCE AND TYPE; BARIUM; WASTE MANAGEMENT; WASTE
TREATMENT, ECONOMICS; EVAPORATION; ION EXCHANGE;
RADIOISOTOPE; CONCENTRATION

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PUB DATE: 1970

AUTHOR: THOMPSON, R.J.; HENDEL, J.F.; HARTON,
C.; IRBY, R.M.; SLEIPETER, J.H.

TITLE: WASTE SOLIDIFICATION DEMONSTRATION PROGRAMS.
EXPERIMENT TECHNIQUES FOR CHARACTERIZATION OF HIGH
LEVEL RADIOACTIVE SOLIDIFIED WASTE

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY,
RICHLAND, WASHINGTON

ABSTRACT: OBJECTIVE OF THE PROGRAM IS TO PROVIDE
THE TECHNOLOGICAL BASIS WHICH WILL ENABLE INDUSTRY TO
CONVERT THE HIGH-LEVEL LIQUID WASTE FROM THE
REPROCESSING OF NUCLEAR FUEL TO A SAFED SOLID FORM.
THE WORK HAS COLLABORATED IN THE OPERATION OF THE WASTE
SOLIDIFICATION ENGINEERING PROTOTYPES BY
BATTILLE-NORTHWEST, WHEREIN ENGINEERING-SCALE
RADIOACTIVE DEMONSTRATIONS ARE BEING CONDUCTED WITH
THREE ALTERNATIVE SOLIDIFICATION SYSTEMS - PHOSPHATE
GLASS, SPRAY SOLIDIFICATION AND POT CALCINATION. BASIC
OBJECTIVES OF THE PROGRAM ARE TO DETERMINE THE
CHARACTERISTICS OF THE SOLIDIFIED WASTE PRODUCTS AND
EVALUATE THE SAFETY AND ECONOMIC ASPECTS OF THE
PRODUCT CHARACTERISTICS AS RELATED TO THE MANAGEMENT
OF HIGH LEVEL RADIOACTIVE WASTES.

PUB DESC: BNWL-1025, 75 PAGES, FIGURES, TABLES,
REFERENCES, JUNE 1970

KEYWORDS: CALCINATION; HIGH-LEVEL WASTE; BATTILLE
NORTHWEST; WASTE TREATMENT, LIQUID; BNL; BNWL;
PHOSPHATE; WASTE DISPOSAL, SOLID; GLASS (SEE ALSO
VITRIFICATION); SPRAY; WASTE DISPOSAL, SALT; FUEL
REPROCESSING; SOLID

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PUB DATE: 1972

AUTHOR: THOMPSON, T.K.; LONSE, G.E.; WHEELER, D.B.

TITLE: FLUIDIZED BED CALCINATION OF RADIOACTIVE
WASTES USING IN-BED COMBUSTION HEATING

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION

ABSTRACT: THE FLUIDIZED-BED WASTE CALCINING
FACILITY (WCF) AT THE IDAHO CHEMICAL PROCESSING PLANT
HAS BEEN SUCCESSFULLY CONVERTED FROM A LIQUID-METAL
HEATING SYSTEM TO A NEW SYSTEM CALLED IN-BED
COMBUSTION, WHERE A HYDROCARBON FUEL IS BURNED
DIRECTLY IN THE FLUIDIZED BED TO SUPPLY THE HEAT
NECESSARY TO CALCINE RADIOACTIVE WASTES. SIGNIFICANT
ACCOMPLISHMENTS DEMONSTRATED DURING THE FIRST
PROCESSING CAMPAIGN USING IN-BED COMBUSTION HEATING
WERE AN OBTAINMENT OF 100% OVER THE TOTAL RUN
DURATION OF 156 DAYS OF RADIOACTIVE OPERATION, A
CAPACITY INCREASE OF ABOUT 15%, AND DEMONSTRATION OF
THE SAFETY AND RELIABILITY OF THE PROCESS AND CONTROL
SYSTEMS.

PUB DESC: NUCLEAR TECHNOLOGY, VOL. 16, PP. 394-405
6 TABLES, 8 FIGURES, 10 REFERENCES, (NOVEMBER 1972)

KEYWORDS: CALCINATION; IDAHO; WASTE TREATMENT,
LIQUID; WASTE DISPOSAL, SOLID; HAZAROUS ANALYSIS; WASTE
MANAGEMENT; COMBUSTION; FLUIDIZED BED; SAFETY
EVALUATION

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PUB DATE: 1969

AUTHOR: THOMPSON, T.K.

TITLE: DEVELOPMENT OF IN-BED COMBUSTION HEATING FOR
CALCINATION OF RADIOACTIVE WASTES

CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION,
NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO

ABSTRACT: IN-BED COMBUSTION, THE BURNING OF A
HYDROCARBON FUEL DIRECTLY IN A FLUIDIZED BED, IS BEING

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INVESTIGATED AS A METHOD OF SUPPLYING HEAT FOR FLUORINATED-AND CALCINATION OF RADIOACTIVE LIQUID WASTES IN THE WASTE CALCINATING FACILITY AT THE IDAHO CHEMICAL PROCESSING PLANT. RESULTS FROM DEVELOPMENT STUDIES INDICATE THAT IN-PILE COMBUSTION CAN BE EMPLOYED ADVANTAGEOUSLY IN THE EXISTING WASTE CALCINATING FACILITY.

PUB DESC: IN-1278, 25 PG, 11 FIGURES, 6 TABLES, 12 REFERENCES, JULY 1969

KEYWORDS: FAILURE, EQUIPMENT; FIBRILIZED BED; ICAHO FALLS; ATMOSPHERIC POLLUTION; WASTE STORAGE; WASTE TREATMENT; CALCINATION; WASTE DISPOSAL, SOLID; HIGH TEMPERATURE; COMBUSTION; RADIOCHEMICAL PROCESSING; VOLATILITY PROCESS; COMBUST

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PUB DATE: 1972

AUTHOR: TUTT, P.T.

TITLE: A SYSTEM FOR SOLIDIFICATION AND PACKAGING OF RADIOACTIVE WASTE AT A PWR

ABSTRACT: DESCRIBES A SOLID RADIOACTIVE WASTE PROCESSING, SOLIDIFICATION, AND PACKAGING SYSTEM AT A TWO-UNIT, 900-MW, PRESSURIZED-WATER REACTOR SITE. DETAILS OF WASTE SOURCES, PROCESS FLOW, EQUIPMENT ARRANGEMENT, OPERATIONS, AND ANNUAL OPERATING COSTS ARE DISCUSSED.

PUB DESC: CECN DIGEST, 28(9), P. 7 (SEPTEMBER 1972)

KEYWORDS: REACTOR, PWR; PACKAGING; WASTE HANDLING; WASTE TREATMENT, SOLID; WASTE TREATMENT, ECONOMICS; WASTE TREATMENT, EQUIPMENT; ON SITE

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PUB DATE: 1972

AUTHOR: TUTT, P.T.; SIEGHEAR, L.H.; HOLDT, G.H.

TITLE: A SYSTEM FOR SOLIDIFICATION AND PACKAGING OF RADIOACTIVE WASTE AT A PWR

CORPORATE AUTHOR: BATTTEL NUCLEAR AND DEVELOPMENT CORPORATION; BATTTEL GAS AND ELECTRIC COMPANY; BATTTEL CORPORATION

ABSTRACT: DESCRIBES A SOLID RADIOACTIVE WASTE PROCESSING, SOLIDIFICATION, AND PACKAGING SYSTEM AT A TWO-UNIT 900-MW, PRESSURIZED-WATER-REACTOR SITE. THE SYSTEM DESCRIBED HERE DIFFERS FROM MOST SUCH SYSTEMS IN THAT RESINS, FILTER CARTRIDGES, AND EVAPORATOR CONCENTRATES CAN BE PACKAGED IN THE SAME LARGE DISPOSABLE CONTAINER (80-176 CUBIC FEET) WITHIN A SHIELDED SHIPPING CASE. DETAILS WITH REGARD TO WASTE SOURCES, PROCESS FLOW, EQUIPMENT ARRANGEMENT, OPERATIONS AND ANNUAL OPERATING COSTS ARE DISCUSSED.

PUB DESC: AMERICAN POWER CONFERENCE, CHICAGO, ILLINOIS, APRIL 18-20, 1972, 30TH MEETING, 15 PAGES, 2 FIGURES, 2 TABLES

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); CONTAINERS (SEE ALSO PACKAGING); PACKAGING; REACTOR, PWR; TRANSPORTATION AND HANDLING; OPERATING EXPERIENCE; WASTE DISPOSAL, SOLID; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1965

AUTHOR: TUTTILL, E.J.; VETH, G.C.; ERBA, L.C.; STRICKLAND, G.; BRICH, I.P.

TITLE: BROOKHAVEN NATIONAL LABORATORY PROCESS FOR THE CONTINUOUS CONVERSION OF HIGH-LEVEL RADIOACTIVE WASTE TO PHOSPHATE GLASS

CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, UFGW, NEW YORK

ABSTRACT: THE CONVERSION OF HIGH-LEVEL RADIOACTIVE WASTES TO PHOSPHATE GLASS OFFERS A PROMISING MEANS OF INCORPORATING FISSION PRODUCTS IN STABLE MEDIA SUITABLE FOR ULTIMATE DISPOSAL. IN THE BROOKHAVEN

PROCESS, PHOSPHORIC ACID IS ADDED TO THE AQUEOUS WASTE AND THE SOLUTION CONVERTED TO PHOSPHATE GLASS IN A CONTINUOUS OPERATION UPON RAISING THE TEMPERATURE IN TWO STEPS TO 1000-1200 C. THE PROCESS HAS BEEN TESTED ON A PILOT PLANT SCALE FOR SOME 3000 HOURS. THE REPORT PRESENTS THE RESULTS OF THE BROOKHAVEN INVESTIGATION OF THE DEVELOPMENT OF THE PHOSPHATE GLASS PROCESS WITH EMPHASIS ON THE PERFORMANCE CHARACTERISTICS OF THE INDIVIDUAL PROCESS UNITS.

PUB DESC: BNL-10109 CONF-660208-16, 36 PAGES, 1965, PRESENTED AT SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

KEYWORDS: WASTE DISPOSAL; PHOSPHATE GLASS; HIGH-LEVEL WASTE; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1966

AUTHOR: UPSCH, U.L.

TITLE: FIXATION OF HIGH-LEVEL RADIOACTIVE WASTES IN PHOSPHATE GLASS--HOT CELL GLASS EFFICIENT

CORPORATE AUTHOR: BATTTEL NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: PHOSPHATE GLASS WAS PRODUCED FROM ACTUAL, HIGHLY RADIOACTIVE FUEL-REPROCESSING WASTE, DEMONSTRATING THE TECHNICAL FEASIBILITY PROCESS, AN AQUEOUS WASTE IS CONVERTED DIRECTLY TO A PHOSPHATE GLASS, WITH NO INTERMEDIATE DRYING OR CALCINATION STEP. THE CONVERSION TO GLASS YIELDS A WASTE-PRODUCT VOLUME OF ABOUT 5 GAL PER TON OF URANIUM PROCESSED, A 15- TO 20-PCB REDUCTION FROM THAT OF CURRENTLY STORED LIQUID PAPER WASTES. IN THIS DEMONSTRATION, AGED PUREX 100 WASTE, DEFICIENT IN CE-100 AND Z'-90-95 HAS 400 Curies OF GAMMA ACTIVITY PER LITER AND PRODUCING ABOUT 20 W OF THERMAL POWER PER LITER.

PUB DESC: BNWL-200 + CONF-660208-9, 69 PAGES, 28 FIGURES, 12 REFERENCES, 12 TABLES- JANUARY 1966 FROM SYMPOSIUM AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASH.

KEYWORDS: WASTE STORAGE; GLASS (SEE ALSO VITRIFICATION); WASTE TREATMENT, FIXATION; WASTE MANAGEMENT; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1965

AUTHOR: UPSCH, U.L.; VETH, G.C.

TITLE: FIXATION OF HIGH-LEVEL RADIOACTIVE WASTES IN PHOSPHATE GLASS

CORPORATE AUTHOR: BATTTEL NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THE BROOKHAVEN PROCESS FOR CONVERTING HIGH-LEVEL AQUEOUS FUEL REPROCESSING WASTE DIRECTLY TO A PHOSPHATE GLASS, WITHOUT AN INTERMEDIATE DRYING STEP, HAS DEMONSTRATED WITH ACTUAL PUREX 100 WASTE. A SMALL-SCALE PILOT PLANT WAS RECENTLY INSTALLED IN A HOT CELL CONTAINING THE EQUIPMENT FROM A PRECEDING STUDY ON WASTE CALCINATION. TECHNICAL FEASIBILITY OF THE PROCESS WAS TESTED, OPERATING CHARACTERISTICS WERE OBSERVED, AND THE CRY-GAS DECONTAMINATION PROBLEM EVALUATED. SAMPLES OF GLASS WERE PRODUCED FOR OBSERVATION AND EVALUATION OF STABILITY AND CHEMICAL DURABILITY.

PUB DESC: BNWL-3A-564, CONF-660208-10, 22 PAGES, FEBRUARY 1, 1965, PRESENTED AT SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

KEYWORDS: WASTE DISPOSAL; PHOSPHATE GLASS; WASTE TREATMENT, FIXATION; WASTE TREATMENT, LIQUID; WASTE TREATMENT, SOLID; BATTTEL NORTHWEST; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1970
AUTHOR: VAN DE VOCHT, D.; FERTIGS, K.

TITLE: DEVELOPMENTS IN TREATMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE LIQUID WASTE AT MOL

CORPORATE AUTHOR: BELGISCHE LAFIRE, MOL, BELGIUM

ABSTRACT: DISCUSSES PROBLEM OF DEVELOPMENT OF SUFFICIENT ION EXCHANGER TO HANDLE THE PROCESSING OF LOW-LEVEL WASTES.

PUB DESC: SN-137/65, STI/PUB-260, CONF700905: 65 PAGES, 26 FIGURES, 10 TABLES. PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTE, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: FRANCE; INTERMEDIATE-LEVEL WASTE; LOW-LEVEL WASTE; IAEA; WASTE TREATMENT; WASTE MANAGEMENT; ION EXCHANGER

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PUB DATE: 1966
AUTHOR: VAN DE VOCHT, D.; DEJONGHE, P.

TITLE: INSOLUBILIZATION OF RADIOACTIVE CONCENTRATES BY INCORPORATION INTO ASPHALT

CORPORATE AUTHOR: MOL, BELGIUM. CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE

ABSTRACT: A PROCESS WAS DEVELOPED FOR FIXING RADIOACTIVE CONCENTRATES (LIQUIDS OR SOLIDS) WITH LIQUID ASPHALT AT 250 C. THE WATER EVAPORATES AND IS REMOVED BY CONDENSATION. THE HOMOGENEOUS MIXTURE PRODUCED IS Poured INTO METAL DRUMS WHERE IT COOLS TO A SOLID BUTON IS EXCEPTIONALLY RESISTANT TO LEACHING. A DUAL-PURPOSE INSTALLATION WHICH SERVES BOTH AS A PRODUCTION UNIT HANDLING 30 CU. METERS/HR AND AS AN EXPERIMENTAL UNIT FOR RESEARCH OF THE PROCESS WAS BUILT.

PUB DESC: ORNL-TD-1031, STI/PUB/116, SN/71/4, 36 PAGES, TRANSLATED BY R. G. BAUSFIELD (OAK RIDGE NATIONAL LAB., TENN.), FROM PP. 565-57 OF STI/PUB/116

KEYWORDS: WASTE TREATMENT; FIXATION; ASPHALT; WASTE TREATMENT, LIQUID; BELGIUM; WASTE TREATMENT, SOLID

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PUB DATE: 1968
AUTHOR: VAN DER BOSSCHE, A.

TITLE: EXTRACTION OF FISSION PRODUCTS FROM HIGHLY RADIOACTIVE WASTE

CORPORATE AUTHOR: INGENIEURGENGENSCHAFT KERNVERFAHRESTECHNIK ICK, COPTROBE, GERMANY

ABSTRACT: THE SEPARATION OF HIGHLY RADIOACTIVE FISSION PRODUCTS RAISES CONSIDERABLE THE PROBLEM OF THE STORAGE AND DISPOSAL OF RADIOACTIVE WASTE. LIQUID HIGHLY ACTIVE WASTE FROM REPROCESSING PLANTS MUST BE STORED IN CONTAINERS WHICH, BECAUSE OF THE NECESSARY COOLING PLANTS AND FILTERED VENTILATION SYSTEMS, entail high costs. TWO RADIOISOTOPES FROM THE WASTE FISSION PRODUCT SOLUTION ARE HEATING A STEADILY GROWING DEMAND - CESIUM-137 AND STRONTIUM-90. VARIOUS PRECIPITATION PROCESSES, ION-EXCHANGE PROCESSES, AND SOLVENT EXTRACTION PROCESSES WERE CARRIED OUT WITH BOTH THESE RADIOACTIVE SUBSTANCES.

PUB DESC: ATOMWIRT., ATOMTECH., 13, PAGES 453-4 (AUG.-SEPT. 1968), IN GERMAN

KEYWORDS: CESIUM; STRONTIUM; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; FISSION PRODUCT, SEPARATION; HIGH-LEVEL WASTE; ION EXCHANGE; PRECIPITATION; SOLVENT EXTRACTION; FUEL REPROCESSING

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PUB DATE: 1966
AUTHOR: VERKORNOV, V.

TITLE: TREATMENT OF AEROSOLS AND VOLATILIZATION PRODUCTS DURING WASTE PROCESSING OPERATIONS

ABSTRACT: THE MEETING, ATTENDED BY REPRESENTATIVES OF SEVERAL COUNTRIES, WAS HELD IN TURKEY. PARTICIPANTS DISCUSSED PROCESSES FOR WHICH THE PROPER CHOICE AND OPERATION OF A GAS PURIFICATION SYSTEM IS OF VERY GREAT IMPORTANCE, E.G., THE PROCESSING OF HIGH-ACTIVITY LIQUID WASTES, THE INCUBERATION OF SOLID RADIOACTIVE WASTES, AND THE INCUBERATION OF LOW- AND MEDIUM-ACTIVITY WASTES IS DISCUSSED.

PUB DESC: AT. ENERGY, REV. 5(2), PAGE 173-176, (DECEMBER 1966)

KEYWORDS: ADSORPTION; USSR; WASTE TREATMENT, LIQUID; WASTE TREATMENT, GAS; WASTE TREATMENT, SOLID; AEROSOL, RADIOACTIVE; INCUBERATION; TURKEY; FILTERS

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PUB DATE: 1972
AUTHOR: VOSTRIL, J.

TITLE: APPLICATION OF ORGANIC FLOCCULANTS TO THE DECONTAMINATION OF RADIOACTIVE CONTAMINATED WATERS BY COAGULATION

CORPORATE AUTHOR: STAATLICHE ZEITSCHRIFT FÜR STRAHLENSCHUTZ, GERMANY

ABSTRACT: DEALS WITH THE EFFECT OF ORGANIC FLOCCULANTS ON WATER DECONTAMINATION BOTH BY FERRIC CHLORIDE COAGULATION AND BY A TWO-STAGE PROCESS - LINE-SODA SOFTENING WITH SUBSEQUENT FERRIC CHLORIDE COAGULATION. THE USE OF OPTIMUM AMOUNTS OF ORGANIC FLOCCULANTS FOR IMPROVING THE REMOVAL OF TURBIDITY, FOR BETTER SEDIMENTATION AND SEPARATION OF FLOCS FORMED DURING COAGULATION WAS INVESTIGATED. THE EFFECT OF ORGANIC FLOCCULANTS WAS STUDIED BOTH BY MEANS OF JAR TESTS AND WITH A MODEL OF FLOC BLANKET CLARIFIER. OPTIMUM AMOUNTS OF ORGANIC FLOCCULANTS FOR GIVEN PROCESSES REDUCE PRINCIPALLY FINAL TURBIDITY OF THE TREATED WATER AND BY THIS IMPROVES THE REMOVAL OF THOSE RADIOISOTOPES THAT ARE PRESENT IN WATER IN COLLOIDAL FORM OR THAT WERE INCORPORATED INTO THE FORMED FLOCS.

PUB DESC: SZS-129, 58 PAGES, 32 FIGURES, 7 TABLES, 69 REFERENCES, APRIL 1972

KEYWORDS: CHEMICAL ACTION; DECONTAMINATION; WASTE TREATMENT; WATER; IRON; COALESCENCE; CHLORIDE; MODEL; ORGANIC

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PUB DATE: 1972
AUTHOR: VIGER, H.; HERZ, E.; LASER, H.

TITLE: OFF-GAS TREATMENT AND KRYPTON DISPOSAL IN HTGP-FUEL ELEMENT REPROCESSING

CORPORATE AUTHOR: KERNFORSCHUNGSANLAGE, INSTITUT FÜR KERNISCHE TECHNOLOGIE, JUELICH, GERMANY

ABSTRACT: KRYPTON, TRITIUM, AND IODINE ARE SEPARATED FROM RUBBER OFF-GAS BY CO₂-LIQUIDIFICATION AND RECTIFICATION AT ROOM TEMPERATURE. KRYPTON IS CONCENTRATED IN THE LOWER BOILING FRACTION, WHILE TRITIUM AND IODINE ARE CONCENTRATED IN THE HIGHER BOILING FRACTION (AKUT-PROCESS). THE DISSOLVED OFF-GAS IS DECONTAMINATED BY A CRYOGENIC PROCESS. BASED ON SAFETY AND ECONOMY, THE DISPOSAL OF COMPRESSED KRYPTON CONTAINED IN STEEL CYLINDERS BY DUMPING IN THE DEEP SEA IS PREFERRED TO THE LONG TERM OVERGROUND BUFFER STORAGE.

PUB DESC: CRRP-721107, 19 PAGES, 5 TABLES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: IODINE; KRYPTON (SEE ALSO WORKS GAS); TRITIUM; WASTE DISPOSAL, OCEAN; WASTE TREATMENT; WASTE TREATMENT, ECONOMICS; OFF GAS; SAFETY EVALUATION

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PUB DATE: 1970
AUTHOR: YAMAGUCHI, T.

TITLE: RADIOACTIVE WASTE TREATMENT IN TOKAI RESEARCH ESTABLISHMENT OF JAPAN ATOMIC ENERGY RESEARCH INSTITUTE

CORPORATE AUTHOR: JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKYO

ABSTRACT: SUMMARIZES TYPES AND AMOUNTS OF RADIOACTIVE WASTES IN TOKAI RESEARCH ESTABLISHMENT. OPERATIONAL RECORDS OF THE FACILITIES ARE GIVEN. REPORTS ON COLLECTION, TRANSPORTATION, TREATMENT, AND DISPOSAL OF WASTES FROM OTHER ORGANIZATIONS. THE MAJOR PROBLEMS OF WASTE TREATMENT AND DISPOSAL ARE DESCRIBED.

PUB DESC: SN-137/25, STL/FWD-264, COM-700905, 15 PAGES, 6 TABLES, 5 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; INVENTORY; LAW; TRANSPORTATION AND HANDLING; WASTE DISPOSAL; WASTE TREATMENT; WASTE MANAGEMENT; JAPAN; GAINING EXPERIENCE

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PUB DATE: 1963
AUTHOR: WHIZZLER, E.R.; DUCKMAN, J.A.; OCHSNER, J.A.

TITLE: A COMPARISON OF VARIOUS CALCINATION PROCESSES FOR HIGH-LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: PHILLIPS PETROLEUM COMPANY

ABSTRACT: FOUR MAJOR CALCINATION PROCESSES - FLUIDIZED BED, FCT, RADIANT-HEAT SBRAY, AND POTASH-BALL KILN - ARE BEING DEVELOPED FOR DISPOSITION OF HIGH-ACTIVITY WASTE SOLUTIONS. THIS REPORT ATTEMPTS TO REDUCE THE PUBLISHED INFORMATION TO A COMMON BASIS. USING PROVEN TECHNIQUES THE NET OFF-GAS RELEASE PER UNIT OF WASTE CAN BE SIMILAR FOR ALL CALCINERS. END PRODUCTS NOW ATTAINABLE ARE- 1) GRANULAR MATERIALS FROM FLUIDIZED BED, RADIANT-HEAT SBRAY, OR POTASH-BALL KILN CALCINERS- 2) CELLULOSIC MATERIAL FROM POT CALCINERS- 3) GLASSES MADE FROM PRIMARY PRODUCT OF ANY CALCINER BY EMPLOYING ADDITIVES.

PUB DESC: COM-107-13 2 PAGES, 1 TABLE- INCLUDED IN TID-7602- TRANS. AMERICAN NUCLEAR SOCIETY, 6- 409-810 (OCTOBER 1963) - AUS REVIEWING, NEW YORK, NOVEMBER 1963

KEYWORDS: EFFLUENT; WASTE DISPOSAL; WASTE HANDLING; WASTE TREATMENT; FIATON; THERMAL CONSIDERATION; WASTE TREATMENT, ECONOMICS

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PUB DATE: 1963
AUTHOR: WHIPPLE, B.T.

TITLE: CONSIDERATIONS ON THE SITING OF OUTFALLS FOR THE SEA DISPOSAL OF RADIOACTIVE EFFLUENT IN TIDAL WATERS

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, BANWELL

ABSTRACT: FACTORS RELATING TO THE SITING OF OUTFALLS FOR THE SEA DISPOSAL OF RADIOACTIVE EFFLUENT ARE DISCUSSED. THEORETICAL PREDICTIONS ARE COMPARED WITH OBSERVATIONS. BOTH TRANSPORT AND DISPERSION OF ACTIVITY BY VARIOUS PROCESSES ARE DISCUSSED.

PUB DESC: INTERNATIONAL J. AIR WATER POLLUTION, 7(8)- 18 PAGES, 12 FIGURES- 889-906 (1963)

KEYWORDS: EFFLUENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); SITING, WASTE DISPOSAL; SURFACE WATER; SURVEY, ENVIRONMENT; WASTE DISPOSAL, OCEAN; HAZARD ANALYSIS

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PUB DATE: 1968
AUTHOR: YAMAMOTO, T.; HITSUISHI, S.; SANOYA, S.

TITLE: DESIGN AND OPERATION OF EVAPORATORS FOR RADIOACTIVE WASTES

CORPORATE AUTHOR: UNIVERSITY OF TOKYO, JAPAN ; UNIVERSITY OF TSUBUKI ; ISADA MANUFACTURING COMPANY, TOKYO, JAPAN

ABSTRACT: A MANUAL DEALING WITH THE APPLICATION OF EVAPORATORS TO THE TREATMENT OF RADIOACTIVE WASTES. THIS BOOK IS THE SECOND OF THREE COMMISSIONED BY THE IAEA ON THE THREE PRINCIPAL TECHNIQUES FOR CONCENTRATING RADIOACTIVE WASTES, NAMELY CHEMICAL PRECIPITATION, EVAPORATION, AND ION-EXCHANGE. CONTENTS - INTRODUCTION, DESIGN AND DESCRIPTION OF EVAPORATOR TYPES AND ASSOCIATED EQUIPMENT OPERATIONAL PROCEDURES, DISPOSAL OF EVAPORATOR CONCENTRATES, COSTS, BIBLIOGRAPHY, APPENDICES I, II, AND III.

PUB DESC: STL/DOC/10/87, 115 PAGES, FIGURES, TABLES, 1968

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); DESIGN CRITERIA; IAEA; OPERATION; PROCEDURES AND MANUALS; WASTE DISPOSAL; WASTE TREATMENT, LIQUID; CONDENSATION; WASTE TREATMENT, ECONOMICS; EVAPORATION; EQUIPMENT

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PUB DATE: 1970
AUTHOR: YEE, W.C.; DELORA, P.; SNOOKLEY, W.E.

TITLE: LOW-LEVEL RADIOACTIVE WASTE TREATMENT - THE WATER RECYCLE PROCESS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TN

ABSTRACT: THE WATER RECYCLE PROCESS WAS DEVELOPED FOR DECONTAMINATING LOW-LEVEL RADIOACTIVE AQUEOUS WASTES AND RECYCLING THE PURIFIED WATER FOR REUSE AT NUCLEAR INSTALLATIONS. THIS PROCESS WAS SUCCESSFULLY DEMONSTRATED THROUGH SEVERAL CYCLES IN A MICRO-PILOT PLANT, USING COOL WASTE THAT CONTAINED LOW CONCENTRATIONS OF SALTS AND RADIOISOTOPES. THE RECYCLE OF WATER SHOULD BE AN IMPROVEMENT OVER PRESENT METHODS IN WHICH THE WASTES ARE DECONTAMINATED AND THE PURIFIED WATER IS DISCHARGED TO THE ENVIRONMENT.

PUB DESC: OBNL-0472, 30 PAGES, JULY 1970

KEYWORDS: CALCIUM; LOW-LEVEL WASTE; WATER; ENVIRONMENT; COBALT; DECONTAMINATION; DUTHERIUM; WASTE TREATMENT, LIQUID; OBNL; PHOSPHATE; ION EXCHANGE; RECOVERY PROCESS; FLOW, RECIRCULATION

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PUB DATE: 1975

TITLE: TREATMENT OF RADIOACTIVE SLURRY AND STORAGE OF CONCENTRATED WASTE

ABSTRACT: A BOILING WATER REACTOR STATION IS USED TO DESCRIBE A TECHNICAL CONCEPT FOR HANDLING CONCENTRATED RADIOACTIVE WASTE FROM ITS ORIGIN IN THE WATER CLEAN-UP SYSTEMS TO THE FINAL STORAGE GROUND IN A SAFE AND ECONOMIC WAY USING METHODS WHICH ARE IN ACCORDANCE WITH THE APPLICABLE RULES AND REGULATIONS FOR TRANSPORT AND FINAL STORAGE. THE WAY IN WHICH THE SLURRY IS SOLICITED AND FILLED INTO DRUMS IS EXPLAINED. ONE-WAY CONCRETE CONTAINERS OR TRANSFER CASKS ARE USED FOR SOLICITING DURING TRANSPORT AND HANDLING AT THE FINAL STORAGE GROUND. LEACHING OUT IS PREVENTED BY THE USE OF CONCRETE CONTAINERS OR BY EMBEDDING THE DRUMS INTO BINDING MATERIAL WITHIN THE STORAGE CAVERN.

PUB DESC: NUCLEAR ENGINEERING INTERNATIONAL, 3 PAGES, 3 FIGURES, 20 (225), PP.108-110 (FEBRUARY 1975)

KEYWORDS: REACTOR, BWR; WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; SHIELDING

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PUB DATE: 1963

TITLE: HIGH-LEVEL RADIOACTIVE WASTES. METHODS OF TREATMENT AND STORAGE. AN INTERNATIONAL SYMPOSIUM.

PUB DESC: JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH/INDIA 22 PAGES 73-76 1963

KEYWORDS: WASTE DISPOSAL; REACTOR; RADIOISOTOPE; INTERNATIONAL (SEE ALSO ORGANIZATION); THERAPY; INSTRUMENTS, EISC.

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PUB DATE: 1972

AUTHOR: ANALBAJ, F.V.

TITLE: STORAGE TANKS FOR LIQUID RADIOACTIVE WASTES - THEIR DESIGN AND USE

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: THIS GUIDEBOOK IS INTENDED PRIMARILY FOR THE WASTE MANAGEMENT SPECIALISTS IN THOSE DEVELOPING COUNTRIES THAT HAVE NOT THE ADVANTAGE OF A WELL DEVELOPED ENGINEERING AND TECHNOLOGICAL BACKGROUND. THE INTENTION OF THE AUTHOR IS THAT THE BOOK SHOULD ASSIST THE SPECIALIST TO (1) VISUALIZE THE PROBLEMS ASSOCIATED WITH THE DESIGN OF STORAGE TANKS, (2) PREPARE DESIGN BRIEFS FOR SUCH SYSTEMS, AND (3) EVALUATE RESULTING DESIGN PROPOSALS. THIS THE BOOK DISCUSSES MAINLY THE DESIGN CRITERIA OF RADIOACTIVE WASTE STORAGE SYSTEMS.

PUB DESC: STI/DOC-10/135, 55 PAGES, 3 TABLES, 15 FIGURES, 45 REFERENCES, 1972

KEYWORDS: DECONTAMINATION; EDUCATION (SEE ALSO RADIATION, PUBLIC EDUCATION); DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); GUIDE; GEOLOGY; WASTE STORAGE; WASTE TREATMENT; REACTOR, POWER; WASTE MANAGEMENT; IAEA; STORAGE CONTAINER; SHIELDING; MONITORING SYSTEM; RADIATION; SAFETY EVALUATION; LEAK; RADIATION MONITORS

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PUB DATE: 1972

AUTHOR: ANALBAJ, F.V.

TITLE: STORAGE TANKS FOR LIQUID RADIOACTIVE WASTES - THEIR DESIGN AND USE

ABSTRACT: THIS BOOK DISCUSSES THE DESIGN CRITERIA OF RADIOACTIVE WASTE STORAGE SYSTEMS. CHAPTER HEADINGS INCLUDE - NATURE OF RADIOACTIVE LIQUID WASTES AND THEIR STORAGE; CONSIDERATIONS FOR DESIGN OF WASTE STORAGE TANKS; DESIGN AND CONSTRUCTION OF WASTE STORAGE TANKS; OPERATING TECHNIQUES; SHIELDING OF WASTE STORAGE TANKS; ENVIRONMENTAL SAFEGUARDS; SUMMARY OF EXPERIENCE AND COSTS.

PUB DESC: CERN DIGEST, 1 PAGE, 24(9), P. 7 (SEPTEMBER 1972)

KEYWORDS: DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE STORAGE; WASTE DISPOSAL, LIQUID; STORAGE CONTAINER; SHIELDING; MONITORING PROGRAM, ENVIRONMENTAL; OPERATION; EXPERIENCE

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PUB DATE: 1962

AUTHOR: ARGONNE NATIONAL LABORATORY (U.S.A.)

TITLE: HAZARDS EVALUATION OF TANK STORAGE

CORPORATE AUTHOR: ARGONNE NATIONAL LAB.

ABSTRACT: A REVIEW IS MADE OF THE PROGRESS IN DEVELOPMENT OF RADIOACTIVE WASTE DISPOSAL METHODS. TOPICS INCLUDED IN THE REVIEW INCLUDE- HAZARDS EVALUATION OF TANK STORAGE- CONVERSION OF HIGH-LEVEL-ACTIVITY WASTES TO SOLIDS BY POT CALCINATION, SPRAY CALCINATION, FLUID-BED CALCINATION, AND CONVERSION TO GLASSES- ADSORPTION OF LIQUID WASTES ON ION EXCHANGE MATERIALS- FINAL DISPOSAL BY STORAGE

IN SALT, HYDROFRACTURING IN SHALE, INJECTION INTO POROUS STRATA THROUGH DEEP WELLS, AND SEA DISPOSAL- AND SEPARATION OF SPECIFIC ISOTOPIES.

PUB DESC: REACTOR FUEL PROCESSING, 5(2)- 3 PAGES, 1 FIGURE, 2 REFERENCES- 00-02 (APRIL 1962)

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; REVIEW; WASTE TREATMENT

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PUB DATE: 1972

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: STORAGE OF RADIOACTIVE WASTE IN BEDROCK SURFACE EXPLORATION, SAVANNAH RIVER PLANT, Aiken, SOUTH CAROLINA

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: LONG-TERM ISOLATION OF THE HIGHLY RADIOACTIVE WASTES FROM MAN'S ENVIRONMENT HAS ALWAYS BEEN A HIGH PRIORITY OBJECTIVE OF THE USAEC. THE PRESENT METHOD OF STORING WASTES IN LARGE UNDERGROUND TANKS PROVIDES SAFE, RELIABLE CONTAINMENT OF THESE WASTES, BUT IS CONSIDERED ONLY AN INTERIM METHOD FOR STORAGE OF WASTES WHICH MAY BE KEPT ISOLATED FROM MAN'S ENVIRONMENT FOR CENTURIES (UNTIL THE RADIATION MATERIALS HAVE DECAYED TO ACCEPTABLE LEVELS). THE CONCEPT FOR MAINTAINING ISOLATION OF THE SMP'S RADIOACTIVE WASTES IS TO STORE THE WASTES IN CAVEANS IN THE BEDROCK BENEATH THE PLANT.

PUB DESC: WASH-1511, 30 PAGES, JANUARY 1972

KEYWORDS: WASTE STORAGE; SAVANNAH RIVER PLANT; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, RESEARCH

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PUB DATE: 1972

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DRAFT ENVIRONMENTAL STATEMENT - FUTURE HIGH LEVEL WASTE FACILITIES - SAVANNAH RIVER PLANT

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE FIRST PROPOSED ADDITION WILL CONSIST OF 1.3-MILLION-GALLON HIGH-ACTIVITY WASTE TANKS, AN EVAPORATOR, AND ASSOCIATED AUXILIARIES. COST IS 14-MILLION DOLLARS. ABOUT 20,000,000 GALLONS OF RADIOACTIVE LIQUID WASTE, INSOLUBLE SLUDGE, AND CRYSTALLIZED SALTS ARE STORED AT THE PLANT TANK FARMS, AND LIQUID WASTE CONTINUES TO BE GENERATED AT A RATE OF ABOUT 4,000,000 GALLONS PER YEAR.

PUB DESC: WASH-1520, 70 PAGES, DECEMBER 1972

KEYWORDS: WASTE STORAGE; ENVIRONMENT; SAVANNAH RIVER PLANT; MODIFICATION; REPORT, ENVIRONMENTAL; LICENSING

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PUB DATE: 1972

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DRAFT ENVIRONMENTAL STATEMENT - CALCINED SOLIDS STORAGE ADDITIONS - NATIONAL REACTOR TESTING STATION

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE PROPOSED STORAGE ADDITION WILL CONSIST OF STAINLESS-STEEL BINS IN A REINFORCED-CONCRETE VAULT, PROVIDING DOUBLE CONTAINMENT OF THE STORED SOLIDS. THE IMPACT OF THE ADDITION IS THE COMMITMENT OF ONE-HALF ACRE OF DESERT LAND, THE RELEASE OF A TRACE OF RADIOACTIVITY DURING FILLING, AND LOCALIZED WARMING FROM THE DECAY HEAT.

PUB DESC: WASH-1529, 61 PAGES, DECEMBER 1972

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KEYWORDS: DATE; ENVIRONMENT; WASTE STORAGE; DRAFT STATEMENT; ENVIRONMENTAL

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PUB DATE: 1970
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: MANAGEMENT OF RADIOACTIVE WASTE

CORPORATE AUTHOR: ATOMIC INDUSTRIAL FORUM, INC.

ABSTRACT: AEC CHIEF OF ENVIRONMENTAL AND SANITARY ENGINEERING COVERS WASTE-MANAGEMENT OPERATIONS. HE POINTS UP SAFETY TO EATE. OVER 90 MILLION GALLONS OF SOLUTIONS AND SLUDGES STORED IN 200 UNDERGROUND TANKS FOR ON-SITE STORAGE TO ALLOW DECAY OF HIGH-LEVEL WASTES. HE DESCRIBES AEC PLANS AND EFFORT IN SOLIDIFICATION PROCESSES AND SALT-MINE STORAGE (BECAUSE THEY ARE ALWAYS EXT. IMPERVIOUS TO WATER, AND NOT ASSOCIATED WITH USABLE SOURCES OF GROUND WATER. PROJECT SALT MINE DEMONSTRATED FEASIBILITY IN 1960S WHEN 6 MILLION CI WERE STORED. HE SAID THAT BY THE YEAR 2000 SOME 1000-3000 ACRES OF SALT AREA MAY BE REQUIRED, WHICH IS ONLY A SMALL FRACTION OF THE 600,000 SQ. MI. AREA THAT IS UNDERLAIN BY SALT IN THE US.

PUB DESC: INFO ISSUE NO. 27 (SUPPLEMENT), PG 5-6 (MAY 1976)

KEYWORDS: SITING; WASTE DISPOSAL; WASTE DISPOSAL; WASTE MANAGEMENT; DATA COLLECTION; SPOKESMAN, AEC

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PUB DATE: 1967
AUTHOR: FARRBERG, A.; ESCALIER, C.

TITLE: RADIOACTIVE WASTE STORAGE IN CAVITIES FORMED BY DISSOLUTION IN SALT - PRELIMINARY STUDIES

CORPORATE AUTHOR: CENTRE D'ETUDES NUCLEAIRES, COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE

ABSTRACT: THE POSSIBILITIES OF STORING RADIOACTIVE WASTE IN CAVITIES FORMED BY DISSOLUTION IN SALT DEPOSITS ARE DESCRIBED. THIS METHOD IS PARTICULARLY ATTRACTIVE BECAUSE OF THE CHARACTERISTICS OF ROCK SALT AND THE DEGREE OF SAFETY OFFERED. THE GEOLOGICAL AND TECHNOLOGICAL CONDITIONS AND THE SAFETY CRITERIA ARE DESCRIBED.

PUB DESC: STI/PDB-156, CCRP-670512, PAGES 495-500 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/NEEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: FRANCE; GEOLOGY; GROUND WATER; TECHNICAL SPECIFICATIONS; WASTE DISPOSAL, SALT; SAFETY ANALYSIS; ROCK MECHANICS

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PUB DATE: 1975
AUTHOR: DECHTOLD, W.

TITLE: DISPOSAL OF RADIOACTIVE WASTES, ANNUAL PROGRESS REPORT 1974

CORPORATE AUTHOR: INSTITUT FÜR KERNKLEBERUNG

ABSTRACT: THIS REPORT IS A JOINT EFFORT OF GESELLSCHAFT FÜR STRAHLENGE UNTERSUCHUNG UND NUCHEM AND GESELLSCHAFT FÜR KERNKLEBERUNG UND KAPLBERG, PRESENTING A SUMMARY OF THE WORK PERFORMED IN 1974 IN THE FIELD OF DISPOSAL OF RADIOACTIVE WASTE. THE MINING AND CONSTRUCTION WORK IS DISCUSSED, WHICH WAS CARRIED OUT BOTH UNDERGROUND AND ABOVE AT THE ASSE SALT MINE NEAR REHLINGEN AND WHICH WAS DONE FOR REPAIR, MAINTENANCE AND EXPANSION OF OPERATION IN ACCORDANCE WITH ITS FUTURE PURPOSE. THE DISPOSAL OF LOW LEVEL WASTES ON THE 750 M-LEVEL AND THE EXPERIMENTAL DISPOSAL OF INTERMEDIATE LEVEL WASTES ON THE 490 M-LEVEL WERE CONTINUED IN THE PERIOD UNDER REVIEW. THE MULTIPLE SHIELDED TRANSPORT CONTAINERS STV FOR SEVER 200 1-DRUMS DESIGNED BY GFM FOR SHIPMENT OF INTERMEDIATE LEVEL WASTES TO THE ASSE, WAS USED REGULARLY. FOR THE SINGLE SHIELDED TRANSPORT CONTAINER

22 AN APPROVAL CERTIFICATE FOR TYPE 2 PACKAGE DESIGN WAS ISSUED BY THE BAM. SUPPLEMENTARY EQUIPMENTS FOR THE EXISTING CONTAINERS WERE SUPPLIED. HOWEVER, THE REPORT GIVES INFORMATION ON THE PRESENT STATUS OF RESEARCH AND OF ITS RESULT. ALSO NEW STORAGE TECHNIQUES ARE REPORTED WHICH ARE CURRENTLY IN THE PLANNING STAGE.

PUB DESC: RFE-2236 1975 (DEC.)

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL, SALT; SALT (SEE ALSO REDDED SALT AND WASTE DISPOSAL, SALT); GERMANY; MINING; ASSE SALT MINE; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; TRANSPORT; CONTAINERS (SEE ALSO PACKAGING); SURVEY; STORAGE CONTAINER

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PUB DATE: 1976
AUTHOR: BIRCHER, C.L.; KRECHT, L.A.

TITLE: SEPARATION AND STORAGE OF KRYPTON

CORPORATE AUTHOR: ALLIED CHEMICAL CORP; IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO FALLS

ABSTRACT: KRYPTON-85 COLLECTION BY CRYOGENIC DISTILLATION AND STORAGE IN PRESSURIZED CYLINDERS IS CONSIDERED TO BE AN AVAILABLE TECHNOLOGY, BUT IN NEED OF APPROPRIATE DEMONSTRATION. CRYOGENIC DISTILLATION HAS BEEN USED FOR MANY YEARS AT LARGE-SCALE LIQUID-AIR PLANTS. DEMONSTRATION OF A HIGH-EFFICIENCY RECOVERY SYSTEM AT A FUEL-REPROCESSING PLANT WOULD BE NEEDED BEFORE COMMERCIAL FACILITIES COULD BE DESIGNED. PRESSURIZED STORAGE CYLINDERS HAVE ALSO BEEN USED FOR SEVERAL DECADES; THE ACCUMULATED TECHNOLOGY WOULD ONLY BE COMBINED WITH EXISTING TECHNIQUES FOR CONSTRUCTING SHIELDED STORAGE FACILITIES. METHODS THAT REQUIRE FURTHER DEVELOPMENT INCLUDE (1) 85KR COLLECTION BY LIQUID FLUOROCARBON ABSORPTION AND (2) ENCAPSULATION IN SOLIDS. PILOT-PLANT TESTS ON MAJOR VARIATIONS OF A FLUOROCARBON ABSORPTION SYSTEM INDICATE A SIGNIFICANT REDUCTION IN THE DEGREE OF OFFGAS CLEANUP REQUIRED IN COMPARISON TO THAT FOR CRYOGENIC DISTILLATION. LABORATORY TESTS ON 85KR ENCAPSULATION IN ZEOLITES INDICATE THAT 85KR LEAKAGE IS VERY SLOW EVEN AT ELEVATED STORAGE TEMPERATURES AND MAY AMOUNT TO ONLY A FRACTION OF A PERCENT OVER SEVERAL CENTURIES IF THE LEAK RATE IS ASSUMED TO BE CONSTANT.

PUB DESC: CONF.-76-0701, JULY 11-16, 1976, DENVER, COLORADO

KEYWORDS: WASTE TREATMENT; WASTE STORAGE; KRYPTON (SEE ALSO NOBLE GAS); GAS; STORAGE CONTAINER; FUEL REPROCESSING; TECHNOLOGY; RESEARCH AND DEVELOPMENT (SEE ALSO R AND D PROGRAM); FLUOROCARBONS; ABSORPTION (SEE ALSO ADSORPTION); SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.);

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PUB DATE: 1972
AUTHOR: BIGGEE, J.O.; PERONA, J.J.

TITLE: A PRELIMINARY STUDY OF THE STORAGE OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTES IN CONCRETE VAULTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: CONCRETE VAULTS OFFER A SAFE, RELIABLE MEANS OF STORING HIGH-LEVEL SOLIDIFIED WASTES FOR MANY DECADES UNTIL A METHOD FOR THE PERMANENT DISPOSAL OF THESE MATERIALS CAN BE SELECTED. A DESIGN STUDY WAS MADE OF VAULTS WHICH UTILIZED NATURAL DRAFT AIR COOLING OF WASTES THAT WERE PACKAGED IN 6- AND 12-IN.-DIAM CONTAINERS AND ENCLOSED IN CYLINDRICAL STEEL SLEEVES. THE OPTIMAL SPACING FOR THE CONTAINERS WAS FOUND TO BE THE CLOSEST ONE CONSIDERED PRACTICAL, A RITCH-TO-HEADRATIO OF 1.25. ALTHOUGH A CLOSE SPACING INCREASES SUBSURFACE DROF, ENERGY COSTS ARE TRIVIAL IF PANS ARE USED. VAULTS THAT ARE OF OPTIMAL DESIGN AND HAVE A TOTAL STORAGE VOLUME OF ABOUT 1.1 MILLION FT³ WOULD BE REQUIRED TO ACCOMMODATE ALL THE HIGH-LEVEL SOLIDIFIED WASTES EXPECTED TO BE GENERATED IN THE UNITED STATES THROUGH THE YEAR 2000, PROVIDED THE WASTES WERE INITIALLY

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STORED FOR 10 YEARS AT THE FUEL REPROCESSING PLANTS.

PUB DESC: OREL-TR-3070, 25 PAGES, 4 FIGURES, 5 TABLES, 9 REFERENCES, AUGUST 1972

KEYWORDS: CONCRETE; HIGH-LEVEL WASTE; CONTAINMENT; CONTAINMENT DESIGN; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; STORAGE CONTAINER; SHIELDING

<644> PUB DATE: 1969
AUTHOR: BLONIER, J.O.; FEPOSA, J.J.

TITLE: MANAGEMENT OF NOBLE-GAS FISSION-PRODUCT WASTES FROM REPROCESSING SPENT FUELS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: TECHNOLOGY IS PRESENTLY AVAILABLE FOR REMOVAL OF KRYPTON AND XENON, AND AFTER THEY HAVE BEEN SEPARATED, IT IS FORESEEN THAT THE KRYPTON BE COMPRESSED IN STANDARD GAS CYLINDERS (EITHER MIXED WITH XENON, OR AFTER HAVING BEEN SEPARATED FROM IT), AND SHIPPED TO A SALT-MINE DEPOSITORY FOR PERMANENT STORAGE.

PUB DESC: OREL-TR-2677, 22 PAGES, 3 FIGURES, 4 TABLES, 16 REFERENCES, NOVEMBER 21, 1969

KEYWORDS: ACCIDENT; SPENT FUEL; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); KRYPTON (SEE ALSO NOBLE GAS); TRANSPORTATION AND HANDLING; WASTE STORAGE; XENON; WASTE TREATMENT, GAS; WASTE MANAGEMENT; RADIOACTIVITY RELEASE; WASTE DISPOSAL, SALT; FUEL REPROCESSING

<645> PUB DATE: 1974
AUTHOR: BOLDT, A.L.

TITLE: RADIOACTIVE WASTE STORAGE

ABSTRACT: THIS PATENT RELATES TO THE STORAGE OF SOLID, HIGH-LEVEL RADIOACTIVE WASTES OUT OF DOORS IN A HEAVY-WALL OR UNITARY METAL CASE, THE THICKNESS OF THE WALLS OF THE CASE BEING SUFFICIENT TO REDUCE RADIATION LEVELS TO A LEVEL AT WHICH THE CASE CAN BE STORED OUT OF DOORS WHERE NATURAL CONVECTION OF AIR OVER THE CASE WILL REMOVE DECAY HEAT.

PUB DESC: U.S. PATENT 3,820,197 +, AUGUST 6, 1974

KEYWORDS: WASTE STORAGE; UNITED STATES; PATENT

<646> PUB DATE: 1971
AUTHOR: RADLEY, D.P.

TITLE: RADIOLYSIS OF LIQUID WASTE DURING BEDROCK STORAGE

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: A PROPOSED METHOD FOR LONG-TERM CONTAINMENT OF RADIOACTIVE WASTE PRODUCED AT THE SAVANNAH RIVER PLANT IS STORAGE IN VAULTS EXCAVATED IN CRYSTALLINE ROCK 1500 FT BENEATH THE SURFACE OF THE PLANT. RADIOLYSIS OF THE WASTE TO POOR GASES WILL OCCUR DURING STORAGE OF THE WASTE. THIS REPORT SUMMARIZES TEST WITH SYNTHETIC WASTES TO DEVELOP DESIGN DATA OF THE RADIOLYTIC GAS EVOLUTION RATES. THESE TESTS SHOWED THAT A VAPOR VOLUME OF ABOUT 15% OF THE TOTAL SPENT VOLUME WOULD BE SUFFICIENT TO KEEP THE PRESSURE IN THE STORAGE VAULT BELOW THE SURROUNDING 1500-FT HYDROSTATIC PRESSURE. THESE TESTS ALSO PROVIDE PART OF THE BASIC DATA NECESSARY TO PREDICT THE BEHAVIOR OF THE GASES AND THE LIQUID WASTE OVER THE ABOUT 1000 YEARS OF STORAGE NECESSARY FOR THE DECAY OF SR-90 AND CS-137 TO INNOCUOUS LEVELS.

PUB DESC: DP-1264, 24 PAGES, 7 FIGURES, 7 TABLES, 9 REFERENCES, AUGUST 1971

KEYWORDS: WASTE STORAGE; SAVANNAH RIVER PLANT; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIOLYTIC GAS; WASTE DISPOSAL, BEDROCK; SAFETY EVALUATION; HYDROSTATICS (SEE ALSO GROUND WATER)

<647> PUB DATE: 1969
AUTHOR: CAUCILL, R.L.; LABIVIERE, J.B.; SHAW, R.P.
TITLE: WASTE ENCAPSULATION AND STORAGE FACILITIES AT HANFORD

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD CO., WASHINGTON

ABSTRACT: DESCRIBES A FACILITY PLANNED TO ENCAPSULATE AND TO STORE THE RADIOISOTOPES, SR-90 AND CS-137.

PUB DESC: ABB-SR-41, SR-235/61, CCBP-691008-2, 25 PAGES, OCTOBER 30, 1969, FROM SYMPOSIUM ON RADIATION SAFETY PROBLEMS IN THE DESIGN AND OPERATION OF ROT FACILITIES, SACLAY, FRANCE

KEYWORDS: DESIGN; STRUCTURE; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE MANAGEMENT; HANFORD SITE

<648> PUB DATE: 1971
AUTHOR: DIEFENBACH, W.; NEIL, R.; KRAUSE, R.; SCHUCHARDT, H.C.; BOMCHERT, H.; DUBB, E.; KLARN, E.; KUHN, R.; STAUPEJAHN, C.; ALBRECHT, E.; KOLDITZ, R.; THEILHARDT, R.

TITLE: DEPOSITORY FOR RADIOACTIVE WASTES ANNUAL REPORT FOR 1970

CORPORATE AUTHOR: KERNFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: THE STORAGE OF LOW-LEVEL RADIOACTIVE WASTES AT THE 750-M LEVEL WAS CONTINUED IN THE PERIOD UNDER REVIEW. THE MAJOR COMPONENTS OF THE FACILITY FOR TRIAL STORAGE OF INTERMEDIATE-LEVEL WASTES WERE ASSEMBLED IN THE SALT MINE AT THE 490-M LEVEL. FOR SHIPMENT OF INTERMEDIATE-LEVEL WASTES ACROSS THE COUNTRY, ANOTHER SHIELDED CONTAINER OF THE E2 TYPE WAS DEVELOPED WHICH CAN BE USED FOR WASTES WITH A RADIATION DOSE RATE OF UP TO 100,000 REMS/HR. HOWEVER, THE REPORT INFORMS ABOUT THE STATE OF RESEARCH IN THE FIELDS OF ROCK MECHANICS, GEOLOGY, HYDROLOGY, AND ITS RESULTS AND ON PLANS FOR NEW METHODS OF STORAGE.

PUB DESC: BfK-1454, SEPTEMBER 1971

KEYWORDS: GEOLOGY; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; CONTAINERS (SEE ALSO PACKAGING); ROCK MECHANICS; REPORT, OPERATIONS; WASTE DISPOSAL, ECONOMICS; WASTE SOURCE AND TYPE; GROUND WATER, NUCLEIDE OCCURRENCE; WASTE TRANSPORTATION; GERMANY; WASTE DISPOSAL, SALT; MONITORING PROGRAM, ENVIRONMENTAL

<649> PUB DATE: 1972
AUTHOR: EDITORIAL, NUCLEAR NEWS (U.S.A.)

TITLE: WASTE MANAGEMENT - DRILLING STUDIES IN HANFORD'S BASALT

ABSTRACT: ATLANTIC RICHFIELD HANFORD COMPANY RECENTLY COMPLETED DRILLING THE FIRST OF TWO BASALT EXPLORATION HOLES ON THE HANFORD SLOPE JUST NORTH OF THE HANFORD NUCLEAR COMPLEX AS PART OF A STUDY TO DETERMINE THE FEASIBILITY OF STORING HIGH-LEVEL RADIOACTIVE WASTES IN A DEEP-MINED CAVERN BENEATH THE HANFORD RESERVOIR.

PUB DESC: NUCLEAR NEWS, 15(2), PP. 40 (FEBRUARY 1972)

KEYWORDS: GEOLOGY; BASALT; MINING; SITING, WASTE DISPOSAL; WASTE MANAGEMENT; WASTE DISPOSAL, BEDROCK;

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HAFFORD SITE; WASTE DISPOSAL, DEEP WELL

<650> PUB DATE: 1972
AUTHOR: EDITORIAL, NUCLEAR NEWS (U.S.A.)

TITLE: WASTE MANAGEMENT

ABSTRACT: REPORTS THAT USARC WILL PURSUE SURFACE AND UNDERGROUND STORAGE. TEST BORINGS ARE TO CONTINUE FOR BEDROCK STORAGE; ASPHALT TO BE USED TO PACKAGE RADIOACTIVE SLUDGE.

PUB DESC: NUCLEAR NEWS, 15(7), PP. 55-56 (JULY 1972)

KEYWORDS: CONCRETE; ASPHALT; WASTE STORAGE; CALCINATION; WASTE TREATMENT; PITTING; ORUL; SAVANNAH RIVER PLANT; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; ICAND FALLS; BATTLE NORTHWEST; SHIELDING; WASTE DISPOSAL, SALT; HAFFORD SITE; AGENCY, ARC (SEE ALSO USARC);

<651> PUB DATE: 1973
AUTHOR: EDITORIAL, NUCLEONICS WEEK (U.S.A.)

TITLE: WEST GERRAULT IS WELL AHEAD WITH SALT MINE STORAGE

ABSTRACT: REPORTS STORAGE OF RADIOACTIVE WASTE OF LOW AND MEDIUM LEVEL IN A SALT MINE. ADDITIONAL STUDY IS NECESSARY BEFORE STORING HIGH-LEVEL WASTES IN THE MINE. INFORMATION IS GIVEN ON HEAT CONDUCTION, PRESSURES, AND MECHANICAL TENSION IN SALT DEPOSITS.

PUB DESC: NUCLEONICS WEEK, 14(8), PP. 7-8 (FEBRUARY 22, 1973)

KEYWORDS: HEAT TRANSFER; THERMAL MECHANICAL EFFECT; WASTE STORAGE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GERRAULT; WASTE DISPOSAL, SALT; PROPERTY, MECHANICAL

<652> PUB DATE: 1970
AUTHOR: EDITORIAL, WASHINGTON STAR (U.S.A.)

TITLE: ARC AGAIN CONSIDERS BURYING ATOMIC WASTE

ABSTRACT: CAUGHT BETWEEN PRESSURE TO SAVE MONEY AND FEAR OF ANOTHER OVERCOST OVER SAFETY, ARC IS TAKING SECOND LOOK AT WASTE STORAGE PLAN. UNDER PROJECT BEDROCK, BILLIONS OF GALLONS OF HOT, HIGHLY RADIOACTIVE WASTE WOULD BE POURED INTO MAN-MADE CAVERNS IN THE BEDROCK 1500 FT BELOW SAVANNAH RIVER PLANT. WASTE WOULD BE KEPT THERE FOR THE 1000 YR OR SO THAT IT WOULD CONTINUE TO EMIT RADIOACTIVITY. PROJECT WAS ORIGINALLY STALLED DUE TO NPT. ACADEMY OF SCI. EXPRESSING CONCERN THAT WASTE WOULD Ooze THROUGH FISSURES INTO SAVANNAH RIVER. SINCE SALT MINE STORAGE OF SOLIDIFIED WASTES WOULD COST 10 TIMES MORE, ARC IS SPENDING \$1.3 MILLION ON FURTHER EFFORTS TO DETERMINE IF BEDROCK PROJECT WOULD PROVIDE SAFE LONG-TERM STORAGE.

PUB DESC: WASHINGTON STAR, WASHINGTON, D.C., SEPTEMBER 28, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); RIVER, SAVANNAH; BEDROCK (SEE ALSO WASTE DISPOSAL, BEDROCK); FISSURE; PRODUCT RELEASE; GEOLOGY; WASTE MANAGEMENT; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; WASTE DISPOSAL, BEDROCK

<653> PUB DATE: 1972
AUTHOR: ELGERT, O.J.; SZULINSKI, H.J.; VANSEN, J.N.

TITLE: ENGINEERED STORAGE OF RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON; ATLANTIC RICHFIELD HAFFORD COMPANY

ABSTRACT: RADIOACTIVE WASTES MUST BE STORED OR DISPOSED OF IN SUCH A MANNER THAT ISOLATION FROM THE BIOSPHERE IS ASSURED UNTIL THEY HAVE DECAYED TO INHARMFUL LEVELS. AN ALTERNATIVE TO AN ULTIMATE DISPOSAL WHICH DEPENDS UPON THE SURVEILLANCE AND ADMINISTRATION OF MAN, IS AN ENGINEERED STORAGE. AN ENGINEERED STORAGE FACILITY IS BEING STUDIED. STORAGE CONCEPTS INVOLVING AIR, WATER, AND CONDUCTION COOLING WERE CONSIDERED AND STORAGE IN COOLED WATER BASINS WAS SELECTED FOR FURTHER DEVELOPMENT. A MODULAR CONSTRUCTION SCHEDULE IS PROPOSED TO MINIMIZE INVESTMENT AND TO UTILIZE TECHNOLOGICAL ADVANCEMENTS.

PUB DESC: CONF-721107-2, AEC-5A-124, 16 PAGES, 7 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); HEAT TRANSFER; CONTAINMENT ISOLATION; REGULATION (SEE ALSO STANDARDS, RADIATION); SITING; WASTE DISPOSAL; WASTE STORAGE; MONITORING; SOLID; WASTE SOURCE AND TYPE; WASTE TREATMENT, SOLID; HIGH-LEVEL WASTE; STORAGE CONTAINER; SOLVENT EXTRACTION; FUEL REPROCESSING; SOLID; COOLING; CONSTRUCTION; VITRIFICATION

<654> PUB DATE: 1976
AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.)

TITLE: ALTERNATIVES FOR HANDLING WASTES FROM REACTORS AND POST-FISSION OPERATIONS IN THE LOW FUEL CYCLE. VOL. 3 - ALTERNATIVES FOR INTERIM STORAGE AND TRANSPORTATION

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: ALTERNATIVE METHODS FOR INTERIM STORAGE AND TRANSPORTATION OF RADIOACTIVE WASTES ARE DISCUSSED IN THIS VOLUME. STORAGE OPERATIONS ARE CONSIDERED INTERIM WHEN A) MONITORING AND HUMAN CONTROL ARE PROVIDED AND B) SUBSEQUENT ACTION INVOLVING TREATMENT, TRANSPORTATION, OR DISPOSAL IS EXPECTED. EXAMPLES OF INTERIM STORAGE TECHNOLOGIES ARE: 1. SPENT FUEL STORAGE IN WATER BASINS 2. TANK STORAGE OF LIQUIDS 3. CANISTER STORAGE IN AIR-COOLED VAULTS. INTERIM-STORED WASTES ARE AWAITING TREATMENT OR FINAL STORAGE OR DISPOSAL IN THE FORM RESULTING FROM THE ALTERNATIVE TREATMENTS PRESENTED IN VOLUME 2. INTERIM STORAGE PROVIDES ONE OR MORE OF SEVERAL WASTE MANAGEMENT FUNCTIONS. THESE ARE DESCRIBED FOR: 1. DEVELOPMENT AND MAINTENANCE OF A MATERIALS BACKLOG 2. HOLDUP DURING DECAY OF SHORT-LIVED RADIOACTIVITY 3. ACCUMULATION OF INVENTORY BEFORE FOR ECONOMIC TREATMENT OR TRANSPORTATION 4. HOLDUP PRIOR TO FINAL STORAGE OR DISPOSAL. TRANSPORTATION ALTERNATIVES ARE DESCRIBED FOR HIGH-LEVEL WASTES, SPENT FUEL, PLOTONIUM, CLADDING RULLS, AND NON HIGH-LEVEL WASTES.

PUB DESC: EEDA - 76-43 VOL. 3, 1976

KEYWORDS: TRANSPORTATION; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); WASTE STORAGE; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); HEAT; HIGH-LEVEL WASTE; LOW-LEVEL WASTE; INTERMEDIATE-LEVEL WASTE; PACKAGING; DECOMMISSIONING; SPENT FUEL; PLOTONIUM; CLADDING RULLS

<655> PUB DATE: 1972
AUTHOR: ENVIRONMENTAL PROTECTION AGENCY (U.S.A.)

TITLE: OPPOSITION TO WASTE STORAGE PROJECT AT SAVANNAH RIVER

ABSTRACT: RESERVATIONS AND OBJECTIONS TO ARC'S PROPOSED BEDROCK WASTE STORAGE PROJECT AT SAVANNAH RIVER, GA., HAVE BEEN EXPRESSED BY EPA AND GOVERNOR OF GEORGIA. PRESENTED IS ARC SUMMARY OF PROPOSAL. GOVERNOR DECLINED STRONG OPPOSITION IN THAT PROPOSED CAVERNS WOULD UNDERLIE TOSCALOOSA AQUIFER, AN INTERSTATE WATER BODY OF GREAT IMPORTANCE AS SOURCE OF GROUNDWATER FOR GEORGIA MUNICIPALITIES AND INDUSTRIES

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AND DISCHARGES LARGE VOLUME INTO SAVANNAH RIVER. EPA AGREES IN THIS CONTRIBUTION AND POINTS OUT THAT DATA ENVIRONMENTAL STATEMENT DOES NOT SPECIFY ANY CRITERIA BY WHICH SUCCESS OR FAILURE OF PROPOSED EXPLORATORY PROGRAM WILL BE JUDGED, ALSO IT IS UNLIKELY THAT PROPOSED 8000 FT OF TUNNELS WILL ENCOUNTER LARGE AREAS OF IMPERMEABLE ROCK WITHOUT REMEDIAL ENGINEERING SUCH AS GROUTING OR LINING. EPA QUESTIONS WHETHER PROJECT SHOULD BE UNDERTAKEN WITHOUT RIGOROUS ASSESSMENT OF FUNDIC ISSUE OF DISPOSAL.

PUB DESC: ATOMIC ENERGY CLEARING HOUSE, 18 (15), PP. 19-25 (APRIL 10, 1972)

KEYWORDS: GROUND WATER; SAVANNAH RIVER PLANT; SITING; WASTE DISPOSAL; WASTE DISPOSAL; WATER, DRINKING; WASTE DISPOSAL, BEDROCK; WATER POLLUTION; AGENCY, STATE; AGENCY, AEC (SEE ALSO USARC); OPPONENT; SPOKESMAN, STATE; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH)

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PUB DATE: 1972

AUTHOR: FEDERAL REPUBLIC OF GERMANY

TITLE: PROVISIONAL CONDITIONS FOR THE TRIAL STORAGE OF MEDIUM RADIOACTIVE WASTES IN THE ASSE SALT MINE GESELLSCHAFT PÖBBL STADLER, WEST GERMANY, 1972

CORPORATE AUTHOR: WEST GERMANY

ABSTRACT: WITHIN THE SCOPE OF A MAJOR TECHNICAL TRIAL, GSP STORES MEDIUM RADIOACTIVE WASTES THAT ARE DEVELOPED IN AN ENTERPRISE THAT IS APPROVED OR REGISTERED IN THE FEDERAL REPUBLIC OR THAT ARE SAFEGUARDED BY THE COMPETENT APPROVING OR SUPERVISING AUTHORITIES. THEY ARE STORED IN THE ASSE SALT MINE IN BERLINGSCHEN AT WOLFFENBÜTTEL. THE TYPE AND FORM OF THE MEDIUM RADIOACTIVE WASTES MUST MEET CERTAIN CONDITIONS IN ORDER TO EXCLUDE DAMAGES TO PERSONNEL AND THE STORAGE SITE DURING THE TRANSFER AND SUBSEQUENT STORAGE. THEREFORE, IT IS NECESSARY TO TREAT AND PACK THE RADIOACTIVE WASTES PRIOR TO DELIVERY IN SUCH A MANNER THAT THEY SATISFY THE FOLLOWING CONDITIONS DISCUSSED HEREIN.

PUB DESC: AEC-TD-7002 (1972)

KEYWORDS: WASTE TREATMENT; GERMANY; INTERMEDIATE-LEVEL WASTE; LABELING (SEE ALSO TRANSPORTATION AND HANDLING); PACKAGING; WASTE STORAGE; WASTE DISPOSAL; SOLID; WASTE DISPOSAL, SALT; ASSE SALT MINE; LOW-LEVEL WASTE

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PUB DATE: 1971

AUTHOR: FEDERAL REPUBLIC OF GERMANY

TITLE: STORAGE OF HEAVY RADIOACTIVE WASTES IN THE ASSE SALT MINE GESELLSCHAFT PÖBBL STADLER, WEST GERMANY, JULY 1971

CORPORATE AUTHOR: WEST GERMANY

ABSTRACT: REPORTS CONTRACTORIAL ARRANGEMENTS NECESSARY FOR STORAGE OF RADIOACTIVE WASTE IN THE ASSE SALT MINE.

PUB DESC: AEC-TD-7003 (1971)

KEYWORDS: WASTE STORAGE; GERMANY; SALT MINE DISPOSAL (SEE ALSO FOSTER DISPOSAL, SALT); ASSE SALT MINE; WASTE DISPOSAL; CONTRACTORIAL ARRANGEMENTS; LOW-LEVEL WASTE

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PUB DATE: 1967

AUTHOR: FEDERAL REPUBLIC OF GERMANY

TITLE: THE FINAL STORAGE OF RADIOACTIVE RESIDUALS IN THE FEDERAL REPUBLIC OF GERMANY

ABSTRACT: THE INCREASING NUMBER OF RESEARCH AND POWER REACTORS IN THE FEDERAL REPUBLIC IS MAKING THE PROBLEM OF COLLECTION AND SAFE DISPOSAL OF THE ACTIVE

WASTE PRODUCTS ACUTE. ONE SOLUTION FOR LOW-ACTIVITY WASTES IS STORAGE IN CAVERNS. THE SALT MINE AT WOLFFENBÜTTEL USED FOR SUCH STORAGE IS BRIEFLY DESCRIBED.

PUB DESC: AT. STON, 13, PAGE 80-82, (MAY-JUNE 1967), (IN GERMAN)

KEYWORDS: WASTE STORAGE; REACTOR, POWER; WASTE DISPOSAL, SOLID; GERMANY; WASTE DISPOSAL, SALT

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PUB DATE: 1974

AUTHOR: FERRO, C.; GIANOTTI, G.P.; RITTENBERGER, H.; LÖSI, D.; SIDOTI, G.; STAMPONE, E.; VALLOIR, C.

TITLE: UTILIZATION OF CLAY FORMATIONS FOR STORAGE OF SOLID HIGH-LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: COMITATO NAZIONALE PER L'ENERGIA NUCLEARE (CUNEN)

ABSTRACT: BY MEANS OF A COMPARATIVE EXAMINATION OF SEVERAL GEOLOGICAL ENVIRONMENTS TO BE USED FOR STORAGE OF SOLID HIGH LEVEL RADIOACTIVE WASTES SOME CLAY FORMATIONS, WHICH REPRESENT A VALID ALTERNATIVE TO SALT FORMATIONS, WERE INVESTIGATED. THIS STUDY WAS CARRIED OUT IN AN AREA WHERE A CLAY FORMATION, MAINLY COMPOSED OF ILLITE, CLORITE, KAOLINITE, MONTMORILLONITE AND DETRITAL MINERALS, REACHES A THICKNESS OF ABOUT 700-800 METERS AND OUTCROPS, UNDER STABLE CONDITIONS, AT AN ALTITUDE NEAR SEA-LEVEL. THE VERTICAL AND HORIZONTAL HOMOGENEITY OF THE CLAY FORMATION WERE ASCERTAINED BY BORE HOLE. THE ABSENCE OF CIRCULATING WATER WAS ASCERTAINED BY RADIOACTIVE TRACERS. GEOTECHNICAL TESTS CARRIED OUT IN LABORATORY SHOWED THE DEGRADATION CHARACTERISTICS OF THE CLAY FORMATION. THE LOW MIGRATION IN THE CLAY FORMATION OF RADIOACTIVE ELEMENTS OCCURRING IN THE WASTES WAS DEMONSTRATED BY SEVERAL RADIOACTIVE TRACERS. THE THERMODYNAMIC BEHAVIOR OF THE ISOTHERMAL LINES, IN TRANSIENT STATE OF A CYLINDRICAL HEAT SOURCE IN A HOMOGENEOUS SEMI-INFINITE MEDIUM WAS DETERMINED. THE RESEARCH CARRIED OUT FOR THIS PURPOSE HAS DEMONSTRATED THAT SOME TYPES OF STABLE CLAY FORMATIONS ARE TO BE CONSIDERED AS A SUITABLE NATURAL ENVIRONMENT FOR THE STORAGE OF SOLID HIGH LEVEL RADIOACTIVE WASTES. (AUTH)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 887-916 (1974)

KEYWORDS: WASTE STORAGE; CLAY; SOLID; HIGH-LEVEL WASTE; HOMOGENEITY; WATER; RADIOACTIVE TRACER; MIGRATION; LABORATORY STUDIES; ITALY

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PUB DATE: 1972

AUTHOR: FISCHER, D.; KÖRNER, W.; RICHTER, D.

TITLE: STUDY OF VARIANTS FOR SELECTING A METHOD OF ULTIMATE STORAGE OF RADIOACTIVE WASTES FROM NUCLEAR FACILITIES IN THE GDR

CORPORATE AUTHOR: NATIONAL CENTRE FOR RADIATION PROTECTION OF THE GDR

ABSTRACT: STARTING FROM TECHNOLOGICAL PARAMETERS INFLUENCING THE DISPOSAL OF RADIOACTIVE WASTES, AS THERE ARE AMOUNTS AND PROPERTIES OF WASTES FROM NUCLEAR POWER STATIONS AND PLANTS OF THE NUCLEAR FUEL CYCLE, POSSIBLE METHODS OF TREATMENT AND FINAL DISPOSAL OF RADIOACTIVE WASTES ARE OUTLINED. THESE METHODS ARE DISCUSSED FROM TWO POINTS OF VIEW: SAFETY AND ECONOMY. THE PROCEDURE CHOSEN IS EXPLAINED AND ASSESSED CONSIDERING THE CONDITIONS IN THE GDR. (IN GERMAN)

PUB DESC: SZS-138, 4 FIGURES, 12 REFERENCES, PP. 1-10, SEPTEMBER 1972

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); EFFLUENT; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; REACTOR, POWER; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; GERMANY; RADIATION SAFETY AND CONTROL; SAFETY EVALUATION

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PUB DATE: 1975
AUTHOR: POSTER, R.A.; PERCE, D.T.

TITLE: AN EVALUATION OF HIGH PRESSURE STEEL CYLINDERS FOR FISSION PRODUCT MOBILE GAS STORAGE.

CORPORATE AUTHOR: ALLIANCE CHEMICAL CORPORATION

ABSTRACT: THE COLLECTION AND LONG-TERM STORAGE OF USED U-235 WILL BE REQUIRED TO PREVENT ESSENTIAL LOCAL RELEASE PROBLEMS AT REPROCESSING PLANTS AND GLOBAL ACCUMULATION IN THE ATMOSPHERE AS NEW PLANTS GO ON STREAM. THIS REPORT DISCUSSES THE ADVANTAGES AND DISADVANTAGES OF USING HIGH PRESSURE STEEL CYLINDERS FOR LONG-TERM STORAGE OF USED U-235. THE ADVANTAGES ARE: (1) WELL-ESTABLISHED HISTORY OF DEVELOPMENT AND USE IN INDUSTRY, (2) LONG LIFE WITH GOOD THERMAL AND RADIATION RESISTANCE, (3) HIGH CAPACITY, (4) LOW COST, AND (5) EASE OF FUTURE RECOVERY. THE DISADVANTAGES ARE: (1) THE POTENTIAL FOR SUDEN FAILURE OF A CYLINDER RESULTING IN THE RELEASE OF ITS CONTENTS, (2) THE REQUIREMENTS THAT ARE PLACED ON THE PURITY OF THE GAS TO BE STORED, AND (3) POTENTIAL PROBLEMS ARISING FROM THE PRESENCE OF THE EXHAUST PRODUCT BODILION. T. DISADVANTAGES DO NOT APPEAR TO BE SERIOUS ENOUGH TO PRECLUDE THE USE OF HIGH PRESSURE STEEL CYLINDERS FOR THE LONG-TERM STORAGE OF USED U-235.

PUB DESC: YCP-1044 1975 (FEB.)

KEYWORDS: STEEL CYLINDERS; MOBILE GAS STORAGE; REPROCESSING (SEE ALSO MOBILE GAS); HIGH PRESSURE; SAFETY EVALUATION; RADIATION PROTECTION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); CYLINDER FAILURE; SUBSIDENCE

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PUB DATE: 1972
AUTHOR: FRASER, R.; RICHTER, G.

TITLE: STORAGE OF RADIOACTIVE WASTES IN SALT FORMATIONS - STAGE OF DEVELOPMENT AND POSSIBILITIES

CORPORATE AUTHOR: NATIONAL CENTER FOR RADIATION PROTECTION OF THE GDR

ABSTRACT: TECHNOLOGICAL POSSIBILITIES AND SAFETY CONDITIONS OF THE STORAGE OF LOW-, INTERMEDIATE- AND HIGH-LEVEL RADIOACTIVE WASTES IN SALT FORMATIONS ARE OUTLINED. THE STAGE OF DEVELOPMENT IN THIS FIELD IS SHOWN CONSIDERING THE WORK DONE IN THE GDR, FRG AND GBR.

PUB DESC: SIS-137, 52 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1972

KEYWORDS: WASTE STORAGE; INTERMEDIATE-LEVEL WASTE; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; GERMANY; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE

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PUB DATE: 1972
AUTHOR: FREDERICK, R.J.

TITLE: THE BURIAL OF RADIOACTIVE WASTE IN SALT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENN.

ABSTRACT: THE USE OF NATURAL SALT FORMATIONS FOR THE LONG-TERM STORAGE OF RADIOACTIVE WASTE HAS BEEN ACTIVELY STUDIED AT ORNL SINCE 1957. RESULTS OF THESE STUDIES, WHICH INCLUDED PROJECT SALT VAULT, A FIELD-SCALE EXPERIMENT, CONSIDERED THE FEASIBILITY OF THIS CONCEPT AND PROVIDED DATA FOR THE DESIGN OF AN ACTUAL WASTE REPOSITORY. THIS PAPER DISCUSSES THE RATIONALE OF USING SALT DEPOSITS FOR STORAGE OF RADIOACTIVE WASTE, SITING CONSIDERATIONS IN LOCATING A REPOSITORY, THE OPERATING CONCEPTS DEVELOPED DURING THE CONCEPTUAL DESIGN FOR THE LABELING AND BURIAL OF THE SOLIDIFIED HIGH-LEVEL WASTES, AND THE LONG-TERM GEOLOGICAL EFFECTS OF THE AREA SURROUNDING A REPOSITORY.

PUB DESC: CONF-720993, 6 PAGES, 4 FIGURES, 1 REFERENCE, PP. 78-83, PAPER PRESENTED AT THE PROCEEDINGS OF THE 20TH CONFERENCE ON REMOTE SYSTEMS

TECHNOLOGY, FREE IN IDAHO FALLS IN SEPTEMBER 1972

KEYWORDS: WASTE STORAGE; PROJECT SALT VAULT; KANSAS; WASTE DISPOSAL, SALT; DESIGN; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT);

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PUB DATE: 1972
AUTHOR: GICZYBA, R.P.

TITLE: AN EVALUATION OF THE CONCRET OF STORING RADIOACTIVE WASTES IN BEDROCK BELOW THE SAVANNAH RIVER PLANT SITE

CORPORATE AUTHOR: NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL; COMM. ON RAD. WASTE MANAGEMENT

ABSTRACT: THE HIGHLY RADIOACTIVE WASTES AG 0 IN TANKS AT THE SAVANNAH RIVER PLANT (SRP) SITE MUST ULTIMATELY BE TRANSFERRED TO SOME FACILITY THAT OFFERS EFFECTIVE RETENTION FOR CENTURIES. A SOLUTION UNDER CONSIDERATION IS TO STORE THESE WASTES IN VAULTS IN THE ROCKS DEEP BEHIND THE SITE. FOR SUCH LONG-TERM RETENTION OF RADIOACTIVE WASTES, AN UNPRECEDENTED DEGREE OF PRECISE INFORMATION IS NEEDED ON THE HYDROLOGIC SYSTEMS IN THE BEDROCK, ON THE REGIONAL STRESS FIELDS, ON THE STRUCTURAL INTEGRITY OF MINOR OPENINGS, AND ON THE CHEMICAL COMPATIBILITY BETWEEN THE WASTES AND POTENTIAL HOST ROCKS. IT IS ALSO APPARENT THAT THIS NEEDED DEGREE OF PRECISION CANNOT BE ADEQUATELY OBTAINED BY EXPLOSION FROM THE SURFACE SUPPLEMENTED BY A LIMITED NUMBER OF BORINGS. THIS STATEMENT IN NO WAY DIMINISHES THE USEFULNESS OF THE EXPLOSION FROM THE SURFACE, THE CHEMICAL AND PHYSICAL TESTS, BORINGS, AND HYDROLOGIC CALCULATIONS SO FAR MADE. IT REFLECTS, RATHER, THE FACT THAT THE METAMORPHIC BASEMENT ROCKS, AND THE SEDIMENTARY ROCKS OF TRIASSIC AGE UNDERLYING THE SITE, ARE NEITHER UNIFORM NOR HOMOGENEOUS AND CANNOT BE EVALUATED WITH PRECISION FROM LIMITED SAMPLES. THE INFORMATION ACQUIRED TO DATE INDICATES A POTENTIAL FOR A SAFE STORAGE FACILITY, BUT, IN VIEW OF THE INTENSITY OF THE RADIOACTIVITY OF THE MATERIAL TO BE STORED AND THE LENGTH OF TIME REQUIRED, THE ONLY PRUDENT COURSE IS THOROUGH EXPLOSION BEFORE FINAL DECISION. THE RECENTLY ACQUIRED DATA ON SEDIMENTARY ROCKS OF TRIASSIC AGE ARE ENCOURAGING & EMPHASIZE THE NEED FOR COMPLETE EXPLOSION.

PUB DESC: WASTE DISPOSAL - SAVANNAH RIVER PLANT CONCEPT EVALUATION BY THE NATIONAL ACADEMY OF SCIENCES, 86 P., 1972

KEYWORDS: WASTE DISPOSAL; BEDROCK (SEE ALSO WASTE DISPOSAL, BEDROCK); SAVANNAH RIVER PLANT; SAFETY EVALUATION; WASTE TREATMENT; LIQUID; GEOLOGY; HYDROLOGY; ROCK; PHYSICAL CHARACTERISTICS; CHEMICAL CHARACTERISTICS; DESIGN CRITERIA; GEOPHYSICAL; GEOCHEMICAL

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PUB DATE: 1967
AUTHOR: GRAP, F.

TITLE: PLANS FOR LONG-TERM STORAGE OF LOW- AND MEDIUM-LEVEL RADIOACTIVE WASTES IN SWITZERLAND

CORPORATE AUTHOR: NOTOR-COLUMBUS LTD., SWITZERLAND

ABSTRACT: NO LIQUID, SUSPECT CONTAMINATED WASTE IS AUTHORIZED TO BE RELEASED INTO THE GROUND. THE SOLID AND SOLIDIFIED LOW-LEVEL RADIOACTIVE WASTES ARE COMPRESSED AND PACKED IN STANDARD STEEL DRUMS AND ARE AT PRESENT STORED AD INTERIM IN WATER-PROOF WASTE STORAGE AREAS ON THE NUCLEAR PLANT SITES. THE GENERAL OPINION OF THE PUBLIC AND LOCAL AUTHORITIES IS HIGHLY OPPOSED TO RADIOACTIVE WASTE DISPOSAL, WHICH HARKS THE REALIZATION OF THESE WASTE STORAGE PROJECTS VERY DIFFICULT.

PUB DESC: STI/PDB-156, CONF-670512, PAGES 329-41 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: CONCRETE; INTERMEDIATE-LEVEL WASTE; CONTAINERS (SEE ALSO PACKAGING); WASTE STORAGE;

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SURFACE WATER, DISPOSAL MEDIA; POPULATION EXPOSURE;
WASTE MANAGEMENT; REACTOR POWER; SWITZERLAND;
RADIATION, PUBLIC EDUCATION

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PUB DATE: 1968

AUTHOR: GRISCH, G.; KRAUSE, H.; LEVQUE, F.; VANTARETTI, F.

TITLE: SITING OF RADIOACTIVE WASTE STORAGE FACIL. INS WITHIN THE EUROPEAN COMMUNITY

CORPORATE AUTHOR: ERBATOR, BRUXELLES; GESELLSCHAFT FÜR BODENFORSCHUNG MBH, KARLSRUHE, GERMANY; FACULTE DES SCIENCES DE L'UNIVERSITE DE BORDEAUX; COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME

ABSTRACT: IT IS ESTIMATED THAT BY THE YEAR 2000 IT WILL BE NECESSARY TO STORE 3000 METRIC TONS (300 BILLION CURIES) OF WASTE FISSION PRODUCTS. THIS STUDY WAS MADE TO DETERMINE THE CAPABILITY OF ACCOMMODATING THIS WASTE MATERIAL. A SERIES OF CLOUTED MAP OVERLAYS, EACH REPRESENTING A PARAMETER, ARE USED TO DETERMINE FAVORABLE LOCATIONS. CRITERIA ARE PROPOSED.

PUB DESC: EUR-3664.P +. 70 PAGES, 12 FIGURES, TABLES, FEB. 1968

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); SITING; DEMOGRAPHY (SEE ALSO POPULATION); EURATOM; FRANCE; STRATIGEOLOGY; SITING, WASTE DISPOSAL; WASTE DISPOSAL; WASTE STORAGE; FERTILIZATION DISTRIBUTION; METEOROLOGY (SEE ALSO AID);

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PUB DATE: 1974

AUTHOR: NATASZOVICH, S.; ASER, M.; HERZ, E.; PATTAY, K.H.; STORCH, S.; THIEL, G.

TITLE: INTERIM STORAGE AND SOLIDIFICATION FOR THOROX-TYPE FISSION PRODUCT SOLUTIONS

CORPORATE AUTHOR: INSTITUTE OF CHEMICAL TECHNOLOGY AND DIVISION DECONTAMINATION

ABSTRACT: HIGHLY RADIOACTIVE FISSION PRODUCT SOLUTIONS RESULTING FROM REPROCESSING OF THORIUM-CONTAINING FUEL ELEMENTS (THOROX-PROCESS) ARE INTERIM STORED IN A SPECIAL TANK EQUIPMENT AT KFA JOLICH. SIX CYLINDRICAL TANKS (1 P(3) VOLUME EACH) ARE INSTALLED IN CELLS BUILT OF CONCRETE BLOCKS. THE TANKS HAVE A CONICAL BOTTOM, A COOLANT JACKET AND A LIC IN WHICH ALL PIPES ARE FIRED. IN THE COURSE OF REPROCESSING SPENT HIGH-FUEL, A RATHER SERIOUS PROBLEM IS THE SOLIDIFICATION AND FINAL DISPOSAL OF THE HIGHLY RADIOACTIVE FISSION PRODUCT WASTE SOLUTIONS. A SURVEY IS GIVEN ON THE CHOICE OF A SUITABLE PROCESS. A SURVEY IS GIVEN ON THE CHOICE OF A SUITABLE PROCESS. DESCRIPTION OF THE PROPOSED FLOWSHEET AS WELL AS LONG-TERM STORAGE AND SAFETY CONSIDERATIONS ARE INCLUDED. IN AN APPENDIX TO THIS PAPER AN ALTERNATIVE SOLIDIFICATION PROCESS FLOWSHEET DEVELOPED BY THE GERMAN GELSENBERG COMPANY IS PRESENTED IN BRIEF. (AUTH)

PUB DESC: OECD-OECD, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 705-729 (1974)

KEYWORDS: FISSION PRODUCT; GERMANY; HIGH-LEVEL WASTE; THOROX; SOLUTIONS; FUEL REPROCESSING; EFFLUENT; INTERIM STORAGE; STORAGE CONTAINER; SHIELDING; DESIGN; WASTE DISPOSAL; SAFETY EVALUATION

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PUB DATE: 1969

AUTHOR: NEPP, H.; KRAUSE, H.; SCHUCHMAY, H.C.; BORCHERT, H.; DORR, K.

TITLE: 1968 ANNUAL REPORT OF THE INSTITUTE FOR UNDERGROUND STORAGE

CORPORATE AUTHOR: BODENFORSCHUNGSZENTRUM KARLSRUHE, FEDERAL REPUBLIC OF GERMANY

ABSTRACT: ORGANIZATIONS INVOLVED. MINING-ENGINEERING FOR EXPERIMENTAL STORAGE OF LOW- AND MEDIUM-LEVEL RADIOACTIVITY IN RESERVOIRS AND EXPERIMENTS IN PREPARATION OF STORAGE OF HIGH-LEVEL WASTE. SHAFT MODIFICATION BELOW 490 M AND INSTALLATION IN THE SHAFT ASSE. II. CONSTRUCTION AND PLANNING FOR ASSE. EXPERIMENTAL STORAGE OF LOW-LEVEL WASTE AT 750 M. PLANNING AND DEVELOPMENT OF MEDIUM-LEVEL STORAGE. CAVERNS IN THE SALT LAYERS IN ASSE. CORE DRILLING AT ASSE. ROCK-MECHANIC INVESTIGATIONS. OBSERVATIONS OF THE ROCK BEHAVIOR. THERMAL AND HYDROLOGICAL EXPERIMENTS. CORROSION INVESTIGATIONS. INVENTORY OF ABANDONED SALT MINES. EXPERIMENTAL DEPOSITION OF RADIOACTIVE WASTES IN THE ATLANTIC OCEAN.

PUB DESC: EPR-1130, 34 PAGES, 8 FIGURES, DECEMBER 1969, (IN GERMAN)

KEYWORDS: WASTE DISPOSAL, OCEAN; INTERMEDIATE-LEVEL WASTE; WASTE STORAGE; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; GERMANY; STORAGE CONTAINER; WASTE DISPOSAL, SALT; ROCK MECHANICS

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PUB DATE: 1975

AUTHOR: HOFFMAN, T.L.

TITLE: CORROSION MONITORING OF STORAGE BINS FOR RADIOACTIVE CALCIUMS

CORPORATE AUTHOR: IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO FALLS

ABSTRACT: HIGHLY RADIOACTIVE LIQUID WASTE PRODUCED AT THE IDAHO CHEMICAL PROCESSING PLANT IS CALCINED TO A GRANULAR SOLID FOR LONG-TERM STORAGE IN STAINLESS STEEL BINS. CORROSION EVALUATION OF COMPOUND WITHDRAWN FROM THESE BINS INDICATES EXCELLENT PERFORMANCE FOR THE MATERIALS OF CONSTRUCTION OF THE BINS. AT EXPOSURE PERIODS OF UP TO SIX YEARS THE AVERAGE PENETRATION RATES ARE 0.01 AND 0.05 MILS PER YEAR FOR TYPES 304 AND 405 STAINLESS STEELS, RESPECTIVELY.

PUB DESC: ICR-1071, 19 PPS, 3 TABS, 7 FIGS, 5 REFS, OCT. 1975

KEYWORDS: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); WASTE STORAGE; CORROSION (SEE ALSO STRESS CORROSION); STEEL, STAINLESS; IDAHO FALLS; STORAGE CONTAINER

<670>

PUB DATE: 1963

AUTHOR: HOFFMANN, E.

TITLE: GEOLOGICAL REPORT ON THE SUITABILITY OF MINE CAVITIES IN THE ASSE II ROCK SALT MINE FOR THE DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: BUNDESANSTALT FÜR BODENFORSCHUNG, HANNOVER, GERMANY

ABSTRACT: A REVIEW IS MADE OF THE GEOLOGIC PROPERTIES OF THE ASSE II ROCK SALT MINE WITH REGARD TO THE SUITABILITY OF USING THE AREA FOR STORAGE OF RADIOACTIVE WASTE.

PUB DESC: AEC-TR-6544, 13 PAGES- NOVEMBER 26, 1963, TRANSLATED FROM A REPORT OF THE BUNDESANSTALT FÜR BODENFORSCHUNG, (FEDERAL SOIL RESEARCH INSTITUTE), HANNOVER, GERMANY, NOVEMBER 26, 1963

KEYWORDS: GEOLOGY; GROUND WATER; SITING, WASTE DISPOSAL; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE DISPOSAL, SOLID; GERMANY; WASTE DISPOSAL, SALT

<671>

PUB DATE: 1967

AUTHOR: HILCOMB, W.P.; PAIGE, D.P.; STEVENSON, C.E.; GRAMER, E.D.

TITLE: HIGH LEVEL RADIOACTIVE SOLID WASTE BURIAL OPERATIONS FOR THE EMB-II FUEL CYCLE FACILITY

<671> CONT.

CORPORATE AUTHOR: ARGONNE NATIONAL LAB., IDAHO DIVISION, IDAHO FALLS, IDAHO

ABSTRACT: THE FUEL-CYCLE FACILITY OF THE EM-11 COMPLEX GENERATES HIGH-LEVEL NONREPROCESSIBLE RADIOACTIVE SOLID WASTE FROM THE REPROCESSING AND REFINING OF REACTOR FUEL. THE SOLID FACILITY PERFORMS LONG-TERM STORAGE WITH DEPTH, AS OPPOSED TO PERMANENT STORAGE OF HIGH-LEVEL SOLID WASTES. THE SITE UTILIZES POST-HOLE STORAGE WITH HIGH-INTENSITY STEEL LINERS. A TOP-LOADING, BOTTOM-DRAWING WASTE-HANDLING COFFIN AND A LOW-COST TRAILER ARE USED. FOUR TYPES OF WASTE CONTAINERS ARE USED, WITH ALL OPERATIONS BEING DONE BY REMOTE CONTROL. THE FIRST WASTED MATERIALS CONTAINED AN ESTIMATED 6400 KG OF WASTE MATERIAL, WITH AN ESTIMATED 1.6 MILLION CUBIC OF ACTIVITY AND RADIATION LEVELS AS HIGH AS 900,000 R/HR.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN, 5(2), PAGE 221-227, (MARCH 1967) 5 FIGURES, 11 REFERENCES

KEYWORDS: REACTOR, STORAGE (SEE ALSO LAFOR); LONG-TERM STORAGE (SEE ALSO WASTE); RADIOACTIVE WASTE STORAGE; REACTOR 1 AND 2 (RE); REACTOR, FAST; GEOLOGY; GROUND WATER; IRRADIATION; REACTOR, LHC; REACTOR; TRANSPORTATION AND HANDLING; REACTOR; WASTE HANDLING; WASTE STORAGE; WASTE SOURCE AND TIE; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; HYDROLOGY; MONITORING (SEE ALSO SURVEY); FUEL REPROCESSING; SURVEILLANCE PROGRAM

<672>

PUB DATE: 1968

AUTHOR: HOLZMUTH, R.L.; GIPPER, R.H.; COSTAS, L.F.; RICH, R.C.

TITLE: HOW TO PREVENT STRESS-CORROSION CRACKING OF RADIOACTIVE WASTE STORAGE TANKS

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: ULTIMATE STRESS CORROSION CRACKING CAUSED LEAKAGE OF SEVERAL HUNDRED GALLONS UNDERGROUND CARBON STEEL TANKS STORING RADIOACTIVE WASTE SOLUTIONS. TESTS SHOWED THAT THE TANKS WERE CAUSED BY CLASSICAL STRESS CORROSION CRACKING AND WERE NOT RELATED TO THE RADIOACTIVITY OF THE WASTES. CORROSION TESTS ARE PRESENTED THAT SHOW THAT TANK STRESS RELIEF IS THE ONLY RELIABLE METHOD OF PREVENTING STRESS CORROSION IN UNDERGROUND CARBON-STEEL TANKS CONTAINING RADIOACTIVE WASTE SOLUTIONS.

PUB DESC: MATER. PROTECT. 7, PAGES 36-8 (JANUARY 1968)

KEYWORDS: WASTE STORAGE; CONTAINERS (SEE ALSO PACKAGING); TANKS; SAVANNAH RIVER PLANT; STORAGE CONTAINER; TEST, LEAK LOCATION; STRESS CORROSION; LEAK

<673>

PUB DATE: 1974

AUTHOR: ISAACSON, R.E.; BROWNELL, L.F.

TITLE: ULTIMATE STORAGE OF RADIOACTIVE WASTES IN TERRESTRIAL ENVIRONMENTS

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD COMPANY

ABSTRACT: NEW AVENUES ARE OPENED FOR THE ULTIMATE STORAGE OF RADIOACTIVE WASTES VIA THE "STOPPER" AND "THERMAL" PROCESSES. STOPPER IS THE STORE PROCESS FOR PERMANENT ENCAPSULATION OF RADIOACTIVITIES, A HYDROTHERMAL PROCESS. THERMAL IS A PYROCHEMICAL PROCESS FOR FIXING RADIOACTIVITIES IN A BASALT-LIKE PRODUCT. THE PRODUCTS CONTAIN ANALOGS OF SILICATE AND ALUMINOSILICATE MINERALS SUCH AS PELLUCITE, STROBILITE, PLEISTOCENE AND "PLUTONITE" - A STRUCTURAL ANALOG OF ZIRCON. ULTIMATE STORAGE WILL HAVE BEEN EFFECTED IF THESE PRODUCT FORMS ARE SECURED IN GEOCHEMICALLY COMPATIBLE MEDIA WHERE THE AUTHENTIC PRECIPITATION OF CATION ALUMINOSILICATES WILL PROVIDE ADDITIONAL PROTECTION FROM TRANSPORT BY GROUNDWATER MOVEMENTS. (AUTH)

PUB DESC: ORCD-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF

SYMPOSIUM, 953-986 (1974)

KEYWORDS: WASTE STORAGE; ARMO; ENVIRONMENT; STONE; PERMANENT ENCAPSULATION; HYDROTHERMAL PROCESS; THERMAL-PROCESS; PYROCHEMICAL PROCESS; WASTE FIXATION; BASALT; TRANSPORT; GROUND WATER

<674>

PUB DATE: 1972

AUTHOR: ISAACSON, R.E.; BROWNELL, L.F.

TITLE: ULTIMATE STORAGE OF RADIOACTIVE WASTES IN TERRESTRIAL ENVIRONMENT

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD COMPANY, RICHMOND, WASHINGTON

ABSTRACT: NEW AVENUES ARE OPENED FOR THE ULTIMATE STORAGE OF RADIOACTIVE WASTES VIA THE "STOPPER" AND "THERMAL" PROCESSES. STOPPER IS THE STORE PROCESS FOR PERMANENT ENCAPSULATION OF RADIOACTIVITIES, A HYDROTHERMAL PROCESS. THERMAL IS A PYROCHEMICAL PROCESS FOR FIXING RADIOACTIVITIES IN A BASALT-LIKE PRODUCT. THE PRODUCTS CONTAIN ANALOGS OF SILICATE AND ALUMINOSILICATE MINERALS SUCH AS PELLUCITE, STROBILITE, PLEISTOCENE AND "PLUTONITE" - A STRUCTURAL ANALOG OF ZIRCON. ULTIMATE STORAGE WILL HAVE BEEN EFFECTED IF THESE PRODUCT FORMS ARE SECURED IN GEOCHEMICALLY COMPATIBLE MEDIA WHERE THE AUTHENTIC PRECIPITATION OF CATION ALUMINOSILICATES WILL PROVIDE ADDITIONAL PROTECTION FROM TRANSPORT BY GROUNDWATER MOVEMENTS.

PUB DESC: CONF-721107-0, AM-54-126, 33 PAGES, 11 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: GROUND WATER; THERMAL-PROCESS; ENVIRONMENT; WASTE DISPOSAL; WASTE STORAGE; FISSILE PRODUCT TRANSPORT; WASTE TREATMENT; FIXATION; THERMAL CONSIDERATION; WASTE MANAGEMENT; HYDROLOGY; GEOLOGY; GEOCHEMICAL; ROCK MECHANICS; FUEL REPROCESSING

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PUB DATE: 1972

AUTHOR: J.A. BLUNT AND ASSOC., ENGINEERS (U.S.A.)

TITLE: PHASE 2 SEISMIC REVIEW: WASTE STORAGE TANK VENTILATION SYSTEM, 241-A-PAD, HARTFORD, WASHINGTON

CORPORATE AUTHOR: JOHN A. BLUNT AND ASSOCIATES ENGINEERS, SAN FRANCISCO, CALIF.

ABSTRACT: THE PHASE II SEISMIC ANALYSIS WAS PERFORMED TO EVALUATE COMPONENTS OF THE 241-A-PAD WASTE STORAGE TANK VENTILATION SYSTEM, WHICH WERE CRITICAL, OR COULD NOT BE PROPERLY APPRAISED ON THE BASIS OF THE PREVIOUS PHASE I QUALITATIVE REVIEW. THE ANALYSIS WAS PERFORMED FOR THE COMBINED EFFECTS OF NORMALLY ACTING LOADS AND THE CRITERIA DESIGN RARE EARTHQUAKE ACTION. THE PHASE II RESULTS ARE SUMMARIZED.

PUB DESC: JADE-ARCO-03, 29 PAGES, 3 FIGURES, 9 REFERENCES, APRIL 1972

KEYWORDS: VENTILATION SYSTEM; WASTE STORAGE; STORAGE CONTAINER; HARTFORD SITE; SEISMOLOGY

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PUB DATE: 1974

AUTHOR: KENNEDY, R.A.

TITLE: RADIOACTIVE WASTE STORAGE

ABSTRACT: HIGH-LEVEL RADIOACTIVE WASTES ARE STORED IN THE OPEN IN CONTAINERS SEALED WITHIN VERTICALLY DISPOSED RETAIL CASES. BROTHER SHIELDS, WHICH PREVIOUSLY ARE OF CONCRETE, ARE DISPOSED AROUND THE CASES AND SPACED THEREFROM TO LEAVE AN ANNULUS THEREWITHIN. INLET AND EXIT PORTS ARE PROVIDED SO THAT SUBSIDING AIR IS DRAWN INTO THE ANNULUS AND FLOWS UPWARDLY PAST THE CASE BY CONVECTION.

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 PUB DESC: U. S. PATENT APPLICATION 506,494,
 SEPTEMBER 16, 1974

KEYWORDS: WASTE STORAGE; STORAGE CONTAINER;
 SHIELDING; UNITED STATES; PATENT

<677>
 PUB DATE: 1969
 AUTHOR: KIRKMAN, R.J.; GUNFREY, D.L.

TITLE: TREATMENT OF LIQUID WASTES BY EVAPORATION TO
 SALT CRYSTALS

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD
 COMPANY, RICHLAND, WASHINGTON

ABSTRACT: RADIOACTIVE WASTES FROM FUEL REPROCESSING
 PLANTS, WHICH COMPOSE THE MAJORITY OF WASTES HANDLED,
 HAVE BEEN STORED ON AN INTERIM BASIS AS SOLUTIONS IN
 UNDERGROUND TANKS WHILE LONG-TERM STORAGE METHODS ARE
 BEING DEVELOPED. WORK IS CONTINUING ON IMPROVING THE
 PRESENT INTERIM STORAGE METHODS TO FURTHER INCREASE
 THE CERTAINTY OF SAFE CONFINEMENT.

PUB DESC: ADM-SA-25, 17 PAGES, AUGUST 4, 1969

KEYWORDS: WASTE STORAGE; WASTE TREATMENT, LIQUID;
 WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; EVAPORATION

<678>
 PUB DATE: 1967
 AUTHOR: FRAUSE, R.; SANDOZ, H.; SCHUCHARDT, H.C.

TITLE: PROJECT FOR STORING RADIOACTIVE WASTES IN A
 SALT CAVITY

CORPORATE AUTHOR: GESELLSCHAFT FÜR FERNFORSCHUNG
 AG, KAULSDORF, GERMANY

ABSTRACT: THE SOLUTION METHOD OF CREATING A CAVITY
 IN A SALT DOME IS DESCRIBED. THE MECHANISM FOR
 INTRODUCTION OF THE RADIOACTIVE WASTE INTO THE CAVITY
 AND THE PROBLEMS INVOLVED ARE EXPLAINED (BORE-HOLE
 DILATED, METHOD OF INTRODUCTION, ETC). ECONOMIC
 CONSIDERATIONS ARE PRESENTED FOR A CAVITY OF 10,000
 CU. METERS, AND THE INFLUENCE ON THE COST OF
 PARAMETERS SUCH AS DEPTH AND DIAMETER OF THE BORE-HOLE
 AND SIZE OF THE CAVITY IS INVESTIGATED.

PUB DESC: STI/PUB-156, CONF-670512, PAGES 479-94 OF
 DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM
 JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: WASTE DISPOSAL, ECONOMICS; GERMANY;
 RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT

<679>
 PUB DATE: 1967
 AUTHOR: KUHN, K.

TITLE: GEO-SCIENTIFIC INVESTIGATIONS IN THE ASSE II
 SALT MINE

CORPORATE AUTHOR: INSTITUT FÜR TIEFENGEWISSE
 CIAUSTHAL-ZELLENFELD DER GESELLSCHAFT FÜR
 STRAHLENFORSCHUNG, MUNICH

ABSTRACT: IN THE RADIOACTIVE WASTE DISPOSAL PROGRAM
 OF THE FEDERAL REPUBLIC OF GERMANY, THE ABANDONED
 SALT-MINE AT ASSE, NEAR WOLFRATSHUSEN IN LOWER SAXONY,
 IS TO BE USED FOR STORAGE. ROCK MECHANICAL
 INVESTIGATIONS WERE PERFORMED. A TEMPERATURE TEST
 FIELD WAS INSTALLED IN THE MINE. OTHER TESTS HAVE
 JUST BEEN STARTED TO EXAMINE THE COMPRESSIVE STRENGTH
 OF ROCK SALT BY TRIAXIAL HYDRAULIC PRESS AT HIGH
 TEMPERATURES.

PUB DESC: STI/PUB-156, CONF-670512, PAGES 500-10 OF
 DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM
 JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: GEOLOGY; GERMANY; SALT MINE DISPOSAL (SEE
 ALSO WASTE DISPOSAL, SALT); TEMPERATURE REACTIVITY
 EFFECT; WASTE DISPOSAL, SALT; SUPPORT STRUCTURE; ROCK
 MECHANICS; MODEL TESTING

<680>
 PUB DATE: 1974
 AUTHOR: LAFIVIERE, J.B.

TITLE: THE RETRIEVABLE SURFACE STORAGE FACILITY A
 FACILITY FOR THE STORAGE OF COMMERCIAL HIGH-LEVEL
 NUCLEAR WASTE

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD COMPANY

ABSTRACT: THE RETRIEVABLE SURFACE STORAGE FACILITY
 WILL PROVIDE THE FACILITIES FOR SAFELY STORING THE
 HIGH-LEVEL RADIOACTIVE WASTE GENERATED BY THE NUCLEAR
 POWER INDUSTRY THROUGH THE YEAR 2000 FOR AN INTERIM
 PERIOD UNTIL ULTIMATE DISPOSAL METHODS ARE AVAILABLE.
 FOR A DESIGN BASIS, THIS INTERIM PERIOD WAS ASSUMED TO
 BE AT LEAST 100 YEARS. SEVERAL POTENTIALLY ATTRACTIVE
 METHODS OF STORAGE STUDIED BY ATLANTIC RICHFIELD
 HARTFORD COMPANY AND OTHER ENGINEERS WERE DISCUSSED BY
 D.D. WOODRICH AT THE SAN FRANCISCO MEETING LAST FALL.
 THIS PAPER DESCRIBES ONE OF THESE, THE SEALED STORAGE
 CASK CONCEPT IN GREATER DETAIL. THE OBJECTIVES ARE:
 THE RSSF SHALL BE REQUIRED TO HANDLE, ENCAPSULATE, AND
 STORE THE HIGH-LEVEL WASTE UNDER CONDITIONS WHICH
 SHALL: ASSURE PUBLIC HEALTH AND SAFETY; PROVIDE
 ENVIRONMENTAL PROTECTION AND COMPATIBILITY WITH THE
 ENVIRONMENT; EMPLOY ESTABLISHED TECHNOLOGY; PROVIDE
 CONTAINER INTEGRITY AND RETRIEVABILITY; ENSURE
 OPERATIONAL RELIABILITY; PERMIT CONTAMINATION-FREE
 OPERATION; WITHSTAND EXPOSURE TO NATURAL PHENOMENA
 WITHOUT COMPROMISING LOSS; PERMIT MODULAR DEVELOPMENT
 MATCHING WASTE RECEIPTS; ALLOW DECOMMISSIONING. (AUTH)

PUB DESC: ADM-SA-109, CONF. 741020--1, (1974)

KEYWORDS: WASTE STORAGE; ANRC; RETRIEVABLE SURFACE
 STORAGE; HIGH-LEVEL WASTE; NUCLEAR POWER; FUEL
 REPROCESSING; WASTE DISPOSAL; DESIGN CRITERIA; STORAGE
 CONTAINER

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 PUB DATE: 1972
 AUTHOR: LAFIVIERE, J.B.

TITLE: RADIOACTIVE WASTE ENCAPSULATION AND STORAGE
 FACILITY

CORPORATE AUTHOR: ATLANTIC RICHFIELD HARTFORD CO.

ABSTRACT: DESCRIBES THE PROCESSES AND THE FACILITY,
 WHICH IS NOW UNDER CONSTRUCTION, THAT WILL BE USED TO
 ENCAPSULATE AND STORE THE ISOTOPES SP-90 AND CS-137.
 PREVIOUS DISCUSSIONS OF THIS FACILITY WERE PRESENTED
 DURING THE CONCEPTUAL DESIGN STAGE IN REFERENCES 1 AND
 2. THE FACILITY WILL BE LOCATED NEAR RICHLAND,
 WASHINGTON ON THE HARTFORD RESERVATION. THE WASTE
 FRACTIONIZATION PLANT (B PLANT) AND THE NEW PLANT WILL
 BE OPERATED BY THE ATLANTIC RICHFIELD HARTFORD COMPANY
 UNDER CONTRACT TO THE CSAC.

PUB DESC: ADM-SA-115, CONF-720903-12, 22 PAGES,
 PAPER PRESENTED AT THE 20TH CONFERENCE ON REMOTE
 SYSTEMS TECHNOLOGY HELD AT IDAHO FALLS, IDAHO,
 SEPTEMBER 17, 1972

KEYWORDS: CESIUM; DESIGN CRITERIA; STRONTIUM; WASTE
 STORAGE; WASTE TREATMENT, FISSION; ISOTOPIC
 FRACTIONATION; ANRC

<682>
 PUB DATE: 1972
 AUTHOR: LOPEZ, G.E.

TITLE: SAFETY ANALYSIS REPORT FOR THE ICVP
 HIGH-LEVEL SOLID RADIOACTIVE WASTE STORAGE FACILITIES

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION,
 IDAHO FALLS, IDAHO

ABSTRACT: AT THE IDAHO CHEMICAL PROCESSING PLANT,
 RADIOACTIVE SOLID WASTES RESULTING FROM FLUIDIZED-BED
 CALCINATION OF EXTRACTION-COLUMN EFFLUENTS AND
 NUCLEAR-FACILITIES DECONTAMINATION SOLUTIONS ARE
 STORED IN STAINLESS-STEEL BINS CONTAINED WITHIN
 BURIED CONCRETE VAULTS. A SAFETY ANALYSIS OF THE

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STORAGE FACILITIES INDICATES THAT THEY ARE CAPABLE OF WITHSTANDING NATURAL OCCURRENCES SUCH AS EARTHQUAKES, TCHADOES, HIGH WINDS, OR FLOODS WITHOUT SERIOUS DAMAGE OR SPREAD OF RADIOACTIVE MATERIALS TO THE ENVIRONMENT.

PUB DESC: ICP-1005, 190 PAGES, FIGURES, TABLES, REFERENCES, JANUARY 1972

KEYWORDS: CONCRETE; HIGH-LEVEL WASTE; FLUIDIZED BED; CONTAINMENT ISOLATION; WASTE STORAGE; WASTE TREATMENT; CALCINATION; CONTAINMENT INTEGRITY; STEEL, STAINLESS; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; STORAGE CONTAINER; SHIPPING; SAFETY ANALYSIS

<683>

PUB DATE: 1974

AUTHOR: BARRIS, E.V.

TITLE: CORROSION OF MILD STEEL TANK LINERS EXPOSED TO SIMULATED SOLIDIFIED ALKALINE HIGH LEVEL WASTE

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: AT BANYOND, LIQUID RADIOACTIVE WASTES ARE CURRENTLY BEING SOLICIFIED AND STORED IN UNDERGROUND STEEL-LINED CONCRETE TANKS. OF INTEREST IS THE CORROSION OF THE MILD STEEL TANK LINERS, INCLUDING STRESS CORROSION OR CAUSTIC CRACKING, CAUSED BY THE SOLIDIFIED WASTE. THE CORROSIVENESS OF SOLIDIFIED WASTE IS LARGELY UNKNOWN BUT PROBABLY WILL BE PRIMARILY DEPENDENT UPON RESIDUAL WATER CONTENT, CAUSTIC CONTENT AND TEMPERATURE. THIS STUDY WAS INITIATED TO DETERMINE THE CORROSIVENESS OF HIGH-LEVEL WASTE SOLUTION BY EXPOSING COUPONS FOR WEIGHT LOSS DETERMINATIONS AND FIT DEPTH MEASUREMENTS AND BY EXPOSING C-RINGS TO DETERMINE STRESS CORROSION CRACKING PROPENSITY.

PUB DESC: BNWL-1069, (1974)

KEYWORDS: STORAGE TANKS; BANYOND SITE; MILD STEEL; HIGH-LEVEL WASTE; WASTE STORAGE; STRESS CORROSION; CAUSTIC CRACKING; SOLID WASTE; WATER CONTENT; TEMPERATURE

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PUB DATE: 1970

AUTHOR: BARQUE, T.; BARREL, S.; REINHOLD, J.; SCURDUP, J.; JOFFE, R.; LEROU, P.

TITLE: DEVELOPMENT OF THE MANAGEMENT OF SOLID WASTES OF INTERMEDIATE ACTIVITY AT THE CENTER OF NUCLEAR STUDIES AT SACLAY

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE

ABSTRACT: DESCRIBES THE NEW INSTALLATION FOR STORAGE - FCL'S IN WATER-TIGHT CONCRETE, WELL FOR STORING WASTES THAT TAKE UP LITTLE FLOOR-SPACE, HOLES FOR LARGE ELEMENTS. THE REASONS USED FOR PERSONNEL PROTECTION ARE GIVEN AS WELL AS SITE PROTECTION AGAINST CONTAMINATION. THE ELEMENTS OF AN ECONOMIC BALANCE-SHEET RELEVANT TO THE NEW MODE OF STORAGE ARE GIVEN.

PUB DESC: SN-137/15, STI/PUB-264, CONF-700905, 19 PAGES, 7 FIGURES, 6 REFERENCES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); FORD; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); FRANCE; IAEA; HOBITOR, PERSONNEL; WASTE MANAGEMENT

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PUB DATE: 1975

AUTHOR: NATIONAL ACADEMY OF SCIENCES (U.S.A.)

TITLE: INTERIM STORAGE OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTES

CORPORATE AUTHOR: NATIONAL RESEARCH COUNCIL

ABSTRACT: REVIEWS AND EVALUATES THE FEASIBILITY, SAFETY, AND ESTIMATED COSTS OF SEVERAL CONCEPTS FOR THE INTERIM SURFACE STORAGE OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTES THAT RESULT FROM THE CIVILIAN NUCLEAR POWER PROGRAM. A STUDY PANEL CONCLUDED THAT RETRIEVABLE SURFACE STORAGE IS ACCEPTABLE. RECOMMENDATIONS RESULTING FROM THE STUDY ARE LISTED AND REVIEWED.

PUB DESC: NATIONAL ACADEMY OF SCIENCES, 1975, 82 PPS, (PUBLISHED BY)

KEYWORDS: WASTE MANAGEMENT; HIGH-LEVEL WASTE; INDUSTRY, NUCLEAR; RETRIEVABLE SURFACE STORAGE; WASTE SOLIDIFICATION; REVIEW; WASTE DISPOSAL; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS);

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PUB DATE: 1971

AUTHOR: NUCLEAR FUEL SERVICES, INC. (U.S.A.)

TITLE: SAFETY ANALYSIS OF HIGH LEVEL LIQUID WASTE STORAGE FACILITY

CORPORATE AUTHOR: NUCLEAR FUEL SERVICES, INC.

ABSTRACT: TRANSMITS THE SAFETY-ANALYSIS REPORT FOR THE WASTE-STORAGE FACILITY. THE NEW FACILITY IS BASICALLY THE SAME AS THAT PRESENTLY LICENSED, BUT THE MARGIN OF SAFETY WILL BE INCREASED IN THAT THE TOTAL QUANTITY OF LIQUID WASTES AT THE SITE WILL BE LIMITED TO THE EXISTING WASTES PLUS A MARGIN OF A FIVE-YEAR INVENTORY.

PUB DESC: DOCKET-50201-102, 50 PAGES, LETTER - NUCLEAR FUEL SERVICES, INC. TO DIVISION OF MATERIALS LICENSING (ARC) - DECEMBER 30, 1971, DOCKET 50-201

KEYWORDS: WASTE STORAGE; WEST VALLEY; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; WFS; SAFETY ANALYSIS; FUEL REPROCESSING

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PUB DATE: 1970

AUTHOR: OAK RIDGE OPERATIONS (U.S.A.)

TITLE: ARC ANNOUNCES SALT MINE DEPOSITORY SITE FOR RADIOACTIVE WASTE

CORPORATE AUTHOR: U.S. ARC, OAK RIDGE OPERATIONS, TENNESSEE

ABSTRACT: ANNOUNCES A TENTATIVE SELECTION OF SITE NEAR LYONS, KANSAS FOR AN INITIAL SALT MINE DEPOSITORY FOR THE DEMONSTRATION OF LONG-TERM STORAGE OF SOLID HIGH-LEVEL AND LONG-LIVED LOW-LEVEL RADIOACTIVE WASTES.

PUB DESC: ARC NEWS RELEASE NO. 3066, 3 PAGES, JUNE 17, 1970

KEYWORDS: GEOLOGY; PROJECT SALT VAULT; KANSAS; PLUTONIUM; SITING, WASTE DISPOSAL; TRANSPORTATION AND HANDLING; WASTE STORAGE; ORNL; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; SAFETY EVALUATION; SITING; FUEL REPROCESSING

<688>

PUB DATE: 1974

AUTHOR: ONCELEJIN, R.S.

TITLE: CHEMICAL COMPOSITIONS OF SUPERNATES STORED IN SEP HIGH LEVEL WASTE TANKS.

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: HIGH-LEVEL RADIOACTIVE WASTES FROM THE SAVANNAH RIVER PLANT SEPARATIONS PROCESSES ARE STORED IN LARGE, UNDERGROUND, CARBON STEEL TANKS. WASTES ACCUMULATE IN THREE FORMS: SUPERNATE, SLUDGE, AND SALT CAKE. AS CARBON STEEL IS SUSCEPTIBLE TO STRESS-CORROSION CRACKING (SCC) AND CRACKS HAVE BEEN OBSERVED IN SEVERAL OF THE TANKS, STUDIES ARE IN

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PROGRESS TO DETERMINE THE EFFECTS OF SUPERHEAT ON SCC OF TANK MATERIALS. THE RESULTS OF CHEMICAL ANALYSIS OF SEPARATION PROCESS WASTE SUPERNATANTS FROM SIXTEEN WASTE STORAGE TANKS (SEVEN IN P-AREA AND NINE IN B-AREA) ARE REPORTED. WASTE COMPOSITIONS MUST BE KNOWN TO EVALUATE CORROSION PHENOMENA THAT MAY LIMIT THE LIFE OF STORAGE TANKS. ANALYSIS WERE ALSO PERFORMED FOR SAVIETTES RADIOACTIVE SPECIES. THE ELECTROCHEMICAL BEHAVIOR OF THE MILD STEEL USED TO CONSTRUCT THE WASTE TANKS WAS SIMILAR TO EITHER ACTUAL WASTE SUPERNATANTS OR SYNTHETIC SOLUTIONS. THIS STABILITY INDICATES THAT THE RESULTS OF LABORATORY CORROSION TESTS SHOULD BE DIRECTLY APPLICABLE TO THE ACTUAL WASTE TANKS. (NOO. AUTH.)

PUB DESC: D-1347 (1974)

KEYWORDS: HIGH-LEVEL WASTE; SAVANNAH RIVER PLANT; CHEMICAL COMPOSITION; WASTE STORAGE; STORAGE TANKS; STRESS CORROSION; CHEMICAL ANALYSIS; WASTE DISPOSAL; MILD STEEL; SYNTHESIS; COMPARISON

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PUB DATE: 1974

AUTHOR: FITTSAN, P.E.

TITLE: STORAGE OF RADIOACTIVE WASTE

CORPORATE AUTHOR: U. S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THERE ARE, THEORETICALLY, AT LEAST FOUR FUNDAMENTAL WAYS BY WHICH RAY CAN BE PROTECTED FROM THE POTENTIAL DANGERS OF RADIOACTIVE WASTE: (1) CONVERSION OF RADIOISOTOPES IN THE WASTE TO SHORT-LIVED OR STABLE ISOTOPES (TRANSMUTATION); (2) REMOVAL OF THE WASTE COMPLETELY FROM THE PLANET (EXTRATERRESTRIAL DISPOSAL); (3) DEFECTION OF THE WASTE ON THE EARTH IN LOCATIONS WHERE IT IS COMPLETELY OUTSIDE MAN'S BIOLOGICAL ENVIRONMENT (GEOLOGICAL DISPOSAL); AND (4) DEFECTION OF THE WASTE IN MONITORED, MAINTAINABLE, HIGH-INTegrity, PROPERLY SHIELDED AND COOLED CONTAINERS (SURFACE STORAGE). OF THE FOUR FOR SURFACE STORAGE, CAVITIES NEEDED IN STABLE FORMATIONS DEWATH LANDMASSIS APPEAR TO THE MOST FEASIBLE WITH TODAY'S TECHNOLOGY.

PUB DESC: ANARE, NO. 48, PP. 2-4 (SEPTEMBER 1974)

KEYWORDS: WASTE MANAGEMENT; WASTE DISPOSAL, SALT; SPOKESMAN, AEC; RETRIEVABLE SURFACE STORAGE

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PUB DATE: 1968

AUTHOR: FLATT,

TITLE: RESEARCH AND DEVELOPMENT ACTIVITIES IN THE AREA OF RADIOACTIVE RESIDUES. QUARTERLY PROGRESS REPORT, JULY-OCTOBER 1967

CORPORATE AUTHOR: PATTERIE NORTHWEST LABORATORY, PICHLAND, WASHINGTON

ABSTRACT: A SALT-STORAGE EXPERIMENT, INVOLVING STORAGE OF WASTE POTS IN ENVIRONMENTAL TEST PODS FILLED WITH SALT, WAS PROPOSED FOR SSET. THE EXPERIMENT WAS PROPOSED TO SUPPLEMENT THE DATA AND TECHNOLOGY THAT RESULTED FROM THE COUL-CONDUCTED PROJECT SALT VAULT PROGRAM AIMED AT DEMONSTRATING WASTE DISPOSAL IN SALT MINES. DESIGN CRITERIA FOR, AND CONCEPTUAL DESIGN OF, SALT-STORAGE W.D. WERE DEVELOPED IN CONJUNCTION WITH ORRI.

PUB DESC: BNWL-677, 30 PAGES, 5 FIGURES, 4 TABLES, MARCH 1968

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; COUL; THERMAL CONSIDERATION; PATTERIE NORTHWEST; WASTE DISPOSAL, SALT; A AND D PROGRAM

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PUB DATE: 1959

AUTHOR: WEPENNING, C.A.

TITLE: TRACE ELEMENTS INVESTIGATIONS REPORT 603.

GEOLOGIC SURVEY OF THE SAN JUAN BASIN, NEW MEXICO, WITH REFERENCE TO DISPOSAL OF LIQUID RADIOACTIVE WASTE

CORPORATE AUTHOR: GEOLOGICAL SURVEY, WASHINGTON, D.C.

ABSTRACT: FOUR TYPES OF RESERVOIRS IN THE SAN JUAN BASIN APPEAR TO DESERVE CONSIDERATION FOR POSSIBLE STORAGE OF HIGH-LEVEL LIQUID RADIOACTIVE WASTE. THESE ARE IN GYPSUM, LIMESTONE, SHALE, AND SANDSTONE. GYPSUM APPEARS MORE USEFUL FOR THE STORAGE OF SINTERED WASTE. STORAGE OF LIQUID WASTE IN LIMESTONE IS POSSIBLE, BUT IT IS UNCERTAIN WHETHER THE STORED WASTE COULD BE CONTROLLED. THE CONSTRUCTION OF ARTIFICIAL RESERVOIRS IN SHALE UNITS BY HYDRAULIC FRACTURING OR DEEP-SEALED EXCLUSION HAS SEVERAL ADVANTAGES, THE MOST SIGNIFICANT OF WHICH IS THE RELATIVE CERTAINTY OF CONFINEMENT. STORAGE IN PERMEABLE SANDSTONE UNITS IS MORE FAVORABLE FROM THE STANDPOINT OF HEAT CONTROL.

PUB DESC: TRI-603, 75 PAGES, 14 FIGURES, REFERENCES, JUNE 1959

KEYWORDS: DECAY HEAT; NEW MEXICO; SHALE; GEOLOGY; HEAT TRANSFER; WASTE STORAGE; WASTE DISPOSAL, LIQUID; HIGH-LEVEL WASTE; CONTAMINATION; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, HYDRAULIC FRACTURING

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PUB DATE: 1964

AUTHOR: BICHTER-BENEDICT, G.

TITLE: SUBTERRANEAN DISPOSAL OF RADIOACTIVE WASTE IN CAVITIES MADE IN SALT FORMATIONS

CORPORATE AUTHOR: BUNDESANSTALT FÜR BODENFORSCHUNG, HANNOVER, GERMANY

ABSTRACT: ONLY ONE KIND OF ROCK IS TRULY IMPERMEABLE TO GROUND WATER- HALITE OR ROCK SALT. SOME OF THE PHYSICAL AND GEOLOGICAL PROPERTIES OF HALITE ARE DESCRIBED, AND IT IS SHOWN THAT DOWNS ON DIAPYRS ARE BETTER FOR WASTE STORAGE THAN TABLE FORMATIONS. THE CREATION OF CAVITIES IN SALT DEPOSITS FOR WASTE STORAGE IS CONSIDERED, AND SOME SALT FORMATIONS IN EUROPE SUITABLE FOR SUCH APPLICATIONS ARE DISCUSSED.

PUB DESC: U. N. INTERNATIONAL CONFERENCE, 16 PAGES, 6 FIGURES, 9 REFERENCES- MAY 1964, A/CONF. 28/P/783- PRESENTED AT THIRD U. N. INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, AUGUST 31-SEPTEMBER 9, 1964- IAEA

KEYWORDS: WASTE STORAGE; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); GERMANY; WASTE DISPOSAL, SALT;

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PUB DATE: 1968

AUTHOR: BICHTER, D.; FOLDA, D.; SCHMIDT, A.

TITLE: ON THE UTILIZATION OF CAVITIES IN SALT FORMATIONS FOR THE FINAL DISPOSAL OF RADIOACTIVE WASTES IN THE G.D.R.

CORPORATE AUTHOR: STAATLICHE ZENTRALE FÜR STRAHLENSCHUTZ, BERLIN, GDR

ABSTRACT: THE STORAGE OF RADIOACTIVE WASTES IN SALT FORMATION CAVITIES IS A CONVENTIENT APPROACH TO FINAL DISPOSAL. A GENERAL EVALUATION IS PRESENTED AND A REVIEW MADE OF THE POSSIBILITIES FOR UTILIZING SALT MINES AND SALT CAVITIES FOR THIS PURPOSE IN THE G.D.R. SAFETY PROBLEMS ARE BRIEFLY DISCUSSED.

PUB DESC: REPANFRIE 11, PAGES 201-4 (SEPTEMBER 1968)

KEYWORDS: MINING; REVIEW; WASTE STORAGE; GERMANY; WASTE DISPOSAL, SALT; SAFETY EVALUATION

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PUB DATE: 1966

AUTHOR: SAILL, J.; SAPP, O.

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TITLE: HIGH LEVEL RADIOACTIVE WASTE BURIAL IN CZECHOSLOVAKIA

CORPORATE AUTHOR: INST. OF NUCLEAR RESEARCH, BRN., CZECH.

ABSTRACT: THE PRELIMINARY PROJECT OF UTILIZING THE ABANDONED LIMESTONE MINE DICHAZD NEAR LYONOVIC, FOR THE STORAGE OF HIGH LEVEL RADIOACTIVE WASTES FROM THE REPROCESSING PLANTS WHICH HAVE BEEN CONVERTED INTO SOLID AND CHEMICALLY RESISTANT MATERIALS, IS GIVEN.

PUB DESC: JAR. ENER., 10, PAGES 150-161 (APRIL 1969) (IN CZECH)

KEYWORDS: GEOLOGY; MINING; STRUNG, CHEMICAL PROCESS PLANT; WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; CZECHOSLOVAKIA; HYDROLOGY; RADIATION SAFETY AND CONTROL; ENVIRONMENT; FUEL REPROCESSING

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PUB DATE: 1972
AUTHOR: SCHULKE, R.

TITLE: STORAGE OF GASEOUS RADIOACTIVE WASTES IN GEOLOGICAL FORMATIONS

CORPORATE AUTHOR: NATIONAL CENTRE FOR RADIATION PROTECTION OF THE GDR

ABSTRACT: POSSIBILITIES OF ULTIMATE STORAGE OF GASEOUS RADIOACTIVE WASTES IN THE GROUND ARE PRESENTED TAKING INTO CONSIDERATION SAFETY, FROM A GEOLOGICAL POINT OF VIEW, AND THE COSTS OF THE DIFFERENT TYPES OF STORAGE. THE GEOLOGICAL TIGHTNESS NECESSARY FOR THE SAFE LONG-TERM STORAGE OF GASEOUS RADIOACTIVE WASTES AS WELL AS THE ASSESSMENT OF THE CRITERIA OF TIGHTNESS ARE DISCUSSED. BESIDES THE POSSIBLE PROCEDURES FOR ULTIMATE STORAGE A RETURN IS PROPOSED FOR INTERMEDIATE STORAGE OF RADIOACTIVE GASES IN THE GROUND. (IN GERMAN)

PUB DESC: SIS-139, 30 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1972

KEYWORDS: CONTAINMENT; GEOLOGY; WASTE STORAGE; SAVANNAH RIVER PLANT; WASTE DISPOSAL, GAS; WASTE MANAGEMENT; GERMANY; SHIELDING; GAS; WASTE DISPOSAL, DEEP WELL

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PUB DATE: 1976
AUTHOR: SHEARID, D.L.; LYON, B.J.

TITLE: RADIOISOTOPE ACCUMULATION IN A REACTOR COOLING LAKE

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF RADIATION PROGRAMS

ABSTRACT: IN THE UTILIZATION OF A COOLING LAKE FOR A COMMERCIAL POWER REACTOR, LOW-LEVEL QUANTITIES OF LIQUID WASTE ARE RELEASED TO THE LAKE WATER. DUE TO THE RETENTION AND RECYCLING OF WATER FOR CONDENSED COOLING PURPOSES, CONCENTRATIONS OF RADIOISOTOPES CAN INCREASE TO LEVELS WHICH ARE DIFFICULTLY MEASURABLE IN THE WATER. SUCH A SITE DESIGN IS REPRESENTED BY THE H. B. ROBINSON UNIT 2 OPERATED BY THE CAROLINA POWER AND LIGHT COMPANY AT BABYVILLE, SC. FOR A 9-YEAR PERIOD LAKE WATER AND OTHER LAKE COMPONENTS SUCH AS FISH, AQUATIC VEGETATION, AND BENTHIC SEDIMENTS WERE SAMPLED AND ANALYZED TO DETERMINE IF ANY LONG-TERM BUILDUP OCCURRED. RESULTS INDICATED THAT THE LAKE WATER CONCENTRATIONS FOLLOWED GENERAL MIXING EQUATIONS AND THAT TURNOVER RATES IN THE INDIVIDUAL COMPONENTS OF THE LAKE WERE TOO SHORT TO QUANTIFY WITH THIS STUDY DESIGN. THIS INDICATES THAT CONCENTRATIONS OF RADIOISOTOPES IN THE LAKE WOULD BE FINALLY A FUNCTION OF PARAMETERS SUCH AS RADIOACTIVITY RELEASED AND LAKE FLOW FOR THE PREVIOUS YEAR AND ESSENTIALLY INDEPENDENT OF EARLIER PARAMETERS. AN ESTIMATE OF ANNUAL EXTERNAL DOSES TO AN INDIVIDUAL UTILIZING THE LAKE FOR RECREATION (I.E., SWIMMING, BOATING, AND FISHING) WOULD BE ABOUT 5 MICRORE.

PUB DESC: RFA-520/5-76-005

KEYWORDS: COOLING WATER; SAMPLING; ANALYSIS; VEGETATION; AQUATIC; ENVIRONMENT; FISH; TOXICITY; COALIT DESIGN; CARBON; NADGAWSE; IODINE; NUCLEAR POWER PLANTS; ROBINSON 2 (PWR);

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PUB DATE: 1971
AUTHOR: SLANSKY, C.H.

TITLE: ULTIMATE STORAGE OF RADIOACTIVE WASTE

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION, IDAHO FALLS, IDAHO

ABSTRACT: THE CONDITIONS FOR ULTIMATE STORAGE OF RADIOACTIVE WASTE ARE - PERIODS OF THE ORDER OF A MILLION YEARS, INACCESSIBILITY OF THE WASTE TO MAN OR HIS FOOD CHAIN, NO SURVEILLANCE OR MAINTENANCE, AND COSTS THAT WOULD BE COMMENSURATE WITH THE BENEFITS. RETRIEVABILITY OF THE STORED WASTE IS NOT A NECESSARY REQUIREMENT ALTHOUGH ACCEPTABLE IF CONVENIENT. SIMILARLY, AVAILABILITY OF THE METHOD TO ALL NUCLEAR NATIONS WOULD BE A DESIRABLE CHARACTERISTIC. TWO REGIONS ON THE EARTH WHERE WASTES MIGHT BE DEPOSITED AND STORED ARE THE SEA AND THE LAND, IN TRENCHES OF OCEAN DEPTHS AND IN UNDERGROUND CAVITIES (SALT BEDS) OR BY HYDROFRACTURE. TWO POSSIBLE APPROACHES TO ULTIMATE DISPOSAL OF RADIOACTIVE WASTE ARE TRANSMUTATION OF THE RADIOISOTOPES TO STABLE ISOTOPES AND SHIPMENT OF THE WASTE VIA ROCKETS TO OTHER PLANETS OR TO THE SUN.

PUB DESC: CCRT-711113-5, 12 PAGES, FROM THE REGIONAL TRAINING COURSE IN RADIOACTIVE WASTE MANAGEMENT, TOKYO, JAPAN, NOVEMBER 4, 1971

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT

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PUB DATE: 1972
AUTHOR: STAFFORD, E.; FERRO, C.; MUST, D.

TITLE: UTILIZATION OF CLAY FORMATIONS FOR STORAGE OF SOLID HIGH LEVEL WASTES

CORPORATE AUTHOR: COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME

ABSTRACT: COMPARATIVE EXAMINATION OF SEVERAL GEOLOGICAL SITES TO BE USED FOR STORING SOLID HIGH-LEVEL RADIOACTIVE WASTES SOME CLAY FORMATIONS, WERE INVESTIGATED. THIS STUDY WAS CARRIED OUT IN AN AREA WHERE A CLAY FORMATION, MAINLY COMPOSED OF ILLITE, CHLORITE, NAOLITE, MONTMORILLONITE AND DETRITAL MINERALS, REACHES A THICKNESS OF ABOUT 700-800 METRES AND OUTCROPS, UNDER STABLE CONDITIONS, AT AN ALTITUDE NEAR SEA-LEVEL. THE VERTICAL AND HORIZONTAL HETEROGENEITY OF THE CLAY FORMATION WERE ASCERTAINED BY BORE HOLES. THE ABSENCE OF CIRCULATING WATER WAS ASCERTAINED BY RADIOACTIVE TRACERS. GEOTECHNICAL TESTS CARRIED OUT IN LABORATORY SHOWED THE DEFORMATION CHARACTERISTICS OF THE CLAY FORMATION.

PUB DESC: CCRT-721107, 25 PAGES, 9 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: SCIL, RADIOISOTOPE MOVEMENT THROUGH; CLAY; WASTE STORAGE; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; ITALY; SOIL; SOIL PROPERTIES; WASTE DISPOSAL, SALT; SOIL MECHANICS

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PUB DATE: 1976
AUTHOR: STAFFLES, D.A.; PENCE, D.T.

TITLE: AN EVALUATION OF QUINOL CLATHRATE FOR FISSION PRODUCT MOLE GAS STORAGE

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION,

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GERMANY OFFICE BOTS

ABSTRACT: THE PROPERTIES OF QUINOL CLATHRATE AS THE RELATE TO THE CONTAINMENT AND STORAGE OF FISSION PRODUCT MOBILE GASES ARE DESCRIBED. THE MOST SERIOUS LIMITATION OF QUINOL CLATHRATE FOR CONTAINMENT AND STORAGE OF FISSION PRODUCT MOBILE GASES IS ITS THERMAL INSTABILITY. BASED ON THE REPORTED THERMAL STABILITY AND SOME HEAT TRANSFER CALCULATIONS PRESENTED IN THIS DOCUMENT, THE MAXIMUM LOADING OF QUINOL CLATHRATE APPEARS TO BE LESS THAN 5 CC OF GAS PER GRAM OF CLATHRATE, ABOUT 7% OF THE THEORETICAL CAPACITY. BECAUSE OF THIS LIMITATION, QUINOL CLATHRATE DOES NOT APPEAR TO BE AN ECONOMICALLY SUITABLE MATERIAL FOR LONG-TERM CONTAINMENT OF FISSION PRODUCT MOBILE GASES. (AUTH)

PUB DESC: ICP-1045 (1974)

KEYWORDS: WASTE STORAGE; STORAGE CONTAINER; KRYPTON (SEE ALSO MOBILE GAS); MOBILE GAS STORAGE; ARGON; XENON; QUINOL CLATHRATE; LEAK; STABILITY; THERMAL EFFECTS

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PUB DATE: 1972

AUTHOR: STARR, C.; BARNHART, D.F.

TITLE: NUCLEAR WASTE STORAGE

CORPORATE AUTHOR: UNIVERSITY OF CALIFORNIA, LOS ANGELES; OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: IN PUBLIC DISCUSSION OF NUCLEAR POWER AND PUBLIC SAFETY, MUCH CONCERN IS EXPRESSED ABOUT THE NEED FOR STORING THE RADIOACTIVE WASTE FOR CENTURIES. WHILE SUCH LONG-TERM STORAGE IS AN ESSENTIAL PART OF NUCLEAR POWER DEVELOPMENT, THE PROJECTED PUBLIC SAFETY ISSUE INVOLVED IS MINIMAL, ESPECIALLY WHEN COMPARED WITH OTHER ENVIRONMENTAL PROBLEMS.

PUB DESC: SCIENCE, 177(4051), PP. 744-745 (SEPTEMBER 1, 1972)

KEYWORDS: WASTE STORAGE; PUBLIC RESPONSE (SEE ALSO OPINION, PROPONENT, AND POPULATION RESPONSE); POPULATION EXPOSURE; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; POPULATION RESEARCH

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PUB DATE: 1965

AUTHOR: STEVENSON, C.E.

TITLE: CURRENT PRACTICES IN HANDLING AND STORING SOLID RADIOACTIVE WASTE FROM REACTORS

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: FROM DATA OBTAINED IN A SURVEY OF REPRESENTATIVE REACTOR OPERATORS (20 REACTORS), AMERICAN STANDARDS ASSOCIATION SUBCOMMITTEE NS-2 HAS PREPARED A SUMMARY OF SOLID-WASTE HANDLING PRACTICES. SUCH SOLID RADIOACTIVE WASTES INCLUDE FILTERS AND ION-EXCHANGE RESINS, CORE HARDWARE, FAILED SYSTEM COMPONENTS, PROTECTIVE CLOTHING, AND OTHER MATERIALS CONTAMINATED IN MAINTENANCE OPERATIONS. AT TWO SITES, COMBUSTIBLES ARE INCINERATED AND THE ASHES ARE DUMPED. AT OTHER SITES, BOTH COMBUSTIBLES OF A BULKY NATURE ARE GENERALLY Baled OR DUMPED DIRECTLY FOR OFF-SITE DISPOSAL AT AEC-APPROVED SITES. AT SEVERAL SITES, SOLIDS, INCLUDING RESINS, MAY BE FIXED IN BLOCKS OF CONCRETE. AT OTHER SITES, RESINS ARE STORED IN UNDERGROUND TANKS. A FEW SITES ARE PROVIDED WITH VAULTS FOR TEMPORARY STORAGE OF SOLIDS.

PUB DESC: NUCLEAR SAFETY 7(2) PAGE 231-234, (WINTER 1965-1966), 4 PAGES, 1 TABLE, 7 REFERENCES

KEYWORDS: WASTE HANDLING; STANDARDS, RADIATION (SEE ALSO REGULATION); WASTE STORAGE; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; INCINERATION; WASTE TREATMENT, EQUIPMENT

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PUB DATE: 1970

AUTHOR: URBAN, C.H.

TITLE: A PRELIMINARY SAFETY ANALYSIS OF NEAR SURFACE STORAGE OF RADIOACTIVE WASTE AS SALT CAVES

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: A DETAILED AND CRITICAL EXAMINATION OF CONCEIVABLE HAZARDS OF THE IN-TANK-SOLIDIFICATION (ITS) WASTE STORAGE CONCEPT REVEALS NO EVIDENCE TO INDICATE THAT THE CONCEPT IS UNSOUND. NO NATURAL HAZARDS LEADING TO THE DEVELOPMENT OF UNSAFE CONDITIONS WERE DISCOVERED. ANTICIPATED USES OF THE NEARBY LAKE WILL NOT JEOPARDIZE THE MULTICENTURY ISOLATION OF THE WASTE STORED BY THE ITS CONCEPT. RADIOLOGICAL SAFETY CONSIDERATIONS INDICATE THE ITS STORAGE CONCEPT TO BE SAFE AND TO OFFER IMPROVED LONG-TERM WASTE STORAGE COMPARED TO THE PRESENT LIQUID STORAGE METHODS.

PUB DESC: BNWL-11994, 60 PAGES, FIGURES, TABLES, 47 REFERENCES, JANUARY 1970

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE TREATMENT, LIQUID; DBL (BROOKHAVEN NATIONAL LAB.); HAZARDOUS ANALYSIS; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; STORAGE CONTAINER

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PUB DATE: 1972

AUTHOR: WARNER, D.F.; DAVIDSON, A.S.; LARKIN, N.J.

TITLE: OPERATIONAL EXPERIENCE IN THE EVAPORATION AND STORAGE OF HIGHLY ACTIVE FISSION PRODUCT WASTES AT WINDSCALE

CORPORATE AUTHOR: BRITISH NUCLEAR FUELS, LIMITED, WINDSCALE WORKS

ABSTRACT: CONCLUDES THAT BOTH EVAPORATORS AND TANK FORM A RELIABLE, SIMPLE SYSTEM FOR SAFE CONCENTRATION AND STORAGE OF HIGHLY ACTIVE FISSION PRODUCT WASTE FROM THE WINDSCALE REPROCESSING PLANTS. THE CLOSE SIMILARITY OF DESIGN TARGETS AND OPERATING PERFORMANCE UP TO CONCENTRATIONS OF 40 LITERS/TON U IS ENCOURAGING AND THE SUBSEQUENT TANKS, WHICH WILL CONTAIN INCREASING QUANTITIES OF OXIDE FUEL WASTES FROM THE REACTOR PLANT, WILL BE OPERATED ON THE SAME CRITERIA OF SPECIFIC HEAT RELEASE, SOLIDS CONCENTRATION AND NITRATES SOLUBILITY. ON THESE GROUNDS, THERE IS EVERY CONFIDENCE IN THE CURRENT DESIGNS AS A BASIS FOR THE SAFE AND ECONOMICAL STORAGE OF HIGHLY ACTIVE WASTE. A STUDY OF THE USE OF VITRIFICATION FOR THE ULTIMATE DISPOSAL OF WASTES AND THE INTERPLAY BETWEEN THE DESIGN OF A VITRIFICATION PLANT AND THE LIQUOR STORAGE TANKS IS BEING ASSESSED TO ACHIEVE THE OPTIMUM TANK SIZE AND LIQUOR CONCENTRATION IN THE LONG TERM.

PUB DESC: CBNF-721107, 14 PAGES, 3 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: CONTAINMENT; WINDSCALE; VITRIFICATION; DESIGN CRITERIA; UNITED KINGDOM; WASTE STORAGE; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; EVAPORATION; STORAGE CONTAINER; SPIELING; SAFETY EVALUATION; OPERATING EXPERIENCE; CONCENTRATION

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PUB DATE: 1967

AUTHOR: WHEELER, D.R.; CICKET, D.R.; LOHSE, G.E.; BLACK, D.F.; RHODES, D.W.; BUCKNER, J.A.

TITLE: STORAGE OF RADIOACTIVE SOLIDS IN UNDERGROUND FACILITIES - CURRENT ICPP PRACTICES AND FUTURE CONCEPTS

CORPORATE AUTHOR: IDAHO NUCLEAR CORPORATION, IDAHO FALLS

ABSTRACT: HIGH-ACTIVITY GRANULAR SOLIDS ARE STORED IN STAINLESS-STEEL BINS INSIDE A BURIED CONCRETE VAULT AT THE IDAHO CHEMICAL PROCESSING PLANT FOR ABOUT \$1500 CO. METER. LABORATORY WORK SHOWS THAT NO FISSION PRODUCTS WILL BE RELEASED FROM THE STORED SOLIDS AND SAFETY ASPECTS OF STORAGE AT HIGH TEMPERATURES ARE

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BEING STUDIED TO AVOID FURTHER THE EXPENSE OF SOLIDS STORAGE. AN APPRECIABLE REDUCTION IN COSTS FOR SOLIDS STORAGE FACILITIES COULD BE REALIZED BY OMITTING THE CONCRETE VAULT AND BURYING RIBS DIRECTLY IN THE SOIL.

PUB DESC: SYL/PUB-156, CORP-67C12, PAGES 421-48 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FOUR JOINT IAEA/EURATOM SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: WASTE STORAGE; CONCRETE; THERMAL CONSIDERATION; WASTE MANAGEMENT; WASTE TREATMENT, ECONOMICS; ICRP; SOIL; MATHEMATICAL TREATMENT; WASTE TREATMENT, EQUIPMENT; MODEL TESTING

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PUB DATE: 1973

AUTHOR: WORNICH, E.D.

TITLE: RETRIEVABLE SURFACE STORAGE OF HIGH LEVEL RADIOACTIVE WASTE

CORPORATE AUTHOR: ATLANTIC RICHFIELD HAYFORD CO.

ABSTRACT: THE POLICY OF THE ATOMIC ENERGY COMMISSION IS TO TAKE CUSTODY OF ALL HIGH-LEVEL NUCLEAR WASTES AND DISPOSE OF THEM PROBABLY. THIS POLICY (CODE OF FEDERAL REGULATIONS, TITLE 10, PART 50) REQUIRES THAT THESE WASTES BE SOLIDIFIED AT FUEL REPROCESSING PLANTS AND SHIPPED TO THE FEDERAL DEPOSITORY WITHIN TEN YEARS AFTER SEPARATION. ULTIMATE DISPOSAL METHODS HAVE NOT YET BEEN SELECTED AND ARE NOT EXPECTED TO BE AVAILABLE WHEN WASTE DELIVERIES BEGIN ABOUT 1983. THE AEC THEREFORE PLANS TO BUILD AN INTERIM STORAGE FACILITY TO SERVE UNTIL THE PERMANENT DEPOSITORY HAS BEEN ESTABLISHED. THIS INTERIM FACILITY IS CALLED THE RETRIEVABLE SURFACE STORAGE FACILITY (RSSF). (AUTH)

PUB DESC: AMN-SA-166 (1973) CORP. 731101-19

KEYWORDS: HIGH-LEVEL WASTE; DEPOSITORY; WASTE STORAGE; RETRIEVABLE SURFACE STORAGE; ENGINEERING (SEE ALSO DESIGN CRITERIA AND SHIELDING); SITING; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); EVALUATION; DESIGN

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PUB DATE: 1974

AUTHOR: ZELIER, E.J.; SAUNDERS, E.P.; AUGINO, E.E.

TITLE: A PROPOSAL FOR THE ESTABLISHMENT OF A PERMANENT INTERNATIONAL HIGH-LEVEL RADIOACTIVE WASTE DEPOSITORY IN ANTARCTICA

CORPORATE AUTHOR: UNIVERSITY OF KANSAS, CENTER FOR RESEARCH, INC.;

ABSTRACT: PERMANENT DISPOSAL OF THE WASTE UNDER THE ANTARCTIC ICE-CAP WOULD REMOVE THE WASTES FROM POPULATED AREAS AND - IF THE DEPOSITORY WERE PROPERLY DESIGNED - WOULD REMOVE THE WASTES FROM ALL CONTACT WITH THE BIOSPHERE. THE POLAR CLIMATE AND THE LOW TEMPERATURE OF THE ICE WOULD FURNISH A SINK FOR THE WASTE GIVEN OFF BY THE RADIOACTIVE WASTE CASKS, AND THE LARGE SUBSURFACE AREA OF THE ICE WOULD PROVIDE ADEQUATE SPACE SO THAT THE CASKS WOULD NOT BE IN CLOSE CONTACT WITH EACH OTHER. ALL AVAILABLE EVIDENCE INDICATES THAT IF THE WASTES WERE POSED INTO A SOLID GLASS MATRIX, THEY COULD BE PRACTICALLY AND SAFELY TRANSPORTED TO THE INTERIOR OF THE ICE-CAP. IF PLACED ON THE SURFACE OF THE ICE, THEY WOULD MELT THEIR OWN REPLACEMENT SHAFTS WHICH WOULD RAPIDLY RESEAL BY FREEZING AND PLASTIC FLOW. THE CONTAINERS WOULD SEAL TIGHTLY TO THE ICE/ROCK INTERFACE WHERE THEY WOULD REMAIN SAFELY ISOLATED FROM THE BIOSPHERE FOR MORE THAN 250,000 YEARS. SCIENTIFIC STUDIES HAVE INDICATED THAT THE AVERAGE TEMPERATURE IN ANTARCTICA HAS REMAINED BELOW FREEZING FOR MORE THAN A BILLION YEARS SO THAT THE LARGE THICKNESS OF POLAR ICE MAY BE EXPECTED TO PROVIDE A GOOD SEAL FOR AT LEAST A SIMILAR PERIOD INTO THE FUTURE. (AUTH)

PUB DESC: OCRE-OCCE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 431-446 (1974)

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL; WASTE TRANSPORTATION; HIGH-LEVEL WASTE; ANTARCTICA; DEPOSITORY; WASTE DISPOSAL, ICE SHEET; TEMPERATURE; POLAR ICE; POPULATION; BIOSPHERE; HEAT SINK; SOLID; GLASS MATRIX

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PUB DATE: 1972

AUTHOR: ZELIER, E.J.; SAUNDERS, E.P.; AUGINO, E.E.

TITLE: A PROPOSAL FOR THE ESTABLISHMENT OF A PERMANENT INTERNATIONAL HIGH-LEVEL RADIOACTIVE WASTE DEPOSITORY IN ANTARCTICA

CORPORATE AUTHOR: UNIVERSITY OF KANSAS, CENTER FOR RESEARCH, INC.

ABSTRACT: PERMANENT DISPOSAL OF WASTE UNDER ANTARCTIC ICE CAP WOULD REMOVE WASTES FROM POPULATED AREAS AND FROM CONTACT WITH BIOSPHERE. THE POLAR CLIMATE AND LOW TEMPERATURE OF ICE WOULD FURNISH A SINK FOR WASTE GIVEN OFF BY RADIOACTIVE WASTE CASKS, AND THE LARGE SUBSURFACE AREA OF THE ICE WOULD PROVIDE ADEQUATE SPACE SO THAT CASKS WOULD NOT BE IN CLOSE CONTACT WITH EACH OTHER. EVIDENCE INDICATES THAT IF WASTES WERE POSED INTO A SOLID GLASS MATRIX, THEY COULD BE PRACTICALLY AND SAFELY TRANSPORTED TO THE INTERIOR OF ICE CAP. IF PLACED ON THE SURFACE, THEY WOULD MELT THEIR OWN REPLACEMENT SHAFTS WHICH WOULD RAPIDLY RESEAL. THE CONTAINERS WOULD SEAL TIGHTLY TO ICE-ROCK INTERFACE WHERE THEY WOULD REMAIN ISOLATED FOR MORE THAN 250,000 YEARS.

PUB DESC: CCBF-721107, 43 PAGES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL, ICE SHEET; WASTE TREATMENT; WASTE TRANSPORTATION; WASTE MANAGEMENT; DEBRIS; GLASS (SEE ALSO VITRIFICATION); ICELAND; SNOW; SOLID

<708>

PUB DATE: 1972

AUTHOR: ALAN, C.; KERNER, H.; NICHOLS, D.

TITLE: FEASIBILITY OF DISPOSAL OF LIQUID RADIOACTIVE WASTES INTO THE DEEPER GEOLOGIC SUB-SURFACE OF THE TERRITORY OF THE GDR

CORPORATE AUTHOR: NATIONAL CENTER FOR RADIATION PROTECTION OF THE GDR

ABSTRACT: STARTING FROM THE GEOLOGICAL CONDITIONS IN THE GDR THE DISPOSAL OF LIQUID LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES INTO DEEP GEOLOGIC FORMATIONS IS CONSIDERED AND OPPOSED TO THE EXPERIENCE GAINED FROM ANALOGOUS PROCEDURES FOR THE DISPOSAL OF CONVENTIONAL LIQUID WASTES. THE DISPOSAL OF LIQUID RADIOACTIVE WASTES INTO CAVITIES OF SALT ROCK OR INTO REACHED PETROLEUM OR NATURAL GAS RESERVOIRS IS ASSESSED AS A SUITABLE PROCEDURE AND EVALUATED CONSIDERING TECHNICAL, ECONOMIC AND SAFETY ASPECTS. CERTAIN CONDITIONS IN SEVERAL LIMITED REGIONS OF THE GDR WOULD PERMIT TO APPLY THESE METHODS. HOWEVER, IN MOST CASES THESE REGIONS ARE NOT IDENTICAL WITH PLANNED SITES OF NUCLEAR PLANTS. WITH REGARD TO A CENTRAL DISPOSAL OF SOLID AND LIQUID RADIOACTIVE WASTES OF ALL ACTIVITY LEVELS THE USE OF AN ABANDONED ROCK SALT MINE IS PREFERRED TO THE ABOVE-MENTIONED PROCEDURES. (IN GERMAN)

PUB DESC: 523-100, 36 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1972

KEYWORDS: GEOLOGY; WASTE STORAGE; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; GERMANY; RADIATION SAFETY AND CONTROL; GEOLOGY, SALT STRUCTURE; SAFETY EVALUATION

<709>

PUB DATE: 1972

AUTHOR: ALBRECHT, E.; BOCHERT, H.; KRAUSE, H.

TITLE: FINAL STORAGE OF RADIOACTIVE WASTES: ANNUAL REPORT 1971

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COMPORATE AUTHOR: GESELLSCHAFT FÜR STRAHLEN-UND
UMWELTFORSCHUNG MBH, MÜNCHEN, GERMANY

ABSTRACT: SUMMARIZES THE WORK DONE IN 1971 IN THE
FIELD OF DISPOSAL OF RADIOACTIVE WASTES. MINING AND
CONSTRUCTION WORK DONE AT THE ASSE MINE NEAR REHLINGEN
IS DISCUSSED. DETAILS ARE GIVEN FOR BOTH LOW-LEVEL
AND INTERMEDIATE-LEVEL WASTE DISPOSAL. ALSO REPORTED
IS THE STATE OF RESEARCH IN THE FIELDS OF ROCK
MECHANICS, GEOLOGY, HYDROLOGY, PLUS RESULTS. NEW
TECHNIQUES FOR WASTE STORAGE ARE REPORTED. (ARTICLE
IN GERMAN)

PUB DESC: KFK-1505, GPT-1 42, 31 PAGES, 12 FIGURES,
JULY 1972

KEYWORDS: MINING; INTERMEDIATE-LEVEL WASTE; ROCK
MECHANICS; WASTE STORAGE; WASTE MANAGEMENT; GERMANY;
WASTE DISPOSAL, SALT

<710>

PUB DATE: 1970

AUTHOR: ALBRECHT, E.; KUBER, K.; FENSL,
P.; DIEPENBACHER, W.; REIL, J.; KRAUSE, H.; SCHUCHARDT,
H.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTES IN THE
FEDERAL REPUBLIC OF GERMANY BY STORAGE IN A SALT MINE

COMPORATE AUTHOR: GESELLSCHAFT FÜR STRAHLEN-UND
UMWELTFORSCHUNG MBH, MÜNCHEN, GERMANY; KARLSRUHE
NUCLEAR RESEARCH CENTER, GERMANY

ABSTRACT: THE GESELLSCHAFT FÜR STRAHLENFORSCHUNG
RUNS AN EXTENSIVE PROGRAM OF SCIENTIFIC RESEARCH AND
TECHNICAL DEVELOPMENT FOR THE FINAL DISPOSAL OF
RADIOACTIVE WASTES IN THE SALT MINE ASSE. THE
EXPERIENCES GATHERED WITH THE STORAGE ARE DESCRIBED.
TECHNOLOGY, THE ADVANTAGES AND DISADVANTAGES OF THE
METHODS ARE DISCUSSED, AND A FORECAST OF THE TECHNIQUE
OF STORAGE PLANNED FOR THE MORE DISTANT FUTURE IS MADE.

PUB DESC: SM-137/9, STI/EB-264, CONF-700905, 30
PAGES, 7 FIGURES, 4 TABLES, 6 REFERENCES, PAPER
PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW-
AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES,
AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; ASSE SALT MINE; WASTE HANDLING;
WASTE TRANSPORTATION; GERMANY; WASTE DISPOSAL, SALT;
OPERATING EXPERIENCE

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PUB DATE: 1975

AUTHOR: ANDERSON, C.A.

TITLE: CAVITY STABILITY: FINITE ELEMENT ANALYSIS
FOR STEADY AND TRANSIENT CREEP

COMPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY,
UNIVERSITY OF CALIF.

ABSTRACT: LONG-TERM STEADY-STATE CREEP AND CREEP
DEFORMATION OF UNDERGROUND STRUCTURES IS A PROBLEM OF
INCREASING IMPORTANCE BY VIRTUE OF THE IMPLICATIONS TO
STORAGE OF RADIOACTIVE WASTE MATERIALS AND TO ENERGY
EXTRACTION METHODS WHICH EMPLOY UNDERGROUND STRUCTURES
OF CAVITIES. THIS PAPER DESCRIBES THE ANISYNETIC
FINITE ELEMENT CODE CSAAS WHICH HAS BEEN DEVELOPED AT
THE LOS ALAMOS SCIENTIFIC LABORATORY IN ORDER TO LOOK
AT THESE PROBLEMS. SPECIAL ATTENTION IS DIRECTED TO
THE "NEARLY INCOMPRESSIBLE" ELEMENT FORMULATION IN
CSAAS AND TO THE STABLE METHOD OF TIME STEPPING WHICH
IS USED TO OBTAIN AN ESTIMATE OF THE INCOMPRESSIBLE
STEADY CREEP STATE FROM AN INITIAL ELASTIC SOLUTION.
APPLICATIONS ARE MADE TO THERMAL CREEP PROBLEMS
INVOLVING PURE HALITE WHICH OBTAINS A WELL DOCUMENTED
CREEP LAW OF HERRMANN'S FORM; THE FLOW RULE FOR
ANISYNETIC STRESS STATES IS BASED ON THE
PLANKL-PROSS LAW OF METAL PLASTICITY. THE RESULTS OF
LINEARIZED EQUATIONS ARE HIGHLY ACCURATE.
COMPARISON OF THE NUMERICAL RESULTS FROM CSAAS WITH
THE FEW KNOWN ANALYTICAL SOLUTIONS TO ONE-DIMENSIONAL
STEADY CREEP PROBLEMS INDICATES A HIGH DEGREE OF
ACCURACY FOR THIS FINITE ELEMENT METHOD. WHEN THE
CODE IS APPLIED TO THE EXAMINATION OF THE LONG-TERM

STABILITY OF A SPHERICAL CAVITY IN HALITE, VARIOUS
STEADY MOTIONS OF THE CAVITY (SUCH AS BULGING OR
SLUMPING) CAN BE OBSERVED, DEPENDING ON THE DEPTH, THE
TEMPERATURE FIELD, AND THE INTERNAL PRESSURIZATION OF
THE CAVITY. (AUTH)

PUB DESC: LA-5769, (1975)

KEYWORDS: WASTE DISPOSAL; CREEP BEHAVIOR (SEE ALSO
PLASTIC FLOW); COMPUTER PROGRAM; RADIOACTIVITY;
UNDERGROUND; CAVITY STABILITY; TRANSIENT CREEP; WASTE
STORAGE; HALITE; THERMAL CREEP

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PUB DATE: 1970

AUTHOR: ANTICUCCI, L.; BRANATI, L.; FIORENTINO,
F.; BALASSI, S.

TITLE: MANAGEMENT EXPERIENCE ON RADIOACTIVE WASTES
FROM E.N.E.C. NUCLEAR POWER STATIONS

COMPORATE AUTHOR: ENTE NAZIONALE PER L'ENERGIA
ELETTRICA, ROME

ABSTRACT: DESCRIBES THE EXPERIENCE WITH LIQUID AND
SOLID WASTE DISPOSAL AT THE THREE ITALIAN NUCLEAR
POWER STATIONS OVER A TOTAL OF TWENTY YEARS OF
OPERATION. FOR EACH STATION, THE SOURCES OF THE
WASTES, THE METHODS OF DISPOSAL, AND THE AMOUNTS
DISCHARGED ARE INDICATED. ALSO MENTIONS THE
IMPROVEMENTS.

PUB DESC: SM-137/80, STI/EB-264, CONF-700905, 24
PAGES, 7 FIGURES, 5 TABLES, PAPER PRESENTED AT THE
IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND
INTERMEDIATE-LEVEL RADIOACTIVE WASTES,
AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: IAEA; WASTE DISPOSAL; REACTOR, POWER;
WASTE MANAGEMENT; ITALY; OPERATING EXPERIENCE

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PUB DATE: 1972

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL, A
BIBLIOGRAPHY

COMPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THE 2249 REFERENCES CITED WERE SELECTED
FROM NUCLEAR SCIENCE ABSTRACTS, VOL. 21 (1967) THROUGH
ISSUE 4 OF VOL. 27 (1972). COMPORATE AUTHOR, AUTHOR,
REPORT NUMBER, AND SUBJECT INDEXES ARE INCLUDED. THE
SUBHEADINGS UNDER THE REACTOR NAME GIVE COMPREHENSIVE
COVERAGE OF REPORTS ON RADIOACTIVE EFFLUENTS AND THEIR
EFFECTS.

PUB DESC: TID-3311(STPPL-3), 522 PAGES, APRIL 1972

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ECOLOGY;
WASTE DISPOSAL; WASTE TREATMENT; SURFACE WATER,
NUCLIDE OCCURRENCE; ENVIRONMENT; MONITORING PROGRAM,
ENVIRONMENTAL; RADIONUCLIDE UPTAKE;
BIOACCUMULATION/TURNOVER; RADIONUCLIDE TRANSFER;
REPORT, ENVIRONMENTAL

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PUB DATE: 1971

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: RADIOACTIVE WASTE REPOSITORY - LIONS, KANSAS

COMPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: THE WASTES OF PRIMARY CONCERN -
DESIGNATED HIGH-LEVEL AND ALPHA WASTES - CONTAIN
RADIOACTIVE NUCLIDES THAT DECAY SO SLOWLY AS TO
REQUIRE THAT THEY BE ISOLATED FROM THE BIOSPHERE FOR
THOUSANDS OF YEARS. THIS STATEMENT DESCRIBES THE
INITIAL REASONS TO BE TAKEN AT A PART OF THE
COMMISSION'S OVERALL WASTE MANAGEMENT POLICY AND
PROGRAM FOR THE PERMANENT DISPOSAL OF THESE WASTES.
THE PROPOSED FACILITY WILL SAFELY CONTAIN THESE WASTES

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FOR THE REQUIRED PERIOD OF TIME WITHOUT ANY
SIGNIFICANT IMPACT ON THE ENVIRONMENT.

PUB DESC: RSN-1503, 234 PAGES, JUNE 1971

KEYWORDS: ECOLOGY; PROJECT SALT VAULT; KANSAS;
GEOLOGY; ALPHA EMITTER; PLUTONIUM; SITING; WASTE
DISPOSAL; THERMAL CONSIDERATION; HIGH-LEVEL WASTE;
WASTE MANAGEMENT; HYDROLOGY; ENVIRONMENT; METEOROLOGY
(SEE ALSO AIR); WASTE DISPOSAL, SALT; RADIATION
EFFECT; SOCIAL ETHICS/ENVIRONMENT

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PUB DATE: 1970
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DISPOSAL OF SOLID RADIOACTIVE WASTES IN
BEDDED SALT DEPOSITS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
WASHINGTON

ABSTRACT: IN JUNE 1970, THE AEC ANNOUNCED ITS
INTENTION TO INITIATE A DEMONSTRATION PROJECT TO
PROVIDE TECHNICAL DATA AND EXPERIENCE ON OPERATIONAL
METHODS AND COSTS OF LONG-TERM STORAGE OF SOLIDIFIED
WASTES FROM THE PROCESSING OF SPENT NUCLEAR POWER
FUELS. A SITE NEAR LYONS, KANSAS, HAS BEEN SELECTED
TENTATIVELY AS THE LOCATION OF THE DEMONSTRATION
PROJECT FOR A SALT BYRE REPOSITORY. TO ASSIST IN THE
EVALUATION OF THE AEC PLANS, THE COMMITTEE REACHED THE
FOLLOWING CONCLUSIONS - (1) THE USE OF BEDDED SALT FOR
THE DISPOSAL OF RADIOACTIVE WASTES IS SATISFACTORY,
(2) THE SITE NEAR LYONS, KANSAS, SELECTED BY THE AEC
IS SATISFACTORY.

PUB DESC: TID-25576, 20 PAGES, REFERENCES, NOVEMBER
1970

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT;
KANSAS; HEAT TRANSFER; PLUTONIUM; WASTE DISPOSAL,
SOLID; WASTE MANAGEMENT; HYDROLOGY; RADIATION SAFETY
AND CONTROL; SHIELDING; WASTE DISPOSAL, SALT;
TRANSCRIPTION ELEMENT; GEOLOGY, SALT STRUCTURE;
PLASTICITY; FUEL REPROCESSING

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PUB DATE: 1966
AUTHOR: AUSSET, B.; CAUPEL, J.

TITLE: PROBLEMS OF SEA DISPOSAL OF WASTE SOLUTIONS
FROM THE CENTER AT LA HAGUE

CORPORATE AUTHOR: ATOMIC ENERGY COMMISSION, FRANCE

ABSTRACT: THE ESTABLISHMENT IN WESTERN FRANCE OF A
LARGE CHEMICAL PLANT FOR REPROCESSING FUEL IRRADIATED
IN NATURAL URANIUM REACTORS LED TO THE NEED TO STUDY
THE POSSIBILITIES OF DISCHARGING INTO THE SEA
LOW-ACTIVITY RESIDUAL WATER RESULTING FROM
DECONTAMINATION OF EFFLUENT. AN AREA SUITABLE FOR
THIS PURPOSE WAS CHOSEN AT LA HAGUE. BASED ON THE
ESTIMATES OF THE CENTRES REQUIREMENTS, SCALE MODELS
WERE USED TO DETERMINE A FAVORABLE LOCATION AND A
SUITABLE TIMETABLE FOR CARRYING OUT DISPOSAL. THE
DISCHARGE OF DYE YIELDED DATA ON THE DISPERSAL RATE
AND THREW LIGHT ON THE DEGREE OF ACCUMULATION IN THE
SEA THAT WOULD RESULT FROM SEPARATE DISPOSALS.

PUB DESC: ORNL-TM-1479, 13 PAGES, FIGURES,
TRANSLATED BY R. G. HANFIELD (CAP RIDGE NATIONAL
LAB., TENN.), FROM A PAPER PRESENTED AT THE SYMPOSIUM
FOR THE DISPOSAL OF RADIOACTIVE WASTES INTO SEA,
OCEANS, AND SURFACE WATERS, VIENNA, MAY 16-20, 1966

KEYWORDS: DESIGN CRITERIA; FRANCE; OCEAN AND SEA
(SEE ALSO WASTE DISPOSAL, OCEAN); SITING; WASTE
DISPOSAL, OCEAN; WASTE DISPOSAL, ECONOMICS; TRACER;
WASTE DISPOSAL, LIQUID; DISPERSION; HYDROLOGY, RATE OF
MOVEMENT (SEE ALSO GROUND WATER); FUEL REPROCESSING;
PIPING

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PUB DATE: 1967
AUTHOR: SANDBERG, I.

TITLE: POSSIBILITIES OF INJECTING RADIOACTIVE
WASTES INTO DEEP, PERMEABLE GEOLOGICAL FORMATIONS

CORPORATE AUTHOR: CENTRE D'ETUDES NUCLEAIRES,
COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE

ABSTRACT: THE INJECTION OF RADIOACTIVE EFFLUENTS
INTO DEEP, PERMEABLE GEOLOGICAL FORMATIONS CAN BE VERY
SATISFACTORY METHOD OF DISPOSING OF CERTAIN WASTES,
PARTICULARLY AS EXPERIENCE IN USING THIS METHOD IN THE
PETROLEUM INDUSTRY AND WITH OTHER INDUSTRIAL WASTES IS
ALREADY AVAILABLE. IN FRANCE THE GEOLOGICAL
STRUCTURES WHICH MAY PROVE SUITABLE FOR THIS TYPE OF
WASTE STORAGE ARE BEING SURVEYED.

PUB DESC: SII/PUB-156, CONF-670512, PAGES 607-26 OF
DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, 86TH
JOINT IAEA/NEEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: CONTAINMENT; FRANCE; EFFLUENT; FRANCE;
GEOLOGY; WASTE DISPOSAL, ECONOMICS; HYDRODYNAMIC
ANALYSIS; WASTE DISPOSAL, LIQUID; SOIL

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PUB DATE: 1968
AUTHOR: BEVERLT, R.G.

TITLE: UNIQUE DISPOSAL METHODS ARE REQUIRED FOR
URANIUM MILL WASTE

CORPORATE AUTHOR: OXION CARBIDE, GRAND JUNCTION,
COLORADO

ABSTRACT: THE TOTAL U CONCENTRATION IN THE LIQUID
EFFLUENT MUST BE MAINTAINED BELOW THE LEVEL OF 2 X
10⁻⁵ MG MICROCURIE/ML. THE DILUTION OF THE LIQUID
EFFLUENT BY STREAMS IS LARGE ENOUGH THAT THE RA-226
AND TH-230 CONCENTRATIONS IN THE STREAM BELOW THE MILL
ARE WELL BELOW DRINKING WATER STANDARDS. ABOUT 10% OF
THE TOTAL RADIOACTIVITY CONTAINED IN THE ONE P-3 TO
MILLS IS RECOVERED IN THE U CONCENTRATE. THE
SHORT-LIVED RADIOISOTOPES, TH-234, PA-234 AND TH-231,
ARE SUBSEQUENTLY LOST BY DECAY. ABOUT 70% OF THE
ACTIVITY IN THE ONE REMAINS UNDISSOLVED IN THE SCID
MILL TAILINGS, WHICH ARE IMPOUNDED IN A TAILING DAM.

PUB DESC: MINING ENGINEERING, 20, PAGES 52-6 (JUNE
1968)

KEYWORDS: DECONTAMINATION; MILL TAILINGS (SEE ALSO
TAILINGS); DILUTION; EFFLUENT; ALPHA EMITTER; MAXIMUM
PERMISSIBLE CONCENTRATION (MPC); MINING; URANIUM; RATA
EMITTER; WASTE DISPOSAL, RIVER; WASTE DISPOSAL,
LIQUID; WASTE DISPOSAL, LAKE; AGENCY, AEC (SEE ALSO
USARC);

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PUB DATE: 1971
AUTHOR: BLOMERT, J.O.; MCCLAIN, W.C.

TITLE: A SALT MINE REPOSITORY FOR RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TN

ABSTRACT: RECOGNIZING THAT A TRULY PERMANENT
SOLUTION OF THE PROBLEM OF WASTE DISPOSAL IS
REQUIRED, THE ATOMIC ENERGY COMMISSION HAS PROMOTED
THE DEVELOPMENT OF PROCESSES FOR CONVERTING THE
LIQUID WASTES TO STABLE, SOLID FORMS, AND IN
CONSULTATION WITH THE NATIONAL ACADEMY OF SCIENCES AND
MEMBERS OF THE GEOLOGIC COMMUNITY HAS SPONSORED WORK
TO CONFIRM THE SUITABILITY OF NATURAL SALT FORMATIONS
AS A FINAL REPOSITORY FOR THESE MATERIALS. IN JUNE
1970, THE AEC ANNOUNCED THE TENTATIVE SELECTION OF A
SITE NEAR LYONS, KANS., FOR A DEMONSTRATIONAL SALT
MINE REPOSITORY.

PUB DESC: NUCLEAR NEWS, 14(4), PG. 35-38 3 FIGURES,
2 TABLES, (APRIL 1971)

KEYWORDS: DESIGN CRITERIA; PUBLIC RESPONSE (SEE
ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE);
PROJECT SALT VAULT; KANSAS; ALPHA EMITTER; MINING;
PLUTONIUM; SITING; WASTE DISPOSAL; WASTE DISPOSAL,
SOLID; HIGH-LEVEL WASTE; POPULATION DISTRIBUTION;
RADIATION SAFETY AND CONTROL; SHIELDING; WASTE

<719> CONT.
DISPOSAL, SALT; CONSTRUCTION; POPULATION RESPONSE

<720>

PUB DATE: 1965

AUTHOR: BLOEMER, J.C.; FREDERICK, E.J.; SALMON, D.; ARNOLD, E.E.

TITLE: THE COSTS OF PERMANENT DISPOSAL OF REACTOR FUEL-PROCESSING WASTE IN TANKS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE COSTS OF PERMANENT STORAGE OF REACTOR FUEL PROCESSING WASTES ARE ESTIMATED FOR A 22,400-BWU NUCLEAR POWER REACTOR. THE WASTES ARISE FROM CHEMICAL DISSOLUTION OF THE FUEL CLADDING AND SOLVENT EXTRACTION PURIFICATION OF A COMBINATION OF URANIUM AND THORIUM CONVERTED FUELS. IT IS ASSUMED THAT A PERMANENT TAX-FREE FUND IS ESTABLISHED DURING A 20-YR PERIOD OF WASTE ACCUMULATION OF SUCH SIZE THAT THE ANNUAL TAX-FREE INTEREST WILL BE SUFFICIENT TO PROVIDE FOR PERIODIC REPLACEMENT OF TANKS AND FOR THE ANNUAL OPERATING EXPENSES OF THE FACILITY. TOTAL COSTS FOR STORING REACTOR WASTE, WHEN LEAST FOR STORAGE OF ACID WASTES IN TANKS OF 75-YR LIFE WITH GOVERNMENT OWNERSHIP, AND GREATEST FOR STORAGE OF ALKALINE WASTES IN TANKS OF 25-YR LIFE WITH PRIVATE OWNERSHIP.

PUB DESC: OURL-2273 106 PAGES, 15 FIGURES, 27 TABLES, 29 REFERENCES- SEPTEMBER, 1965

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE SOURCE AND TYPE; WASTE MANAGEMENT; RADIOLYTIC GAS

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PUB DATE: 1966

AUTHOR: BORGLEY, W.J.; EPPSON, F.R.; MCCLAIN, W.C.; PARKER, P.L.

TITLE: DISPOSAL OF HIGH ACTIVITY POWER REACTOR WASTES IN SALT MINE - MINE RECONSTRUCTION REQUIRED FOR PROJECT SALT VAULT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: PROJECT SALT VAULT IS A FIELD-SCALE DEMONSTRATION OF THE DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN A SALT MINE. PREPARATIONS REQUIRED FOR THE EXPERIMENT INCLUDE CONSTRUCTION OF A NEW HEADFRAME FOR THE MAIN MINE SHAFT, RENOVATION OF THE EXISTING SURFACE AND UNDERGROUND FACILITIES, MINING OF ABOUT 19,000 TONS OF SALT TO PREPARE THE EXPERIMENTAL AREA, AND DRILLING OF A 19.1-IN. I.D. WASTE-CHARGING SHAFT FROM THE SURFACE TO THE MINE LEVEL, 1000 FT. BELOW.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN, 9(3), PAGES 360-366 (JUNE 7, 1966) 5 FIGURES, 9 REFERENCES

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; KANSAS; HIGH-LEVEL WASTE; GEOLOGY; MINING; AIR; WASTE DISPOSAL, SOLID; RADIATION SAFETY AND CONTROL; SHIELDING; WASTE DISPOSAL, SALT; EXPERIMENT; EQUIPMENT; FLOW

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PUB DATE: 1966

AUTHOR: BORGLEY, W.J.; BRACKSHAW, B.L.; FRISCH, F.R.; SCHAPPEL, W.F.; PARKER, P.L.; EICHENF, J.O.

TITLE: PROJECT SALT VAULT - A DEMONSTRATION DISPOSAL OF HIGH-LEVEL RADIOACTIVE SOLIDS IN LYONS, KANSAS, SALT MINE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: THE DEMONSTRATION OF THE DISPOSAL OF HIGHLY RADIOACTIVE SOLID WASTE HAS AS ITS OBJECTIVES THE DEMONSTRATION OF REQUIRED WASTE-HANDLING EQUIPMENT AND TECHNIQUES, THE DETERMINATION OF THE STABILITY OF SALT UNDER THE INFLUENCE OF HEAT AND RADIATION, AND THE COLLECTION OF INFORMATION ON CREEP AND PLASTIC FLOW OF SALT NEEDED FOR THE DESIGN OF AN ACTUAL

DISPOSAL FACILITY. FOURTEEN IRRADIATED FUEL ASSEMBLIES FROM THE ENGINEERING TEST REACTOR WILL SERVE AS A SOURCE OF RADIATION. DURING THE COURSE OF THE 2-YEAR TEST, FOUR SETS OF ASSEMBLIES WILL BE USED TO ACHIEVE A PEAK DOSE IN THE SALT OF ABOUT 8 TIMES 10 TO THE 6TH PWS, AND THE TEMPERATURE OF THE SALT ADJACENT TO THE CENTER HOLE WILL BE MAINTAINED AT 200 C WITH SUPPLEMENTARY ELECTRICAL HEATERS. A SECOND RADIOACTIVE ASSEMBLY, LOCATED IN THE EXISTING MINE FLOOR, WILL RECEIVE THE FUEL CASSETTES WHICH ARE REMOVED FROM THE MAIN ASSEMBLY AT THE END OF EACH 6-MONTH PERIOD. A THIRD ASSEMBLY, CONSISTING ONLY OF HEATERS, WILL BE OPERATED AS A CONTROL TO DETERMINE THOSE EFFECTS DUE SOLELY TO HEAT. IN ADDITION TO THE RADIOACTIVE AND CONTROL ASSEMBLIES, A RED-PILLAR LOCATED BETWEEN THE MAIN RADIOACTIVE ASSEMBLY AND THE CONTROL ASSEMBLY WILL BE HEATED ELECTRICALLY AROUND ITS BASE TO PRODUCE SIGNIFICANT INFORMATION ON SALT FLOW CHARACTERISTICS AND MINE STABILITY AT ELEVATED TEMPERATURES.

PUB DESC: HEALTH PHYSICS 12(3), 8 PAGES, 5 FIGURES, 8 REFERENCES, PAGES 417-424, (MARCH 1966)

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; KANSAS; DOSE; TEMPERATURE GRADIENT; THERMAL CONSIDERATION; DESIGN STUDY; WASTE DISPOSAL, SALT; HEAT TRANSFER; RADIATION EFFECT

<723>

PUB DATE: 1966

AUTHOR: BORGLEY, W.J.; EPPSON, F.R.

TITLE: DISPOSAL OF HIGH ACTIVITY POWER REACTOR WASTES IN SALT MINE - MINE RECONSTRUCTION REQUIRED FOR PROJECT SALT VAULT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROJECT SALT VAULT IS A FIELD-SCALE DEMONSTRATION OF THE DISPOSAL OF HIGH-LEVEL SOLIDIFIED RADIOACTIVE WASTES IN A SALT MINE. PREPARATIONS REQUIRED FOR THE EXPERIMENT INCLUDE CONSTRUCTION OF A NEW HEADFRAME FOR THE MAIN MINE SHAFT, RENOVATION OF THE EXISTING SURFACE AND UNDERGROUND FACILITIES, MINING OF ABOUT 19,000 TONS OF SALT TO PREPARE THE EXPERIMENTAL AREA, AND DRILLING OF A 19.1-IN. I.D. WASTE-CHARGING SHAFT FROM THE SURFACE TO THE MINE LEVEL, 1000 FT. BELOW.

PUB DESC: OURL-2273, 10 PAGES, 5 FIGURES, 9 REFERENCES, 1966

KEYWORDS: HEAT; PROJECT SALT VAULT; HIGH-LEVEL WASTE; GEOLOGY; TRANSPORTATION AND HANDLING; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; RECOVERY PROCESS; EQUIPMENT DESIGN; PLASTICITY; EXPERIMENT; FUEL ELEMENTS

<724>

PUB DATE: 1966

AUTHOR: BORGLEY, W.J.; PARKER, P.L.; STRAINESS, R.G.

TITLE: DISPOSAL OF RADIOACTIVE WASTES IN GEOLOGIC FORMATIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: FIELD-SCALE DEMONSTRATIONS SHOWED THAT IT IS POSSIBLE TO SAFELY AND ECONOMICALLY STORE HIGH-LEVEL SOLIDIFIED WASTES IN SALT FORMATIONS AND INTERMEDIATE-LEVEL WASTES IN THE SLIGHTLY PERMEABLE SHALES AT CAR RIDGE. DISPOSAL OF LOW-LEVEL LIQUID WASTES IN IMPERMEABLE FORMATIONS HAS NOT YET BEEN DEMONSTRATED IN FIELD-SCALE PLANTS, BUT THE IDEA HAS BEEN PROVED ON LABORATORY-SCALE MODELS.

PUB DESC: OURL-2537, CONF-660924-9, 24 PAGES, FROM 1ST INTERNATIONAL CONGRESS OF THE 1ST INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SCAR, ITALY

KEYWORDS: GEOLOGY; SHALE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT

<725>

PUB DATE: 1964

AUTHOR: BOEGLY, W.J.; BRACHMAN, R.L.; RYMPSON, F.H.; MCCLAIN, W.C.; PARKER, F.L.; SCHAPPEL, W.P.; KUBOTA, E.

TITLE: DISPOSAL IN NATURAL SALT FORMATIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROGRESS IS REPORTED ON PROJECT SALT VAULT - A DEMONSTRATION ON HIGH-LEVEL WASTE STORAGE IN SALT MINES. THE EQUIPMENT AND INSTRUMENTATION NECESSARY FOR THE DEMONSTRATION IS DESCRIBED. CLOSURE OF THE CAVITY DUE TO ELEVATED TEMPERATURES IS DISCUSSED. RADIOLYTIC PRODUCTION OF CHLORINE FROM SALT IS REVIEWED.

FOR DESC: OADR-3697, OCTOBER 1964, PAGES 19-31 OF HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1964

KEYWORDS: GEOLOGY; THERMAL CONSERVATION; WASTE TRANSPORTATION; HAZARDS ANALYSIS; RADIOLYTIC GAS; WASTE DISPOSAL, SALT

<726>

PUB DATE: 1964

AUTHOR: BOEGLY, W.J.; BRACHMAN, R.L.; RYMPSON, F.H.; MCCLAIN, W.C.; PARKER, F.L.; SCHAPPEL, W.P.

TITLE: PROJECT SALT VAULT- RADIOACTIVE WASTE DISPOSAL IN A SALT MINE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROJECT SALT VAULT IS A PART OF A DEVELOPMENT PROGRAM DESIGNED TO DETERMINE THE REQUIREMENTS FOR SAFE AND ECONOMICAL DISPOSAL OF RADIOACTIVE WASTES IN ROCK SALT FORMATIONS. THE WASTE-HANDLING EXPERIENCE AND THE SALT-FLOW DATA OBTAINED IN THIS EXPERIMENT, WHEN COMBINED WITH THE RESULTS OF LABORATORY AND THEORETICAL STUDIES ON THE STRUCTURAL STABILITY OF ROCK SALT AT ELEVATED TEMPERATURES AND PRESSURES, SHOULD ALLOW THE ESTABLISHMENT OF A BASIS FOR THE DESIGN OF AN ACTUAL DISPOSAL FACILITY FOR OPTIMUM USE OF SALT MINE SPACE.

FOR DESC: OADR-P-1479, (CGRP-650519-1), 20 PAGES-1964, 20TH ANNUAL INDUSTRIAL WASTE CONFERENCE, LAFAYETTE, INDIANA, 1964

KEYWORDS: DOME; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); HEAT TRANSFER; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; RADIATION EFFECT

<727>

PUB DATE: 1967

AUTHOR: BOLCH, B.E.; SELLECK, B.E.; KAUFMAN, B.J.

TITLE: GAS DISPERSION IN POROUS MEDIA. PRELEY-BETHELDS NUMBER CORRELATIONS

CORPORATE AUTHOR: CALIFORNIA UNIV., BERKELEY. SANITARY ENGINEERING RESEARCH LAB.

ABSTRACT: A MATHEMATICAL MODEL ANALOGOUS TO MOLECULAR DIFFUSION WAS DEVELOPED FOR A TRACE PULSE INJECTED INTO A CARRIER GAS FLOWING THROUGH 16-FOOT LONG, 2-INCH DIAMETER COLUMNS CONTAINING VARIOUS GRANULAR MEDIA. LONGITUDINAL DISPERSION COEFFICIENTS DETERMINED FROM THE BREAK-THROUGH PEAKS WERE CORRELATED IN TERMS OF A PRELEY-BETHELDS-SCHMIDT NUMBER SYSTEM. THE RANGE OF BETHELDS NUMBERS WAS SUFFICIENT TO DESCRIBE THE ENTIRE LAMINAR REGION. AN EXPRESSION WAS DEVELOPED WHICH ACCOMMODATES MAJOR VARIATIONS IN PARAMETERS AND DESCRIBES LONGITUDINAL DISPERSION IN THE LAMINAR REGION. CONSIDERABLE RESEARCH REPORT AND THEORETICAL ANALYSIS WAS GIVEN TO THE CONCEPT OF TURBULENCE. A SLIGHT UNIFORM, HORIZONTALLY STRATIFIED, DISCONTINUOUS REGION PROVIDED A COMPARISON OF A MATHEMATICAL MODEL WITH AN EXPERIMENTAL VALUE. MOLECULAR DIFFUSION COEFFICIENTS FOR THE RADIOACTIVE TRACE-CARRIER GAS STUDY SYSTEM WERE DETERMINED EXPERIMENTALLY AND COMPARED TO CALCULATED VALUES.

FOR DESC: SERL-67-10, 130 PAGES, 62 FIGURES, 9 TABLES, 104 REFERENCES, NOV. 1967

KEYWORDS: 1 ACED, RADIOACTIVE; WASTE DISPOSAL, TERRESTRIAL; MATHEMATICAL MODEL; WASTE DISPOSAL, GAS; WASTE DISPOSAL, BEDROCK; MODEL TESTING

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PUB DATE: 1971

AUTHOR: BRACHMAN, R.L.; LOMBARD, T.P.; BOEGLY, W.J.; SCHAPPEL, W.P.; STANFIELD, A.R.; MCCLAIN, W.C.; RYMPSON, F.H.; ROUSE, R.L.

TITLE: PROJECT SALT VAULT: A DEMONSTRATION OF THE DISPOSAL OF HIGH ACTIVITY SOLIDIFIED WASTE IN UNDERGROUND SALT MINES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY; OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: THE PRIMARY PURPOSE OF THIS REPORT IS TO DOCUMENT IN ONE VOLUME (AS COMPLETELY AS PRACTICAL) THE BACKGROUND, DESIGN, INSTALLATION, OPERATION, AND CONCLUSIONS DERIVED FROM PROJECT SALT VAULT. PROJECT SALT VAULT WAS A DEMONSTRATION OF THE DISPOSAL OF HIGH-LEVEL SOLIDIFIED RADIOACTIVE WASTES IN A SALT MINE IN LYONS, KANSAS. ASSOCIATED WITH THE DEMONSTRATION WERE SEVERAL NECESSARY SIDE EXPERIMENTS. IN ORDER TO BE COMPLETE, THE SIGNIFICANT RESULTS OF THE LABILED STUDIES ARE ALSO INCLUDED. IN MANY CASES ONLY THE MAJOR RESULTS ARE INCLUDED, NOT A FAIRLY COMPLETE LIST OF REFERENCES TO REPORTS COVERING THE ORIGINAL WORK IS GIVEN. MUCH OF THIS MATERIAL HAS NOT BEEN PUBLISHED PREVIOUSLY. A DETAILED REPORT IS GIVEN BY CHAPTERS ON VARIOUS SUBJECTS AS HISTORICAL BACKGROUND, PRELIMINARY WORK AND DESIGN OF THE DEMONSTRATION, GEOLOGY OF THE MINE, DESIGN, FABRICATION, AND INSTALLATION OF EQUIPMENT, SAFETY EVALUATION OF THE DEMONSTRATION, OPERATING EXPERIENCES, AND RESULTS. THE FINAL CHAPTERS DEPEND ON PILLAR MODEL STUDIES AND COMPUTER SIMULATION OF MINE BEHAVIOR. (UCL)

FOR DESC: GADR-4555 (1971) 372P.

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL ALTERNATIVES; PROJECT SALT VAULT; KANSAS; SALT MINE DISPOSAL (SEE ALSO WASTE DISPOSAL, SALT); WASTE DISPOSAL, SALT; SALT CAVITY; EXPERIMENT; DEMONSTRATION; HEAT TRANSFER; TEMPERATURE; PLASTIC FLOW; ROCK MECHANICS; GEOLOGY; HYDROLOGY; DESIGN CRITERIA; EQUIPMENT; MINING; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); INSTURMENTATION; HAZARDS ANALYSIS; OPERATING EXPERIENCE; SHIPPING CONTAINER

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PUB DATE: 1969

AUTHOR: BRACHMAN, R.L.; RYMPSON, F.H.; MCCLAIN, W.C.; ROUSE, R.L.

TITLE: RESULTS OF A DEMONSTRATION AND OTHER STUDIES OF THE DISPOSAL OF HIGH LEVEL SOLIDIFIED, RADIOACTIVE WASTES IN A SALT MINE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TRUSSARD

ABSTRACT: MAJOR TECHNICAL PROBLEMS REGARDING DISPOSAL IN SALT HAVE BEEN RESOLVED. THE FEASIBILITY AND SAFETY OF HANDLING HIGHLY RADIOACTIVE MATERIALS IN AN UNDERGROUND ENVIRONMENT HAVE BEEN DEMONSTRATED. THE STABILITY OF THE SALT UNDER THE EFFECTS OF HEAT AND RADIATION HAS SHOWN, AS WELL AS THE CAPABILITY OF SOLVING MAJOR STRUCTURAL PROBLEMS BY STANDARD MINING TECHNIQUES. THE DATA OBTAINED ON THE CREEP AND PLASTIC FLOW CHARACTERISTICS OF THE SALT SHOULD MAKE IT POSSIBLE TO ARRIVE AT A SUITABLE MINE DESIGN FOR A DISPOSAL FACILITY. A STUDY OF THE ECONOMICS OF DISPOSAL IN SALT MINES INDICATES THAT THIS METHOD WILL BE COMPATIBLE WITH COMPETITIVE NUCLEAR POWER. ALL OF THESE ITEMS COMBINED LEADS ONE TO THE CONCLUSION THAT BURIAL IN SALT MINES IS ONE OF THE BETTER, IF NOT THE BEST, METHODS FOR THE ULTIMATE DISPOSAL OF HIGH-LEVEL SOLIDIFIED WASTES.

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 PUB DESC: HEALTH PHYSICS, 10(1), PAGES 63-67
 (JANUARY 1970) 1 FIGURE, 17 REFERENCES

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT;
 MINING; WASTE DISPOSAL, ECONOMICS; CREEP BEHAVIOR (SEE
 ALSO PLASTIC FLOW); WASTE DISPOSAL, SOLID; HIGH-LEVEL
 WASTE; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL;
 ENVIRONMENT; SAFETY PRINCIPLES AND PHILOSOPHY;
 SHIELDING; WASTE DISPOSAL, SALT; HEAT TRANSFER

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PUB DATE: 1969
 AUTHOR: BRADSHAW, R.L.; PERONA, J.J.; FLOREKE,
 J.G.; BOEGLY, R.J.

TITLE: EVALUATION OF ULTIMATE DISPOSAL METHODS FOR
 LIQUID AND SOLID RADIOACTIVE WASTES, VI. DISPOSAL OF
 SOLID WASTES IN SALT FORMATIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
 TENNESSEE

ABSTRACT: STUDIED THE COST OF DISPOSING OF
 HIGH-LEVEL SOLIDIFIED WASTES IN BEDDED SALT
 FORMATIONS. A CONCEPTUAL DESIGN OF A SALT MINE WAS
 DEVELOPED FOR DISPOSAL OF WASTES FROM THE RECOVERY OF
 SPENT URANIUM AND TECHNIUM REACTOR FUELS FROM A
 15,000-MW (ELECTRICAL) NUCLEAR POWER ECONOMY. THE
 WASTE PRODUCTS ARE CONTAINED IN POTS 6, 12, AND 24 IN.
 IN DIAMETER BY 10 FEET LONG AND ARE BURIED IN VERTICAL
 HOLES IN THE FLOOR OF A MINE 1 SQUARE MILE IN AREA AND
 LOCATED 1000 FEET BELOW THE SURFACE.

PUB DESC: OBNL-3359(REV.), 90 PAGES, FIGURES,
 TABLES, REFERENCES, MARCH 1969

KEYWORDS: DECAY HEAT; PROJECT SALT VAULT; DESIGN
 CRITERIA; HEAT TRANSFER; HOT CELL; MINING; SODIUM;
 VENTILATION SYSTEM; WASTE HANDLING; WASTE DISPOSAL,
 ECONOMICS; STACK; WASTE DISPOSAL, SOLID; WASTE
 TRANSPORTATION; HIGH-LEVEL WASTE; WASTE DISPOSAL,
 SALT; GEOLOGY, SALT STRUCTURE; FUEL REPROCESSING; FUEL
 ELEMENTS

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PUB DATE: 1968
 AUTHOR: BRADSHAW, R.L.; PERSON, P.R.; BOEGLY,
 R.J.; KUBOTA, R.; PARKER, P.L.; STUBBS, E.G.

TITLE: PROPERTIES OF SALT IMPORTANT IN RADIOACTIVE
 WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: TESTS RELATING TO ULTIMATE DISPOSAL OF
 HIGHLY RADIOACTIVE FUELED REACTOR WASTES IN SALT MINES
 HAVE BEEN MADE. A NUMBER OF LABORATORY AND FIELD
 TESTS HAVE BEEN CONDUCTED ON PROPERTIES OF SALT WHICH
 ARE IMPORTANT IN THE DESIGN AND OPERATION OF A
 WASTE-DISPOSAL FACILITY. IN SITU HEAT-TRANSFER
 PROPERTIES ARE SUFFICIENTLY CLOSE TO THE VALUES
 DETERMINED IN THE LABORATORY THAT CONFIDENCE CAN BE
 PLACED IN THEORETICAL HEAT-TRANSFER CALCULATIONS.
 RADIATION EXPOSURE (CPS OF 5 X 10¹⁰HR) PRODUCES SOME
 CHANGES IN STRUCTURAL PROPERTIES, BUT THE EFFECT ON
 MINE STABILITY SHOULD BE NEGLIGIBLE. ROCK SALT IS
 APPROXIMATELY EQUIVALENT TO CONCRETE AS A
 GAMMA-RADIATION SHIELD. ELEVATED TEMPERATURES WILL
 CAUSE ACCUMULATED CREEP, BUT THE EFFECTS ON
 STRUCTURAL STABILITY CANNOT YET BE PREDICTED
 ACCURATELY.

PUB RES: GEOLOGICAL SOCIETY OF AMERICA, INC.,
 SPECIAL PAPER 89, PAGES 643-654, 5 FIGURES, 4 TABLES,
 REFERENCES, 1968

KEYWORDS: CREEP BEHAVIOR (SEE ALSO PLASTIC FLOW);
 PLASTIC FLOW; SHIELDING; WASTE DISPOSAL, SALT; HEAT
 TRANSFER; GAMMA RADIATION; GEOLOGY, SALT STRUCTURE;
 STRESS STRAIN DATA; RADIATION EFFECT

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PUB DATE: 1964
 AUTHOR: BRADSHAW, R.L.; LICHENICK, T.P.; MCCLAIN,
 W.C.; PERSON, P.R.

TITLE: MODEL AND UNDERGROUND STUDIES OF THE
 INFLUENCE OF STRESS, TEMPERATURE AND RADIATION ON FLOW
 AND STABILITY IN ROCK SALT MINES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: REPROCESSING OF NUCLEAR POWER REACTOR
 FUEL PRODUCES A RADIOACTIVE WASTE WHICH MUST BE
 ISOLATED FROM THE ENVIRONMENT FOR CENTURIES. THE MOST
 PROMISING DISPOSAL METHOD FOR THESE HEAT-GENERATING
 WASTES IS CONVERSION TO SOLIDS, POLICED BY FINAL
 DISPOSAL IN A SALT MINE. TO BE ABLE TO DESIGN A
 RADIOACTIVE WASTE DISPOSAL FACILITY IN A SALT MINE, IT
 IS NECESSARY TO BE ABLE TO PREDICT THE EFFECTS ON MINE
 STABILITY. RESEARCH HAS BEEN CARRIED OUT IN THE
 LABORATORY USING MODEL PILLARS AND IN A 1000-FT-DEEP
 (305 M) SALT MINE IN KANSAS USING REACTOR FUEL AND
 ELECTRICAL HEATERS IN A SPECIALLY RECAVATED AREA.

PUB DESC: OBNL-P-2126, 19 PAGES, 1966

KEYWORDS: DECAY HEAT; SALT MINE DISPOSAL (SEE ALSO
 WASTE DISPOSAL, SALT); DESIGN CRITERIA; THERMAL
 CONSIDERATION; WASTE DISPOSAL, SOLID; RADIATION SAFETY
 AND CONTROL; WASTE DISPOSAL, SALT; GEOLOGY, SALT
 STRUCTURE; STRESS STRAIN DATA; MODEL TESTING; FUEL
 REPROCESSING; FUEL ELEMENTS

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PUB DATE: 1965
 AUTHOR: BRADSHAW, R.L.; FLOREKE, J.O.; BOEGLY,
 R.J.; PERSON, P.R.; PARKER, P.L.; PERONA, J.J.; SCHAEFER,
 W.F.

TITLE: DISPOSAL OF HIGH ACTIVITY FUELED REACTOR
 WASTES IN SALT MINES- A CONCEPT AND FIELD SCALE
 DEMONSTRATION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
 OAK RIDGE, TENNESSEE

ABSTRACT: TO PROVE THE FEASIBILITY OF DISPOSAL IN
 SALT MINES, A CONCEPTUAL DESIGN HAS BEEN DEVELOPED FOR
 DEMONSTRATION OF THE STORAGE CONCEPT BEING EMPLOYED IN
 A 1000 FT. DEEP INACTIVE MINE IN LYONS, KANSAS. IN
 THE DEMONSTRATION, IRRADIATED FUEL ASSEMBLIES FROM THE
 ENGINEERING TEST REACTOR WILL SERVE AS A SOURCE OF
 RADIATION IN LIEU OF ACTUAL SOLIDIFIED WASTES. TWO
 RADIOACTIVE ASSAYS WILL EACH CONTAIN 14 ASSEMBLIES IN
 7 CANS.

PUB DESC: NUCLEAR STRUCTURAL ENGINEERING, 29(4)
 438-446 (OCTOBER 1965) 9 PAGES, 11 FIGURES, 3
 REFERENCES

KEYWORDS: WASTE DISPOSAL, ECONOMICS; WASTE
 DISPOSAL, LIQUID; WASTE TRANSPORTATION; WASTE
 DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE

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PUB DATE: 1968
 AUTHOR: BRADSHAW, R.L.

TITLE: DEMONSTRATION DISPOSAL OF HIGH-LEVEL
 RADIOACTIVE SOLIDS IN LYONS, KANSAS, SALT MINE.
 BACKGROUND AND PRELIMINARY DESIGN OF EXPERIMENTAL
 ASPECTS.

PUB DESC: OBNL-TN-734

KEYWORDS: WASTE DISPOSAL; PROJECT SALT VAULT;
 KANSAS; WASTE DISPOSAL, SALT; REACTOR; RADIOISOTOPE;
 ENVIRONMENT; SALT (SEE ALSO BEDDED SALT AND WASTE
 DISPOSAL, SALT); EXPERIMENT

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PUB DATE: 1961
 AUTHOR: BRADSHAW, R.L.; PERONA, J.J.; PERCOTT,
 J.T.; FLOREKE, J.O.

TITLE: EVALUATION OF ULTIMATE DISPOSAL METHODS FOR
 LIQUID AND SOLID RADIOACTIVE WASTES. PART 1. INTERIM
 LIQUID STORAGE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

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ABSTRACT: COSTS OF INTERIM LIQUID STORAGE OF ACID AND ALKALINE PULP AND THORPE WASTES WERE ESTIMATED FOR STORAGE TIMES OF 0.5 TO 30 YEARS. A 6-TON/DAY PLANT WAS ASSUMED, PROCESSING 1500 TONNES/YEAR OF URANIUM CONVERTER PULP AT A BURRUP OF 10,000 MHD/TONNE AND 270 TONNES/YEAR OF THORPE CONVERTER PULP AT A BURRUP OF 20,000 MHD/TONNE. TABLES OF SAVANNAH RIVER DESIGN WERE ASSUMED, WITH STAINLESS STEEL CONSTRUCTION FOR ACID WASTES AND MILD STEEL CONSTRUCTION FOR NEUTRALIZED WASTES. THE CYCLING CYCLE OF EACH TANK WAS ASSUMED TO CONSIST OF EQUAL FILLING AND EMPTYING PERIODS PLUS A FULL REASON. TANK COSTS WERE MINIMUM WHEN FULL TIME WAS 40 TO 70 PERCENT OF THE INTERIM STORAGE TIME. COSTS RANGED FROM 0.0022 TO 0.0095 BILL/KWH-ELECTRIC FOR ACID WASTES AND FROM 0.0017 TO 0.0051 BILL/KWH-ELECTRIC FOR NEUTRALIZED WASTES.

PUB DESC: ORNL-3120- 31 PAGES, 8 TABLES, 15 REFERENCES- SEPTEMBER 7, 1961

KEYWORDS: PULP BURRUP; WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE SOURCE AND TYPE; THERMAL CONSIDERATION; WASTE MANAGEMENT

<736>

PUB DATE: 1968
AUTHOR: BIGGS, L.I.

TITLE: GEOLOGY OF SUBSURFACE WASTE DISPOSAL IN MICHIGAN BASIN

ABSTRACT: THE CAMBRIAN SANDSTONES (HONEY SINK) HAVE THE MOST FAVORABLE PROPERTIES FOR HIGH-VOLUME LIQUID-WASTE DISPOSAL. THEY ARE SUITABLY THICK AND REASONABLY SHALLOW PRINCIPALLY IN SOUTHEASTERN MICHIGAN NEAR DETROIT. WHERE REASSED, THE POROSITY AVERAGES ABOUT 10 PERCENT AND THE PERMEABILITY ABOUT 30 MD. THE CAMBRIAN SANDSTONE BEDS ARE OVERLAIN BY A THICK, EXTENSIVE SHALE LAYER (UTICA) AND SALT BEDS (SALINA), WHICH ARE OF SECONDARY IMPORTANCE TO LIQUID-AND SOLID-WASTE DISPOSAL.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS - A STUDY OF RESERVOIR STRATA, 1968 8 FIGURES, 2 TABLES, REFERENCES, PG 120-153

KEYWORDS: GEOLOGY; MICHIGAN; SHALE; SANDSTONE; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); HYDROLYTIC ANALYSIS; TOXIC WASTE; WASTE DISPOSAL, LIQUID; ROCK MECHANICS

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PUB DATE: 1960
AUTHOR: BRITISH PATENT OFFICE

TITLE: IMPROVEMENTS IN OR RELATING TO THE INJECTION OF RADIO-ACTIVE WASTE INTO THE EARTH

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE

ABSTRACT: AN IMPROVED METHOD FOR INJECTING RADIOACTIVE WASTES INTO THE GROUND IS DESCRIBED. THE METHOD PERMITS AN INCREASED AMOUNT OF WASTE TO BE INJECTED IN A SINGLE OPERATION. A SLURRY IS FORMED OF THE WASTE, CEMENT, ALUMINATE, AND RESORCINOL. THE ALUMINATE AND RESORCINOL FORM A PREPOLYMERIC RESIN WHICH RETAINS THE DECONTAMINATION WATER IN THE MIXTURE.

PUB DESC: BRITISH PATENT 1,137,849, DECEMBER 27, 1960

KEYWORDS: CONCRETE; PLASTIC; FRANCE; UNITED KINGDOM; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; FISSILE PRODUCT RETENTION; RESIN; PATENT; ADDITIVE

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PUB DATE: 1967
AUTHOR: BRITISH PATENT OFFICE

TITLE: METHOD OF DISPOSING OF WASTE MATERIALS PARTICULARLY RADIOACTIVE WASTE

CORPORATE AUTHOR: BALLBOYCE COMPANY

ABSTRACT: DESCRIBES A METHOD FOR THE SUBTERRANEAN DISPOSAL OF RADIOACTIVE WASTE. THE METHOD CONSISTS IN PRODUCING A WELLBORE HAVING A CASING WHICH PENETRATES A FRACTURED EARTH FORMATION. A LOW-VISCOSITY SLURRY CONTAINING THE WASTE MATERIAL, WATER, HYDRAULIC CEMENT, CLAYS, AND AGENT WHICH REACTS CHEMICALLY WITH THE CEMENT RETARDING ITS SETTING. THE SLURRY IS INJECTED INTO THE FRACTURE AND ALLOWED TO SET, WHICH CONTAINS THE RADIOACTIVE WASTE TO THE FORMATION.

PUB DESC: BRITISH PATENT 1,050,700, 14 PAGES, 1 FIGURE, 6 TABLES, JANUARY 11, 1967

KEYWORDS: UNITED KINGDOM; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; PATENT

<739>

PUB DATE: 1967
AUTHOR: BROOKSBANK, R.E.; MCWHIPPIE, W.T.

TITLE: CURRENT PRACTICES IN THE DISPOSAL OF RADIOACTIVE WASTES FROM FUEL-FABRICATION FACILITIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: REVIEWS CURRENT PRACTICES OF TYPICAL COMMERCIAL NUCLEAR FUEL-FABRICATION FIRMS IN THE U.S. IN STORING AND HANDLING WASTES. BOTH THE SOURCES AND THE TYPES OF WASTE GENERATED IN NUCLEAR FUEL FABRICATIONS BY A 13-MEMBER GROUP OF FIRMS SURVEYED BY QUESTIONNAIRE AND PERSONAL CONTACT ARE DESCRIBED. TYPICAL PRACTICES AND TECHNIQUES IN HANDLING, STORAGE, AND DISPOSAL OF WASTES, INCLUDING BAILING AND/OR DUMPING OF COMPRESSIBLE WASTES, INCINERATION OF COMBUSTIBLE WASTES COMBLED WITH INCORPORATION OF THE ASH IN CONCRETE IN STEEL DRUMS EQUIPPED WITH HEAVY-DUTY FORGED CLOSURE RINGS, INCORPORATION OF BOTH LIQUID AND SOLID NONCOMBUSTIBLE WASTES IN CONCRETE OR CONCRETE-VERMICULITE MIXTURES IN STEEL DRUMS, AND THE TREATMENT AND DISPOSAL OF THE LARGE-VOLUME WASTES, SUCH AS VENTILATION AIR AND COOLING WATER. THE HEALTH AND SAFETY ASPECTS OF THESE ARE DISCUSSED BRIEFLY, AND APPLICABLE REGULATIONS ARE INCLUDED IN THE LIST OF REFERENCES.

PUB DESC: NUCLEAR SAFETY 8(4), PAGES 384-90, 2 TABLES, 15 REFERENCES

KEYWORDS: WASTE STORAGE; FUEL FABRICATION (SEE ALSO FABRICATION); HEALTH PHYSICS; WASTE TREATMENT, FIXATION; BAILING; CRUL; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; INCINERATION

<740>

PUB DATE: 1965
AUTHOR: BEGUE, D.J.; HANEY, W.A.

TITLE: THE ROLE OF GEOLOGY IN THE DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: BATTELLE NORTHEAST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS PAPER IS A SHORT DISCUSSION ON THE TYPES OF RADIOACTIVE WASTES GENERATED IN THE NUCLEAR INDUSTRY, AND THE KINDS OF GEOLOGIC FORMATIONS WHICH HAVE BEEN SUGGESTED AS POSSIBLE STRUCTURES SUITABLE FOR THE DISPOSAL OR STORAGE OF RADIOACTIVE WASTES. THE PURPOSE IS TO DESCRIBE THE ROLE WHICH GEOLOGY PLAYS IN THE EVALUATION OF DISPOSAL SITES PRIOR TO THEIR USE, AND HOW GEOLOGY IS UTILIZED IN THE INTERPRETATION OF MONITORING RESULTS AFTER THE DISPOSAL FACILITY IS PUT IN OPERATION.

PUB DESC: BNWL-SA-57, 19 PAGES, 2 REFERENCES, FEBRUARY 28, 1965

KEYWORDS: GEOLOGY; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); CONTAINMENT INTEGRITY; SITING; WASTE STORAGE; WASTE DISPOSAL, LIQUID; HYDROLOGY; SOIL; ROCK MECHANICS; FUEL REPROCESSING

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PUB DATE: 1973
AUTHOR: BURCH, D.D.

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TITLE: NUCLEAR WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: A DISCUSSION ADDRESSING TO THE BATTER DELIBERATE AND LONG-RANGE APPROACH. ESTABLISHED BY THE AEC TO FIND A SOLUTION TO THE WASTE-DISPOSAL BY HYDRAULIC FRACTURING.

PUB DESC: CONF-730417-1, 18 PAGES, PAPER PRESENTED AT THE 4TH ANNUAL ENVIRONMENTAL POLICY SYMPOSIUM OF THE AMERICAN ORIGINANCE ASSOCIATION, EDGEWOOD ARSENAL, BAYLAND, APRIL 4, 1973

KEYWORDS: CONCRETE; SITING, WASTE DISPOSAL; WASTE DISPOSAL, ECONOMICS; SAFETY INJECTION; WASTE MANAGEMENT; MONITORING (SEE ALSO SURVEY); WASTE DISPOSAL, HYDRAULIC FRACTURING

<742>

PUB DATE: 1969

AUTHOR: BUREAU OF RADIOLOGICAL HEALTH (U.S.A.)

TITLE: PUBLIC HEALTH ASPECTS OF THE NATIONAL REACTOR TESTING STATION RADIOACTIVE BURIAL GROUND

CORPORATE AUTHOR: BUREAU OF RADIOLOGICAL HEALTH, ROCKVILLE, MARYLAND

ABSTRACT: GIVES RECOMMENDATIONS FOR SAFE BURIAL OF RADIOACTIVE MATERIAL. THESE RECOMMENDATIONS INCLUDE TRENCH COVER AND TYPE OF SOIL BENEATH BURIED WASTES, PLOTTED CONTROL MEASURES, TEST HOLES FOR MONITORING THE BURIAL SITE, SEGREGATION OF PLOTCHUR AND AMERICAN WASTE IN SPECIAL PITS SUITABLE FOR REMOVAL IF NECESSARY, INTENSIFICATION OF MONITORING TO CHECK FOR MIGRATION OF RADIOACTIVE MATERIAL FROM THE BURIAL GROUND.

PUB DESC: BW-16220, 20 PAGES, DECEMBER 1969

KEYWORDS: FINE; REGULATION (SEE ALSO STANDARDS, RADIATION); TRENCHES; WRTS; WASTE DISPOSAL, TERRESTRIAL; ROCKY PLATS; POPULATION EXPOSURE; SOIL; HYPOLOGY (SEE ALSO AIR); SAFETY EVALUATION; CFF SITE; AGRICULT, AEC (SEE ALSO USAREC); BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND);

<743>

PUB DATE: 1965

AUTHOR: BUTLER, P.E.; BACE, J.D.

TITLE: AQUEOUS WASTE EVALUATIONS

CORPORATE AUTHOR: DOW CHEMICAL COMPANY, ROCKY PLATS

ABSTRACT: A STUDY OF OVERALL HEAT TRANSFER COEFFICIENTS IN A SHORT VERTICAL TUBE EVAPORATOR FOR THE CONCENTRATION OF SALTED AQUEOUS WASTES WAS CONDUCTED. THE VARIABLES OF SOLUTION CONCENTRATIONS, BOILING TEMPERATURE, TEMPERATURE DIFFERENTIAL, AND THEIR EFFECTS ON OVERALL HEAT TRANSFER COEFFICIENTS WERE INVESTIGATED. DECONTAMINATION FACTORS WERE DETERMINED IN RELATION TO VAPOR VELOCITIES IN THE DE-ENTRAINMENT SECTION OF THE EVAPORATOR.

PUB DESC: BPP-534, 20 PAGES, 4 FIGURES, 7 REFERENCES- AUGUST 6, 1965

KEYWORDS: WASTE TREATMENT, LIQUID; WASTE SOURCE AND TYPE; ROCKY PLATS; THERMAL CONSIDERATION; EVAPORATION

<744>

PUB DATE: 1967

AUTHOR: CAPITANT, B.; GRISSON, G.; LEVEQUE, P.

TITLE: EXPERIMENTAL STUDY OF THE HIGH-PRESSURE INJECTION OF RADIOACTIVE EFFLUENTS INTO FRACTURED GEOLOGICAL LAYERS

CORPORATE AUTHOR: BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES, PARIS

ABSTRACT: RADIOACTIVE EFFLUENTS CAN BE

SATISFACTORILY STORED BY INJECTING THEM, IN THE FORM OF A CEMENT OR CLAY GROUT, INTO CLOSED GEOLOGICAL STRUCTURES. AN ATTEMPT HAS BEEN MADE TO PRODUCE IN A SUPERFICIAL GEOLOGICAL FORMATION SOME OF THE EFFECTS OF FRACTURING AT DEPTH. HIGH-PRESSURE INJECTION TESTS WERE CARRIED OUT WITH INERT ELEMENTS IN SURFACE LAYERS. THE RESULTS OBTAINED, TOGETHER WITH FURTHER APPLICATION OF THE METHOD, USING WELL-KNOWN MINERAL-OIL FORMATIONS AS SPECIFIC EXAMPLES, ARE DESCRIBED.

PUB DESC: STI/PUB-154, CONF-670512, PAGES 321-51 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FOUR JOINT IAEA/EURA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: CALCIUM; GEOLOGY; RUTHERFORD; SOIL, RADIOACTIVE MOVEMENT THROUGH; STRONTIUM; ZINCINUM; WASTE DISPOSAL, LIQUID; ION EXCHANGE; WASTE DISPOSAL, HYDRAULIC FRACTURING; THALLIUM

<745>

PUB DATE: 1970

AUTHOR: CASWELL, C.A.

TITLE: UNDERGROUND WASTE DISPOSAL CONCEPTS AND DISCONCEPTIONS

CORPORATE AUTHOR: GURUNAR AND ASSOCIATES, INC.

ABSTRACT: DISCUSSES THE CONTROVERSIAL TOPIC OF DEEP-WELL DISPOSAL, POINTING OUT THE ADVANTAGES AND DISADVANTAGES OF THIS ENGINEERING SYSTEM. ALSO DISCUSSED ARE THE WELL-DESIGN CRITERIA, MIGRATION RATES OF THE FLUID IN THE GEOLOGICAL FORMATIONS, THE MISUNDERSTANDING ABOUT HYDRAULIC FRACTURING, WATER INJECTION, AND THE NEED FOR FURTHER RESEARCH.

PUB DESC: ENVIRONMENTAL SCIENCE AND TECHNOLOGY, 4(8), PG 642-647 (AUGUST 1970)

KEYWORDS: DESIGN CRITERIA; GEOLOGY; HYDROLOGY; WASTE DISPOSAL, HYDRAULIC FRACTURING; HYDROLOGY, RATE OF MOVEMENT (SEE ALSO GROUND WATER); WASTE DISPOSAL, DEEP WELL

<746>

PUB DATE: 1971

AUTHOR: CAVE, R.L.

TITLE: DISPOSAL OF RADIOACTIVE WASTE IN GREAT BRITAIN

ABSTRACT: PROVIDES AN EXCELLENT REVIEW OF THE UK EXPERIENCE IN THIS FIELD, NOT ONLY IN TERMS OF THE TECHNICAL PROBLEMS WHICH HAVE ARISEN BUT ALSO OF THE LEGISLATION NECESSARY TO CONTROL THE DISPOSAL OF THESE POTENTIALLY HAZARDOUS WASTES. IN THE DISCUSSION, THE MAIN TOPICS OF INTEREST WERE, THE RELATIONSHIP BETWEEN THE PERMISSIBLE LEVELS OF DISCHARGE AND COST, THE DISPOSAL OF SOLID WASTE, THE APPLICATION OF THE CRITICAL-PATH CONCEPT IN PRACTICE AND THE RE-USE OF HIGHLY POLLUTED WATER CONTAINING RADIOACTIVE WASTES.

PUB DESC: JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY, 10(3), PAGE 165-166, JULY 1971

KEYWORDS: MAXIMUM PERMISSIBLE CONCENTRATION (MPC); UNITED KINGDOM; CRITICAL NUCLEIDE PATHWAY; WASTE DISPOSAL; REACTOR, POWER; CRITICAL NUCLEIDE PATHWAY; RADIOACTIVITY RELEASE; WATER POLLUTION; FUEL REPROCESSING; COMPARISON

<747>

PUB DATE: 1972

AUTHOR: CHEVERTON, R.D.; TURNER, R.D.

TITLE: THERMAL ASPECTS OF BURIED RADIOACTIVE WASTES IN BEDDED SALT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: SALT HAS IDEAL CHARACTERISTICS AS A REPOSITORY FOR RADIOACTIVE WASTES. VITAL TO THE REPOSITORY DESIGN AT LYONS, KANSAS, ARE THE PROVISIONS TO DISSIPATE HEAT FROM THE WASTES FOR SEVERAL

<747> CONT.
CENTURIES.

PUB DESC: POWER ENGINEERING, 76(4), PP. 48-50
(APRIL 1972)

KEYWORDS: FISSION PRODUCT RELEASE; HEAT TRANSFER;
ALPHA EMISSION; WASTE MANAGEMENT; RADIATION
SAFETY AND CONTROL; WASTE DISPOSAL, SALT; ;
TRANSURANIC ELEMENT; PLASTICITY

<748>

PUB DATE: 1971
AUTHOR: CHEVETON, R.D.; TURNER, W.D.

TITLE: THERMAL ANALYSIS OF THE NATIONAL RADIOACTIVE
WASTE REPOSITORY - PROGRESS THROUGH JUNE 1971

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: SOLIDIFIED HIGH-LEVEL FUEL REPROCESSING
WASTES AND ALPHA-CONTAMINATED SOLID WASTES ARE TO BE
PLACED IN SALT FORMATIONS 1000 FT BELOW THE EARTH'S
SURFACE AT THE PROPOSED NATIONAL RADIOACTIVE WASTE
REPOSITORY NEAR LYONS, KANSAS. THE HEAT RELEASED
FROM THESE WASTES WILL RESULT IN TEMPERATURE INCREASES
THROUGHOUT THE IMMEDIATE GEOLOGIC FORMATIONS.
PRELIMINARY THERMAL CALCULATIONS INDICATED THE
TECHNICAL FEASIBILITY OF THE REPOSITORY. MORE RECENT
ANALYSES HAVE CONSIDERED THE REPOSITORY IN GREATER
DETAIL AND HAVE REFLECTED VARIATION IN THERMAL PROPERTY AND
STRATIGRAPHIC DATA. THE RESULTS FROM THESE ANALYSES
INDICATE THAT ALL OF THE CRITERIA CAN BE SATISFIED.

PUB DESC: ORNL-4726, 90 PAGES, DECEMBER 1971

KEYWORDS: HEAT TRANSFER; PROJECT SALT VAULT;
KANSAS; THERMAL ANALYSIS; WASTE SOURCE AND TYPE;
HIGH-LEVEL WASTE; TEMPERATURE REACTIVITY EFFECT; WASTE
DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; GEOLOGY,
STRATIGRAPHY; FUEL REPROCESSING; TEMPERATURE

<749>

PUB DATE: 1974
AUTHOR: CLAIBORNE, R.C.

TITLE: THERMAL ANALYSIS OF A FUEL CLADDING
REPOSITORY PILOT PLANT IN SALT.

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: FUEL CLADDING WASTES (HULLS) REMAINING
AFTER A CHOP-LEACH PROCESS USED IN THE RECOVERY OF
NUCLEAR FUEL FROM SPENT FUEL ELEMENTS ARE HIGH LEVEL
WITH RESPECT TO RADIATION BUT RATHER LOW LEVEL WITH
RESPECT TO THERMAL POWER. COST CONSIDERATIONS DICTATE
RATHER LARGE WASTE CANISTERS WITH COMPACTED CONTENTS;
HOWEVER, SUCH A STORAGE SCHEME CAN CREATE THERMAL
PROBLEMS IF THE CANISTERS ARE PACKED TOO CLOSELY
TOGETHER IN A DISPOSAL HORIZON WITHIN A GEOLOGICAL
FORMATION. THE DESIGN FOR A PILOT PLANT FOR THESE
WASTES INCLUDE RETRIEVABILITY AND READY ACCESS TO THE
ROOMS FOR SEVERAL YEARS, A CONDITION THAT RESTRICTS
THE MAXIMUM FLOOR TEMPERATURE TO LESS THAN 110 DEGREES
F AND PROBABLY TO THE ORDER OF 100 DEGREES F. INITIAL
PLANNING CALLS FOR WASTE CANISTERS TO BE 15 FT LONG
(ACTIVE LENGTH OF 13 FT) AND MADE FROM STANDARD 12-IN.
STEEL PIPE, WITH THE HULLS COMPACTED TO NEAR 70%
THEORETICAL DENSITY. A REASONABLE ARRANGEMENT FOR THE
CANISTERS IS REPLACEMENT OF 20-IN.-DIAM HOLES DRILLED
IN SEVERAL ROOMS IN SALT CONSTITUTING THE FLOOR OF AN
EXCAVATED ROOM. THE EMPTY SPACE COULD BE FILLED WITH
SAND, WHICH SHOULD FACILITATE RETRIEVABILITY.

PUB DESC: ORNL/TM-5221 1976 (APRIL)

KEYWORDS: WASTE REPOSITORY (SEE ALSO FEDERAL
REPOSITORY); THERMAL CONSIDERATION; DESIGN CRITERIA;
WASTE DISPOSAL, SALT; WASTE STORAGE; SALT (SEE ALSO
BRINE) AND WASTE DISPOSAL, SALT; CLADDING; WIRE;
BINDING; CHOP-LEACH PROCESS; FUEL REPROCESSING;
GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL,
TERRESTRIAL); GEOLOGY

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PUB DATE: 1974
AUTHOR: CLARK, D.T.

TITLE: SIX MONTH STUDY OF RADIATION CONCENTRATIONS
AND TRANSPORT MECHANISMS AT THE HAYES PLATS AREA OF
FLEMING COUNTY, KENTUCKY.

CORPORATE AUTHOR: KENTUCKY DEPT. FOR HUMAN
RESOURCES; BUREAU FOR HEALTH SERVICES; OFF. OF
CONSUMER HEALTH PROT., RADIATION AND PRODUCT SAFETY
BRANCH

ABSTRACT: A NON-TECHNICAL REPORT DESCRIBING THE
HAYES PLATS BURIAL GROUNDS AND THE OPERATION OF ITS
FACILITIES OVER THE PERIOD OF 1963 AT ITS START, TO
1973. THE CONCLUDING REMARKS INDICATE PROBLEMS HAVE
DEVELOPED. SUGGESTIONS OF A REMEDIAL NATURE ARE MADE.

PUB DESC: COMMONWEALTH OF KENTUCKY - PROJECT
REPORT. FRANKFORT, KY., 1974 (DECEMBER)

KEYWORDS: PUBLIC HEALTH; WASTE DISPOSAL, ASSESSMENT
(SEE ALSO ASSESSMENT); HAYES PLATS; KENTUCKY;
ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC
HEALTH); SAFETY; CONTENTS; WASTE DISPOSAL,
TERRESTRIAL; SITING; COMMERCIAL BURIAL GROUND (SEE
ALSO BURIAL GROUND); GEOLOGY; SOIL; MIGRATION;
FALLOUT; WATER POLLUTION

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PUB DATE: 1967
AUTHOR: CLEPSON, A.; BALTZ, E.H.

TITLE: PROGRESS IN THE UNITED STATES OF AMERICA
TOWARD DEEP-WEIL DISPOSAL OF LIQUID AND GASEOUS
RADIOACTIVE WASTES

CORPORATE AUTHOR: GEOLOGICAL SURVEY, WASHINGTON,
D.C.

ABSTRACT: THE BASIC TECHNOLOGY FOR DEEP-WEIL
DISPOSAL OF LIQUID WASTES IF THE GEOLOGIC SURFACE
HAS BEEN DEVELOPED AND USED BY THE PETROLEUM INDUSTRY
FOR DISPOSAL OF OIL-FIELD BRINES AND ADOPTED BY THE
CHEMICAL INDUSTRY FOR DISPOSAL OF CERTAIN HAZARDOUS
WASTES. REQUIREMENTS FOR DISPOSAL OF RADIOACTIVE
WASTES ARE MORE STRINGENT THAN FOR MOST OTHER
INDUSTRIAL WASTES. STUDIES TO EVALUATE THE DEEP-WEIL
METHOD SPECIFICALLY FOR DISPOSAL OF RADIOACTIVE
WASTES, PLUS INFORMATION ON OTHER GROUND-DISPOSAL
PRACTICES AND ON DEEP DISPOSAL OF OTHER INDUSTRIAL
WASTES, INDICATE THAT THE METHOD ITSELF IS TECHNICALLY
FEASIBLE.

PUB DESC: STI/PUB-156, CONF-670512, PAGES 591-605
OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
JOINT IAEA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: CHEMICAL REACTION; DEEP WELL (SEE ALSO
WASTE DISPOSAL, DEEP WELL); GEOLOGY; WASTE DISPOSAL,
GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, ROCK

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PUB DATE: 1972
AUTHOR: COHEN, J.J.; LEVY, A.E.; BRAUN, R.L.

TITLE: DISPOSAL OF RADIOACTIVE WASTE IN DEEP
SILICATE ROCK

CORPORATE AUTHOR: LAWRENCE RADIATION LABORATORY,
UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: A METHOD FOR DISPOSING OF NUCLEAR-REACTOR
WASTES BY IN-SITU INCORPORATION IN MOLDED SILICATE
ROCK IS PRESENTED. IN THIS METHOD, LIQUID WASTES ARE
INJECTED INTO A DEEP UNDERGROUND CHIMNEY AND ALLOWED
TO SELF-BOIL. THE RESULTING STEAM IS PROCESSED AT
THE GROUND SURFACE AND RECYCLED INTO A CLOSED SYSTEM.
WHEN WASTE ADDITION IS TERMINATED, THE CHIMNEY IS
ALLOWED TO BOIL DRY, THEREBY SOLIDIFYING THE WASTE.
THE HEAT GENERATED BY THE RADIOACTIVE WASTE THEN SELTS
THE SURROUNDING ROCK, WHICH DISSOLVES THE WASTE.
FINALLY, THE ROCK RECRYSTALLIZES, TRAPPING THE
RADIOACTIVITY IN AN INSOLUBLE ROCK MATRIX DEEP
UNDERGROUND. THIS METHOD HAS SIGNIFICANT
ENVIRONMENTAL AND ECONOMIC ADVANTAGES OVER PREVIOUSLY

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PROPOSED METHODS.

PUB DESC: IEEE TRANSACTIONS ON NUCLEAR SCIENCE, 19(7), PP. 172-176 7 FIGURES, 2 REFERENCES, (FEBRUARY 1972)

KEYWORDS: CONTAINMENT, UNDERGROUND; SITING, WASTE DISPOSAL; STEAM; REACTOR, POWER; SAFETY INJECTION; WASTE DISPOSAL, LIQUID; HIGH TEMPERATURE; WASTE MANAGEMENT; WASTE DISPOSAL, BEDROCK; ROCK MECHANICS; DISSOLUTION; SOLID; BOILING; INDUSTRY, NUCLEAR

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PUB DATE: 1972
AUTHOR: COHEN, J.J.; LEWIS, A.E.

TITLE: NUCLEAR CHIMNEY RADIOACTIVE WASTE DISPOSAL

ABSTRACT: AQUEOUS FLUORIC POUNDS OF RADIOACTIVE WASTES ARE INTRODUCED INTO LOWER PORTIONS OF A NUCLEAR CHIMNEY WHEREIN WATER IS VAPORIZED THEREBY BY RADIOACTIVE HEAT AND CONCENTRATED WASTES ARE ACCUMULATED THEREIN. WHEN SUFFICIENT WASTES HAVE ACCUMULATED INPUT OF COOLANT AND RADIOACTIVE WASTE IS TERMINATED AND THE CAVITY MAY BE SEALED AFTER VAPOR OUTPUT TERMINATES. RADIOACTIVE HEAT OUTPUT THEN IS EMPLOYED TO MELT THE CHIMNEY CONTENTS AND ROCK ADJACENT TO THE CHIMNEY PORTIONS SO AS TO INCORPORATE THE RADIOACTIVE MATERIALS INTO THE MOLTEN ROCK.

PUB DESC: U.S. PATENT 3,760,630. DECEMBER 19, 1972

KEYWORDS: WASTE DISPOSAL; WASTE TREATMENT; FISSION; PATENT; ROCK MECHANICS

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PUB DATE: 1971
AUTHOR: COHEN, J.J.; LEWIS, A.E.; REARD, R.L.

TITLE: DISPOSAL OF RADIOACTIVE WASTE IN DEEP SILICATE ROCK

CORPORATE AUTHOR: LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: A METHOD FOR DISPOSING OF NUCLEAR-REACTOR WASTES BY IN-SITU INCORPORATION IN MOLTEN SILICATE ROCK IS PRESENTED. IN THIS METHOD, LIQUID WASTES ARE INJECTED INTO A DEEP UNDERGROUND CHIMNEY AND ALLOWED TO SELF-BOIL. THE RESULTING STEAM IS PROCESSED AT THE GROUND SURFACE AND RECYCLED INTO A CLOSED SYSTEM. WHEN WASTE ADDITION IS TERMINATED, THE CHIMNEY IS ALLOWED TO BOIL DRY, THEREBY SOLIDIFYING THE WASTE. THE HEAT GENERATED BY THE RADIOACTIVE WASTE THEN HELPS MELT THE SURROUNDING ROCK, WHICH DISSOLVES THE WASTE. FINALLY, THE ROCK REFREEZES, TRAPPING THE RADIOACTIVITY IN AN INSOLUBLE ROCK MATRIX DEEP UNDERGROUND. THIS METHOD HAS SIGNIFICANT ENVIRONMENTAL AND ECONOMIC ADVANTAGES OVER PREVIOUSLY PROPOSED METHODS.

PUB DESC: OCELF-73234, CONF-711111-10, 11 PAGES, FROM THE NUCLEAR SCIENCE SYMPOSIUM, SAN FRANCISCO, CALIFORNIA, NOVEMBER 3, 1971

KEYWORDS: CONTAINMENT, UNDERGROUND; FLOWSHARE; SITING, WASTE DISPOSAL; STEAM; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT; FISSION; WASTE DISPOSAL, LIQUID; HIGH TEMPERATURE; WASTE MANAGEMENT; ROCK MECHANICS; FUEL REPROCESSING; SOLID; BOILING

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PUB DATE: 1971
AUTHOR: COHEN, J.J.; LEWIS, A.E.; REARD, R.L.

TITLE: USE OF A DEEP NUCLEAR CHIMNEY FOR THE IN-SITU INCORPORATION OF NUCLEAR FUEL-REPROCESSING WASTE IN MOLTEN SILICATE ROCK

CORPORATE AUTHOR: LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: IN THIS METHOD, LIQUID WASTES ARE INJECTED INTO A DEEP UNDERGROUND CHIMNEY AND ALLOWED

TO SELF-BOIL. THE RESULTING STEAM IS PROCESSED AT THE GROUND SURFACE AND RECYCLED INTO A CLOSED SYSTEM. WHEN WASTE ADDITION IS TERMINATED, THE CHIMNEY IS ALLOWED TO BOIL DRY, THEREBY SOLIDIFYING THE WASTE. THE HEAT GENERATED BY THE RADIOACTIVE WASTE THEN HELPS MELT THE SURROUNDING ROCK, WHICH DISSOLVES THE WASTE. FINALLY, THE ROCK REFREEZES, TRAPPING THE RADIOACTIVITY IN AN INSOLUBLE ROCK MATRIX DEEP UNDERGROUND. THIS METHOD HAS SIGNIFICANT ENVIRONMENTAL AND ECONOMIC ADVANTAGES OVER PREVIOUSLY PROPOSED METHODS.

PUB DESC: OCELF-51044, 23 PAGES, 20 REFERENCES, 9 TABLES, 12 FIGURES, MAY 4, 1971

KEYWORDS: CONTAINMENT, UNDERGROUND; STEAM; SAFETY INJECTION; WASTE DISPOSAL, LIQUID; HIGH TEMPERATURE; EVAPORATION; ECONOMIC STUDY; ROCK MECHANICS; FUEL REPROCESSING; DISSOLUTION; SOLID; WASTE DISPOSAL, DEEP WELL; REACTOR 2 (ENR)

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PUB DATE: 1972
AUTHOR: COLE, R.S.

TITLE: DISPOSAL OF RADIOACTIVE LIQUID ORGANIC WASTES AT THE ICPP

CORPORATE AUTHOR: ALLIED CHEMICAL CORPORATION, IDAHO FALLS, IDAHO

ABSTRACT: AT THE IDAHO CHEMICAL PROCESSING PLANT, A SLIGHTLY RADIOACTIVELY CONTAMINATED AROCLOR-TYPE MIXTURE, FROM THE SOLVENT EXTRACTION OPERATION, IS DISPOSED BY BURNING WITH AN ORDINARY HOUSEHOLD-TYPE OIL BURNER AT APPROXIMATELY 20 LITER/HR. PRIOR TO BURNING, THE AROCLOR IS PROCESSED THROUGH A STEAM STRIPPER AT 35 LITER/HR TO REMOVE RADIOACTIVE CONTAMINANTS AND OTHER IMPURITIES. THE COMBUSTION GASES ARE RELEASED TO THE ATMOSPHERE THROUGH THE ICPP STACK. DECONTAMINATION FACTORS OF 100 TO 10,000 ON RADIOACTIVE CONTAMINANTS ARE ACHIEVED IN THE STEAM STRIPPER, RESULTING IN RELEASE RATES TO THE ICPP STACK WELL BELOW LOCALLY ESTABLISHED GUIDELINES.

PUB DESC: ICP-1007, 19 PAGES, MARCH 1972

KEYWORDS: EFFLUENT; IDAHO; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; INCINERATION; RADIOCHEMICAL PROCESSING; SOLVENT EXTRACTION; GAS; PLANT

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PUB DATE: 1971
AUTHOR: CONGRESS (U.S.A.)

TITLE: CONGRESSIONAL HEARING ON OCEAN DUMPING

ABSTRACT: AEC HAS ALREADY BEEN EFFECTIVELY CARRYING OUT THE POLICY OF THE BILL (HR4721). NO LICENSE HAS BEEN ISSUED FOR OCEAN DUMPING OF RADIOACTIVE WASTE DURING LAST 10 YEARS. LICENSES IN EXISTENCE ARE BEING TERMINATED. AEC FAVORS MAINTAINING THE POSSIBILITY OF OCEAN DUMPING IN A MINOR WAY. AEC WILL STILL HAVE RESPONSIBILITY AND AUTHORITY FOR RADIOACTIVE WASTE DISPOSAL.

PUB DESC: ATOMIC ENERGY CLEANING HOUSE, 17(15), PG. 61 (APRIL 12, 1971)

KEYWORDS: LICENSING; WASTE DISPOSAL, OCEAN; REGULATION, AEC; ENVIRONMENT

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PUB DATE: 1970
AUTHOR: CONGRESS (U.S.A.)

TITLE: THE ATCH - ITS LARGEST AFTERMATH. PART II - ATOMIC WASTE PROBLEM DISCLOSED.

ABSTRACT: REPORTS CONGRESSIONAL ACTIVITY INTO THE PAST AND PRESENT PRACTICES OF RADIOACTIVE WASTE DISPOSAL. SENATOR CHURCH, OF IDAHO, POINTS OUT THE CONCERN OF IDAHOANS ABOUT LOCAL WASTE DISPOSAL PRACTICES AND RAISES QUESTIONS ABOUT AN UNPUBLISHED REPORT OF A COMMITTEE OF THE NATIONAL ACADEMY OF SCIENCES TO THE SENATE. FURTHER CONCERN OF

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ENVIRONMENTAL POLLUTION POSSIBILITIES ARE DEMONSTRATED.

PUB DESC: CONGRESSIONAL RECORD, 116(34), PP.
53137-53146 (MARCH 6, 1974)

KEYWORDS: ADMINISTRATIVE CONTROL; ISLAND FALLS;
CONGRESSIONAL ACTIVITY; WTE; DIVERS; ATMOSPHERIC
POLLUTION; WASTE RESIDUAL; SURFACE WATER; NUCLEAR
OCCURRENCE; CONTAMINATION; ENVIRONMENT; ON SITE; OFF
SITE; ASBEST, ABC (SEE ALSO USABC);

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PUB DATE: 1964

AUTHOR: COOPER, E.E.

TITLE: CURRENT PRACTICES IN THE RELEASE AND
DECONTAMINATION OF I 131 AT WYTS, HAMPSHIRE, SARAWAK RIVER
AND ORSI

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A STUDY WAS UNDERTAKEN BY THE NUCLEAR
SAFETY INFORMATION CENTER, ORNL, OF THE CURRENT
PRACTICES IN THE RELEASE AND DECONTAMINATION OF I 131 AT
THE NATIONAL REACTOR TESTING FACILITY, HAMPSHIRE ATOMIC
PRODUCTS CORPORATION, SARAWAK RIVER PLANT, AND OAK
RIDGE NATIONAL LABORATORY. ANALYSES WERE MADE OF THE
PRINCIPAL SOURCES OF I 131 EFFLUENT OF TREATMENT PRIOR
TO RELEASE, QUANTITIES RELEASED TO THE ENVIRONMENT,
CRITERIA FOR RELEASE, SAMPLING EQUIPMENT AND
ANALYTICAL TECHNIQUES, AND SENSITIVITY OF ANALYTICAL
TECHNIQUES, AND ESTIMATES THE RISK OF HUMAN EXPOSURE
BASED ON QUANTITIES DETECTED (INCLUDING NUCLEAR TEST
FALLOUT) IN ENVIRONMENTAL MEDIA. CONCLUSIONS ARE
DRAWN REGARDING THE RELEASE OF RADIOISOTOPES, THE
CHEMICAL AND PHYSICAL FORMS AT THE POINT OF RELEASE,
AND CHANGES OCCURRING IN FORM DURING SOJOURN IN THE
ENVIRONMENT. THE DECONTAMINATION TECHNIQUES INVESTIGATED,
IN USE, AND MOST APPLICABLE FOR RADIOISOTOPES ARE
DISCUSSED, AND INFORMATION IS PRESENTED ON THE
DEPOSITION OF RADIOISOTOPES FROM CONTAMINATED CLOUDS AND
SUBSEQUENT INHALATION BY MAN.

PUB DESC: ORNL-DSIC-3- 167 PAGES, 10 TABLES, 10
FIGURES, 166 REFERENCES- AUGUST 11, 1964

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW);
CRUSTACEAN; DEPOSITION; EFFLUENT; FALLOUT; LOBIKE;
CRITTER, LIQUID; MONITOR, SLACK; DIVER; SURVEY;
ENVIRONMENT; WASTE DISPOSAL, ATMOSPHERIC; WASTE
DISPOSAL, TERRESTRIAL; AGRICULTURE; MONITOR, AIR;
CRITTER, GAS; CRITTER, SOLID; SURFACE WATER, NUCLEAR
OCCURRENCE; WASTE SOURCE AND TYPE; WASTE TREATMENT,
GAS; MONITOR, ENVIRONMENTAL; POPULATION EXPOSURE;
RADIATION RISKS

<760>

PUB DATE: 1976

AUTHOR: CROFT, A.G.

TITLE: AN EVALUATION OF OPTIONS RELATIVE TO THE
FIXATIONS AND DISPOSAL OF C-14 CONTAMINATED CO₂ AS
CACO₃

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A PAPER STUDY WAS CONDUCTED TO DETERMINE
THE BEST METHOD FOR FIXING THE 14C-CONTAMINATED CO₂
RESULTING FROM AN HIGH FUEL BLOCK (UNDER AS CACO₃), AND
TO DETERMINE THE BEST METHODS FOR DISPOSING OF THE
CACO₃ THUS PRODUCED. THE FIXATION METHOD SELECTED WAS
THE DIRECT REACTION OF A C₁₄(OH)₂ SLURRY WITH THE CO₂.
THE LEAST EXPENSIVE DISPOSAL OPTIONS WHICH ARE LIKELY
TO BE ACCEPTABLE APPEAR TO BE THE SHALLOW-LAND BURIAL
OF LITERS SIZED CACO₃ SOLID (TOTAL COST = \$16.07/KG
HEAVY METAL) OR DENSED CACO₃ COMBUSTED WITH COAL
(TOTAL COST = \$43.33/KG HEAVY METAL). NEITHER PLACING
THE CO₂ FIXATION PROCESS BEFORE THE RE MOVAL PROCESS
FOR SEPARATING THE BULK OF THE GRAPHITE FUEL BLOCK
FROM THE FUEL PARTICLES IS ATTRACTIVE ON BOTH
TECHNICAL AND ECONOMIC GROUNDS. HOWEVER, REDUCTION OF
THE HIGH FUEL BURNING COSTS APPEARS TO BE A MORE
ATTRACTIVE METHOD OF REDUCING THE 14C RELEASE RATE.

PUB DESC: ORNL/76-5171 1576

KEYWORDS: SAFETY EVALUATION; WASTE DISPOSAL,
ASSESSMENT (SEE ALSO ASSESSMENT); CONCRETE;
ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC
HEALTH); WASTE TREATMENT; FIXATION; CARBONATES; BORE
DATE; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS);
WASTE STORAGE; BURIAL (SEE ALSO COMMERCIAL
BURIAL GROUND); TRANSPORTATION; EFFLUENT (SEE ALSO
WASTE GAS); WASTE DISPOSAL, SEALED (SEE ALSO SEALED
DISPOSAL AND OCEAN AND SEA); HYDRAULIC FRACTURING (SEE
ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING)

<761>

PUB DATE: 1971

AUTHOR: COLLIER, P.L.

TITLE: TECHNICAL STATUS OF THE RADIOACTIVE WASTE
DEPOSITORY - A DEMONSTRATION PROJECT FOR SOLID
RADIOACTIVE WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: REVIEWS THE WORK DONE TO ESTABLISH THE
FEASIBILITY OF RECOVERED SALT FORMATIONS FOR THE
CONTAINMENT OF RADIOACTIVE SOLID WASTES AND DESCRIBES
THE NATURE OF THE ADDITIONAL INVESTIGATIONS THAT ARE
BEING UNDERTAKEN OR ARE SCHEDULED TO BE CARRIED OUT.
IT IS BELIEVED THAT THIS BOOK CONSTITUTES A VALID
TECHNICAL JUSTIFICATION FOR PROCEEDING WITH THE
PRESENT PLANS TO ESTABLISH A DEMONSTRATION DEPOSITORY
AT LYONS, KANSAS.

PUB DESC: ORNL-6460, 69 PAGES, FIGURES, TABLES,
REFERENCES, APRIL 1971

KEYWORDS: ECOLOGY; PROJECT SALT VAULT; KANSAS;
GEOLOGY; ALPHA EMITTER; PLUTONIUM; SITING, WASTE
DISPOSAL; MONITOR, ENVIRONMENTAL; TIDUAL
CONSIDERATION; WASTE TRANSPORTATION; HIGH-LEVEL WASTE;
HYDROLOGY; RADIATION SAFETY AND CONTROL; WASTE
DISPOSAL, SALT; SALT (SEE ALSO SALT ONLY AND WASTE
DISPOSAL, SALT); ROCK MECHANICS; RADIATION EFFECT

<762>

PUB DATE: 1957

AUTHOR: COLLIER, P.L.

TITLE: STATUS REPORT ON THE DISPOSAL OF RADIOACTIVE
WASTE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY;
ARGONNE NATIONAL LABORATORY

ABSTRACT: A COMPREHENSIVE SURVEY OF WASTE DISPOSAL
TECHNIQUES, REQUIREMENTS, COSTS, RISKS, AND
LONG-RANGE CONSIDERATIONS IS PRESENTED. THE NATURE OF
HIGH LEVEL WASTES FROM REACTORS AND CHEMICAL
PROCESSES, IN THE FORM OF FISSION PRODUCT GASES, WASTE
SOLUTIONS, SOLID WASTE, AND PARTICULATE SOLIDS IN GAS
PHASE, IS DESCRIBED. GROWTH PREDICTIONS FOR NUCLEAR
REACTOR CAPACITY AND THE ASSOCIATED FISSION PRODUCT
AND TRANSPLUTONIC WASTE PROBLEM ARE MADE AND DISCUSSED
ON THE BASIS OF PRESENT KNOWLEDGE. BIOLOGICAL HAZARDS
FROM ACCUMULATED WASTES AND POTENTIAL HAZARDS FROM
REACTOR ACCIDENTS, ONE AND FIVE DAY TREATMENT PROCESSING,
CHEMICAL REPROCESSING PLANTS, AND HANDLING OF
FISSIONABLE AND FERTILE MATERIAL AFTER IRRADIATION AND
DECONTAMINATION ARE SURVEYED. THE WASTE
TRANSPORTATION PROBLEM IS CONSIDERED FROM THE
STANDPOINTS OF NATURE OF THE PROBLEM, PRESENT
REGULATIONS, COSTS, AND COOLING PREDICTIONS. THE
POSSIBILITIES FOR ULTIMATE WASTE MANAGEMENT AND/OR
DISPOSAL ARE REVIEWED AND DISCUSSED. THE COSTS OF
DISPOSAL, EVAPORATION, STORAGE TANKS, AND DRAIN-DRAINING
ARE CONSIDERED. (NSA-THE ABSTRACT)

PUB DESC: OR-57-3-114 (REV.), 232 P. JUNE 25, 1957
(FROM TID-2243, 1973)

KEYWORDS: WASTE DISPOSAL; BILLING; ECONOMICS (SEE
ALSO WASTE DISPOSAL, ECONOMICS); HAZARD ANALYSIS;
EFFLUENT; FUEL REPROCESSING; GAS; LIQUID; SOLID;
TRANSMUTATION ELEMENT; PLUTONIUM; POSTCAST; ONE
PROCESSING; EVAPORATION; WASTE STORAGE; ORNL; AVL;
HIGH-LEVEL WASTE

<763>

PUB DATE: 1964
AUTHOR: CERNOSLOVAK ACADEMY OF SCIENCES

TITLE: HYDRODYNAMICS OF THE DISPOSAL OF
LOW-ACTIVITY LIQUID RADIOACTIVE WASTES IN SOIL

CORPORATE AUTHOR: CZECHOSLOVAK ACADEMY OF SCIENCES,
PRAGUE, CZECHOSLOVAKIA

ABSTRACT: IN THE CASE OF INJECTION OF DILUTED
SUSPENSION, THE GENERAL NUMERICAL CONSTANTS IN THE
THEORETICAL EQUATIONS (DESCRIBING THE COURSE OF
CLOGGING, INFLUENCE THE COURSE OF PRESSURES TO A LARGE
EXTENT. ON THE OTHER HAND, THE COURSE OF
CONCENTRATIONS OF THE SUSPENSION IS INFLUENCED IN A
MUCH LESSER DEGREE.

PUB DESC: HW-15450, 12 PAGES

KEYWORDS: IAEA; INJECTION; WASTE DISPOSAL;
TERRESTRIAL; WASTE DISPOSAL, LIQUID; CZECHOSLOVAKIA

<764>

PUB DATE: 1956
AUTHOR: BRACKENRITS, P.V.

TITLE: FISSION PRODUCT DISPOSAL FROM SINESCALE.

PUB DESC: NUCLEAR ENGINEERING 1, PAGES 25-27 1956

KEYWORDS: FISSION PRODUCT RELEASE; OCEAN AND SEA
(SEE ALSO WASTE DISPOSAL, OCEAN); EUTONICUM;
RETENTION; STABILITY; WASTE DISPOSAL; DISPERSION;
SINESCALE; SEDIMENT

<765>

PUB DATE: 1972
AUTHOR: DE LAGUNA, W.

TITLE: HYDRAULIC FRACTURING TEST AT WEST VALLEY,
NEW YORK

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE PURPOSE OF THE TEST WAS TO DETERMINE
THE GEOMETRY OF FRACTURES FORMED HYDRAULICALLY IN
FIAT-LIING DEVONIAN SHALE IN WESTERN NEW YORK. FIVE
WELLS WERE DRILLED--AN INJECTION WELL AT THE CENTER
AND FOUR OBSERVATION WELLS 150 FT OUT TO THE EAST,
NORTH, WEST, AND SOUTH. ALL FIVE WELLS WERE 1500 FT
DEEP AND WERE CASSED THROUGH THEIR FULL DEPTH. THE
FIRST TEST WAS THE INJECTION OF ABOUT 100,000 GAL OF
WATER AT 1050 PSI INIC ROCK CLASSIFIED AS FAIR FOR THE
FORMATION OF HORIZONTAL FRACTURES. INDICATIONS FROM
THE PUMPING PRESSURE, WHICH WAS LOW, WERE THAT A
HORIZONTAL FRACTURE HAD FORMED, BUT THERE WAS SOME
DOUBT, AS THE RESULTS DIFFERED FROM THOSE FOR A
SIMILAR TEST AT OAK RIDGE UNDER THE FRACTURES ARE
KNOWN TO BE HORIZONTAL. ANALYSIS OF THE PRESSURE DECAY
AFTER PUMPING HAD STOPPED SUGGESTED A HORIZONTAL
FRACTURE. A SECOND INJECTION AT 1050 PSI OF WATER
CONTAINING A RADIOACTIVE TRACER WAS SHOWN TO HAVE
FORMED A GROUP OF HORIZONTAL FRACTURES. ADDITIONAL
FRACTURES AT DIFFERENT DEPTHS WERE MADE AND DETAILED
DATA OF THESE ARE GIVEN. THE TWO GENERAL CONCLUSIONS
REACHED ARE ALSO REPORTED.

PUB DESC: ORNL-4827 1972 (OCT.)

KEYWORDS: WEST VALLEY; TRACER RADIOACTIVE; SAFETY
INJECTION; PRESSURE DROP; HYDRAULIC FRACTURING (SEE
ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); NEW YORK
STATE; GEOLOGY; TESTING; INJECTION; PRESSURE;
FRACTURES; HORIZONTAL FRACTURES; FRACTURE GEOMETRY

<766>

PUB DATE: 1971
AUTHOR: DE LAGUNA, W.; WEINER, E.C.; SIMPSON,
P.T.; WITKOWSKI, E.J.; STROUBESS, E.C.

TITLE: SAFETY ANALYSIS OF WASTE DISPOSAL BY
HYDRAULIC FRACTURING AT OAK RIDGE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
OAK RIDGE, TENNESSEE

ABSTRACT: DESCRIBES THE FACILITIES WHICH HAVE BEEN
DESIGNED AND BUILT AT ORNL FOR HYDRAULIC FRACTURING AS
A METHOD FOR PERMANENT DISPOSAL OF RADIOACTIVE WASTE
SOLUTION TOGETHER WITH INFORMATION CONCERNING ORNL
EXPERIENCE WITH 14 INJECTIONS PERFORMED BETWEEN
FEBRUARY 1964 AND SEPTEMBER 1970. THE SAFETY ANALYSIS
CONTAINED HEREIN LEADS TO THE CONCLUSION THAT, WITHIN
THE OPERATING LIMITS SPECIFIED, HYDROFRACTURE DISPOSAL
OF RADIOACTIVE WASTE CAN BE CARRIED OUT IN A SAFE AND
ORDERLY MANNER WITH NO SIGNIFICANT PRESENT OR FUTURE
HARMS TO THE PUBLIC OR TO THE ENVIRONMENT.

PUB DESC: ORNL-4645, 41 PAGES, 16 FIGURES,
SEPTEMBER 1971

KEYWORDS: ORNL; WASTE DISPOSAL, LIQUID; WASTE
DISPOSAL, HYDRAULIC FRACTURING; SAFETY ANALYSIS

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PUB DATE: 1970
AUTHOR: DE LAGUNA, W.

TITLE: RADIOACTIVE WASTE DISPOSAL BY HYDRAULIC
FRACTURING

ABSTRACT: THE TECHNIQUE OF HYDRAULIC FRACTURING TO
INCREASE OIL RECOVERY MAY BE USED FOR WASTE DISPOSAL,
ALTHOUGH THERE ARE CERTAIN SIGNIFICANT DIFFERENCES.
THE DISPOSAL WELL AT OAK RIDGE WAS DRILLED AND CASSED
TO A DEPTH OF 1000 FT IN SHALE BY USING STANDARD
OIL-FIELD METHODS. THE CASING IS SLICED NEAR THE
BOTTOM, AND FOR WASTE DISPOSAL A SELF-HARDENING
MIXTURE OF WASTE, PORTLAND CEMENT, AND CLAY IS PUMPED
DOWN UNDER HIGH PRESSURE TO FORM A WIDESPREAD, THIN,
HORIZONTAL FRACTURE IN THE SHALE IN WHICH THE WASTE
SETS UP SOLID. PROBLEMS THAT HAD TO BE SOLVED WERE
(1) DETERMINING THE GEOMETRY OF THE FRACTURES FORMED
IN THE SHALE, (2) ESTABLISHING THE FORMULA FOR A
SATISFACTORY WASTE-CEMENT-CLAY MIX, (3) DESIGNING AND
CONSTRUCTING THE SURFACE PLANT, AND (4) FORMULATING
METHODS OF MONITORING THE OPERATION.

PUB DESC: NUCLEAR SAFETY, 10 PAGES, 11(5), PP.
391-400(SEPTEMBER-OCTOBER 1970)

KEYWORDS: CONCRETE; SHALE; DESIGN CRITERIA;
GEOLOGY; WASTE DISPOSAL, LIQUID; HYDROLOGY; WASTE
DISPOSAL, HYDRAULIC FRACTURING; EQUIPMENT; ENERGY
LEVEL; MONITOR, AREA; OPERATING EXPERIENCE

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PUB DATE: 1968
AUTHOR: DE LAGUNA, W.; YAMURA, T.; WEINER,
E.C.; STROUBESS, E.C.; MCCLAIN, W.C.; SEXTON, E.C.

TITLE: ENGINEERING DEVELOPMENT OF HYDRAULIC
FRACTURING AS A METHOD FOR PERMANENT DISPOSAL OF
RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE MANY PHASES OF THE DEVELOPMENT OF
WASTE DISPOSAL BY HYDRAULIC FRACTURING ARE DISCUSSED.
THE FIRST AND SECOND PHASES POINTED OUT A NEED FOR
FURTHER PRELIMINARY INVESTIGATIONS BEFORE DESIGN AND
CONSTRUCTION OF THE FRACTURING PLANT. EXPERIMENTAL
INJECTIONS, ONE THROUGH SEVEN, ARE DISCUSSED AND THE
TWO OPERATIONAL INJECTIONS OF INTERMEDIATE LOW-LEVEL
WASTES COMPLETED, DISPOSING OF BETTER THAN 80,000
CURIES OF CESIUM AND STRONTIUM. THE CONCLUSION IS
THAT THE POSSIBILITY OF USING HYDRAULIC FRACTURING FOR
WASTE DISPOSAL IN OTHER AREAS SHOULD BE EXPLORED AND
THAT CONSIDERATION SHOULD BE GIVEN TO USING THE METHOD
TO DISPOSE OF WASTES OTHER THAN THE MEDIUM-LEVEL
WASTES FOR WHICH IT IS NOW EMPLOYED AT OAK RIDGE

PUB DESC: ORNL-4259, 261 PAGES, FIGURES, TABLES,
AUGUST 1968

KEYWORDS: CESIUM; INTERMEDIATE-LEVEL WASTE;
GEOLOGY; STRONTIUM; WASTE STORAGE; WASTE DISPOSAL,
ECONOMICS; ORNL; RADIATION SAFETY AND CONTROL; WASTE
DISPOSAL, HYDRAULIC FRACTURING

<769>

PUB DATE: 1964
 AUTHOR: DE LACROIX, R.; SEITON, D.C.; STEINBERG, E.C.; TAMURA, T.; ZIEGLER, R.C.

TITLE: DISPOSAL BY HYDRAULIC FRACTURING

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: WATER INJECTIONS WERE MADE AND CONFIRMED THAT A FLUID LOSS ADDITIVE IS NOT NECESSARY IN THE WASTE INJECTIONS. THE SANDWICH TECHNIQUE FOR SLOTTING FAILED TO CUT THE CASING AFTER 20 HRS AT A JET PRESSURE OF 2600 PSI. THE PROBABLE OPERATING COST OF THE SHALE FRACTURING PLANT SHOWS THAT THE COST OF THE MIX AND THE WELL LIFE ARE THE SIGNIFICANT VARIABLES. WELL LIFE CAN BE EXTENDED BY MAKING THE BATCH SIZE LARGER. THE DESCRIBED CONTROLLED THE DENSITY OF THE SLURRY TO WITHIN 0.1 LB/GAL OF THE DESIRED DENSITY, WHICH IS ACCEPTABLE. FOLLOWING CONSTRUCTION OF THE SURFACE PLANT, A SERIES OF FIVE INJECTIONS WAS MADE TO DETERMINE THE PERFORMANCE OF THE PLANT AND THE UNDERGROUND BEHAVIOR OF DIFFERENT WASTE SLOTTERS. OPERATION OF THE SURFACE PLANT WAS SMOOTH AND SATISFACTORY.

PUB DESC: ORO-1367, OCTOBER 1964, PAGES 10-19 OF HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR FISCAL YEAR JULY 31, 1964

KEYWORDS: SOIL; RADIOACTIVE DECONTAMINATION; WASTE DISPOSAL; TERRESTRIAL; WASTE DISPOSAL, ECONOMICS; ORE; WASTE DISPOSAL, LIQUID; HAZARDOUS ANALYSIS; MINERAL EXCHANGE; WASTE DISPOSAL, HYDRAULIC FRACTURING

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PUB DATE: 1962
 AUTHOR: DIVISION OF TECHNICAL INFORMATION, D.T.C. (U.S.A.)

TITLE: INFORMAL LISTING OF BIBLIOGRAPHIES OF ATOMIC ENERGY LITERATURE

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION

ABSTRACT: ALL UNCLASSIFIED BIBLIOGRAPHIES ISSUED OR RECEIVED BY THE U.S. ATOMIC ENERGY COMMISSION ARE LISTED IN A PERMANENT COMPILATION ENTITLED BIBLIOGRAPHIES OF INTEREST TO THE ATOMIC ENERGY PROGRAM, TID-3043. DIVISION 1 OF TID-3043 INCLUDES BIBLIOGRAPHIES ISSUED OR RECEIVED BY THE AEC UP TO MARCH 15, 1950. SUPPLEMENT 1 TO THIS FIRST DIVISION INCLUDES BIBLIOGRAPHIES ISSUED OR RECEIVED BY THE AEC DURING THE PERIOD MARCH 1950 THROUGH OCTOBER 1959, WHILE SUPPLEMENT 2 COVERS NOVEMBER 1959 THROUGH NOVEMBER 1960. DIVISION 2, NOW IN PRESS, INCLUDES BIBLIOGRAPHIES THROUGH NOVEMBER 1961.

PUB DESC: TID-3712, 26 PAGES, 1962

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ECOLOGY; WASTE DISPOSAL; AGRICULTURE; RADIATION EFFECT

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PUB DATE: 1972
 AUTHOR: BOWEN, J.

TITLE: OPERATION 'HOT NOIS'

ABSTRACT: A RATHER UNUSUAL AND ELABORATE TECHNIQUE IS PROPOSED TO SOLVE THE PROBLEM OF STORING HIGH-ACTIVITY RADIOACTIVE EFFLUENTS: SELF-BURIAL, WHICH CONSISTS OF USING THE HEAT GENERATED BY RADIOACTIVE DECAY TO Melt THE WASTE IN THE SURFICIAL STRATA OF THE SOIL. A PARAMETRIC STUDY OF THE TECHNIQUE IS PRESENTED, AS WELL AS THE RESULTS OF EXPERIMENTAL VERIFICATIONS CARRIED OUT ON SPHERICAL AND CYLINDRICAL MODEL CONTAINERS.

PUB DESC: BIOSPECTRA, 11(4), PP. 102-109 (DECEMBER 1972)

KEYWORDS: DECAY HEAT; DESIGN CRITERIA; EFFLUENT; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; HIGH-LEVEL WASTE; SOIL; STORAGE CONTAINER; RADIOACTIVITY RELEASE

<772>

PUB DATE: 1972
 AUTHOR: BOUZA, J.; CILLIANT, S.; KESTENHUT, L.

TITLE: SELF-BURIAL PROCESS OF CONTAINERS FILLED WITH HIGHLY ACTIVE RADIOACTIVE WASTE

CORPORATE AUTHOR: EUROPEAN ATOMIC ENERGY COMMUNITY, ISFRA, ITALY

ABSTRACT: THIS PRELIMINARY REPORT SHOWS ON A THEORETICAL BASIS HOW THE HEAT-HEAT OF FISSION PRODUCTS CAN BE USED TO GENERATE SELF-BURIAL OF APPROPRIATE CONTAINERS FILLED UP WITH RADIOACTIVE WASTES. SELF-BURIAL IN SALT DOMES IS SHOWN TO BE AN INTERESTING POSSIBILITY. (IN FRENCH)

PUB DESC: EUR-4903F, 34 PAGES, 11 PICTURES, NOVEMBER 1972

KEYWORDS: HEAT HEAT; WASTE STORAGE; STORAGE CONTAINER; WASTE DISPOSAL, SALT; FISSION PRODUCT RETENTION; BENEFICIAL USE

<773>

PUB DATE: 1974
 AUTHOR: DUCKWORTH, J.P.; JUNG, R.J.; KNIGHT, R.E.

TITLE: LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT RESEARCH PROJECT FINAL REPORT SEPT. 15, 1974

CORPORATE AUTHOR: NUCLEAR FUEL SERVICES, INC.

ABSTRACT: THE OBJECTIVE OF THE RESEARCH PROJECT WAS TO DEVELOP STANDARDS FOR THE HANDLING, TREATMENT, AND DISPOSAL OF SOLIDIFIED EVAPORATOR CONCENTRATES AND SPENT ION EXCHANGE RESINS GENERATED IN CONNECTION WITH THE OPERATION OF NUCLEAR POWER PLANTS. THE STANDARDS ARE TO BE BASED UPON THE PHYSICAL AND CHEMICAL PROPERTIES OF SUCH WASTES, THE AVAILABLE WASTE CONTAINMENT MATERIALS, AND THE CHARACTERISTICS OF THE SOIL IN THE BURIAL AREA IN THE CENTER. THE PROJECT WAS FURTHER DEFINED BY THE IDENTIFICATION OF FOUR SPECIFIC TASKS ASSIGNED AS BY APPLYING AN "AS-LOW-AS-PRACTICABLE" STANDARD ON RADIOACTIVE RELEASES WHICH MUST RESULT FROM THE DISPOSAL OPERATION. THESE TASKS WERE: (1) WASTE CHARACTERIZATION (2) BURIAL GROUP CHARACTERISTICS (3) EVALUATION OF ALTERNATIVE PROCESSES (4) DEVELOPMENT OF DISPOSAL STANDARDS

PUB DESC: NUCLEAR FUEL SERVICES 1974 (SEPT.)

KEYWORDS: LOW-LEVEL WASTE; WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); UFS; WET VALLEY; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE DISPOSAL, TERRESTRIAL; COMMERCIAL BURIAL GROUPS (SEE ALSO BURIAL GROUPS); GEOLOGY; WASTE CHARACTERIZATION; BURIAL GROUP CHARACTERISTICS; SAFETY EVALUATION; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); STANDARDS, RADIATION (SEE ALSO REGULATION)

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PUB DATE: 1970
 AUTHOR: DUNSTER, D.J.; VABBER, D.F.

TITLE: THE DISPOSAL OF MOLE GAS FISSION PRODUCTS FROM THE REPROCESSING OF NUCLEAR FUEL

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, BARNWELL; UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND

ABSTRACT: THE RADIOLOGICAL EFFECTS, LOCAL, NATIONAL AND WORLD-WIDE, OF THE RELEASE OF GASES FROM REPROCESSING PLANTS ARE CONSIDERED IN RELATION TO A NATIONAL POWER PROGRAMME AND PREDICTIONS OF THE GROWTH OF NUCLEAR POWER. THE STATUS OF THE UK WORK ON GASES REMOVAL AND STORAGE IS REVIEWED AND EXTRAPOLATED TO THE PROGRAMMES PROPOSED TO THE YEAR 2000. IT IS DEMONSTRATED THAT THERE IS SOLID EVIDENCE FOR CONFIDENCE IN OUR ABILITY TO EXTRACT THE MOLE GASES FROM THE GASEOUS EFFLUENT FROM REPROCESSING PLANTS

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 WHEN THE NEED ARISES AND THAT THE LONG-TERM STORAGE OF THE WASTES WILL NOT POSE INSURMOUNTABLE TECHNICAL PROBLEMS.

PUB DESC: AMNH(NF)D-101, CONF-691039-1, 30 PAGES, FROM MEETING ON MOBILE GAS FISSIION PRODUCTS IN THE NUCLEAR INDUSTRY, PARIS, FRANCE, JANUARY 1970

KEYWORDS: KRYPTON (SEE ALSO MOBILE GAS); UNITED KINGDOM; UNITED KINGDOM; WASTE TREATMENT, GAS; WASTE MANAGEMENT; OXY GAS; FUEL REPROCESSING

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AUTHOR: DYER, P.J. PUB DATE: 1976

TITLE: CANADIAN GEOLOGIC ISOLATION PROGRAM

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LIMITED; WHITESHILL NUCLEAR RES. ESTAB.

ABSTRACT: THE CANADIAN GEOLOGIC ISOLATION PROGRAM IS DIRECTED AT EXAMINING THE POTENTIAL OF (1) SALT DEPOSITS AND (2) HARD ROCK AS REPOSITORIES FOR RADIOACTIVE WASTES. IT WAS FELT ESSENTIAL, FROM THE INCEPTION, THAT ALTERNATIVE HOST ROCKS BE EVALUATED OVER A FAIRLY LARGE GEOGRAPHICAL AREA. THE STUDIES ON SALT DEPOSITS TO DATE ARE BASED ON EXISTING GEOLOGICAL INFORMATION AND HAVE IDENTIFIED THE AREAS THAT SHOW SOME POTENTIAL AND WORTH FURTHER STUDY. THE FACTORS CONSIDERED INCLUDE DEPTH, THICKNESS AND PURITY OF THE DEPOSIT, OVERLYING AQUIFERS, AND THE POTENTIAL FOR GAS AND OIL EXPLOSION AS WELL AS POLYMER RECOVERY. THE STUDIES ON HARD ROCK ARE RESTRICTED TO PLUTONIC IGNEOUS ROCKS IN THE CENTRIC PART OF THE CANADIAN SHIELD. BECAUSE GEOLOGICAL INFORMATION ON THEIR EXTENT AND EXTENT IS SPARSE, THE STUDY IS LIMITED TO BODIES THAT ARE WELL EXPOSED AND FOR WHICH INFORMATION IS AVAILABLE. FIELD STUDIES IN THE NEXT TWO SEASONS ARE AIMED AT MAPPING THE FAULT AND JOINT PATTERNS AND DEFINING THE GEOLOGIC CONTROLS ON THEIR DEVELOPMENT. IN 1977 AND 1978, TWO OF THREE OF THE MORE FAVORABLE SITES WILL BE MAPPED IN GREATER DETAIL, AND AN EXPERIMENTAL DRILLING PROGRAM WILL BE ESTABLISHED TO DETERMINE THE EXTENT OF FRACTURING AT DEPTH AND THE GEOLOGY OF THESE FRACTURES. CONCEPTUAL DESIGNS OF MINED REPOSITORIES IN HARD ROCK ARE ALSO BEING MADE WITH THE VIEW OF IDENTIFYING, AT AN EARLY STAGE IN THIS PROGRAM, SPECIAL PROBLEMS IN HARD-ROCK REPOSITORIES THAT MAY REQUIRE DEVELOPMENT AND STUDY.

PUB DESC: CONF-76-0701; JULY 11-16, 1976; DENVER, COLORADO

KEYWORDS: WASTE DISPOSAL; SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); WASTE STORAGE; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); ROCK; NATURAL RESOURCES; OIL; GAS; SITING; HYDROLOGY; GRANITIC ROCK (SEE ALSO BEDROCK); CANADA;

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AUTHOR: EDMOND, R.W.; GREGG, E.C. PUB DATE: 1968

TITLE: SUBSURFACE WASTE-DISPOSAL POTENTIAL IN SALINA BASIN OF KANSAS

CORPORATE AUTHOR: AUGUSTANA COLLEGE; KANSAS STATE GEOLOGICAL SURVEY

ABSTRACT: STUDY OF THE GEOLOGY OF THE SALINA BASIN IN KANSAS SHOWS GOOD POTENTIAL STORAGE RESERVOIRS FOR INDUSTRIAL WASTE IN A CANADIAN SANDSTONE, IN PENNSYLVANIAN SHALE BEDS, AND IN TERTIARY SALT BEDS. A NATURAL FLOW OF FLUIDS IN THE BASIN IS THOUGHT TO BE FROM NORTH TO SOUTH AT A SLOW RATE.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS - A STUDY OF RESERVOIR DATA, 1968 7 FIGURES, 10 REFERENCES, PG 158-168

KEYWORDS: GEOLOGY; KANSAS; WATER; HYDROLOGY; WASTE DISPOSAL, SALT; ROCK MECHANICS; FLOW

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AUTHOR: ELIASON, J.R. PUB DATE: 1967

TITLE: EARTH SCIENCES WASTE DISPOSAL INVESTIGATIONS, JULY-DECEMBER 1966

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: EVALUATES GROUNDWATER CONTAMINATION RESULTING FROM DISPOSAL OF PLANT EFFLUENTS. THE EXTENT OF GROSS DATA AND TRITIUM CONTAMINATION IN GROUND WATER IS PRESENTED.

PUB DESC: BNWL-432, 17 PAGES, 2 FIGURES, 2 TABLES, REFERENCES, JUNE 10, 1967

KEYWORDS: CESIUM; GROUND WATER; RADIATION; STRONTIUM; TRITIUM; WASTE DISPOSAL, TERRESTRIAL; GROSS ALPHA; GROSS BETA; GROUND WATER, NUCLEAR OCCURRENCE; WASTE DISPOSAL, LIQUID; BATTELLE NORTHWEST; BROOKING; RAMPFORD SITE

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AUTHOR: ENISON, P.H.; BRADSHAW, R.L.; BOGLEY, W.J.; MCCLELLAN, R.C.; PARKER, P.L.; SCHAFER, W.F. PUB DATE: 1965

TITLE: PROJECT SALT VAULT - DESIGN AND OPERATION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: THE DEMONSTRATION DISPOSAL OF HIGH-LEVEL RADIOACTIVE SOLIDS, INITIATED IN NOVEMBER 1965 IN THE CARRY SALT MINE AT LYONS, KANSAS, IS KNOWN AS PROJECT SALT VAULT. FOURTEEN IRRADIATED FUEL ASSEMBLIES FROM THE ENGINEERING TEST REACTOR SERVE AS A SOURCE OF RADIATION IN LINE OF ACTUAL SOLIDIFIED WASTES. THE ASSEMBLIES, CONTAINED IN SEVEN CANS, HAVE BEEN PLACED IN AN ARRAY OF HOLES IN THE FLOOR. DURING THE COURSE OF THE 2-YEAR TEST, FOUR SETS OF ASSEMBLIES WILL BE USED TO ACHIEVE A PEAK DOSE TO THE SALT OF ABOUT 800,000,000 RADS, AND THE TEMPERATURE OF THE ADJACENT SALT WILL BE RAISED TO 200 C WITH AUXILIARY ELECTRICAL HEATERS.

PUB DESC: ORNL-E-2050 CONF-640208-15, 20 PAGES, 1965, FROM SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

KEYWORDS: CASE; PROJECT SALT VAULT; KANSAS; WASTE HANDLING; CREEP BEHAVIOR (SEE ALSO PLASTIC FLOW); WASTE TRANSPORTATION; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; GEOLOGY, GEOPHYSICAL

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AUTHOR: ENISON, P.H.; KUBOTA, R. PUB DATE: 1964

TITLE: PROBLEMS IN DISPOSAL OF RADIOACTIVE LIQUID WASTES IN SALT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROBLEMS ASSOCIATED WITH DISPOSAL OF HIGH-ACTIVITY, LIQUID WASTES IN SALT ARE DISCUSSED. CHEMICAL REACTION (THE AJOA REACTION) BETWEEN ACID PULVER WASTE AND SALT PRODUCES NOXIOUS NITROUS CHLORIDE AND CHLORINE GASES. REACTIONS BETWEEN THE WASTE AND IMPURITIES IN THE SALT FORMATION HAVE A MUCH LESSER EFFECT. NEUTRALIZED PULVER SHOULD NOT REACT CHEMICALLY WITH SALT. THE CRITICAL RADIATION DOSE RATE IS THE DECOMPOSITION OF WATER TO HYDROGEN HYDROGEN, BUT CHANGES IN STRUCTURAL PROPERTIES MAY ALSO BE OF CONSEQUENCE. THERMAL EFFECTS CAN CAUSE CHANGES IN THE CAVITY GEOMETRY AND INTEGRITY. FIELD STUDIES INDICATE THAT ALL OF THESE PROBLEMS ARE OF LITTLE CONSEQUENCE, OR CAN BE MINIMIZED, EXCEPT THE RADIOLYTIC DECOMPOSITION OF THE AQUEOUS MEDIUM WHICH COULD CAUSE AN EXPLOSIVE HAZARD. THE ONLY SOLUTION TO THIS PROBLEM APPEARS TO BE ADEQUATE VENTILATION.

PUB DESC: ORNL-P-206- 27 PAGES, 6 FIGURES, 2 TABLES- 1964, PUBLISHED IN CHEMICAL ENG. PROGRESS,

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SYMPOSIUM SERIES, VOL. 60, PART 13, 1964

KEYWORDS: CHEMICAL REACTION; CHEMICAL TOXICITY (SEE ALSO TOXICITY); EFFLUENT; GEOLOGY; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE SOURCE AND TYPE; PCRBOS MEDIA; THERMAL CONSIDERATIONS; RADIATION EFFECT

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AUTHOR: EMMERS, J.B. PUB DATE: 1965

TITLE: SOLID RADIOACTIVE WASTE DISPOSAL AT THE LOS ALAMOS SCIENTIFIC LABORATORY

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: DESCRIBES METHODS USED AT THE LOS ALAMOS SCIENTIFIC LABORATORY FOR THE DISPOSAL OF SOLID RADIOACTIVE WASTE. COLLECTION, TRANSPORTATION, AND BURIAL OF WASTE, RADIOLOGICAL SAFETY OF THE DISPOSAL OPERATIONS, AND COST SURVEYS COVERING A TEN-YEAR PERIOD ARE GIVEN.

PUB DESC: LA-DC-8307, CONF-670512-5, 52 PAGES, FIGURES, 1965, PRESENTED AT JOINT ENR/EPA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

KEYWORDS: GEOLOGY; DOWNTURNING (SEE ALSO SURVEY); BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; LASE; HYDROLOGY

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AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.) PUB DATE: 1976

TITLE: ALTERNATIVES FOR HANDLING WASTES FROM REACTORS AND POST-FISSION OPERATIONS IN THE LWR FUEL CYCLE. VOL. 4 GEOLOGIC ISOLATION, EXTRATERRESTRIAL DISPOSAL, AND TRANSPORTATION

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: ALTERNATIVES FOR FINAL STORAGE AND DISPOSAL ARE DESCRIBED IN THIS VOLUME AND IS CONCERNED WITH SITE SELECTION, GEOLOGIC DISPOSAL ALTERNATIVES, INCLUDING SEA BED AND ICE SHEET DISPOSAL. A SECTION IS DEVOTED TO TRANSPORTATION OF LIGHT BUCKLES AND ACTIVITIES.

PUB DESC: ESEA - 76-43, VOL 4, 1976

KEYWORDS: GEOLOGY; BASEMENT ROCK (SEE ALSO BEDROCK); ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); WASTE DISPOSAL ALTERNATIVES; WASTE DISPOSAL; WASTE STORAGE; SEA BED DISPOSAL (SEE ALSO WASTE DISPOSAL, OCEAN BED STORAGE); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, ICE SHEET; EXTRA-TERRESTRIAL DISPOSAL; TRANSPORTATION

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AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.) PUB DATE: 1976

TITLE: ALTERNATIVES FOR HANDLING WASTES FROM REACTORS AND POST-FISSION OPERATIONS IN THE LWR FUEL CYCLE. VOL. 5 APPENDICES.

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: THE APPENDICES OF VOLUME 5 PROVIDE SUPPLEMENTARY INFORMATION, WITH EMPHASIS ON CHARACTERISTICS OF GEOLOGIC FORMATIONS THAT MIGHT BE USED FOR FINAL STORAGE ARE ALSO INCLUDED A SELECT GLASSART OF THEMES, CONVERSION FACTORS, DATA CONCERNING THE OCEAN FLOOR, AND GOVERNMENT REGULATIONS ON THE MANAGEMENT OF RADIOACTIVE MATERIALS.

PUB DESC: ESEA - 76-43 VOL. 5, 1976

KEYWORDS: GEOLOGICAL FORMATIONS; BASEMENT ROCK (SEE ALSO BEDROCK); ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA); GEOLOGY; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); FUEL REPROCESSING; WASTE DISPOSAL; WASTE STORAGE; DATA COLLECTION; SITING; OCEAN DISPOSAL; OCEAN FLOOR

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AUTHOR: ENVIRONMENTAL PROTECTION AGENCY (U.S.A.) PUB DATE: 1971

TITLE: EPA REPORT ON LYONS WASTE STORAGE

ABSTRACT: ENVIRONMENTAL PROTECTION AGENCY STATES THAT LONG-TERM STORAGE OF ULTIMATE DISPOSAL OF HIGHLY RADIOACTIVE WASTES IN SALT MINES APPEARS TO BE THE BEST METHOD. THEY DEMAND, HOWEVER, THAT A MORE DETAILED DOCUMENTATION OF THE ENVIRONMENTAL AND SAFETY ASPECTS OF THE PROPOSED STORAGE PLAN IS IN ORDER. IT SEES NEED FOR CONSIDERATION OF LOCATIONS WHERE WASTE SOLIDIFICATION PERFORMED AND TRANSPORTATION OF THE MATERIAL. EPA STRESSES 4 POINTS -- DEVELOP (1) VARIOUS FACTORS ON LONG-TERM INTEGRITY OF THE GEOLOGIC FORMATION AND ITS ABILITY TO CONTAIN THE STORED MATERIAL WITHOUT CONTAMINATING TERRESTRIAL AND HYDROLOGIC ENVIRONMENTS, (2) CONTINGENCY PLANS FOR RECOVERY, (3) PLANS FOR PERIODIC EVALUATIONS RELATIVE TO ENVIRONMENT AND GEOLOGY CHANGES, (4) RESPONSIBILITY AS TO WHO WILL CONDUCT STUDIES TO ASSESS EFFECT OF DISCHARGES THAT MIGHT OCCUR.

PUB DESC: ATOMIC ENERGY CLEARING HOUSE, 17(21), PG. 17 (MAY 20, 1971)

KEYWORDS: SURVEY; EMERGENCY; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE DISPOSAL; HYDROLOGY; ENVIRONMENT; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; STUDY CAPABILITY; AGENCY, FEDERAL; SPOKESMAN, FEDERAL

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AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY PUB DATE: 1968

TITLE: RADIOACTIVE WASTE DISPOSAL OPERATION INTO THE ATLANTIC 1967

CORPORATE AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY (ENEA), CECS

ABSTRACT: A SUITABLE SOLUTION FOR SOME TYPES OF SOLID WASTE IS BY DISPOSAL, UNDER CAREFULLY CONTROLLED CONDITIONS, INTO SELECTED AREAS OF THE DEEP OCEANS. HOWEVER, SUCH OPERATIONS RAISE INTERNATIONAL ADMINISTRATIVE AND POLITICAL, AS WELL AS SCIENTIFIC, TECHNOLOGICAL AND ECONOMIC QUESTIONS. TO DEAL WITH THESE AND TO ESTABLISH AN INTERNATIONAL BASIS FOR THE REQUIRED OPERATIONAL CONTROLS FOR SEA DISPOSAL OF PACKAGED SOLID WASTES, AN EXPERIMENTAL INTERNATIONAL OPERATION WAS CARRIED OUT IN THE SUMMER OF 1967 UNDER THE AUSPICES OF THE EUROPEAN NUCLEAR ENERGY AGENCY (ENEA). FIVE MEMBER COUNTRIES OF ENEA TOOK PART IN THE OPERATION, AND SOME 11,000 TONS OF SOLID WASTE, WITH A TOTAL ACTIVITY OF APPROXIMATELY 8,000 CURIES, WERE DEPOSITED AT A DEPTH OF 5,000 METRES IN THE EASTERN ATLANTIC OCEAN. THIS REPORT DESCRIBES THE PLANNING AND CARRYING-OUT OF THE OPERATION.

PUB DESC: EUROPEAN NUCLEAR ENERGY AGENCY, OCEAN. FOR ECON. CO-OPERATION AND DEVELOP., 42 P., SEPT. 1968

KEYWORDS: WASTE MANAGEMENT; PUBLIC RELATIONS; WASTE DISPOSAL, SOLID; OCEAN, ATLANTIC; HAZARDOUS ANALYSIS; SITING; SAFETY EVALUATION; CONTAINERS (SEE ALSO PACKAGING); WASTE DISPOSAL, OCEAN; PACKAGING; REGULATION (SEE ALSO STANDARDS, RADIATION); SHIPPING; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); DECONTAMINATION; EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); OECD (SEE ALSO EMEA);

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AUTHOR: PERIMORE, J.B. PUB DATE: 1963

TITLE: LAND BURIAL OF SOLID RADIOACTIVE WASTE

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DURING A TEN-YEAR PERIOD.

PUB DESC: ONSITE-63-30-2

KEYWORDS: TRITIUM; LAND BURIAL (SEE ALSO BURIAL
CASKS); WASTE DISPOSAL; WATER; SOIL; RADIOISOTOPE;
SOLID; TRANSPORT

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PUB DATE: 1968

AUTHOR: FINEBAU, P.

TITLE: PROGRESS IN WASTE-DISPOSAL RESEARCH AND
DEVELOPMENT

ABSTRACT: CONVERSION OF HIGH-LEVEL-ACTIVITY WASTES
TO SOLIDS BY FLUID-BED CALCINATION IS DISCUSSED.
POSSIBLE MODIFICATIONS TO THE WASTE CALCINING FACILITY
TO IMPROVE ITS OPERATING RELIABILITY AND INCREASE ITS
THROUGH-PUT RATES ARE CONSIDERED. FUEL INJECTION OF
WASTE SOLUTIONS INTO FLUIDIZED BEDS IN THE WASTE
CALCINING FACILITY IS DESCRIBED. ASPHALT
IMMOBILIZATION OF INTERMEDIATE-LEVEL-ACTIVITY WASTES
IS DISCUSSED.

PUB DESC: REACTOR FUEL-PROCESS. TECHNOL., 11,
PAGES 65-80 (WINTER 1967-68)

KEYWORDS: CALCINATION; HIGH-LEVEL WASTE;
INTERMEDIATE-LEVEL WASTE; ASPHALT; WASTE DISPOSAL,
LIQUID; WASTE DISPOSAL, SOLID; FLOIDIZED BED; B AND C
FUELS

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PUB DATE: 1967

AUTHOR: FONTAINE, G.

TITLE: GROUND DISPOSAL METHODS FOR RADIOACTIVE
SOLID WASTES AT THE ISPR A ESTABLISHMENT OF EURATOM

CORPORATE AUTHOR: EURATOM ATOMIC ENERGY COMMUNITY,
ISPR A, ITALY

ABSTRACT: RADIOACTIVE SOLID WASTE PRODUCED IN THE
REACTORS AND LABORATORIES OF THE ISPR A ESTABLISHMENT
OF EURATOM CAN BE DIVIDED INTO HIGHLY CONTAMINATED BUT
UNACTIVATED WASTE (WASTE FROM LABORATORIES, HOT-CELL
DECONTAMINATION, ETC.), AND HIGHLY ACTIVATED BUT
LIGHTLY CONTAMINATED WASTE (WASTE FROM IN-PILE LOOPS
AND EXPERIMENTS). GROUND DISPOSAL METHODS ARE USED
ONLY IF THERE IS NO MATERIAL IN THE WASTE WHICH CAN
REACT WITH THE CEMENT. VARIOUS METHODS HAVE BEEN
CONSIDERED AND UTILIZED, UNDERGROUND WELLS BEING
UTILIZED IN EACH CASE. A STUDY OF CONSTRUCTION COST
REVEALED AN ECONOMIC SOLUTION WITH RESPECT TO
HIGH-LEVEL ACTIVITY AND SECURITY, WHICH ALSO COVERS
DIRECT IMMEDIATION AND THE EVENTUAL TRANSFER OF
CONTAMINATION.

PUB DESC: STI/POR-156, CERN-670512, PAGES 109-21 OF
DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND,
VIENNA, IAEA, 1967 (IN FRENCH)

KEYWORDS: CONCRETE; ITALY; WASTE DISPOSAL,
ECONOMICS; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT;
CONTAMINATION; HYDROLOGY; RADIATION SAFETY AND
CONTROL; SOIL

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PUB DATE: 1967

AUTHOR: FINEBAU, P.

TITLE: A MODEL FOR THE APPROXIMATE CALCULATION OF
SAFE RATES OF DISCHARGE OF RADIOACTIVE WASTES INTO
MARINE ENVIRONMENTS

ABSTRACT: PRIOR TO ENHANCING SUCH AN EXTENSIVE
PROGRAMME OF INVESTIGATIONS INTO MARINE WASTE
DISPOSAL, A PRELIMINARY ASSESSMENT IS USEFUL TO
DETERMINE, APPROXIMATELY, THE POTENTIAL OF THE MARINE
ENVIRONMENT TO RECEIVE A GIVEN RADIOACTIVE WASTE.
ATTENTION IS DIRECTED TO IDENTIFYING THAT BEYOND BOUND
OF THE DISPOSED ACTIVITY TO MAR WHICH IS MOST LIKELY
TO BE LIMITING IN TERMS OF EXPOSURE TO RADIATION, AND
ESTABLISHING THE CRITICAL RADIOISOTOPE OR

RADIOISOTOPE INVOLVED. DERIVED WORKING LIMITS FOR
THE CONCENTRATION OF ACTIVITY IN SEAWATER FOR 102
RADIOISOTOPE ARE GIVEN, BASED ON FOOD CHAIN ROUTES
VIA FLESH OF FISH, CRUSTACEA AND MOLLUSCS AND EDIBLE
ALGAE ASSUMING THAT THE ENTIRE DIETARY PORTION
REQUIREMENT OF AN INDIVIDUAL IS OBTAINED FROM THESE
SOURCES, AND USING GENERALISED CONCENTRATION FACTORS
FOR THE CONCENTRATION OF ACTIVITY FROM SEAWATER TO
EDIBLE MARINE ORGANISMS. TAKING ACCOUNT OF THE REMOVAL
OF ACTIVITY BY RADIOACTIVE DECAY, THE DERIVATION OF A
WEIGHTED AVERAGE REPLACEMENT VALUE FOR A MIXTURE OF
RADIOISOTOPE IS GIVEN. THE APPLICATION OF THESE
VALUES TO A DETERMINATION OF THE NUMBER OF DISCHARGES,
OR RATE OF DISCHARGE, PER ANNUM WHICH COULD BE MADE
INTO A GIVEN VOLUME OF RECEIVING WATER, FOR A WASTE OF
APPROXIMATELY KNOWN COMPOSITION AND ACTIVITY, IS
ILLUSTRATED WITH SPECIFIC EXAMPLES. IT IS CONCLUDED
THAT SUCH APPROXIMATIONS WOULD NOT BECOME ACCURATELY
ASSESSED VALUES BY AS MUCH AS AN ORDER OF MAGNITUDE
AND IN MOST CASES, DUE TO INHERENTLY CONSERVATIVE
ASSUMPTIONS USED IN THE ASSESSMENT, WOULD BE AN ORDER
OF MAGNITUDE OR MORE LOWER. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 13(7), P. 703 (1967)

KEYWORDS: HEALTH PHYSICS; MODEL STUDIES; DISCHARGE
RATE; ASSESSMENT; CRITICAL ISOTOPE PATHWAY;
RADIOACTIVE WASTE; WASTE DISPOSAL; MARINE ENVIRONMENT;
PATHWAY (SEE ALSO CRITICAL ISOTOPE PATHWAY); MAR;
CRITICAL RADIOISOTOPE; FOOD CHAIN; SEA WATER; WASTE
DISPOSAL, OCEAN; ENVIRONMENTAL EFFECT; ENVIRONMENT;

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PUB DATE: 1969

AUTHOR: FRY, A.H.

TITLE: RADIOACTIVE WASTE DISPOSAL

CORPORATE AUTHOR: KENTUCKY DEPARTMENT OF HEALTH,
FRANKFORT

ABSTRACT: REPORTS LARGE QUANTITIES OF SOLID
RADIOACTIVE MATERIAL CAN BE DISPOSAL OF SAFELY BY
CAREFULLY CONTROLLED LAND BURIAL. THIS CONCLUSION WAS
REACHED ON THE BASIS OF A PROGRAM CONDUCTED IN
KENTUCKY SINCE 1963. THE MATERIAL BEING BURIED IS
RESTRICTED TO FACIATED SOLID WASTE OF LOW HAZARD
POTENTIAL. ORIGINALLY ONLY VERY LOW CONCENTRATION
WASTES WERE DISPOSAL OF AT THIS SITE, BUT SUBSEQUENTLY
THE OPERATIONS CHANGED TO INCLUDE SUCH ITEMS AS
DECAYED RADIOACTIVE TELETERAPY SOURCES, REACTOR
THERMOCOUPLES, AND END BOXES, WHICH ARE HIGHLY
RADIOACTIVE BUT PRESENT A VERY LOW POTENTIAL FOR THE
LEACHING OF THE RADIOACTIVE MATERIAL INVOLVED. THE 3
TYPES OF BURY WELLS ARE DESCRIBED.

PUB DESC: AMERICAN JOURNAL OF PUBLIC HEALTH, VOL.
59, PG. 488-490 (MARCH 1969)

KEYWORDS: WASTE DISPOSAL, TERRESTRIAL; KENTUCKY;
ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC
HEALTH); WASTE TREATMENT, FIXATION; WASTE DISPOSAL,
SOLID; RADIATION SAFETY AND CONTROL; SAFETY PROGRAM;
OPERATING EXPERIENCE; ENVIRONMENTAL CONTROL MEASURE;
AGENCY, AEC (SEE ALSO USARC); BURIAL GROUND (SEE ALSO
COMMERCIAL BURIAL GROUND);

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PUB DATE: 1968

AUTHOR: GALLI, J.E.

TITLE: ECONOMIC AND INDUSTRIAL POTENTIAL OF
GEOLOGIC BASINS AND RESERVOIR STRATA

ABSTRACT: ONE POTENTIAL VALUE OF SUBSURFACE STRATA
IN GEOLOGIC BASINS IS THE AVAILABLE SPACE FOR STORAGE
OR DISPOSAL OF INDUSTRIAL WASTE LIQUIDS AND SOLIDS.
DISPOSAL METHODS WHICH ARE BEING DEVELOPED INCLUDE: THE
INJECTION OF LIQUIDS INTO DEEP PERMEABLE FORMATIONS,
THE STORAGE OF SOLIDS IN CAVERNS CONSTRUCTED IN SALT
BEDS, AND THE INCORPORATION OF LIQUIDS IN CEMENT
SLURRIES WHICH ARE INJECTED INTO ARTIFICIALLY PRODUCED
FRACTURES IN SHALE AND ALLOWED TO HARDEN. ONE OF THE
PAPERS IN THIS VOLUME DESCRIBE GEOLOGIC BASINS WHERE
SUCH DISPOSAL METHODS MIGHT BE USED SUCCESSFULLY.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS -

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A STUDY OF RESERVOIR STRATA, 1966 REFERENCES, PG 1-10

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); GEOLOGY; WASTE DISPOSAL; WASTE STORAGE; HYDRODYNAMIC ANALYSIS

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PUB DATE: 1960
AUTHOR: CAMMARINI, G.S.; VIALI, D.K.

TITLE: POTENTIAL OF SEWER BASIN FOR DISPOSAL OF LIQUID WASTES

CORPORATE AUTHOR: SUE CIL COMPANY; WOLF REFORMATION COMPANY

ABSTRACT: A RECONNAISSANCE SUBSURFACE GEOLOGIC STUDY HAS SHOWN THAT THREE TYPES OF RESERVOIRS ARE AVAILABLE FOR LIQUID-WASTE DISPOSAL IN THE SEWER BASIN-FRACTURED PRECAMBRIAN ROCKS, POROUS SANDSTONE RESERVOIRS, AND THICK SHALE SUITABLE FOR DISPOSAL BY THE HYDRAULIC-FRACTURING TECHNIQUE.

PUB DESC: SUBSURFACE DISPOSAL GEOLOGICAL BASINS - A STUDY OF RESERVOIR STRATA, 1960 12 FIGURES, REFERENCES, PG 145-185

KEYWORDS: GEOLOGY; COLORADO; SHALE; SANDSTONE; POROUS MEDIA; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; ROCK MECHANICS

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PUB DATE: 1975
AUTHOR: GEM, F.

TITLE: DISPOSAL OF RADIOACTIVE WASTES IN SALT DOMES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: DIAPYCNIC SALT STRUCTURES, WHICH ARE CAUSED BY THE PLASTIC DEFORMATION OF THICK SALT BEDS, HAVE BEEN PROPOSED AS POSSIBLE LOCATIONS FOR THE DISPOSAL OF RADIOACTIVE WASTES REQUIRING LONG-TERM CONTAINMENT. THERE ARE, HOWEVER, SEVERAL IMPORTANT QUESTIONS CONCERNING TECTONIC STABILITY, SALT DISSOLUTION, AND RELIABILITY OF LONG-TERM CONTAINMENT THAT WOULD HAVE TO BE SATISFACTORILY ANSWERED BEFORE THIS SCHEME OF WASTE DISPOSAL COULD BE CONSIDERED FEASIBLE. SEVERAL CONCEPTS HAVE BEEN PROPOSED FOR THE REPLACEMENT OF RADIOACTIVE WASTES IN DIAPYCNIC SALT STRUCTURES. THE MOST PROMISING OF THESE ARE: (1) A MECHANICAL RING, AND (2) THE MIXING OF GRANULAR WASTE AND CRUSHED SALT IN DEEP SOLUTION CAVITIES. IN COMPARISON WITH A MECHANICAL RING, THE GRANULAR MIXTURE IN SOLUTION CAVITIES WOULD REQUIRE THE MIXING OF LARGER VOLUMES OF SALT AND WOULD BE FEASIBLE ONLY WITH WASTES AGED SIGNIFICANTLY MORE THAN 10⁴ Y. ON THE OTHER HAND, IT COULD OFFER GREATER RELIABILITY OF LONG-TERM CONTAINMENT BECAUSE OF THE INCREASED ISOLATION PROVIDED BY THE GREATER DEPTH. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 29(1), P. 1 (1975)

KEYWORDS: SALT (SEE ALSO SEWER SALT AND WASTE DISPOSAL, SALT); FEASIBILITY; WASTE DISPOSAL, SALT; SALT DOMES; WASTE DISPOSAL

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PUB DATE: 1967
AUTHOR: GIANNOTTI, G.P.; BITTENFEDER, R.; SIDOTI, G.

TITLE: SELECTION CRITERIA FOR GROUND DISPOSAL SITES FOR SOLID RADIOACTIVE WASTE IN HIGHLY POPULATED AREAS

CORPORATE AUTHOR: CISE, LABORATORIES DE GENIE, SANITAIRE, CSE-CASACIA, ITALY

ABSTRACT: IN CONTRAST TO DEEP DISPOSAL OF RADIOACTIVE WASTE, GROUND DISPOSAL INVOLVES DIRECT INTERACTION OF THE WASTE WITH SURFACE WATERS AND INDIRECTLY BY A NUMBER OF OTHER ENVIRONMENTAL FACTORS. IN EXAMINING ITALY FOR POTENTIAL WASTE SITES, VARIOUS CRITERIA WERE STUDIED AND PRIORITY ALLOTTED TO CERTAIN OF THESE. IT IS BELIEVED THAT THE

INVESTIGATIONS UNDERTAKEN IN ITALY MAY BE APPLICABLE TO OTHER COUNTRIES WITH HIGH POPULATION DENSITIES.

PUB DESC: SIX/PUB-156, CONF-670512, PAGES 319-20 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, 1968 JOINT AREA/ENEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: ECOLOGY; SITING; DEMOGRAPHY (SEE ALSO POPULATION); GEOLOGY; SEISMOLOGY; WASTE DISPOSAL, ECONOMICS; SITE CLIMATOLOGY; SURFACE WATER, NUCLEAR OCCURRENCE; WASTE DISPOSAL, SOLID; POPULATION EXPOSURE; HYDROLOGY; ITALY; SOIL; ENVIRONMENT; WATER POLLUTION

<794>

PUB DATE: 1967
AUTHOR: GIANNOTTI, G.P.; BITTENFEDER, R.; SIDOTI, G.; PANTANETTI, F.

TITLE: RADIOACTIVE WASTE DISPOSAL IN ITALY. PRELIMINARY SITING STUDY

CORPORATE AUTHOR: CISE, DIVISION DE PROTECTION SANITAIRE ET ECOLOGIE, ROME, ITALY

ABSTRACT: A PRELIMINARY SITING STUDY TO LOCATE AREAS FAVORABLE FOR A PERMANENT INSTALLATION FOR THE DISPOSAL OF RADIOACTIVE WASTES IN SURFACE GROUND FORMATIONS IS DESCRIBED. THE STUDY IS BASED ON A COMPARATIVE EXAMINATION OF THE FACTORS WHICH CHARACTERIZE A NATURAL ENVIRONMENT. IN PARTICULAR, CONSIDERATION WAS GIVEN TO ALL PARAMETERS WHICH COVER THE COMPLETE TRIANGLESHIP BETWEEN WATER, REGARDED AS THE POTENTIALLY BEST DISPERSING MEDIUM, AND THE BIOLOGIC ENVIRONMENT. ALL DATA COLLECTED ON THE VARIOUS PARAMETERS ARE SUMMARIZED IN 21 MAPS.

PUB DESC: COM. NAT. ENER. NUCL., NOTIZ., 13, PAGE 53-60, (DEC. 1967), (IN ITALIAN)

KEYWORDS: SITING; WASTE DISPOSAL; WASTE DISPOSAL, TERRESTRIAL; WATER; ITALY; DISPERSION

<795>

PUB DATE: 1965
AUTHOR: GIESLER, D.L.

TITLE: HANDLING OF LOW AND MEDIUM LEVEL LIQUID WASTE AT SAVANNAH RIVER PLANT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: THE UNITED STATES FEDERAL RADIATION COUNCIL, IN ITS RADIATION PROTECTION STANDARDS, RECOMMENDS RADIATION PROTECTION GUIDES FOR GUIDANCE ON GENERAL PRINCIPLES OF CONTROL APPLICABLE TO ALL RADIOISOTOPES OCCURRING IN THE ENVIRONMENT. CONTROL OF POPULATION EXPOSURE FROM RADIOISOTOPES OCCURRING IN THE ENVIRONMENT IS ACCOMPLISHED BY LIMITING THE INTAKE OF MATERIALS INTO THE ENVIRONMENT. THIS INVOLVES CONSIDERATION OF CONCENTRATIONS OF RADIOACTIVE MATERIAL IN AIR, WATER, OR FOOD. THE SAVANNAH RIVER PLANT HAS DEVELOPED PLANT RELEASE GUIDES TO DEFINE THE AMOUNTS OF RADIOISOTOPES THAT CAN BE DISCHARGED BY THE PLANT TO THE ENVIRONMENT WHILE REMAINING WELL BELOW THE RADIATION PROTECTION GUIDES FOR NEIGHBORING POPULATIONS. RELEASES OF RADIOACTIVITY SHALL NOT CAUSE THE AVERAGE RADIATION DOSE TO A SUITABLE SAMPLE OF THE EXPOSED OFF-PLANT POPULATION TO EXCEED 0.17 REM PER YEAR TO THE UNCLE MOBY, GOBARD, OR BONE BARROW, OR TO EXCEED 0.5 REM PER YEAR TO OTHER ORGANISMS. WE RECOGNIZE AND UNDOUBTABLY SUPPORT THE FEDERAL RADIATION COUNCIL'S PHILOSOPHY THAT EVERY REASONABLE EFFORT SHOULD BE MADE TO KEEP RADIATION DOSES AS LOW AS PRACTICABLE AND, AS A MATTER OF POLICY, THE PLANT CONTINUES RADIOACTIVE MATERIALS SHEETED PRACTICAL BARRIER AND RELEASE THEM TO THE ENVIRONMENT. TABLE 1 SHOWS THE PLANT RELEASE GUIDES AND THE PLANT CLOSING GUIDES OF THE VARIOUS ISOTOPES DISCHARGED TO SURFACE DRAINAGE FROM THE PLANT.

PUB DESC: EISFO-65-30-30 1965 (CONF. 651202-1)

KEYWORDS: INTERMEDIATE-LEVEL WASTE; SAVANNAH RIVER PLANT; WASTE MANAGEMENT; LOW-LEVEL WASTE; SOLVENT EXTRACTION; PUMPS (SEE ALSO PANTANETTI); WASTE

<795> CONT.

DISPOSAL; GROUND DISPOSAL; RUDIAL GROUND (SEE ALSO COMMERCIAL RUDIAL GROUND); SHEDAGE PITS; WASTE STORAGE; WASTE TREATMENT; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); COSTS;

<796>

PUB DATE: 1961

AUTHOR: GLEBEKAMP, E.

TITLE: ATOMIC ENERGY WASTE. ITS NATURE, USE AND DISPOSAL

CORPORATE AUTHOR: BHEL., BAPPELL CHEMISTRY DIVISION

ABSTRACT: A TEXT TYPE TREATISE OF THE WASTE MATERIALS OF ATOMIC ENERGY, THEIR EFFECTS ON MATERIALS AND LIVING ORGANISMS AND THE LEGAL ASPECTS OF ATOMIC ENERGY DISPOSAL. THE OPERATIONS INVOLVED IN THE TREATMENT OF RADIOACTIVE WASTE ARE DISCUSSED. VISSION PRODUCTS AS A SOURCE OF RADIATION IS RELATED AND THE USES OF RADIATION IN RESEARCH AND AGRICULTURE IS DETAILED. (ELM)

PUB DESC: INTERSCIENCE PUBLISHERS, INC. NEW YORK, 1961, 626 P.

KEYWORDS: WASTE DISPOSAL; REVIEW; MATERIAL; RADIATION EFFECT; LAW; WASTE TREATMENT; FISSION PRODUCT; BENEFICIAL USE; AGRICULTURE

<797>

PUB DATE: 1967

AUTHOR: GORSE, V.D.

TITLE: CHARACTERIZATION OF THERMAL SOILS FOR DISPOSAL OF RADIOACTIVE WASTE.

PUB DESC: SN-93/21, DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND 3 PAGES 301-315 1967

KEYWORDS: WASTE DISPOSAL; INDIA; SOIL; RADIOISOTOPE

<798>

PUB DATE: 1975

AUTHOR: GOULD, L.R.

TITLE: THE PERMANENT DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTE IN THE ANTARCTIC ICE SHEET

CORPORATE AUTHOR: UNIVERSITY OF ARIZONA, TUCSON

ABSTRACT: THE POSSIBILITY THAT THE ANT-ARCTIC ICE SHEET MIGHT SATISFY SOME OF THE REQUIREMENTS FOR A PERMANENT DEPOSITORY OF HIGH LEVEL RADIOACTIVE WASTES ON A GLOBAL SCALE THAN ANY OTHER PROSPECT HAS PRODUCED PROPOSALS TO IMPLEMENT THAT POSSIBILITY. THESE HAVE EXCITED THE INTEREST OF GLACIOLOGISTS ON A GLOBAL SCALE AND HAVE RAISED SERIOUS QUESTIONS ABOUT THE FEASIBILITY AND THE SAFETY OF SUCH PROPOSALS.

PUB DESC: AMERICAN NUCLEAR SOCIETY, TOPICAL MEETING ON NUCLEAR SAFETY, TUCSON, ARIZONA, OCT. 5-8, 1975, 5 PGS

KEYWORDS: WASTE MANAGEMENT; WASTE DISPOSAL, ICE SHEET; WASTE DISPOSAL; FUEL CYCLE; FUEL REPROCESSING; ENVIRONMENT; GEOLOGY

<799>

PUB DATE: 1976

AUTHOR: GRANTMAN, L.F.; KREFFER, D.E.; OLDERAMP, R.D.; BOCHARD, W.L.

TITLE: DISPOSAL OF TRANSURANIC SOLID WASTE USING ATOMICS INTERNATIONAL'S MOLTER SALT COMPOSITION PROCESS, 11

CORPORATE AUTHOR: BOCKWELL INTERNATIONAL, ATOMICS INTERNATIONAL DIV.

ABSTRACT: THE ATOMICS INTERNATIONAL (AI) MOLTER SALT COMPOSITION PROCESS PRODUCES THE RIGHT AND VOLUME OF COMBUSTIBLE TRANSURANIC (TRU) WASTE BY UTILIZING A MOLTER SALT MEDIUM TO COMBUST ORGANIC MATERIALS, TO

TRAP PARTICULATES AND FISSION MATERIAL, AND TO BRACE CHEMICALLY WITH ANY ACIDIC GASES PRODUCED DURING COMBUSTION. (1) THE "ASH" IS RETAINED BY THE MOLTER SALT. TO CONTROL THE AMOUNT OF NONCOMBUSTIBLE SUBSTANCE; IN THE MELT, A PORTION OF THE MOLTER SALT IS PERIODICALLY DRAINED FROM THE COMBUSTOR. THERE ARE TWO OPTIONS FOLLOWING THE COMBUSTION STEP: THE SALT-ASH MIXTURE CAN BE CAST INTO A METAL CASTER FOR DIRECT STORAGE, WHICH IS PREFERRED, OR THE SALT-ASH MIXTURE CAN BE PROCESSED TO SEPARATE ASH FOR DISPOSAL, TO RECOVER THE SALT FOR RECYCLE AND TO RECOVER FISSION MATERIALS. EITHER OPTION RESULTS IN THE RAPID, COMPLETE, AND NONPOLLUTING DESTRUCTION OF THE COMBUSTIBLE WASTE. THE DEVELOPMENTAL STATUS OF THE PROCESS HAS PROCEEDED TO THE POINT WHERE CONCEPTUAL DESIGN OF A TWO WASTE COMBUSTOR WITHOUT PLUTONIUM RECOVERY IS THE NEXT LOGICAL STEP. IN THIS REGARD, CONCEPTUAL DESIGN OF A COMBUSTION UNIT FOR HAZARDOUS ORGANIC CHEMICALS HAS BEEN COMPLETED BY AI; THIS DESIGN AND REQUIRED SAFEGUARDS ARE VERY SIMILAR TO A TWO WASTE COMBUSTION UNIT. FURTHERMORE, AI IS PRESENTLY INSIGHTING AND CONSTRUCTING A 1000 MC/HR MOLTER SALT COAL GASIFICATION UNIT, WITH MANY FEATURES SIMILAR TO THE TWO WASTE COMBUSTOR. FURTHER RESEARCH AND DEVELOPMENT IS REQUIRED BEFORE A PLUTONIUM RECOVERY SYSTEM CAN BE DESIGNED TO RECLAIM THE PLUTONIUM FROM THE MELT SALT. (DOC. AUTH ABST.)

PUB DESC: BBA-13169-A1, 1976 (HANCN)

KEYWORDS: MOLTER SALT COMPOSITION; RECYCLING; COMBUSTION; CHEMICAL REACTION; ACID; GAS; ASH; WASTE STORAGE; WASTE DISPOSAL; R AND D PROGRAM; PLUTONIUM

<800>

PUB DATE: 1975

AUTHOR: HANSTRA, J.

TITLE: RADIOLOGIC HAZARD MEASURE FOR BURIED SOLID RADIOACTIVE WASTE

CORPORATE AUTHOR: REACTOR CENTRUM NEGERLAND, THE NETHERLANDS

ABSTRACT: REVIEWS THE RADIOLOGIC HAZARDS RESULTING FROM THE DISPOSAL OF HIGH-LEVEL REPROCESSING WASTES INTO A DEEP GEOLOGICAL FORMATION. THE TERM RADIOLOGIC HAZARD MEASURE (RHM), USED TO MEASURE THE HAZARD FROM BURIED RADIOACTIVE WASTES, IS BASED ON THE MAXIMUM RADIOLOGIC CONCENTRATION PERMISSIBLE IN WATER. CALCULATIONS ARE MADE OF THE RHM LEVELS FOR THE HIGH-LEVEL REPROCESSING WASTES OF BOTH LIGHT-WATER-REACTOR AND FAST BREEDER REACTOR FUELS. IN COMPARING THESE RHM LEVELS WITH THAT FOR THE NATURAL ACTIVITY OF AN EQUIVALENT AMOUNT OF URANIUM ORE AND ITS MILL TAILINGS, IT IS CONCLUDED THAT AN ACTUAL ADDITIONAL RADIOLOGIC HAZARD FOR BURIED HIGH-LEVEL REPROCESSING WASTE ONLY EXISTS FOR THE FIRST 100 TO 500 YEARS AFTER BURIAL.

PUB DESC: NUCLEAR SAFETY, 16(2), SP. 180-90, 4 PGS., 10 REFS., (MARCH-APRIL 1975)

KEYWORDS: WASTE DISPOSAL, SOLID; HAZARDS ANALYSIS; MILL TAILINGS (SEE ALSO TAILINGS); WASTE DISPOSAL, TERRESTRIAL; SITING, WASTE DISPOSAL

<801>

PUB DATE: 1968

AUTHOR: PARKWAY, J.E.

TITLE: POSSIBILITIES FOR SUBSURFACE WASTE DISPOSAL IN A STRUCTURAL SYNCLINE IN PENNSYLVANIA

CORPORATE AUTHOR: TELETYPE COMPANY

ABSTRACT: RESULTS OF A STUDY OF A SMALL STRUCTURAL SYNCLINE ON THE WESTERN PERIPHERY OF THE CENTRAL APPALACHIAN MOUNTAINS OF PENNSYLVANIA SUGGEST THAT THE AREA MAY BE SUITABLE FOR THE INJECTION OF LIQUID WASTES INTO DEEP SUBSURFACE RESERVOIRS. THE STUDY WAS PERFORMED UNDER THE AUSPICES OF THE AAPG, THE USARC, AND PRINCETON UNIVERSITY.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS - A STUDY OF RESERVOIR STRATA, 1968 14 FIGURES, 8 TABLES, REFERENCES, PG 93-127

<001> CONT.

KEYWORDS: GEOLOGY; PENNSYLVANIA; SITING, WASTE DISPOSAL; HYDROLYTIC ANALYSIS; ECOMOS MEDIA; WASTE DISPOSAL, LIQUID; ROCK MECHANICS; WASTE DISPOSAL, DEEP WELL

<002>

PUB DATE: 1969
AUTHOR: MATHE, C.B.; GUNTER, D.B.

TITLE: DESIGN AND COST OF LIQUID-WASTE DISPOSAL SYSTEMS. REPORT 692

CORPORATE AUTHOR: NATURAL RESOURCES CENTER, UNIVERSITY OF ALABAMA, UNIVERSITY, MADRID

ABSTRACT: NOT CORRELATES WITH RADIOACTIVE WASTES, BUT INFO RIGHT P. EVAL. THE COMPUTER PROGRAM LUSAC OFFERS A CHECK ON THE ECONOMICS OF DESIGN. FORMULAS IN THE TREATMENT OF COST OF DEEP-WELL LIQUID-WASTE SYSTEMS. 1. SYSTEMS - (1) STEADY-STATE FLOW EQUATION IN COMBINATION WITH THE THERM CURVE OF AVERAGE TREATMENT PLANT COSTS, (2) PRESSURE BUILDUP SUBROUTINE (PBLUP) IN COMBINATION WITH THE THERM CURVE TO OBTAIN PLANT COST, (3) STEADY-STATE FLOW EQUATION COMBINED WITH PLANT SUBROUTINE FOR TREATMENT PLANT COST, AND (4) FLOWUP SUBROUTINE COMBINED WITH PLANT SUBROUTINE.

PUB DESC: PB-191, 535, 110 PAGES, FIGURES, TABLES, DECEMBER 1969

KEYWORDS: COMPUTER PROGRAM; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, DEEP WELL

<003>

PUB DATE: 1970
AUTHOR: REPP, R.

TITLE: DISPOSAL OF RADIOACTIVE WASTES

ABSTRACT: TREATMENT OF THE WASTE BY CHEMICAL PRECIPITATION, ION EXCHANGE PROCESSES AND EVAPORATION ARE DISCUSSED. THE FIXING OF THE RADIOACTIVE WASTE IN CEMENT AND IN BITUMEN AS WELL AS BY THE SINTERING PROCESS AND THE AEC UNDER-SEA DRYING METHOD ARE REVIEWED. OTHER POSSIBLE MEANS REVIEWED ARE DISPOSAL TO STREAMS, TO THE SEA, BY PRECIPITATION INTO THE GROUND, HYDRAULIC FRACTURING, BURIAL IN THE GROUND, STORAGE AT THE SITE AND IN SALT MINE AND DISPOSAL AT SEA. THE PROCESSES USED IN GERMANY AND ESTIMATES OF THAT COUNTRY'S REQUIREMENTS FOR DISPOSAL IN THE FUTURE ARE GIVEN. SALT MINE APPEAR TO OFFER THE BEST METHOD OF DISPOSAL IN GERMANY. (70 PAGES.)

PUB DESC: WGB PREHEATED CONFERENCE, ISSUED, PAGE 63-75, IN GERMANY, 1970

KEYWORDS: WASTE DISPOSAL; CEMENT; ASPHALT; BITUMEN; WASTE TREATMENT; WASTE MANAGEMENT; GERMANY

<004>

PUB DATE: 1964
AUTHOR: NITAHARA, T.

TITLE: EVALUATION AND CONTROL OF RADIOACTIVE WASTE DISPOSAL INTO THE SEA

CORPORATE AUTHOR: UNIVERSITY OF TOKYO, JAPAN

ABSTRACT: THE DISPOSAL OF RADIOACTIVE WASTE FROM NUCLEAR-PROPELLER SHIPS, NUCLEAR PLANTS, ETC., INTO THE SEA IS A NECESSITY. IN THE TEN YEARS SINCE THE EXPLOSION OF THE HYDROGEN BOMB ON BIKINI ISLAND, AN UNCOMPARABLE AMOUNT OF KNOWLEDGE HAS BEEN ACQUIRED FOR THE EVALUATION OF THE EFFECTS OF RADIOACTIVITY ON THE HUMAN BODY RESULTING FROM RADIOACTIVE CONTAMINATION OF THE SEA. NEVERTHELESS, IT SEEMS THAT MANY OF THE SPECIALISTS AMONG THE SCIENTISTS AND TECHNOLOGISTS CONCERNED WITH NUCLEAR ENERGY, WHO NOW INCLUDES A WIDE RANGE OF SCIENTIFIC FIELDS, DO NOT CORRECTLY UNDERSTAND THIS. METHODS OF EVALUATION WILL BE DESCRIBED VERY GENERALLY HERE, AND ALSO SYSTEMS OF CONTROL FOR MINIMIZING ITS EFFECT.

PUB DESC: JOURNAL OF THE ATOMIC ENERGY SOCIETY OF JAPAN 6- 446-411 (1964)- 12 PAGES, REFERENCES- (OTHERS-SCALE TRANSLATION 177)

KEYWORDS: BIOLOGY; DILUTION; RADIUM PERMISSIBLE DOSE NUMBER (RPM); RADIUM PERMISSIBLE CONCENTRATION (RMC); SITING, WASTE DISPOSAL; WASTE DISPOSAL, OCEAN; RADIUM PERMISSIBLE DOSE (RPM); MONITOR, ENVIRONMENTAL; POPULATION EXPOSURE; RADIATION PROTECTION, ORGANIZATION; JAPAN; RADIATION SAFETY AND CONTROL; CONCENTRATION; AQUATIC ORGANISM

<005>

PUB DATE: 1971
AUTHOR: HOLZER, C.

TITLE: NUCLEAR WASTE -- KANSAS BILED BY AEC PLANS FOR ATCH BURE

ABSTRACT: PLANS FOR BURIAL OF NUCLEAR WASTES IN LYONS, KANSAS, SALT BED HAVE MET WITH SERIOUS OBJECTIONS. OPPOSITIONS CITE REPORT OF STATE GEOLOGICAL SURVEY WHICH INSISTS SERIOUS QUESTIONS REMAIN UNANSWERED.-- SIGMATION OF WASTE CONTAINERS THROUGH SALT, THERMAL EXPANSION CAUSING OVERLAPPING LAYERS OF ROCK TO CRACK AND ALLOW GROUNDWATER TO SEEP IN. POSSIBLE SURPRISES BROUGHT ABOUT BY UNPREDICTED RADIOACTIVE INTERACTIONS. POSITION OF AEC IS THAT ALL NECESSARY DATA HAVE BEEN ACCUMULATED. CITIZENS OF LYONS, WHO MAY GAIN 200 PERMANENT JOBS, APPAR NOT TO BE PERTURBED. LYONS NUCLEAR PARK IS DESIGNED TO HOLD ALL NON-DEFENSE ATOMIC WASTE COUNTRY WILL ACCUMULATE BY THE END OF CENTURY.

PUB DESC: SCIENCE, VOL. 172, PP. 249-250 (APRIL 16, 1971)

KEYWORDS: SITING, WASTE DISPOSAL; PROJECT SALT VAULT; KANSAS; THERMAL CONSIDERATION; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); REGULATION, STATE; TRANSPORTATION AND HANDLING; WASTE DISPOSAL; WASTE STORAGE; WASTE TRANSPORTATION; WASTE MANAGEMENT; WASTE DISPOSAL, SALT; AGENCY, STATE; OPPOSITION; PROPOSAL; SPOKESMAN, AEC; SPOKESMAN, STATE; CONGRESSIONAL ACTIVITY

<006>

PUB DATE: 1968
AUTHOR: HOLZER, C.; SCHWABACH, J.

TITLE: WILL IT BE POSSIBLE TO DISPOSE OF THE RADIOACTIVE WASTE FROM A LARGE NUMBER OF NUCLEAR POWER STATIONS

ABSTRACT: DISCUSSES POSSIBILITY OF DISPOSING OF RADIOACTIVE WASTE FROM INCREASED OPERATION OF LARGE NUCLEAR POWER STATIONS. ALL SOURCES OF WASTE ARE ANALYZED AND COMPARED WITH PRESENT PRACTICES IN THE U.S. REPORTS THAT THE 20 YEARS EXPERIENCE IN THE U.S. HAS THE PROBLEM WELL UNDER CONTROL.

PUB DESC: ATOMWINT., ATOMTECH, VOL. 13, PG 582-584 (DECEMBER 1968)

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE DISPOSAL; WASTE STORAGE; WASTE MANAGEMENT; USSR; UNITED STATES; OPERATING EXPERIENCE

<007>

PUB DATE: 1967
AUTHOR: HOLZER, C.; SCHWABACH, J.

TITLE: PROBLEMS IN THE DISPOSAL OF RADIOACTIVE WASTE IN GERMANY

ABSTRACT: RESEARCH ON THE FINAL DISPOSAL OF RADIOACTIVE WASTE IN THE FEDERAL REPUBLIC OF GERMANY IS DESCRIBED. IT WAS PROPOSED THAT AN ARTIFICIAL CAVERN BE CONSTRUCTED IN ONE OF THE MORE THAN 200 SALT DEPOSITS OF NORTH WEST GERMANY FOR THIS PURPOSE. RESEARCH HAS ESTABLISHED THE FIRST PREREQUISITES FOR THE FINAL DISPOSAL OF WASTE OF LOW TO MEDIUM ACTIVITY. THE FINAL STORAGE OF 1700 PARRELS EACH WITH A CAPACITY FOR 200 LITERS OF RADIOACTIVE WASTE WAS STARTED IN THE ASSE SALT MINE.

<007> CONT.

PUB DESC: ATOMTECH., ATOMTECH., 12, PAGES 813-17 (1966-SEPT. 1967)

KEYWORDS: GEOLOGY; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); CALCINATION; WASTE TREATMENT; FILTRATION; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; GEMMANY; HYDROLOGY; WASTE DISPOSAL, SALT

<008>

PUB DATE: 1967

AUTHOR: GOWELL, G.

TITLE: TRENCH DISPOSAL OF SOLID RADIOACTIVE WASTE FROM THE WINDSCALE AND CALDER WORKS OF THE UKAEA

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD, ENGLAND

ABSTRACT: WINDSCALE AND CALDER WORKS OF THE UKAEA IS SITUATED IN CUMBRIA ON THE NORTHWEST COAST OF ENGLAND. LARGE VOLUMES OF LOW-ACTIVITY AND SUSPECT ACTIVE SOLID WASTES ARISE BOTH FROM PROCESS AND LABORATORY OPERATIONS. THE TOTAL QUANTITY IS ABOUT 1600 TONS/YR, WITH AN UNCONFIRMED VOLUME OF ABOUT 6000 CU. METERS. IT IS IMPRACTICABLE TO USE CONTAINING AS A METHOD OF STORAGE INTO ACTIVE AND INACTIVE FRACTIONS. CONSEQUENTLY, ALL THE MATERIAL MUST BE TREATED AS RADIOACTIVE WASTE AND DISPOSED OF CORRESPONDINGLY. A STUDY OF THE RELATIVE COST OF DISPOSAL METHODS HAS EMPHASIZED THE EXPENSE OF FORTREATMENT SUCH AS INCINERATION OR DILUTION AND SHOWS THAT LOCAL BURIAL WITHOUT TREATMENT IS BY FAR THE CHEAPEST METHOD OF DISPOSAL.

PUB DESC: STI/PUB-156, CCFP-67CE12, PAGES 3-13 OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, FROM JCIIR IAEA/ITERA STUDIES, VIENNA, AUSTRIA

KEYWORDS: MONITOR, LIQUID; TRENCHES; LOW-LEVEL WASTE; UNITED KINGDOM; SITE CLIMATELOGY; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE TREATMENT, ECONOMICS; WINDSCALE

<009>

PUB DATE: 1959

AUTHOR: ROY, R.D.; KIMBERMAN, E.F.; TARNICEZ, R.B.

TITLE: AN ANALYSIS OF LAND DISPOSAL OF PACKAGED RADIOACTIVE WASTE IN SEVEN WESTERN STATES

CORPORATE AUTHOR: STANFORD RESEARCH INSTITUTE, MENLO PARK, CALIFORNIA

ABSTRACT: A PRELIMINARY STUDY WAS MADE OF POSSIBLE AREAS IN WESTERN U.S., WHICH MIGHT BE USED FOR FUTURE LAND BURIAL OF SOLID OR PACKAGED LOW-LEVEL RADIOACTIVE WASTES. THE VOLUME AND NATURE OF WASTES GENERATED IN THE SEVEN WESTERN STATES WERE INVESTIGATED. FOURTEEN AREAS IN THE STATES WERE SELECTED AS THE BEST AREAS FOR FURTHER STUDIES FOR DISPOSAL OF PACKAGED WASTES. THE COSTS OF LAND DISPOSAL WERE ALSO ANALYZED AND COMPARED WITH THOSE FOR SEA DISPOSAL.

PUB DESC: SMIA-8, 120 PAGES- SEPTEMBER 30, 1959

KEYWORDS: SITING, WASTE DISPOSAL; PACKAGING; LAND BURIAL (SEE ALSO BURIAL CONCERN); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE DISPOSAL, ECONOMICS; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION

<010>

PUB DATE: 1967

AUTHOR: IAEA; BARROW, R.A.; MCNESTAD, J. P.; SCOTT, F.J.;

TITLE: RADIOACTIVE WASTE DISPOSAL INTO THE GROUND

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: ANALYTICAL STUDY OF A VARIETY OF DISCIPLINES AND EXPERIENCES PERTINENT TO THE BROAD AND COMPLEX SUBJECT OF RADIOACTIVE WASTE DISPOSAL. MAIN CONCERNS OF SUCH DISPOSAL TO THE GROUND ARE THE LONG TERM EFFECTS CAUSED BY PROCESSES THAT CHANGE THE

HYDROLOGICAL PATTERNS OR BIOLOGICAL DISTURBANCES. REPORTED AND PERTINENT DATA/FACTS CONCERNING SITE CHARACTERISTICS AFFECTING GROUND DISPOSAL, CHEMICAL REACTIONS OF WASTES IN THE GROUND AND THEIR BEHAVIOR, MODES OF RELEASE, EVALUATION OF SITES AND METHODS OF GROUND DISPOSAL, STANDARDS AND CONTROL TECHNIQUES.

PUB DESC: IAEA SAFETY SERIES NO. 15, 1965, 120PP.

KEYWORDS: BURIAL CONCERN (SEE ALSO COMMERCIAL BURIAL CONCERN); WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEATH); WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL; SITING; CLIMATE; HYDROLOGY; GEOLOGY; CHEMICAL REACTIONS; BEHAVIOR; MINERAL EXCHANGE; LIQUID; SOLID; SAFETY EVALUATION; STANDARDS, RADIATION (SEE ALSO REGULATION); ACCIDENTAL RELEASE; WASTE STORAGE

<011>

PUB DATE: 1972

AUTHOR: INDIANA AND MICHIGAN POWER CO. (U.S.A.)

TITLE: RESPONSE TO QUESTION 11.5 - CONTROL OF RELEASES FROM THE CVCS MONITOR TANKS

CORPORATE AUTHOR: INDIANA AND MICHIGAN POWER COMPANY

ABSTRACT: DISCUSS THE TYPE OF CONTROL PROVIDED FOR RELEASES FROM THE FOUR CVCS MONITOR TANKS. *** (ANSWER) RELEASES ARE MADE UNDER ADMINISTRATIVE CONTROL. THE RELEASE IS SAMPLED AND ANALYZED FOR BOTH TRITIUM AND DEUTERIUM ISOTOPES AND IS THEN MONITORED BY THE WASTE-DISPOSAL-SYSTEM LIQUID-EFFLUENT MONITOR BEFORE FURTHER DILUTION AND RELEASE INTO THE CIRCULATING WATER DISCHARGE.

PUB DESC: Docket-50315-61, 1 PAGE, PG. 11.5-1 OF AGREEMENT 21 TO COOK 1 AND 2 LICENSE APPLICATION, APRIL 12, 1972, DOCKETS 50-315/316, TYPE--PUB, RPO--BEST., AE--UTILITY

KEYWORDS: CONTROL SYSTEM; REACTOR, PWR; SAMPLING; WASTE DISPOSAL, LIQUID; RESPONSE TO NRC QUESTION; COOK 1 (PWR); ; RADIATION MONITORS

<012>

PUB DATE: 1971

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: DISPOSAL OF RADIOACTIVE WASTES INTO RIVERS, LAKES, AND ESTUARIES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: DISCUSSES THE MECHANISMS AND PARAMETERS WHICH AFFECT AND CONTROL THE PATH OF RADIOCLIDES INTRODUCED INTO FRESH WATERS; IT DISCUSSES THE CONCEPTS OF CRITICAL NUCLIDE, CRITICAL PATHWAY AND CRITICAL POPULATION GROUP AND DEMONSTRATES HOW THE USE OF THESE CONCEPTS PROVIDES A SOUND, CONVENIENT AND ECONOMICAL MEANS FOR SETTING DISCHARGE LIMITS AND MAINTAINING A CONTINUING SURVEILLANCE. IT OFFERS PRACTICAL ADVICE ON THE USE OF THESE CONCEPTS, GIVES SOME DETAILED INFORMATION ON UPTAKE AND DISPERSION MECHANISMS, AND OFFERS INSTRUCTION ON HOW TO USE THIS INFORMATION AND THESE CONCEPTS TO ESTIMATE POTENTIAL RADIATION COSTS AND THUS ESTABLISH DISCHARGE LIMITS.

PUB DESC: STI/PUB-203, 75 PAGES, 1 FIGURE, 9 TABLES, 3 REFERENCES, APRIL 1971

KEYWORDS: MAXIMUM PERMISSIBLE CONCENTRATION (MPC); WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, RIVER; POPULATION EXPOSURE; CRITICAL NUCLIDE PATHWAY; HYDROLOGY; RADIATION SAFETY AND CONTROL; DISPERSION; SURVEILLANCE PROGRAM; WASTE DISPOSAL, LAKE; RADIOCLIDE UPTAKE; PARAMETER; DISCHARGE

<013>

PUB DATE: 1969

AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: THE INVESTIGATION OF THE POSSIBILITY OF PREPARING IODINE AND KRYPTON COMPOUNDS TO BE USED FOR THE DISPOSAL OF RADIOACTIVE GASES

<813> CONT.
CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY
AGENCY, VIENNA, AUSTRIA

ABSTRACT: THE BASIC PURPOSE OF THE INVESTIGATIONS WAS TO FIND OUT THE APPLICABILITY OF CHEMICAL METHODS FOR REMOVING RADIOACTIVE IODINE AND KRYPTON FROM WASTE GASES IN FUEL REPROCESSING PLANTS BY (1) FLUORINATION OF IODINE AND KRYPTON MIXTURES AT VARIOUS CONDITIONS, (2) POSSIBLE QUANTITATIVE SEPARATION OF IODINE FROM KRYPTON, (3) SYNTHESIS OF STABLE KRYPTON COMPOUNDS, AND (4) STUDY OF PHYSICAL AND CHEMICAL PROPERTIES OF THE OBTAINED COMPOUNDS. THE 16 RESULTS OBTAINED ARE LISTED.

PUB DESC: IJRS-GR-223, 76 PAGES, FIGURES, TABLES, JANUARY 16, 1970

KEYWORDS: CHEMICAL REACTION; KRYPTON (SEE ALSO NUCLEI GAS); IODINE; FISSION PRODUCT; SEPARATION; WASTE DISPOSAL, GAS; FLUORINE, UNUSUAL; FUEL REPROCESSING; FLUORIDE; FROPEPT, CHEMICAL

<814>
PUB DATE: 1966
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: PHYSICAL AND BIOLOGICAL TRANSPORT OF RADIOISOTOPES RESULTING FROM THE DISPOSAL OF RADIOACTIVE WASTES INTO THE SEAS, OCEANS, AND SURFACE WATERS

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: THE SYMPOSIUM HELD IN VIENNA, AUSTRIA DURING MAY 1966 WAS REPRESENTED BY 61 SCIENTISTS FROM 25 COUNTRIES AND FIVE INTERNATIONAL ORGANIZATIONS. 56 PAPERS WERE PRESENTED. MANY SUBJECTS RELATIVE TO THE CAPTIONED SUBJECT WERE DISCUSSED AND MUCH VALUABLE INFORMATION WAS GIVEN CONCERNING A WIDE RANGE OF REGIONS AND CIRCUMSTANCES INVOLVING RADIOACTIVE WASTE DISPOSAL. ONE IMPORTANT CONCLUSION FROM THE MEETING WAS THAT MUCH RESEARCH REMAINS TO BE DONE TO ENSURE THE SAFETY AND WELL BEING OF MAN IN THE ENVIRONS OF THE SEAS, OCEAN, AND SURFACE WATERS.

PUB DESC: STI-PUB-126, CERN-640507, 494 PAGES, 199 FIGURES, 82 TABLES, 365 REFERENCES, SEPTEMBER 1966, DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS AND SURFACE WATERS. PROCEEDINGS SERIES. PROCEEDINGS OF A SYMPOSIUM HELD IN VIENNA, AUSTRIA, MAY 16-20, 1966

KEYWORDS: BILUTION; FALLOUT; IAEA; WASTE DISPOSAL, OCEAN; BIOTA; SURFACE WATER, TRACER; WASTE DISPOSAL, RIVER; ION EXCHANGE; DISPERSION; ENVIRONMENT; WATER POLLUTION; FLOW DISTRIBUTION; DESIN; TRANSPORT PROPERTY; CONCENTRATION; AQUATIC COGADISM; SEDIMENT

<815>
PUB DATE: 1963
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: DISPOSAL OF RADIOACTIVE WASTES INTO FRESH WATER - SAFETY SERIES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: A REVIEW IS MADE OF THE PHYSICAL, CHEMICAL, AND BIOLOGICAL FACTORS AFFECTING THE FATE OF RADIOISOTOPES DISCHARGED INTO FRESH WATERS. IT IS SUGGESTED THAT THE PRIMARY RADIATION STANDARDS OF THE ICRP BE USED AS A BASIS FOR EVALUATING THE EFFECTS OF SUCH RELEASES AND FOR FORMULATING LEGAL, ADMINISTRATIVE AND ORGANIZATIONAL MEASURES FOR RADIOACTIVE WASTE DISPOSAL. RADIOACTIVE WASTES ARE DESCRIBED, IN RELATION TO THEIR STABLE, CHEMICAL AND RADIOCHEMICAL PROPERTIES, ALONG WITH THE MANAGEMENT PRACTICES EMPLOYED.

PUB DESC: STI-PUB/4 IAEA SAFETY SERIES NO. 10- IAEA 99 PAGES, 8 FIGURES, 24 TABLES, 50 REFERENCES, 1963

KEYWORDS: CRUSTACEAN; DEPOSITIC; DOSE; EFFLUENT; GROUND WATER; HAZARD, RELATIVE; RIVER; SURFACE WATER; WASTE DISPOSAL, TERRESTRIAL; WATER; WASTE DISPOSAL, RIVER; WASTE SOURCE AND TYPE

<816>
PUB DATE: 1961
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: RADIOACTIVE WASTE DISPOSAL INTO THE SEA

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: THIS REPORT SUMMARIZES THE RESULTS OF A STUDY BY A PANEL OF EXPERTS ON THE TECHNICAL AND SCIENTIFIC PROBLEMS CONNECTED WITH RADIOACTIVE WASTE DISPOSAL INTO THE SEA. THE REPORT OFFERS RECOMMENDATIONS WHICH COULD SERVE AS A BASIS OF INTERNATIONAL AGREEMENT TO ENSURE THAT ANY DISPOSAL OF RADIOACTIVE WASTE INTO THE SEA INVOLVES NO UNACCEPTABLE DEGREE OF HAZARD TO MAN.

PUB DESC: IAEA-SS-5, (STI-PUB/14), 174 PAGES, SEPTEMBER 1961

KEYWORDS: ECOLOGY; EXHAUST PERMISSIBLE CONCENTRATION (MPC); OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, OCEAN; WASTE SOURCE AND TYPE; RADIATION SAFETY AND CONTROL

<817>
PUB DATE: 1967
AUTHOR: IBAPEO, E.; KUNGARD, E.

TITLE: DISPOSAL OF LOW- AND INTERMEDIATE-LEVEL SOLID RADIOACTIVE WASTES

CORPORATE AUTHOR: JUSTA DE ENERGIA NUCLEAR, MADRID

ABSTRACT: IN VIEW OF THE FUTURE IMPORTANCE OF RADIOACTIVE WASTE DISPOSAL AND JUBIL IN THE CIRCUM, STUDIES HAVE BEEN UNDERTAKEN TO FIND SUITABLE SITES FOR THIS PURPOSE IN SPAIN. THE GEOGRAPHICAL, GEOLOGICAL, HYDROLOGICAL, PETROGRAPHICAL AND SEISMOLOGICAL CONSIDERATIONS WHICH LED TO THE CHOICE OF SOME OLD MINES IN THE SOUTH OF SPAIN AS STORAGE SITES FOR LOW- AND INTERMEDIATE-LEVEL WASTES ARE DESCRIBED. THE AVAILABILITY OF THESE SITES WILL ENSURE THAT ENOUGH SPACE IS AVAILABLE TO MEET THE REQUIREMENTS OF THE SPANISH NUCLEAR ENERGY PROGRAM FOR A VERY CONSIDERABLE TIME.

PUB DESC: STI-PUB-156, (OEF-67051), PAGES 61-77 OF DIS' AL OF RADIOACTIVE WASTES INTO THE GROUND, VII , IAEA, 1967 (IN SPANISH)

KEYWORDS: GEOLOGY; INTERMEDIATE-LEVEL WASTE; MINING; SEISMOLOGY; WASTE STORAGE; WASTE DISPOSAL, SOLID; HYDROLOGY; RADIATION SAFETY AND CONTROL; SPAIN

<818>
PUB DATE: 1969
AUTHOR: ISAACSON, R.E.

TITLE: THE HANFORD EXPLOITATORY DEEP WELL

CORPORATE AUTHOR: ATLANTIC RICHFIELD HANFORD COMPANY, RICHLAND, WASHINGTON

ABSTRACT: A DEEP WELL IS BEING DRILLED ON THE HANFORD PROJECT TO OBTAIN ROCK AND WATER SAMPLES TO EVALUATE THE GEOLOGIC AND HYDROLOGIC CHARACTERISTICS OF THE UNDERLYING ROCK STRATA. THIS INFORMATION IS NEEDED TO DETERMINE WHETHER OR NOT THE DEEP BASALT FLOWS ARE THICK ENOUGH AND IMPERMEABLE ENOUGH TO STORE RADIOACTIVE WASTES FOR HUNDREDS TO THOUSANDS OF YEARS IN VIEW OF CATER'S WHERE THEY WILL BE ISOLATED FROM THE BIOSPHERE.

PUB DESC: AEE-SA-47, 18 PAGES, JULY 16, 1969

KEYWORDS: GEOLOGY; BASALT; WASTE STORAGE; HYDROLOGY; HANFORD SITE; WASTE DISPOSAL, DEEP WELL

<819>
PUB DATE: 1963
AUTHOR: JACOBS, D.G.

<019> CONT.
TITLE: MOVEMENT OF RADIOISOTOPES THROUGH THE GROUND
CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: FOUR GENERAL APPROACHES FOR COMPARING MIGRATION OF RADIOISOTOPES IN THE GROUND WITH THE MOVEMENT AND DISPERSION OF THE TRANSPORTING WATER INVOLVE ITS CORRELATION WITH (1) QUALITATIVE DESCRIPTION OF WATER MOVEMENT, (2) DETAILED CLASSICAL HYDRODYNAMIC DESCRIPTION OF THE RECEIVING FORMATION, (3) DIRECT MEASUREMENT OF HYDRAULIC DISPERSION USING APPROPRIATE WATER TRACER TO OBTAIN SOLUTION VELOCITY DISTRIBUTION, AND (4) QUANTITATIVE DESCRIPTION OF VARIOUS FACTORS AFFECTING RADIOISOTOPE MOVEMENT AND DISPERSION. PRIMARY CONCERN IS TO DESCRIBE THE VARIATION OF ACTIVITY IN THE SOLUTION PHASE WITH TIME AND DISTANCE. A SEPARATE ASPECT OF THE PROBLEM CONCERNS BUILDUP OF ACTIVITY ON VARIABLE SOLID PHASE WITH TIME AND DISTANCE.

PUB DESC: NUCLEAR SAFETY, 5(1), 5 PAGES, 16 REFERENCES- 109-113, PP. 109-115 SEPS. 40-55 (FALL 1963)

KEYWORDS: GROUND WATER; SOIL; RADIOISOTOPE MOVEMENT THROUGH; WASTE DISPOSAL, TERRESTRIAL; CHEMICAL SOIL

<020>
PUB DATE: 1964
AUTHOR: JAMMET, B.; JUCALI, D.; DEUSSET, R.

TITLE: SANITARY PROBLEMS RAISED BY THE ELIMINATION OF RADIOACTIVE WASTE AND BY NUCLEAR ACCIDENTS

CORPORATE AUTHOR: COMMISSARIAT A L'ENERGIE ATOMIQUE

ABSTRACT: THE SANITARY PROBLEMS RAISED BY WASTE-DISPOSAL MUST BE CONSIDERED DIFFERENTLY WHETHER IT IS CARRIED OUT DISCONTINUOUSLY DURING THE NORMAL OPERATION OF A PLANT OR OCCURS ACCIDENTALLY. AFTER A SURVEY OF THE WAYS IN WHICH MAN MAY BE AFFECTED BY RADIOACTIVE MATERIALS RELEASED IN THE ENVIRONMENT, THESE TWO ASPECTS WILL BE EXAMINED IN TURN.

PUB DESC: A/CCWF. 20/P/870- 16 PAGES- MAY 1964. PRESENTED AT THIRD U. N. INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, AUGUST 31-SEPTEMBER 9, 1964- 142A

KEYWORDS: DOSE; WASTE DISPOSAL; POPULATION EXPOSURE

<021>
PUB DATE: 1975
AUTHOR: JEVES, C.B.

TITLE: GAMMA-RADIATION EFFECTS IN GEOLOGIC FORMATIONS OF INTEREST IN WASTE DISPOSAL: A REVIEW AND ANALYSIS OF AVAILABLE INFORMATION AND SUGGESTIONS FOR ADDITIONAL REPERIMENTATION

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: LITERATURE CONCERNING RADIATION EFFECTS ON SILICATE ROCK AND LIMESTONE MINERALS HAS BEEN REVIEWED TO PROVIDE A SUMMARY OF AVAILABLE INFORMATION ON THE EFFECTS OF GAMMA RADIATION ON THESE MATERIALS IN A WASTE REPOSITORY, AND TO MAKE AN EVALUATION OF THE NEED FOR ADDITIONAL EXPERIMENTAL DATA. IT WAS CONCLUDED THAT THERE ARE NO APPARENT REASONS TO EXPECT ANY SIGNIFICANT AMOUNTS OF STORED RADIATION ENERGY IN ANY OF THE IMPORTANT ROCK-FORMING MINERALS. IT IS RECOMMENDED THAT CERTAIN RADIATION EXPERIMENTS BE CONDUCTED ON SILICA, CLAY, LIMESTONE MINERALS, AND FILLSANDS TO VERIFY THE ABSENCE OF SIGNIFICANT EFFECTS.

PUB DESC: ORNL-TN-4827, 26 PPS, 2 TABS, 67 REFS, SEPT. 1975

KEYWORDS: ; STORING ENERGY; INFILTRATION; CLAY; ADVISORY COMMITTEE ON RADIATION SAFETY; REVIEW; RADIATION EFFECT; GEOLOGY; WASTE DISPOSAL; MINERAL; SILICON; ROCK MECHANICS; RADIATION DAMAGE; GAMMA RADIATION

<022>
PUB DATE: 1971
AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: AEC FACT SHEETS ON NATIONAL RADIOACTIVE WASTE DEPOSITORY, LYONS, KANSAS

ABSTRACT: THE PURPOSE OF THIS DEPOSITORY IS TO PROVIDE FOR THE PERPETUAL STORAGE OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTES AND TRANSURANIC CONTAMINATED SOLID WASTES SUCH AS PLUTONIUM GENERATED AT AEC INSTALLATIONS. ADDITIONALLY, THIS PROJECT WILL PROVIDE TECHNICAL DATA AND EXPERIENCE ON OPERATIONAL METHODS AND COSTS OF LONG-TERM STORAGE OF SOLIDIFIED HIGH-LEVEL WASTES GENERATED BY COMMERCIAL REPROCESSING PLANTS. ADDITIONAL DATA IS GIVEN ON DESIGN OF THE PROPOSAL, DESIGN STUDIES MADE, FUNDING, CONTRACTORS, SITE SELECTION, CRITERIA FOR SELECTING CONTRACTORS, SCHEDULING COST DATA, SAFETY REVIEWS, WASTE SHIPMENT AND HANDLING, SIZE AND CAPACITY OF HOLE, AND THE POTENTIAL USE OF THE SURFACE LAND.

PUB DESC: JCAR HEARING, PART 3, PAGE 1900-1910, MARCH 1971

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; KANSAS; GEOLOGY; ALPHA RADIATION; SITING; PLUTONIUM; SAFETY REVIEW; SITING; WASTE DISPOSAL; WASTE HANDLING; WASTE SOURCE AND TYPE; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; HIGH-LEVEL WASTE; WASTE DISPOSAL, SALT; TRANSURANIC ELEMENT; CONSTRUCTION; CONSTRUCTION SCHEDULE

<023>
PUB DATE: 1971
AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: TECHNICAL STATUS OF THE RADIOACTIVE WASTE DEPOSITORY - A DEMONSTRATION PROJECT FOR SOLID RADIOACTIVE WASTE DISPOSAL

ABSTRACT: A REVIEW OF THE WORK THAT HAS BEEN DONE TO ESTABLISH THE SUITABILITY OF BEDED SALT FORMATIONS FOR THE CONTAINMENT OF RADIOACTIVE SOLID WASTES, AND THE NATURE OF THE ADDITIONAL INVESTIGATIONS WHICH ARE EITHER UNDER WAY OR SCHEDULED TO BE DONE. PROPOSALS THAT, ON ASSESSMENT, THIS WORK CONSTITUTES A VALID TECHNICAL JUSTIFICATION FOR PROCEEDING WITH THE PRESENT PLANS TO ESTABLISH A DEMONSTRATION DEPOSITORY.

PUB DESC: JCAR HEARINGS, PART 3, APPENDIX 17, PAGE 1915-1942, MARCH 1971

KEYWORDS: GEOLOGY; DESIGN CRITERIA; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); SITING; OPERATION; PLUTONIUM; SAFETY REVIEW; SITING; WASTE SOURCE AND TYPE; MONITOR, ENVIRONMENTAL; THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; HYDROLOGY; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; CONSTRUCTION; RADIATION EFFECT

<024>
PUB DATE: 1971
AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: AEC FACT SHEET ON SELECTION OF LYONS, KANSAS, SITE FOR WASTE DEPOSITORY AND TRANSPORTATION OF RADIOACTIVE WASTE

ABSTRACT: ANNOUNCED THE TENTATIVE SELECTION OF A SITE NEAR LYONS, KANSAS, FOR AN INITIAL SALT HOLE REPOSITORY FOR THE DEMONSTRATION OF LONG-TERM STORAGE OF SOLID HIGH-LEVEL AND LONG-LIVED LOW-LEVEL RADIOACTIVE WASTES. THE PURPOSE OF THE DEMONSTRATION PROJECT WILL BE TO PROVIDE TECHNICAL DATA AND EXPERIENCE ON OPERATIONAL METHODS AND COSTS OF LONG STORAGE OF SOLIDIFIED HIGH-LEVEL WASTES WHICH ARE GENERATED BY COMMERCIAL REPROCESSING PLANTS THAT REMOVE WASTE FISSILE PRODUCTS FROM FUEL THAT HAS BEEN USED IN NUCLEAR POWER STATIONS. IN ADDITION, THE WASTE MANAGEMENT FACILITY WILL PROVIDE LONG-TERM STORAGE OF SOLID MATERIALS CONTAMINATED WITH LOW-LEVEL RADIATION, PRINCIPALLY THE TRANSURANIC ELEMENTS SUCH AS PLUTONIUM GENERATED AT AEC INSTALLATIONS.

PUB DESC: JCAR HEARINGS, PART 3, APPENDIX 18, PAGE 1943-1947, MARCH 1971

<824> CONT.

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; KANSAS; ALPHA BATTERY; FLUORINE; SITING; WASTE DISPOSAL; WASTE STORAGE; WASTE TRANSPORTATION; HIGH-LEVEL WASTE; WASTE MANAGEMENT; WASTE DISPOSAL, SALT; R AND D PROGRAM; FUEL REPROCESSING; SOLID; OPERATING EXPERIENCE; DATA COLLECTION; AGENCY, AEC (SEE ALSO USAEC);

<825>

PUB DATE: 1970

AUTHOR: JOINT COMMITTEE ON ATOMIC ENERGY (U.S.A.)

TITLE: DISPOSAL OF SOLID RADIOACTIVE WASTES IN BEDDED SALT DEPOSITS - REPORT BY THE COMMITTEE ON RADIOACTIVE WASTE MANAGEMENT

ABSTRACT: AT REQUEST OF USAEC, THE COMMITTEE ON RADIOACTIVE WASTE MANAGEMENT OF THE NATIONAL ACADEMY OF SCIENCES -- NATIONAL RESEARCH COUNCIL HAS EXAMINED THE TECHNICAL FEASIBILITY OF THE DISPOSAL OF SOLID RADIOACTIVE WASTE IN BEDDED SALT DEPOSITS. BASED ON RECOMMENDATIONS OF THE PANEL, THE COMMITTEE REACHED THE FOLLOWING CONCLUSIONS - (1) THE USE OF BEDDED SALT FOR THE DISPOSAL OF RADIOACTIVE WASTES IS SATISFACTORY. (2) THE SITE NEAR LYONS, KANSAS, SELECTED BY THE AEC IS SATISFACTORY, SUBJECT TO THE DEVELOPMENT OF CERTAIN ADDITIONAL COMPLEMENTARY DATA AND EVALUATION. INITIAL DISPOSAL WILL BE FOR LOW LEVEL SOLID WASTE MATERIAL CONTAMINATED WITH PLU AND/OR OTHER LONG-LIVED TRANSURANIC ISOTOPES. SUBSEQUENT DISPOSAL WILL INCLUDE HIGHLY RADIOACTIVE, HIGH TEMPERATURE, SOLID WASTES.

PUB DESC: JCRC HEADING, PART 3, APPENDIX 20, PAGE 2003-2031, MARCH 1971

KEYWORDS: SAFETY REVIEW; PROJECT SALT VAULT; KANSAS; WASTE MANAGEMENT; RADIOACTIVE SAFETY AND CONTROL; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; SAFETY EVALUATION; SAFETY ANALYSIS; R AND D PROGRAM; AGENCY, AEC (SEE ALSO USAEC);

<826>

PUB DATE: 1955

AUTHOR: JOSEPH, A.R.

TITLE: RADIOACTIVE WASTE DISPOSAL PRACTICES IN THE ATOMIC ENERGY INDUSTRY (A SURVEY OF THE COSTS)

CORPORATE AUTHOR: JOHN HOPKINS UNIVERSITY, BALTIMORE, MARYLAND

ABSTRACT: A SURVEY WAS MADE OF METHODS AND RELATED COSTS OF DISPOSING OF RADIOACTIVE WASTES AS PRACTICED IN 1955 BY TWELVE ATOMIC INDUSTRY INSTALLATIONS. THE SCHEME FOR MAKING THE SURVEY AS WELL AS DETAILED WASTE DISPOSAL PRACTICES ARE REPORTED. SEVERAL CONCLUSIONS DRAWN FROM THE FACTUAL DATA ARE (1) THAT IT IS MORE EXPENSIVE PER CUBIC FOOT TO HANDLE HIGH LEVEL WASTES THAN LOW LEVEL WASTES AND (2) THAT LAND DISPOSAL IS LESS EXPENSIVE THAN SEA DISPOSAL. A RE-EXAMINATION OF PILING ECONOMICS SHOWS THAT HIGH COMPRESSION OF SOLID WASTES IS MORE EXPENSIVE THAN SIMILAR FORMS OF COMPACTION.

PUB DESC: NDO-7030, 195 PAGES, 3 FIGURES, 6 TABLES-DECEMBER 31, 1955

KEYWORDS: WRTS; WASTE DISPOSAL, OCEAN; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, WASTE; WASTE SOURCE AND TYPE; APL; BNL; ADEL; OBNL; NUCLEAR PLANTS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE TREATMENT, SOLID; LUL; LSL; WASTE TREATMENT, ECONOMICS

<827>

PUB DATE: 1971

AUTHOR: KANSA (U.S.A.)

TITLE: AEC PROGRAM UNDER CLOSE REVIEW

ABSTRACT: RESERVATIONS HAVE BEEN EXPRESSED BY THE STATE GEOLOGICAL SURVEY TO GOV. ROBERT L. DOCKING

LAST DECEMBER. AMONG OTHER THINGS, THE REPORT AFFIRMED BY THE SURVEY DIRECTOR, WILLIAM W. HAMILTON, CONTAINED THAT PLANS FOR TRANSPORTING THE WASTE ACROSS THE STATE TO THE DEPOSITORY WERE COMPLETELY INADEQUATE, AND THAT THE AEC HAD SHOWN LITTLE INTEREST IN SUCH QUESTIONS AS POSSIBILITY OF AN EXPLOSION DUE TO THE EXCESS OF STORAGE TEMPERATURE IN WASTES.

PUB DESC: NUCLEAR NEWS, 10(4), PG. 30 (APRIL 1971), 1 PAGE

KEYWORDS: TRANSPORTATION AND HANDLING; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); KANSAS; WASTE MANAGEMENT; RADIOACTIVE SAFETY AND CONTROL; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; POPULATION RESPONSE; AGENCY, AEC (SEE ALSO USAEC);

<828>

PUB DATE: 1968

AUTHOR: KING, L.G.

TITLE: DISPOSAL OF REACTOR OFF-GAS INTO SOIL SYSTEMS

CORPORATE AUTHOR: BATTILLE MEMORIAL INSTITUTE, COLUMBUS LABORATORIES

ABSTRACT: REPORTS PROGRESS OF A FIELD DEMONSTRATION OF THE CONCEPT FOR DISPOSAL OF REACTOR OFF-GAS INTO THE GROUND. RECENT WORK WAS CENTERED UPON COMPLETING THE DEVELOPMENT OF TWO MATHEMATICAL MODELS OF GAS FLOW AND APPLYING THEM TO THE SPECIFIC TRACER TEST AT WYTS. SOME PROBLEMS ARE DISCUSSED.

PUB DESC: BNWL-805, PP. 4.1-4.2, APRIL 1968

KEYWORDS: WYTS; WASTE DISPOSAL, TERRESTRIAL; TRACER, GAS; WASTE DISPOSAL, GAS; MATHEMATICAL TREATMENT; MODEL TESTING; R AND D PROGRAM; REGISTERED SAFETY FEATURE

<829>

PUB DATE: 1968

AUTHOR: KING, L.G.

TITLE: MATHEMATICAL MODELS FOR UNDERGROUND INJECTION OF GASEOUS WASTES INTO THE VAPOSE ZONE

CORPORATE AUTHOR: BATTILLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: MATHEMATICAL MODELS WHICH DESCRIBE THE FLOW OF COMPRESSIBLE GAS THROUGH POROUS MEDIA WERE DEVELOPED AS PART OF A RESEARCH PROGRAM INVESTIGATING THE FEASIBILITY OF UNDERGROUND DISPOSAL OF GASEOUS WASTES FOLLOWING A NUCLEAR REACTOR INCIDENT. THE MODELS DESCRIBE GAS MOVEMENT THROUGH GROUND DURING INJECTION VIA A SINGLE WELL ABOVE THE REGIONAL WATER TABLE. WITH RESPECT TO PERMEABILITY, THE POROUS MEDIA CAN BE TREATED AS HOMOGENEOUS AND ANISOTROPIC. SOLUTIONS FOR THE TWO HOMOGENEOUS CASES ARE PRESENTED IN DIMENSION-LESS GRAPHICAL FORM FOR A WIDE RANGE OF CONDITIONS.

PUB DESC: BNWL-945, 139 PAGES, 8 FIGURES, 13 TABLES, 8 REFERENCES, DECEMBER 1968

KEYWORDS: WYTS; WYTS; ANALYTICAL MODEL; REACTOR, POWER; TRACER, GAS; ACCIDENT, HYPOTHETICAL; WASTE DISPOSAL, GAS; HELIUM; MATHEMATICAL TREATMENT; FLOW

<830>

PUB DATE: 1974

AUTHOR: RILEY, R.D.

TITLE: DEEP ROCK NUCLEAR WASTE DISPOSAL TEST: DESIGN AND OPERATIONS.

CORPORATE AUTHOR: SANDIA LABORATORIES, SAN DIEGO

ABSTRACT: AN ELECTRICALLY HEATED TEST OF NUCLEAR WASTE SIMULANT IN GRANITE ROCK WAS CONDUCTED TO DEMONSTRATE THE FEASIBILITY OF THE CONCEPT OF DEEP ROCK NUCLEAR WASTE DISPOSAL AND TO OBTAIN DESIGN DATA. THIS REPORT DESCRIBES THE DEEP ROCK DISPOSAL SYSTEMS.

<830> CONT.
STUDY AND THE DESIGN AND OPERATION OF THE FIRST
CONCEPT FEASIBILITY TEST. (AUTH)

PUB DESC: SAND 74-0042 (1974)

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL
ALTERNATIVES; DEEP ROCK (SEE ALSO BEDROCK); REVIEW;
WASTE DISPOSAL, BEDROCK; DESIGN; OPERATION; SOLID;
ROCK; GRANITIC ROCK (SEE ALSO BEDROCK); NUCLEAR
WASTES; HEAT TRANSFER; MELTING; SCINDIFICATION (SEE
ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.);
THERMAL STRESS; TEST DATA

<831>

PUB DATE: 1972

AUTHOR: KRAUSE, R.; HILL, R.; SAUB, R.

TITLE: DEEP-Well DISPOSAL OF TRITIUM CONTAINING
LIQUID EFFLUENTS

CORPORATE AUTH: GESellschaft fuer Kernforschung
MB, KARLSRUHE, GERMANY

ABSTRACT: AT THE KARLSRUHE NUCLEAR RESEARCH CENTER
DEEP-Well INJECTION OF TRITIUM-CONTAINING EFFLUENTS
INTO ISOLATED DEPLETED OIL BEDROCKS OF THE DEEP
BEDROCKS IS BEING STUDIED AS AN APPROACH OF TRITIUM
DISPOSAL, WHICH DOES NOT LEAD TO A POLLUTION OF THE
BIOSPHERE. THE GEOLOGY OF THE OIL FIELD IN THE
VICINITY OF THE CENTER, THE TECHNICAL UNDERGROUND AND
SURFACE ADAPTATIONS OF THE SELECTIVE WELL, THE CONTROL
AND SURVEILLANCE PROVISIONS ARE DESCRIBED TOGETHER
WITH THE ESSENTIAL SAFETY CONSIDERATIONS AND THE
ANTICIPATED OPERATION CONDITIONS.

PUB DESC: CONF-721107, 25 PAGES, 8 FIGURES, PAPER
PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF
RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN
PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: CONTAINMENT, UNDERGROUND; EFFLUENT;
GEOLOGY; SITING, WASTE DISPOSAL; TRITIUM; WASTE
MANAGEMENT; GERMANY; SAFETY EVALUATION; FUEL
REPROCESSING; GAS; LIQUID; WASTE DISPOSAL, DEEP WELL

<832>

PUB DATE: 1972

AUTHOR: KRAUSE, R.; KUEHN, R.; SCHMIDT, R.

TITLE: DISPOSAL OF SOLIDIFIED HIGH-LEVEL
RADIOACTIVE WASTES IN THE ASSE SALT MINE

CORPORATE AUTH: GEsellschaft fuer Kernforschung
MB, KARLSRUHE, GERMANY; TECHNISCHE HOCHSCHULE AACHEN

ABSTRACT: A CRITICAL REVIEW OF THE GERMAN POLICY
CONFINED THE FEASIBILITY TO DISPOSE OF SOLIDIFIED
HIGH-LEVEL RADIOACTIVE WASTES IN THE ASSE SALT MINE.
FROM THE RESPECTIVE B & D PROGRAM, SOME IMPORTANT
GEOLOGICAL DATA, SOME RESULTS OF COMPUTER CALCULATIONS
AND FIELD EXPERIMENTS ON HEAT DISSIPATION, AND THE
GENERAL IDEA OF THE TRANSPORT AND HANDLING SYSTEM ARE
GIVEN IN THIS REPORT.

PUB DESC: CONF-721107, 14 PAGES, 5 FIGURES, PAPER
PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF
RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN
PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: COMPUTED PROGRAM; GEOLOGY; HEAT TRANSFER;
WASTE HANDLING; WASTE DISPOSAL, SOLID; WASTE
TRANSPORTATION; HIGH-LEVEL WASTE; WASTE MANAGEMENT;
GERMANY; WASTE DISPOSAL, SALT; MATHEMATICAL TREATMENT;
FUEL REPROCESSING; B AND D PROGRAM; DATA COLLECTION

<833>

PUB DATE: 1964

AUTHOR: BROTHOV, P.G.; HADZI, A.B.; BELITSKY,
A.S.; ZIKOVA, A.S.; PIZOV, A.I.; CELIKOVICH, D.A.

TITLE: THE WAYS TO SOLVE IN THE USSR THE PROBLEM OF
SANITARY PROTECTION OF THE ENVIRONMENT FROM
RADIOACTIVE CONTAMINATION

ABSTRACT: THE SANITARY REQUIREMENTS PRESENTED TO

THE DISTRIBUTION OF ENTERPRISES FOR THE EXTRACTION,
PROCESSING AND USE OF NUCLEAR FUEL, THE CONDITIONS FOR
THE DISCHARGE OF RADIOACTIVE WASTE INTO THE ATMOSPHERE
AND THE PERMISSIBLE DOSES OF RADIOACTIVE SUBSTANCES IN
THE AIR, RESERVOIRS AND SUBTERRANEAN SOURCES OF WATER
SUPPLY ARE COVERED BY QUOTED SANITARY REGULATIONS
PUBLISHED BY THE SANITARY INSPECTION BODIES OF THE
MINISTRY OF HEALTH PROTECTION WHICH HAVE THE FORCE OF
LAW.

PUB DESC: A/CONF. 20/P/3.9- 7 PAGES- MAY 1964,
PRESENTED AT THIRD U. S. INTERNATIONAL CONFERENCE ON
THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, AUGUST
31-SEPTEMBER 9, 1964- IAEA

KEYWORDS: LAW; USSR; ENVIRONMENT; REGULATION (SEE
ALSO STANDARDS, RADIATION); WASTE DISPOSAL, INDUSTRIAL

<834>

PUB DATE: 1974

AUTHOR: KUEHN, R.; KIEFERBACHEN, R.; KRAUSE, R.;
SCHMIDT, R.

TITLE: DISPOSAL OF SOLIDIFIED HIGH-LEVEL
RADIOACTIVE WASTES IN THE ASSE SALT MINE

CORPORATE AUTH: FEDERAL REPUBLIC OF GERMANY

ABSTRACT: A CRITICAL REVIEW OF THE GERMAN POLICY
CONFINED THE FEASIBILITY TO DISPOSE OF SOLIDIFIED
HIGH-LEVEL RADIOACTIVE WASTES IN THE ASSE SALT MINE.
FROM THE RESPECTIVE B & D PROGRAM SOME IMPORTANT
GEOLOGICAL DATA, SOME RESULTS OF COMPUTER CALCULATIONS
AND FIELD EXPERIMENTS ON HEAT DISSIPATION, AND THE
GENERAL IDEA OF THE TRANSPORT AND HANDLING SYSTEM ARE
GIVEN IN THIS REPORT. (AUTH)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE
WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF
SYMPOSIUM, 917-933 (1974)

KEYWORDS: SALT MINE DISPOSAL (SEE ALSO WASTE
DISPOSAL, SALT); GERMANY; REVIEW; SOLID; FEASIBILITY;
ASSE SALT MINE; B AND D PROGRAM; GEOLOGICAL DATA;
HIGH-LEVEL WASTE; CALCULATIONS; HEAT DISSIPATION;
WASTE TRANSPORT (SEE ALSO TRANSPORT); WASTE HANDLING

<835>

PUB DATE: 1975

AUTHOR: LARFON, R.E.; ROBINSON, R.A.; WETTER, R.O.

TITLE: CONCEPTUAL DESIGN REPORT NEW HYDROFRACTURE
FACILITY

CORPORATE AUTH: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THIS REPORT PRESENTS THE RESULTS OF A
CONCEPTUAL DESIGN STUDY FOR A PROPOSED NEW
HYDROFRACTURE WASTE DISPOSAL FACILITY AT ORNL.
DEVELOPMENT OF THE SHALE FRACTURING PROCESS BEGAN IN
1959, AND HAS BEEN USED FOR THE ROUTINE DISPOSAL OF
INTERMEDIATE LEVEL LIQUID RADIOACTIVE WASTE (ILW)
SINCE 1966. IN THIS PROCESS, WASTE SOLUTIONS
GENERATED IN THE COURSE OF VARIOUS LABORATORY PROGRAMS
ARE COLLECTED AND CONCENTRATED IN AN EVAPORATOR AND
THEN MIXED WITH CEMENT AND OTHER ADDITIVES TO FORM A
THIN GROUT. THE GROUT IS INJECTED INTO AN IMPERMEABLE
SHALE FORMATION AT A DEPTH OF ABOUT 10000 FT., WELL
BELOW THE DEPTH OF THE BOTTOM OF THE WATER TABLE IN
THIS AREA. INJECTION PRESSURES OF SEVERAL THOUSANDS
LBS PER SQ. IN. INDUCE HORIZONTAL FRACTURES IN THE
SHALE FORMATION, AND THE GROUT SPREADS OUT IN THE FORM
OF A THIN SHEET ALONG WITH THE BEDDING PLANS OF THE
SHALE. SHORTLY AFTER COMPLETION OF THE INJECTION, THE
GROUT SETS, THEREBY PERMANENTLY FIXING THE RADIOACTIVE
WASTES WITHIN THE SHALE STRUCTURE. SUBSEQUENT
INJECTIONS ARE MADE AT ABOUT 10 FT INTERVALS IN THE
SHALE FORMATION AND FORM GROUT SHEETS THAT ARE
APPROXIMATELY PARALLEL TO THE PRECEDING SHEETS.
TYPICALLY, THE ACTIVITY CONCENTRATION OF THE INJECTED
WASTE RANGES FROM 0.2 TO 2.0 CI/GAL. (MOD AUTHOR)

PUB DESC: CNL-TH-4826, JULY 1975, 41 P.

KEYWORDS: WASTE DISPOSAL; WASTE DISPOSAL
ALTERNATIVES; CNL; SHALE; INTERMEDIATE-LEVEL WASTE;
CEMENT; CONCENTRATION; HYDRAULIC FRACTURING (SEE ALSO

<835> CONT.
WASTE DISPOSAL, HYDRAULIC FRACTURING; DESIGN
CRITERIA; SITING; PERSONNEL; OPERATION; CONSTRUCTION;
ENGINEERING (SEE ALSO DESIGN CRITERIA AND SHIELDING);
COSTS; STANDARDS, RADIATION (SEE ALSO REGULATION)

<836>

PUB DATE: 1971
AUTHOR: LASALA, A.B.; DOTT, G.C.

TITLE: PRELIMINARY EVALUATION OF HYDROLOGIC FACTORS
RELATED TO RADIOACTIVE WASTE STORAGE IN BASALTIC ROCKS
AT THE HANFORD RESERVATION, WASHINGTON

CORPORATE AUTHOR: UNITED STATES DEPARTMENT OF THE
INTERIOR, GEOLOGICAL SURVEY, WATER RESOURCES DIV.,
RICHLAND, WASHINGTON

ABSTRACT: A PRELIMINARY STUDY OF THE HYDROLOGIC
FACTORS RELATED TO THE FEASIBILITY OF STORING
HIGH-LEVEL RADIOACTIVE WASTES IN CEMENT CURED
BASALTIC ROCKS OF THE HANFORD RESERVATION WAS BEGUN IN
1969 WITH THE DRILLING OF TEST WELL ABB-8C-1. THE
FACTORS OF CONCERN INCLUDE THE RATE AND DIRECTION OF
GROUND-WATER MOVEMENT, THE CHARACTERISTICS OF
GROUND-WATER DISCHARGE, AND THE GEOCHEMICAL NATURE OF
THE WASTE-ROCK-WATER SYSTEM THAT MIGHT AFFECT THE
MOVEMENT OF RADIOISOTOPES. THE WELL WAS DRILLED TO
5,641 FEET. HYDRAULIC TESTING TO DETERMINE THE
WATER-BEARING PROPERTIES OF THE ROCKS AND TO SAMPLE
GROUND WATER WAS CARRIED OUT TO A DEPTH OF 4,700 FEET.
TESTING WAS NOT COMPLETED BECAUSE THE WELL WAS LOST
FOLLOWING REPAIRS TO SECTIONS OF THE WELL THAT WERE
CAVING.

PUB DESC: TID-25764, 68 PAGES, 19 REFERENCES, 10
FIGURES, 7 TABLES, 1971

KEYWORDS: GROUND WATER; BASALT; WASTE STORAGE;
SAMPLING; HYDROLOGY; RADIATION SAFETY AND CONTROL;
HYDROLOGY, RATE OF MOVEMENT (SEE ALSO GROUND WATER);
GEOLOGY, GEOCHEMICAL; HANFORD SITE; SAFETY EVALUATION;
ROCK MECHANICS; DISCHARGE

<837>

PUB DATE: 1972
AUTHOR: LEWIS, A.E.; COHEN, J.J.; DRAHA, R.L.

TITLE: PLACEMENT AND SELF-PROCESSING OF NUCLEAR
FUEL REPROCESSING WASTES IN DEEP UNDERGROUND CAVITIES

CORPORATE AUTHOR: LAWRENCE LIVERMORE LABORATORY,
UNIVERSITY OF CALIFORNIA, LIVERMORE

ABSTRACT: PRESENTS A METHOD FOR DISPOSING OF
NUCLEAR FUEL REPROCESSING WASTES BY IN SITU
INCORPORATION IN MOLDED SILICATE ROCK. IN THIS
METHOD, LIQUID WASTES ARE INJECTED INTO A DEEP
UNDERGROUND CAVITY AND ALLOWED TO SELF-POIL. THE
RESULTING SLURRY IS PROCESSED AT THE GROUND SURFACE AND
RECYCLED IN A CLOSED SYSTEM. WHEN WASTE ADDITION IS
TERMINATED, THE CHIMNEY IS ALLOWED TO DRY OUT,
THEREBY SOLIDIFYING THE WASTE. THE HEAT GENERATED BY
THE RADIOACTIVE WASTE THEN SELTS THE SURROUNDING ROCK,
WHICH DISSOLVES THE WASTE. FINALLY, THE ROCK
DIFFUSES, TRAPPING THE RADIOACTIVITY IN AN INSOLUBLE
ROCK MATRIX DEEP UNDERGROUND. THIS METHOD HAS
SIGNIFICANT ENVIRONMENTAL AND ECONOMIC ADVANTAGE OVER
PREVIOUSLY PROPOSED METHODS.

PUB DESC: CONF-721107-1, DCL-73818, 16 PAGES, 8
FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE
MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL
REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1,
1972

KEYWORDS: CONTAINMENT, UNDERGROUND; SELF-POILING;
ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE
DISPOSAL, THERMAL; SILICON; THERMAL CONSIDERATION;
HIGH TEMPERATURE; EVAPORATION; ENVIRONMENT; ROCK
MECHANICS; FUEL REPROCESSING

<838>

PUB DATE: 1973
AUTHOR: LOGAN, S.L.

TITLE: DEEP SELF-CURIAL OF RADIOACTIVE WASTES BY
ROCK-MELTING CAPSULES

CORPORATE AUTHOR: UNIVERSITY OF NEW MEXICO

ABSTRACT: A DISPOSAL SYSTEM FOR HIGH-LEVEL
RADIOACTIVE WASTES IS PROPOSED UTILIZING THE HEAT
FROM WASTE CAPSULES TO MELT ROCK, AND DECREASE BY
GRAVITY TO GREAT DEPTHS. RESULTS SHOW THAT THIS
DISPOSAL CONCEPT IS FEASIBLE, WITH SELF-MIGRATION DEPTHS
>10 KM REASILY ATTAINABLE. PRESTRACTION DEPTH
INCREASES WITH CAPSULE SIZE AND WITH CONCENTRATION OF
WASTE CONTENTS. GRANITE HAS VISCOSITY SEVERAL ORDERS
OF MAGNITUDE HIGHER THAN THAT OF BASALT AT A GIVEN
TEMPERATURE. THIS REQUIRES DESIGNING FOR OPERATION AT
1000 C FOR GRANITE, COMPARED TO 1400 C FOR BASALT.
EACH CAPSULE OF 50-CM RADII AND 30% WASTE
CONCENTRATION ACCOMMODATES THE ANNUAL FISSION PRODUCT
WASTES FROM A 1000-MW(D) NUCLEAR POWER PLANT, OR 50 +
C5 WASTES FROM 6 PLANTS, OR ACTINIDE WASTES FROM 10
PLANTS.

PUB DESC: AMERICAN NUCLEAR SOCIETY, 16(1), PP.
177-178, PAPER PRESENTED AT THE 1973 ANNUAL MEETING,
HELD IN CHICAGO, ILLINOIS, JUNE 10-14, 1973

KEYWORDS: DEEP HEAT; WASTE DISPOSAL, DEEP; ROCK;
WASTE TYPICAL TREATMENT

<839>

PUB DATE: 1971
AUTHOR: LOGSDON, J.E.; HICKLEY, J.W.H.

TITLE: RADIOACTIVE WASTE DISCHARGES TO THE
ENVIRONMENT FROM A NUCLEAR FUEL REPROCESSING PLANT

ABSTRACT: THE NUCLEAR FUEL SERVICES FUEL
REPROCESSING PLANT HAS BEEN IN OPERATION SINCE 1966
AND HAS PROVIDED VALUABLE EXPERIENCE IN WASTE
MANAGEMENT PROBLEMS RELATED TO THIS TYPE OF FACILITY.
THE LARGE QUANTITIES OF RADIOACTIVITY WHICH MUST BE
CONTROLLED AT A NUCLEAR FUEL REPROCESSING PLANT
VIRTUALLY ELIMINATE DISCHARGE-AND-EJECTION AS A
SATISFACTORY METHOD OF DISPOSING OF RADIOISOTOPES
WHICH CONCENTRATE THROUGH ENVIRONMENTAL MEDIA.
RADIOISOTOPES SUCH AS STRONTIUM-90, RUTHENIUM-106,
CESIUM-137, CESIUM-134, COBALT-60, THORIUM, AND
KRYPTON-85 HAVE BEEN FOUND IN ENVIRONMENTAL MEDIA
AROUND WFS. THESE INDICATE THAT PATHWAYS TO THE
PUBLIC DO EXIST AS A RESULT OF OPERATION OF THE
FACILITY. HOWEVER, STUDIES TO DATE HAVE INDICATED
THAT TYPICAL POPULATION DOSES IN THE VICINITY OF WFS
ARE NOT SIGNIFICANTLY DIFFERENT FROM DOSES RECEIVED IN
OTHER PORTIONS OF THE STATE.

PUB DESC: RADIOBIOLOGICAL HEALTH DATA AND REPORTS,
12(6), PAGE 305-312, JUNE 1971

KEYWORDS: CESIUM; WEST VALLEY; COBALT; EFFLUENT;
KRYPTON (SEE ALSO MOBILE GAS); RUTHENIUM; STRONTIUM;
THORIUM; WASTE DISPOSAL; POPULATION EXPOSURE; CRITICAL
NUCLIDE PATHWAY; RADIATION SAFETY AND CONTROL;
RADIOACTIVITY RELEASE; ENVIRONMENT; WFS; FUEL
REPROCESSING; WMS; DISCHARGE

<840>

PUB DATE: 1969
AUTHOR: LOEBDICK, T.P.; BRADSHAW, S.L.

TITLE: MODEL PILLAR TESTS FOR EVALUATING THE
STRUCTURAL STABILITY OF OPERINGS IN ROCK SALT UTILIZED
FOR THE DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY,
TENNESSEE

ABSTRACT: FROM TESTS, IT HAS BEEN OBSERVED THAT THE
DEFORMATION OF THE PILLARS INCREASES RAPIDLY WITH
INCREASING LOADS. HOWEVER, EVEN MORE SIGNIFICANT IS
THE RAPIDLY ACCELERATED CREEP RATES OF THE SALT AT
ELEVATED TEMPERATURES. AT ALL AXIAL LOADS AND
CONSTANT TEMPERATURES, THERE IS INITIALLY A HIGH CREEP
RATE THAT DECREASES WITH TIME. CREEP RATES HAVE BEEN
OBSERVED TO CONTINUE TO DECLINE EVEN AFTER 3 1/3 YEARS
OF TESTING. LABORATORY STUDIES SHOW THAT THIS SALT
BEDS, WHICH COMMONLY OCCUR WITH BRINE SALT DEPOSITS,
CAUSE GREATLY ACCELERATED RATES OF DEFORMATION IN

<040> CCRL
 EXCAVATED CAVITIES WHEN THEY OCCUR IN THE PILLARS AT THE ROOF AND FLOOR INTERFACES.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN, VOL. 9, PAGES 269-70 (FEBRUARY 1969)

KEYWORDS: GEOLOGY; TEMPERATURE; STRESS ANALYSIS; CREEP BEHAVIOR (SEE ALSO ELASTIC FLOW); WASTE DISPOSAL, SALT; STRUCTURAL INTEGRITY (SEE ALSO ROCK MECHANICS); ROCK MECHANICS; MODEL TESTING

<041>

PUB DATE: 1960
AUTHOR: LONERICK, T.F.

TITLE: ACCELERATED DEFORMATION OF ROCK SALT AT ELEVATED TEMPERATURE AND PRESSURE AND ITS IMPLICATIONS FOR HIGH LEVEL RADIOACTIVE WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ABSTRACT: WITH THE STORAGE OF HIGH-LEVEL RADIOACTIVE WASTE IN SALT STRUCTURES, UNIQUE HIGH STABILITY PROBLEMS WILL OCCUR AS A RESULT OF THE ELEVATED TEMPERATURES. TO PREDICT FLOW IN ROCK SALT, SCALE MODELS OF SALT PILLARS AND THEIR SURROUNDING ROCKS WERE MADE FROM CORES TAKEN IN THE CANYON SALT MINE, LYONS, KANSAS. TESTS WERE RUN AT TEMPERATURES OF 22.5, 60, 100, AND 200 C WITH AXIAL LOADS OF 2,000, 4,000, 6,000, 8,000, AND 10,000 PSI AT EACH TEMPERATURE. THE TESTS SHOWED THAT MARKED INCREASES OCCUR IN THE RATES OF DEFORMATION OF SALT PILLARS AT HIGH LOADS AND ESPECIALLY AT ELEVATED TEMPERATURES. FOR ALL COMBINATIONS OF AXIAL LOADS AND TEMPERATURES, IT WAS OBSERVED THAT THERE IS INITIALLY A HIGH RATE OF DEFORMATION THAT DIMINISHES WITH TIME.

PUB DESC: ORNL-TN-2102, 119 PAGES, FIGURES, RADCN, 1960

KEYWORDS: GEOLOGY; HIGH-LEVEL WASTE; PROJECT SALT VAULT; KANSAS; PLASTIC FLOW; TEMPERATURE DEPENDENCE; STRESS; CREEP BEHAVIOR (SEE ALSO ELASTIC FLOW); DEFORMATION; WASTE DISPOSAL, SOLID; WASTE DISPOSAL, SALT; PLASTICITY; EXPERIMENT; SUPPORT STRUCTURE

<042>

PUB DATE: 1965
AUTHOR: LONERICK, T.F.; BRADSHAW, R.L.

TITLE: MODEL PILLAR TESTS FOR EVALUATING THE STRUCTURAL STABILITY OF OPENINGS IN ROCK SALT UTILIZED FOR THE DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ABSTRACT: PERHAPS THE MOST PROMISING GEOLOGIC ENVIRONMENT FOR THE DISPOSAL OF LARGE AMOUNTS OF HEAT-GENERATING HIGH-LEVEL RADIOACTIVE WASTE IS SUBTERRANEAN ROCK SALT DEPOSITS. TO DESIGN AN ACTUAL DISPOSAL FACILITY IN SALT, IT IS NECESSARY THAT THE EFFECTS OF ELEVATED TEMPERATURE, LOAD, AND STRATIGRAPHIC RELATIONS ON STRUCTURAL OPENINGS BE DETERMINED. TO PREDICT FLOW IN ROCK SALT, SCALE MODELS OF SALT PILLARS AND THEIR SURROUNDING ROCKS HAVE BEEN FABRICATED FROM CORES TAKEN IN MINES AT LYONS AND BUTCHINSON (KANSAS), BRISQ (NEW YORK), DITHOIT (MICHIGAN), GRAND SALINE (TEXAS), COTE BLANCHE (LOUISIANA), AND ASSE (GERMANY).

PUB DESC: ORNL-P-4100, 26P., 1965

KEYWORDS: DESIGN CRITERIA; FLOW THEORY AND EXPERIMENTS; GEOLOGY; STRESS; TESTING; CREEP BEHAVIOR (SEE ALSO PLASTIC FLOW); DEFORMATION; WASTE DISPOSAL, SALT; THERMAL PROPERTY; MODEL TESTING

<043>

PUB DATE: 1965
AUTHOR: LONERICK, T.F.; GARDNER, D.A.

TITLE: THE OCCURRENCE AND DETECTION OF RADIOISOTOPES IN THE SEDIMENTS OF WHITE OAK LAKE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: AS A RESULT OF THE DISCHARGES OF LOW-LEVEL RADIOACTIVE LIQUID WASTES TO SURFACE STREAMS AT OAK RIDGE NATIONAL LABORATORY, LARGE QUANTITIES OF RADIOISOTOPES HAVE ACCUMULATED IN THE BOTTOM SEDIMENTS OF WHITE OAK LAKE. RUTHENIUM-106 (1030 CURIES) AND CESIUM-137 (700 CURIES) ACCOUNT FOR MORE THAN 90% OF THE TOTAL ACTIVITY NOW PRESENT AT THE SITE, WHILE CO-60 (152 CURIES), THE RARE EARTHS (17 CURIES, EXCLUSIVE OF Y-90), AND SR-90 (15 CURIES) MAKE UP THE REMAINDER. MORE THAN HALF OF THE ACTIVITY IS ASSOCIATED WITH THE UPPER 6-IN. SEDIMENT LAYER. RUTHENIUM IS RESTRICTED TO A SMALL AREA IN THE UPPER LAKE BED. CS-137 OCCUPIES HIGHLY SELECTIVE EXCHANGE SITES IN THE SEDIMENT AND CAN BE DESORBED ONLY BY DISRUPTION OF THE LATTICE STRUCTURE. ONLY A SMALL FRACTION OF THE CO-60 IN THE SOIL WAS FOUND TO BE EXCHANGABLE. ABOUT ONE-HALF OF THE SR-90 AND THE RARE EARTHS IN THE SEDIMENT APPEAR TO BE EXCHANGABLE, WHILE THE OTHER HALF IS IN THE FORM OF SLIGHTLY SOLUBLE SALTS.

PUB DESC: ORNL-P-331 20 PAGES, 5 FIGURES, 3 TABLES, 10 REFERENCES- HEALTH PHYSICS 11(6)- 567 (JUNE 1965)

KEYWORDS: CESIUM; WHITE OAK LAKE; COBALT; DEPOSITION; EFFLUENT; GEOLOGY; GROUND WATER; RIVER; RUTHENIUM; SOIL; RADIOISOTOPES; SEDIMENT THROUGH; STRATUM; SURFACE WATER; WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, RIVER; SEDIMENT

<044>

PUB DATE: 1965
AUTHOR: LONERICK, T.F.; STRICK, E.J.

TITLE: GEOMORPHOLOGICAL EVALUATION OF SOLID WASTE STORAGE AREA 6

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE PROPOSED SITE OF SOLID WASTE STORAGE AREA 6 IN BELTCH VALLEY IS UNDERLAIN MOSTLY BY MULTICOLORED SHALES AND INTERBEDDED SILTY LIMESTONES THAT ARE GENERALLY SUFFICIENTLY WEATHERED TO PERMIT EASY EXCAVATIONS BY POWER EQUIPMENT. ABOUT 25% OF THE 70-ACRE TRACT IS UNSUITABLE FOR BURIAL, SINCE IT LIES IN AREAS WHERE THE WATER TABLE IS WITHIN 6 FT OR LESS OF THE LAKE SURFACE. IN ORDER TO MINIMIZE LEACHING AND THE SUBSEQUENT MIGRATION OF RADIOACTIVE MATERIALS FROM THE BURIED WASTE, IT IS ESSENTIAL THAT THE TRENCHES BE CONSTRUCTED SO AS TO SUSPEND THE WASTE ABOVE THE WATER TABLE, MINIMIZE RAINFALL INFILTRATION INTO THE HILLS SINCE THEY ARE COVERED, AND PROVIDE MINIMUM SEEPAGE RATES OF WATERS FROM THE TRENCHES.

PUB DESC: ORNL-TN-1327 P. 17 PAGES, 6 FIGURES, 8 REFERENCES, DECEMBER 1965

KEYWORDS: SURFACE WATER, ISOTOPES OCCURRENCE; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); GROUND WATER, ISOTOPES OCCURRENCE; ORNL; WASTE DISPOSAL, SOLID; HYDROLOGY; GEOLOGY, STRATIGRAPHY; MINERAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND)

<045>

PUB DATE: 1967
AUTHOR: HARTER, W.L.

TITLE: GROUND WASTE DISPOSAL PRACTICES AT THE SAVANNAH RIVER PLANT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: SOLID RADIOACTIVE WASTE HAS BEEN BURIED AT THE SAVANNAH RIVER PLANT SINCE 1953. THE WASTE, CONSISTING OF EQUIPMENT AND MATERIAL CONTAMINATED WITH FISSION PRODUCTS, ACTIVATION PRODUCTS, AND TRANSURANIC ISOTOPIES, HAS BEEN BURIED IN UNLINED TRENCHES ABOVE THE WATER TABLE. A TOTAL OF 1,500,000 CI OF FISSION AND ACTIVATION PRODUCTS, AND 9000 CI OF TRANSURANIC ELEMENTS, HAVE BEEN BURIED THROUGH 1966. SEEPAGE BASINS COST ABOUT 90.25/CI. REFER TO CONSTRUCT, AND EXPERIENCE INDICATES THAT THE USEFUL LIFE OF A BASIN IS GREATER THAN 10 YEARS.

<045> CONT.

PUB DESC: STL/FRS, CONF-670512, PAGES 95-106 OF DISPOSAL OF RADIOACTIVE WASTES IN THE GROUND, FROM JCIUT IAEA/NUEN STRATEGIC, VIENNA, AUSTRIA

KEYWORDS: EFFLUENTS; TRENCHES; DOMITOR, LIQUID; SOIL, RADIOACTIVE DECONTAMINATION; TRITIUM; WASTE STORAGE; SAVANNAH RIVER PLANT; THERMAL CONSIDERATION; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; WASTE TREATMENT, ECONOMICS; HYDROLOGY; ION EXCHANGE; PRECIPITATION; RADIATION SAFETY AND CONTROL

<046>

PUB DATE: 1971

AUTHOR: BACCOCCHI, A.; COTRANC, G.; GEM, F.; LEBEL, G.

TITLE: DISPOSAL OF THE RADIOACTIVE WASTES AT THE TRISAIA NUCLEAR RESEARCH CENTER

CORPORATE AUTHOR: ENR, TRISAIA, ITALY

ABSTRACT: DISCUSSES THE METHOD OF CLASSIFICATION, COLLECTION, AND TREATMENT OF SOLID AND LIQUID WASTES PRODUCED AT THE TRISAIA NUCLEAR RESEARCH CENTER. THE PROBLEM CAUSED BY THE POSSIBLE MIGRATION OF RADIOISOTOPES DUE TO THE CHRONIC OR ACCIDENTAL LOSS EITHER FROM THE PITS FOR SOLID WASTES OR FROM LIQUID CONTAINERS IN THE SEA IS TREATED IN DETAIL.

PUB DESC: NUCLEONICA VISICOMUNICAZIONE, V5 (1), P. 30 (MARCH 1971)

KEYWORDS: CONTAINMENT, UNDERGROUND; WASTE TREATMENT; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; CONTAINMENT, UNDERGROUND

<047>

PUB DATE: 1976

AUTHOR: BATUSZAK, J. S.; STUBBS, P. V.; BAKER, C. P.

TITLE: RADIOISOTOPE DYNAMICS AND HEALTH IMPLICATIONS FOR THE NEW YORK NUCLEAR SERVICE CENTER'S RADIOACTIVE WASTE BURIAL SITE

CORPORATE AUTHOR: NEW YORK STATE DEPT. OF HEALTH

ABSTRACT: A COMMERCIAL RADIOACTIVE WASTE BURIAL SITE HAS OPERATED SINCE 1962 AT THE WESTERN NEW YORK NUCLEAR SERVICE CENTER. SOLID LOW-LEVEL RADIOACTIVE WASTES ARE BURIED IN TRENCHES EXCAVATED FROM A VERY FINE-GRAINED HETEROGENEOUS MIXTURE OF SILT AND CLAY (SILT TILL) AND ARE THEN COVERED WITH THE EXCAVATED MATERIAL. DESPITE MANY OPERATIONAL PRECAUTIONS, WATER LEVELS IN THREE BURIAL TRENCHES ROSE TO WITHIN A FEW CENTIMETERS OF THE COVERING MATERIAL BY LATE 1973. ACTIVITY LEVELS OF HTO, 90SB, AND 137CS IN TRENCH WATER AND CORE SAMPLES WERE MEASURED TO OBTAIN PRELIMINARY INFORMATION ON THE DEGREE OF SUBSURFACE RADIOISOTOPE MIGRATION FROM THE BURIAL TRENCHES INTO THE SUBJACENT SOIL. TRITIUM CONCENTRATIONS MEASURED IN VOID-SPACE WATER FROM VERTICAL CORES APPEARED TO PEAK IN THE COVER MATERIAL 1.5 TO 2 M BELOW THE GROUND SURFACE. CONCENTRATIONS OF 90SB AND 137CS IN THE SILTY TILL WERE GREATEST NEAR THE SURFACE OF THE COVER MATERIAL. CONCENTRATIONS OF HTO AND 90SB, MEASURED IN A SERIES OF SLANT-HOLE CORE SAMPLES COLLECTED UNTIL THE TRENCH WAS INTERCEPTED, SHOWED TRITIUM MIGRATION TO HAVE PROCEEDED LESS THAN 0.3 M, WHILE 90SB MIGRATION APPEARED TO BE SOMEWHAT LESS. THE PRELIMINARY DATA SUGGEST THAT: (A) RADIOISOTOPE MIGRATION FROM THE BURIAL TRENCHES INTO THE SUBJACENT SILTY TILL IS SLIGHT; (B) RADIOACTIVITY IN THE SURFACE SOIL IS NOT NECESSARILY CAUSED BY MIGRATION OF TRENCH WATER; (C) GROUNDWATER MOVEMENT IS NOT MASSIVE; (D) RAINWATER INFILTRATION, WITH SETTLEMENT AND COMPACTION OF BURIED WASTES, IS THE MOST LIKELY CAUSE OF RISING TRENCH WATER LEVEL; AND (E) SURFACE CONTAMINATION MAY OCCUR FROM SPILLS DURING BURIAL OPERATIONS, FROM TRENCH DIGGING, AND FROM DEPOSITION OF STACK EFFLUENTS FROM A NEARBY NUCLEAR FUEL REPROCESSING PLANT. BY JANUARY 1975 THE STRAIGHT RISING WATER LEVELS IN THREE TRENCHES WERE APPROXIMATELY 1 M ABOVE THE UNDISTURBED SOIL FROM WHICH THE TRENCHES WERE EXCAVATED, RESULTING IN INCREASED RADIOACTIVITY LEVELS IN LOCAL STREAMS DRAINING THE SITE. TO LOWER THE TRENCH WATER LEVELS

TO BELOW THAT OF THE UNDISTURBED SOIL, WATER WAS REMOVED FROM THE TRENCHES, TREATED TO REDUCE ACTIVITY LEVELS, AND RELEASED TO LOCAL STREAMS. THE ESTIMATED MAXIMUM INDIVIDUAL BODY DOSE FOR THE RELEASE WAS 5 X 10-5 REM FOR AN INDIVIDUAL SERVED BY THE NEAREST PUBLIC WATER SUPPLY. THE TOTAL-BODY POPULATION DOSE, INTEGRATED FOR AN ESTIMATED POPULATION OF 2 X 10 6, WAS 5 X 10-2 PERSON-REM. STATISTICALLY, ACCORDING TO THE DEIA COMMITTEE RISK ESTIMATES, LESS THAN 10-5 DEATHS WOULD BE EXPECTED TO OCCUR FROM THIS DISCHARGE. DOSE ESTIMATES INDICATE THAT CONTINUOUS DISCHARGE OF UNTREATED TRENCH WATER FROM THE LOW-LEVEL RADIOACTIVE WASTE BURIAL SITE WOULD NOT PRODUCE A STATISTICALLY SIGNIFICANT HEALTH EFFECT. (AUTH)

PUB DESC: IAEA-SM-207/79 1976 (MARCH)

KEYWORDS: COMMERCIAL BURIAL GROUND (SEE ALSO REGIONAL GROUND); WASTE DISPOSAL, ASSESSMENT (SEE ALSO ASSESSMENT); GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); RADIATION; POPULATION RISK; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WEST VALLEY; NEW YORK STATE; LOW-LEVEL WASTE; SOLID WASTE; MIGRATION; WATER TABLE; TRITIUM; CESIUM; TENDRUM; GROUND WATER

<048>

PUB DATE: 1968

AUTHOR: MCCABE, T. P.; PRIVASNY, B. C.; STEAD, P. L.; WILSON, J. E.

TITLE: POSSIBILITIES FOR DISPOSAL OF INDUSTRIAL WASTES IN SUBSURFACE ROCKS ON MOUTH FLANK OF APPALACHIAN BASIN IN NEW YORK

CORPORATE AUTHOR: TIDEWATER OIL COMPANY; CONSOLIDATED GAS SUPPLY CORPORATION

ABSTRACT: THE MOUTH FLANK OF THE APPALACHIAN BASIN IN THE STATE OF NEW YORK WAS STUDIED, WITH THE OBJECT OF DETERMINING THE SUITABILITY OF THE REGION FOR SUBSURFACE DISPOSAL OF INDUSTRIAL WASTES, PARTICULARLY LIQUID WASTES. PERMEABLE SANDSTONE, SALT BEDS THAT CAN PROVIDE LEAK-PROOF MAN-MADE CAVERNS, AND SHALE THAT CAN CONTAIN FLUIDS IN ARTIFICIALLY PRODUCED FRACTURES ARE ESPECIALLY SIGNIFICANT.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS - A STUDY OF RESERVOIR STRATA, 1968 29 FIGURES, 2 TABLES, REFERENCES, PG 43-92

KEYWORDS: GEOLOGY; NEW YORK STATE; SITING, WASTE DISPOSAL; WASTE DISPOSAL; HYDROLOGY; ROCK MECHANICS

<049>

PUB DATE: 1975

AUTHOR: MCCLAIN, W. C.; LONCEK, T. P.; LOHRER, S. S.

TITLE: GEOLOGIC DISPOSAL EVALUATION PROGRAM--SEMIANNUAL REPORT FOR PERIOD ENDING MARCH 31, 1975

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE RADIOACTIVE WASTE DEPOSITORY PROJECT AT ORNL HAS FOR SOME TIME BEEN ENGAGED IN A PROGRAM DIRECTED TOWARD ESTABLISHING A FEDERAL DEPOSITORY FOR RADIOACTIVE WASTES, PRIMARILY SOLIDIFIED HIGH-LEVEL WASTE, IN A BEDDED SALT FORMATION. EARLY IN 1970, THE PROJECT WAS RESTRUCTURED AND, TO MORE HEARTY REFLECT ITS BROADENED SCOPE, WAS RENAMED THE GEOLOGIC DISPOSAL EVALUATION (GDE) PROGRAM. THE OBJECTIVES OF THE PROGRAM ARE TWOFOLD: (1) TO EVALUATE THE SUITABILITY OF ALL POTENTIAL GEOLOGIC FORMATIONS AND ROCK TYPES AS PERMANENT DISPOSAL RECEPTACLES OR DEPOSITORIES FOR ANY CATEGORY OF RADIOACTIVE WASTE USING ANY APPROPRIATE REPLACEMENT TECHNIQUE; AND, (2) TO CARRY OUT IN AN ORDERLY, STEADY MANNER, THOSE RESEARCH AND DEVELOPMENT ACTIVITIES WHICH COULD EVENTUALLY LEAD TO THE ESTABLISHMENT OF ACTUAL WASTE DISPOSAL DEPOSITORIES USING ONE OR MORE OF THE PROMISING GEOLOGIC FORMATION-WASTE TYPE-REPLACEMENT TECHNIQUE CONCEPTS. (MODIFIED AUTH, ABST.)

PUB DESC: ORNL-5052, JULY 1975. 135 P., 15 FIG., 11 TAB., 60 REF.

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KEYWORDS: WASTE CYCLOSIS; WASTE DISPOSAL ALTERNATIVES; OBNL; DEPOSITORY; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); BEDDED SALT; HYDROLOGY; SALT DOMES; SALT ANTICLINE; MEGILLACTUS ROCK; SHALE; ROCK; ASSESSMENT; SAFETY EVALUATION

<050>

PUB DATE: 1968
AUTHOR: MCCLAIN, B.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: ALTHOUGH HYDRAULIC FRACTURING HAS BEEN SHOWN TO BE A SAFE AND ECONOMIC METHOD OF WASTE DISPOSAL AT OAK RIDGE NATIONAL LABORATORY, IT WILL BE NECESSARY TO CARRY OUT AN EXTENSIVE SITE EXAMINATION PROGRAM BEFORE THE TECHNIQUE CAN BE USED AT ANY OTHER LOCATION. THE MOST DIFFICULT PART OF THIS SITE EXAMINATION IS PROVING THAT THE HYDRAULICALLY INDUCED FRACTURES IN THE UNDERGROUND ROCKS ARE HORIZONTAL OR NEARLY SO. A SITE-TESTING PROGRAM WHICH UTILIZES SEVERAL METHODS OF REMOTE DETERMINATION OF FRACTURE ORIENTATION IS DISCUSSED, BUT CONFIRMATORY CORE HOLES FROM THE SURFACE INTERSECTING THE TEST GROUT SHEETS WILL BE REQUIRED.

PUB DESC: OBNL-7-4916, 32 PAGES, 15 REFERENCES, 1968

KEYWORDS: GEOLOGY; SEISMOLOGY; SITING; STRESS; TESTING; WASTE DISPOSAL; ECONOMICS; ANALYSIS; OBNL; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; ROCK MECHANICS; FUEL REPROCESSING

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PUB DATE: 1968
AUTHOR: MCCLAIN, B.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING - PART V. SITE EVALUATIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: ALTHOUGH HYDRAULIC FRACTURING HAS BEEN SHOWN TO BE A SAFE AND ECONOMIC METHOD OF WASTE DISPOSAL AT THE OAK RIDGE NATIONAL LABORATORY, IT WILL BE NECESSARY TO CARRY OUT AN EXTENSIVE SITE EXAMINATION PROGRAM BEFORE THE TECHNIQUE CAN BE USED AT ANY OTHER LOCATION. THE MOST DIFFICULT PART OF THIS SITE EXAMINATION IS PROVING THAT THE HYDRAULICALLY INDUCED FRACTURES IN THE UNDERGROUND ROCKS ARE HORIZONTAL OR NEARLY SO. A SITE-TESTING PROGRAM WHICH UTILIZES SEVERAL METHODS OF REMOTE DETERMINATION OF FRACTURE ORIENTATION IS DISCUSSED, BUT CONFIRMATORY CORE HOLES FROM THE SURFACE INTERSECTING THE TEST GROUT SHEETS WILL BE REQUIRED.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN, 9(3), PAGES 315-326 7 FIGURES, 15 REFERENCES

KEYWORDS: GEOLOGY; SITING; WASTE DISPOSAL; WASTE STORAGE; OBNL; WASTE DISPOSAL, HYDRAULIC FRACTURING; PRESSURE BOMB; GEOLOGY, STRATIGRAPHY

<052>

PUB DATE: 1968
AUTHOR: MCCLAIN, B.C.; BRADSHAW, B.L.

TITLE: STATUS OF INVESTIGATIONS OF SALT FORMATIONS FOR DISPOSAL OF HIGHLY RADIOACTIVE POWER-REACTOR WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: A CONCEPT FOR DISPOSAL OF SOLIDS IN A SALT MINE HAS DEVELOPED, AND PREPARATIONS FOR A DEMONSTRATION EXPERIMENT BEGAN IN 1963. THE RADIOACTIVE PHASE OF THIS DEMONSTRATION BEGAN IN NOVEMBER 1965 AND SUCCESSFULLY DEMONSTRATED THE FEASIBILITY AND SAFETY OF HANDLING HIGHLY RADIOACTIVE MATERIALS IN AN UNDERGROUND ENVIRONMENT. THIS

EXPERIMENT ALSO DEMONSTRATED THE STABILITY OF SALT UNDER THE EFFECTS OF HEAT AND RADIATION. DATA OBTAINED ON THE CREEP AND PLASTIC FLOW CHARACTERISTICS OF SALT HAVE MADE IT POSSIBLE TO ARRIVE AT A SUITABLE MINE DESIGN FOR A DISPOSAL FACILITY. A STUDY OF THE ECONOMICS OF DISPOSAL IN SALT MINES INDICATES THAT THIS METHOD WILL BE COMPATIBLE WITH COMPETITIVE NUCLEAR POWER.

PUB DESC: NUCLEAR SAFETY, 10 PAGES, 9 FIGURES, 36 REFERENCES, 11(2), PG 130-141 (MARCH-APRIL 1970)

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; PLASTIC FLOW; HEAT TRANSFER; WASTE HANDLING; WASTE DISPOSAL, ECONOMICS; CREEP BEHAVIOR (SEE ALSO PLASTIC FLOW); OBNL; WASTE DISPOSAL, SOLID; RADIATION SAFETY AND CONTROL; WASTE DISPOSAL, SALT; GEOLOGY, SALT STRUCTURE; EXPERIMENT

<053>

PUB DATE: 1967
AUTHOR: MCCLAIN, B.C.

TITLE: ROCK MECHANICS IN THE DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE MOST PROBABLE MECHANISM OF FAILURE OF THE ROCK IN THIS AREA (OBNL) APPEARS TO BE BY THE FORMATION OF A VERTICAL INSTEAD OF A HORIZONTAL FRACTURE. FRACTURE ORIENTATION IS CONTROLLED PRIMARILY BY THE ORIENTATION OF THE PRINCIPAL STRESS FIELD IN THE ROCK. EACH SUCCESSIVE WASTE INJECTION SLIGHTLY MODIFIES THIS STRESS FIELD TOWARD A CONDITION MORE FAVORABLE TO THE FORMATION OF A VERTICAL FRACTURE. THE MINIMUM ULTIMATE CAPACITY OF THE FORMATION WAS ESTIMATED AS FOUR MILLION GALLONS. IT WAS ALSO POSSIBLE TO MAKE CERTAIN RECOMMENDATIONS FOR THE OPERATION OF THE PLANT WHICH WOULD AVOID, AS FAR AS POSSIBLE, THE CONDITIONS LEADING TO FAILURE AND IN THIS WAY INCREASE THE FORMATION CAPACITY.

PUB DESC: OBNL-8-3383, 44 PAGES, 11 FIGURES, TABLES, 16 REFERENCES, 1967

KEYWORDS: OBNL; STRATIGRAPHY (SEE ALSO GEOLOGY, STRATIGRAPHY); WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; ROCK MECHANICS

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PUB DATE: 1967
AUTHOR: MCCLAIN, B.C.

TITLE: HYDRAULIC FRACTURING AS A WASTE DISPOSAL METHOD

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: OBNL DEVELOPED A METHOD OF WASTE DISPOSAL BASED ON THE OIL-FIELD METHOD OF HYDRAULIC FRACTURING. THIS WORK REACHED PRODUCTION IN DECEMBER 1966 AND IN APRIL 1967 WHEN TWO INJECTIONS WERE CARRIED OUT TOTALING 65,000 AND 80,000 GAL, RESPECTIVELY, OF RESIDUES FROM A NEW WASTE EVAPORATOR. THIS EVAPORATOR CONCENTRATES THE NORMAL LABORATORY WASTES ABOUT 15 TO 20 TIMES AND WILL PRODUCE ABOUT 150,000 TO 200,000 GAL OF WASTE ANNUALLY, CONTAINING UP TO 0.5 CI/GAL. IT IS EXPECTED TO DISPOSE OF THIS CONCENTRATE IN 80,000-GAL BATCHES AT 4- TO 6-MONTH INTERVALS.

PUB DESC: OBNL-8-1054, CONF-670512-4, 20 PAGES, FROM JOINT IAEA/ENEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA, 1967

KEYWORDS: OBNL; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING

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PUB DATE: 1967
AUTHOR: MCCLAIN, B.C.; BRADSHAW, B.L.; EMERSON, P.H.

TITLE: DISPOSAL OF HIGH LEVEL SOLIDIFIED WASTES IN SALT MINES

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CORPORATE AUTHOR: ORNL BEECH NATIONAL LABORATORY

ABSTRACT: PROJECT SALT VAULT, AN EXPERIMENT DEMONSTRATING THE DISPOSAL OF HIGH-LEVEL RADIOACTIVE SOLID WASTES, WAS OPERATED FROM NOVEMBER 1965 TO JUNE 1967. IMMEDIATE FUEL ASSEMBLIES FROM THE ENGINEERING TEST REACTOR, SUPPLEMENTED WITH ELECTRICAL HEAT WERE USED INSTEAD OF ACTUAL WASTES. THE FEASIBILITY AND SAFETY OF HANDLING RADIOACTIVE MATERIALS IN AN UNDERGROUND ENVIRONMENT WAS DEMONSTRATED. THE STABILITY OF THE SALT UNDER THE EFFECTS OF HEAT AND RADIATION WAS SHOWN, AS WELL AS THE CAPABILITY OF SOLVING MINOR STRUCTURAL PROBLEMS BY STANDARD MINING METHODS. THE DATA OBTAINED ON THE CREEP AND PLASTIC FLOW CHARACTERISTICS OF THE SALT WILL MAKE IT POSSIBLE TO ARRIVE AT A SUITABLE MINE DESIGN FOR A DISPOSAL FACILITY FOR ANY DESIRED CATEGOR OF ROOM CLOSURE.

PUB DESC: ORNL-P-3053, CCBP-670512-3, 22 PAGES, 1967, FROM JOINT IAEA/NEEA SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, VIENNA, AUSTRIA

KEYWORDS: WASTE STORAGE; PROJECT SALT VAULT; HIGH-LEVEL WASTE; PLASTIC FLOW; ORNL; WASTE DISPOSAL, SOLID; WASTE DISPOSAL, SALT

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PUB DATE: 1975

AUTHOR: MCKENZIE, R.E.; GILBERT, L.F.; PAULSON, R.R.; RICHARDS, V.L.; VERMICK, R.B.

TITLE: DISPOSAL OF TRANSURANIC SOLID WASTE USING ATOMICS INTERNATIONAL HOTTER SALT COMBUSTION PROCESS

CORPORATE AUTHOR: ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA

ABSTRACT: THE PROCESS FOR DISPOSAL OF TRANSURANIC SOLID WASTE UTILIZES A HOTTER SALT TO COMBUST ORGANIC MATERIALS, TO TREAT INORGANIC SUBSTANCES INCLUDING TRANSURANICS, AND TO REACT CHEMICALLY WITH ACIDIC GASES FORMED DURING COMBUSTION. SUBSEQUENT PROCESSING OF THE MELT IN AN AQUEOUS SYSTEM INDUCES THREE PRODUCTS: (1) ASH, (2) SALT, AND (3) SOLID SODIUM CHLORIDE FOR DISPOSAL. THE TRANSURANICS ARE READILY LEACHED FROM THE ASH AND SEPARATED VIA ION EXCHANGE TECHNIQUES. NO LIQUID WASTES ARE PRODUCED. THE REDUCTIONS IN WEIGHT AND VOLUME ARE 82 AND 90%.

PUB DESC: AI-280A-13151, 60 PAGES, 17 TABLES, 9 FIGURES, MAY 5, 1975

KEYWORDS: ; LEACHING; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE DISPOSAL, SOLID; WASTE TREATMENT, SOLID; TRANSURANIC ELEMENT; COMBUSTION; WASTE TREATMENT

<057>

PUB DATE: 1967

AUTHOR: HERBITY, R.F.

TITLE: PERMANENT DISPOSAL BY BURIAL OF HIGHLY RADIOACTIVE WASTES INCORPORATED INTO GLASS

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

ABSTRACT: A METHOD WAS DEVELOPED AT CHALK RIVER FOR INCORPORATING HIGH-LEVEL FISSION PRODUCT WASTES FROM NUCLEAR FUEL PROCESSING INTO GLASS BLOCKS FOR ULTIMATE DISPOSAL. NITRIC ACID SOLUTIONS OF FISSION PRODUCTS WERE MIXED WITH DEPHLELITE STRENGTH AND LIME IN CUCULLES AND FIRED IN A KILN TO A TEMPERATURE OF 1350 C TO FORM A GLASS WITH HIGH RESISTANCE TO LEACHING. THE RESULTS INDICATE THAT THE METHOD IS SUITABLE FOR PERMANENT DISPOSAL OF HIGH-LEVEL NUCLEAR WASTES AND THAT THE BLOCKS COULD BE BURIED UNPROTECTED IN A CONTROLLED AREA, EVEN IN SATURATED SOIL OF LOW EXCHANGE CAPACITY. BURIAL ABOVE THE SATURATION SOIL IN AN AREA WOULD RESULT IN EVEN LESS RELEASE OF RADIOACTIVITY FROM THE GLASS.

PUB DESC: STI/POR-156, CCBP-670512, PAGES 403-B OF DISPOSAL OF RADIOACTIVE WASTES INTO THE GROUND, JOINT IAEA/NEEA SYMPOSIUM, VIENNA, AUSTRIA

KEYWORDS: CHEMICAL REACTION; HIGH-LEVEL WASTE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; RIVER, CHALK; GLASS (SEE ALSO VITRIFICATION); STRENGTH; FUEL REPROCESSING

<058>

PUB DATE: 1965

AUTHOR: HERBITY, R.F.

TITLE: A STUDY OF DILUTION IN THE WINDING RIVER NEAR VENE

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA, CHALK RIVER

ABSTRACT: BRODASINE D, A FLUORESCENT DYE, WAS ADDED TO THE WATER IN THE PROCESS SEWER AT THE WHITSELL NUCLEAR RESEARCH ESTABLISHMENT, AND ITS SUBSEQUENT DILUTION IN THE WINDING RIVER WAS MEASURED USING A FLUOROMETER MOUNTED IN A SMALL BOAT. THE TRACER FOLLOWED THE EAST BRANCH OF THE RIVER VERY CLOSELY AND DID NOT DILUTE THROUGHOUT THE WHOLE WIDTH OF THE RIVER UNTIL A DISTANCE OF 13 KM WAS REACHED. ONLY SMALL CONCENTRATIONS OF TRACER WERE DETECTED IN THE WATER SUPPLY OF LAC DU DORNE, A SMALL VILLAGE ON THE WEST BANK OF THE RIVER 8 KM DOWNSTREAM FROM THE SEWER OUTFALL.

PUB DESC: AEC-2295, 7 PAGES, 3 FIGURES, 1 TABLE, 1 REFERENCE- AUGUST 1965, AEC, 50.20

KEYWORDS: CANADA; RIVER, WINDING; DILUTION; WASTE DISPOSAL, RIVER; SURFACE WATER, DISPOSAL MEDIA; HYDROLOGY; DISPERSION; HYDROLOGY, RATE OF MOVEMENT (SEE ALSO CURRENT WATER)

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PUB DATE: 1964

AUTHOR: HERBITY, R.F.

TITLE: STUDIES OF DILUTION IN THE OTTAWA RIVER USING BRODASINE D 2 - CHEL TO PEBROKE

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

ABSTRACT: BRODASINE D, A FLUORESCENT DYE, WAS USED TO STUDY DILUTION IN THE OTTAWA RIVER DOWNSTREAM OF THE CHEL REACTOR SITE. DYE WAS INJECTED INTO THE PROCESS SEWER AND THE CONCENTRATION MEASURED AS IT DISPERSED INTO THE RIVER AND MOVED DOWNSTREAM. ADDITION TIMES WERE VARIED FROM 20 MINUTES TO 3 DAYS TO SIMULATE TYPICAL RADIOACTIVE RELEASES. AN INITIAL DILUTION FACTOR OF 7 WAS OBSERVED AT THE RIVER SURFACE ABOVE THE OUTFALL. THE DYE DISPERSED INTO THE DEEP DEEP SECTION OF THE RIVER DOWNSTREAM OF THE PLANT AND WAS COMPLETELY MIXED THROUGHOUT THE RIVER 8 KM DOWNSTREAM. SHORT TERM DISCHARGES MIXED THROUGHOUT A LARGE VOLUME OF THE RIVER, GIVING HIGH DILUTION FACTORS. TRANSIT TIME TO PEBROKE (33 KM) WAS 10 DAYS. THE TRACER WAS DETECTED AS FAR DOWNRIVER AS OTTAWA (200 KM).

PUB DESC: AEC-2030- 8 PAGES, 6 FIGURES, 1 TABLE, 3 REFERENCES- JULY 1964

KEYWORDS: ACTIVATION PRODUCT; BRODASINE D; RIVER, OTTAWA; SURFACE WATER, TRACER; WASTE DISPOSAL, RIVER

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PUB DATE: 1975

AUTHOR: REED, G.L.

TITLE: PRELIMINARY DATA ON THE OCCURRENCE OF TRANSURANIC NUCLIDES IN THE ENVIRONMENT AT THE RADIOACTIVE WASTE BURIAL SITE BARRY PLATS, KENTUCKY

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY

ABSTRACT: BETWEEN 1963 AND 1974, APPROXIMATELY 104,000 KG OF SOLID "LOW-LEVEL" RADIOACTIVE WASTE WERE BURIED AT THE BARRY PLATS, KENTUCKY, SITE. THESE WASTES CONTAINED APPROXIMATELY 80 KG OF PLUTONIUM-239 AND A LARGE UNDETERMINED QUANTITY OF OTHER PLUTONIUM ISOTOPES. IN 1972, ELEVATED LEVELS OF RADIOACTIVITY

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URDS DETECTED IN MONITORING SAMPLES COLLECTED NEAR THE BURIAL FACILITY BY THE KENTUCKY DEPARTMENT FOR HUMAN RESOURCES (KDRH). SUBSEQUENTLY, THE KDRH CONDUCTED A SPECIAL RADIOLOGICAL STUDY OF THE BURIAL SITE AND ITS ENVIRONS. BASED ON THE CONCENTRATION OF PLUTONIUM PRESENT ON THE BASIS OF PLUTONIUM-239 TO -238, 49 OF 50 SAMPLES COLLECTED ON OR NEAR THE BURIAL SITE WERE CONTAMINATED WITH PLUTONIUM FROM A SOURCE OTHER THAN ATMOSPHERIC FALLOUT. PLUTONIUM WAS DETECTED IN SURFACE SOIL, IN SOIL CORES 90 CM DEEP, IN MONITORING WELLS, AND IN STREAMS WHICH DRAIN THE SITE. DURING THE PAST 13 YEARS, INFILTRATING PRECIPITATION COLLECTED IN THE BURIAL TRENCHES, FORMING A BORILE PLUTONIUM-CONTAMINATED LEACHATE. THE CHEMICAL FORM, PATHWAYS, AND MECHANISMS BY WHICH THE PLUTONIUM MOVED OUT OF THE TRENCHES HAVE NOT BEEN EXPLAINED SATISFACTORILY. EXTENSIVE STUDIES OF THE BURIAL SITE ARE IN PROGRESS. THE PRIMARY CONCLUSION DRAWN FROM THE HYDROGEOLOGY OF THE SITE AND THE PLUTONIUM DATA IS THAT PLUTONIUM HAS MOVED FROM THE FACILITY, POSSIBLY VIA SEVERAL PATHWAYS INCLUDING SURFACE WATER RUNOFF, ATMOSPHERIC FALLOUT FROM AN EVAPORATION, LATERAL MIGRATION THROUGH THE SOIL, AND MIGRATION THROUGH JOINTED SUBSURFACE GEOLOGIC FORMATIONS. THIS PAPER PRESENTS THE PLUTONIUM DATA WITH COMMENTARY ON ITS OCCURRENCE AND POSSIBLE SIGNIFICANCE FROM A HYDROGEOLOGICAL AND ENVIRONMENTAL PERSPECTIVE. (AUTH)

PUB DESC: IAEA/TERA INTERNATIONAL SYMPOSIUM, SAN FRANCISCO, CALIF 11/75

KEYWORDS: WASTE DISPOSAL; TERRESTRIAL; WASTE PLANTS; KENTUCKY; LOW-LEVEL WASTE; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); ENVIRONMENT; MONITORING (SEE ALSO SURVEY); PLUTONIUM; TRANSDUCTION ELEMENT; LEACHING; HYDROLOGY; HYDROGEOLOGY; GEOLOGY; SOIL; MIGRATION

<061>

PUB DATE: 1973

AUTHOR: MITER, C.L.; O'CONNELL, R.P.

TITLE: POTENTIAL IMPACT OF CURRENT COMMERCIAL SOLID LOW-LEVEL RADIOACTIVE WASTE DISPOSAL PRACTICES ON THE HYDROGEOLOGIC ENVIRONMENT

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY

ABSTRACT: THE ORIGINAL CONCEPT OF "LOW-LEVEL" RADIOACTIVE WASTES WAS THAT THEY WOULD BE "LOW-NEAR-TO-EXTENSIVE" WASTES. "LOW-LEVEL" WASTES ARE NOW KNOWN TO POSSIBLY INCLUDE "EVERYTHING ELSE" NOT INCLUDED IN "HIGH-LEVEL" LIQUID RADIOACTIVE WASTES. LOW-LEVEL RADIOACTIVE WASTES RESULTING FROM NUCLEAR POWER PRODUCTION ARE PREDICTED TO INCREASE EXPONENTIALLY THROUGH THE YEAR 2000. SIGNIFICANT QUANTITIES OF PLUTONIUM-239 ARE ALSO BEING BURIED. DEPENDING UPON THE AVERAGE CONCENTRATION AND HALF-LIFE OF THE WASTES IN A TRENCH, A TYPICAL TRENCH IN THE YEAR 2000 COULD REMAIN HAZARDOUS FOR CENTURIES. SIX LANDFILL-TYPE FACILITIES ARE PRESENTLY BEING OPERATED COMMERCIAL FOR THE BURIAL OF LOW-LEVEL RADIOACTIVE WASTES UNDER WIDELY VARYING HYDROGEOLOGIC AND PETROGEOLOGIC CONDITIONS. FOUR SITES HAVE ESTIMATED OPERATING LIFETIMES OF 75 YEARS OR MORE. OPERATING BURIAL SITES APPEAR TO OFFER ADEQUATE SAFETY FOR THE QUANTITIES AND ACTIVITIES OF WASTES NOW BURIED AT THE SITES. HOWEVER, MORE INFORMATION ON THE CHARACTER OF THE WASTES AND THE PROPERTIES OF THE BURIAL MEDIA IS NEEDED. THERE APPEARS TO BE A DEFINITE NEED FOR A METHOD TO PROVIDE A QUANTITATIVE ANALYSIS OF THE SAFETY OFFERED BY PRESENT AND PROPOSED BURIAL SITES UNDER THE PROJECTED, GREATLY EXPANDED WASTE LOADS OF THE FUTURE. A MODEL OR METHOD SHOULD BE DEVELOPED WHICH IS CAPABLE OF DESCRIBING THE LOCATION AND CONCENTRATION OF THE WASTES MIGRATING FROM THE BURIAL SITE, YEAR BY YEAR, FROM THE TIME THE CONTAMINANT LEAVES THE BURIAL TRENCH TO THE TIME IT REACHES A DISCHARGE POINT.

PUB DESC: AAPG-0265-1AHS 1973 (SEPT.)

KEYWORDS: WASTE DISPOSAL; TERRESTRIAL; PROJECTION (SEE ALSO FORECAST); LAND BURIAL (SEE ALSO BURIAL GROUND); PLUTONIUM; D AND D PROGRAM; ENVIRONMENT; HYDROGEOLOGY; HYDROLOGY; SAFETY EVALUATION; TRANSPORT;

GEOLOGY; SOIL; MODEL; LOW-LEVEL WASTE; METEOROLOGY (SEE ALSO AIR); SAFETY EVALUATION

<062>

PUB DATE: 1971

AUTHOR: MITER, B.

TITLE: AN AGREEMENT FOR A RECOVERABLE HIGH-LEVEL WASTE CONTAINER

CORPORATE AUTHOR: KANSAS STATE UNIVERSITY, MANHATTAN

ABSTRACT: REPORTS QUESTIONS WITH RESPECT TO SITE INTEGRITY. SUGGESTS WATER INVASION (1) FROM AQUIFER ABOVE THE SALT BED, (2) FROM NATURAL EMISSIONS OF THE SALT BED, AND (3) BY MIGRATION OF BRINE-FILLED CAVITIES INTO THE CANISTER STORAGE HOLES. RECOVERABILITY POSES ANOTHER PROBLEM OF PUBLIC CONCERN.

PUB DESC: NUCLEAR NEWS, 10(4), PG. 30-40 (APRIL 1971)

KEYWORDS: COCUM WATER; TRANSPORTATION AND HANDLING; RADIATION SAFETY AND CONTROL; RADIATION; PUBLIC EDUCATION; WASTE DISPOSAL; SALT; PUBLIC READING; PUBLIC RELATIONS

<063>

PUB DATE: 1960

AUTHOR: RICHON, G.

TITLE: THE DISPOSAL OF RADIOACTIVE WASTE INTO IRRIGATION WATER

ABSTRACT: THE PRACTICE OF APPLYING RUC(W)S FOR IRRIGATING ENVIRONMENTAL DISCHARGE OF RADIOACTIVE WASTE IS QUESTIONED. THEORETICAL ESTIMATES AND EXPERIMENTAL DATA ARE PRESENTED TO SHOW THAT CONTAMINATED WATERS USED FOR IRRIGATION CAN RESULT IN HIGHER DOSES TO MAN FROM THE IRRIGATED FOOD PRODUCTS THAN FROM DIRECT CONSUMPTION OF THE WATER. THE AUTHOR POINTS OUT THE NEED FOR A COMPREHENSIVE STUDY OF THE USE OF THE WATERS INTO WHICH CONTINUOUS DISPOSAL OF RADIOACTIVE WASTE IS PLANNED.

PUB DESC: CONF. 642-2- HEALTH PHYSICS SOCIETY NINTH ANNUAL MEETING, CINCINNATI, OHIO, JUNE 15-18, 1960 9 PAGES, 5 TABLES, 4 REFERENCES

KEYWORDS: CESION; EFFLUENT; FRANCE; RADIUM PERMISSIBLE BODY BURDEN (RMBB); MAXIMUM PERMISSIBLE CONCENTRATION (MPC); RIVER; STREAMS; WATER; AGRICULTURE; WASTE DISPOSAL, RIVER; WATER, DRINKING; SURFACE WATER, DISPOSAL MEDIA; ICB; ION EXCHANGE; MINERAL WATER; SOIL; WATER, IRRIGATION; CONCENTRATION; AQUATIC ORGANISM; FOOD

<064>

PUB DATE: 1970

AUTHOR: RILES, H.E.; SJOBLOM, G.L.; EAGLES, J.B.

TITLE: ENVIRONMENTAL MONITORING AND DISPOSAL OF RADIOACTIVE WASTES FROM U.S. NAVAL NUCLEAR POWERED SHIPS AND THEIR SUPPORT FACILITIES, 1973

CORPORATE AUTHOR: ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF RADIATION PROGRAMS

ABSTRACT: THE ENVIRONMENTAL EFFECT OF DISPOSAL OF RADIOACTIVE WASTES ORIGINATING FROM U.S. NAVAL NUCLEAR PROPULSION PLANTS AND THEIR SUPPORT FACILITIES IS ASSESSED. THE TOTAL RADIOACTIVITY, LESS TRITIUM DISCHARGED TO ALL PORTS AND HARBORS FROM THE MORE THAN 100 NAVAL NUCLEAR-POWERED SHIPS AND SUPPORTING TENDERS, NAVAL BASES AND SHIPYARDS WAS LESS THAN 0.002 CURIE IN 1973. THE TOTAL TRITIUM RELEASED TO ALL PORTS AND HARBORS WAS LESS THAN 1 CURIE IN 1973. THIS REPORT CONFIRMS THAT PROCEDURES USED BY THE NAVY TO CONTROL RELEASES OF RADIOACTIVITY FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES ARE EFFECTIVE IN PROTECTING THE ENVIRONMENT AND THE HEALTH AND SAFETY OF THE GENERAL PUBLIC. (AUTHOR)

PUB DESC: RADIATION DATA AND REPORTS, 15, (1970) 625-646

<064> CONT.

KEYWORDS: ENVIRONMENTAL MONITORING; MILITARY; TITRATION; INVENTORY; FORTS AND HARBORS; WASTE DISPOSAL; HABITAT; SHIPS; NUCLEAR POWER; RADIOACTIVE WASTE; MEASUREMENT; EVALUATION; PUBLIC HEALTH

<065>

PUB DATE: 1973

AUTHOR: NILES, R.E.; SJOBELCH, G.L.

TITLE: ENVIRONMENTAL MONITORING AND DISPOSAL OF RADIOACTIVE WASTES FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES.

CORPORATE AUTHOR: NUCLEAR POWER DIRECTORATE, NAVAL SHIP SYSTEMS COMMAND, DEPT. OF THE NAVY

ABSTRACT: THE ENVIRONMENTAL EFFECT OF DISPOSAL OF RADIOACTIVE WASTES ORIGINATING FROM U.S. NAVAL NUCLEAR REACTOR PLANTS AND THEIR SUPPORT FACILITIES IS ASSESSED. THE TOTAL RADIOACTIVITY DISCHARGED TO ALL PORTS AND HARBORS FROM THE MORE THAN 100 NUCLEAR-POWERED SHIPS AND SUPPORTING TENDERS, BASES AND SHIPYARDS WAS LESS THAN 0.002 CURIE IN 1972. THIS REPORT CONFIRMS THAT PROCEDURES USED BY THE NAVY TO CONTROL RELEASES OF RADIOACTIVITY FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES ARE EFFECTIVE IN PROTECTING THE ENVIRONMENT AND THE HEALTH AND SAFETY OF THE GENERAL PUBLIC. (AUTH)

PUB DESC: RADIATION DATA AND REPORTS, 10:517-525 (1973)

KEYWORDS: ENVIRONMENTAL MONITORING; MILITARY; INVENTORY; WASTE DISPOSAL; ASSESSMENT; NUCLEAR POWER; SHIPS; HABITAT; PUBLIC HEALTH; PORTS AND HARBORS; SURVEILLANCE PROGRAMS

<066>

PUB DATE: 1972

AUTHOR: NILES, R.E.; SJOBELCH, G.L.; DUNNE, R.D.

TITLE: ENVIRONMENTAL MONITORING AND DISPOSAL OF RADIOACTIVE WASTES FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES, 1971

CORPORATE AUTHOR: NUCLEAR POWER DIRECTORATE, DEPT. OF THE NAVY

ABSTRACT: THE TOTAL RADIOACTIVITY DISCHARGED INTO ALL PORTS AND HARBORS FROM THE MORE THAN 100 REACTOR PLANTS AND SUPPORTING TENDERS, BASES, AND SHIPYARDS WAS LESS THAN 0.002 CURIE IN 1971. THIS SMALL AMOUNT OF RADIOACTIVITY HAS HAD NO SIGNIFICANT OR DISCERNIBLE EFFECT ON THE QUALITY OF THE MARINE ENVIRONMENT. THIS REPORT CONFIRMS THAT PROCEDURES USED BY THE NAVY TO CONTROL DISCHARGES OF RADIOACTIVITY FROM U.S. NAVAL NUCLEAR-POWERED SHIPS AND THEIR SUPPORT FACILITIES ARE EFFECTIVE IN PROTECTING THE ENVIRONMENT AND THE HEALTH AND SAFETY OF THE GENERAL PUBLIC.

PUB DESC: RADIATION DATA AND REPORTS, 13(9), PP. 469-478 & TABLES, 24 REFERENCES, (SEPTEMBER 1972)

KEYWORDS: REACTOR; HABITAT; ENVIRONMENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, OCEAN; MONITOR, ENVIRONMENTAL; RADIATION SAFETY AND CONTROL; WATER POLLUTION; SAFETY EVALUATION; MILITARY; REACTOR, MILITARY; DISCHARGE

<067>

PUB DATE: 1962

AUTHOR: MORGAN, J.B.; JANISON, C.L.; STEVENSON, J.O.

TITLE: GROUND DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND

ABSTRACT: THE SECOND APC CONFERENCE ON GROUND DISPOSAL OF RADIOACTIVE WASTES WAS A FOLLOW-UP OF A MEETING HELD TWO YEARS AGO AT BERKELEY, CALIFORNIA, IN AUGUST 1959. APPROXIMATELY 50 PEOPLE, INCLUDING REPRESENTATIVES FROM ENGLAND, FRANCE, ITALY, BELGIUM, INDIA, AND THE INTERNATIONAL ATOMIC ENERGY AGENCY,

PARTICIPATED IN TECHNICAL DISCUSSIONS RELATED TO GROUND DISPOSAL OF VARIOUS TYPES OF RADIOACTIVE WASTES IN THE UNITED STATES AND OTHER COUNTRIES. DETAILED PANEL DISCUSSIONS WERE HELD ON HYDROGEOLOGY, GEOCHEMISTRY, WASTE INJECTION AND SOLID WASTE DISPOSAL. OPERATING DATA FROM GROUND DISPOSAL OPERATIONS AT BAMPCHO, OAK RIDGE, NATIONAL REACTOR TESTING STATION, OSKONHAVN, AND CHALK RIVER, CANADA WERE ALSO PRESENTED.

PUB DESC: TID-7628 SECOND GROUND DISPOSAL OF RADIOACTIVE WASTES CONFERENCE HELD AT ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, CANADA, SEPTEMBER 26-29, 1961 635, TABLES, FIGURES, REFERENCES- MARCH 1962

KEYWORDS: CESIUM; DILUTION; CHROMATOGRAPHY; GEOLOGY; GROUND WATER; PLUTONIUM; RUTHENIUM; SITING; SOIL; RADIOACTIVE WASTE; TREATMENT; STORAGE; URANIUM; WASTE DISPOSAL; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE DISPOSAL, HYDROLOGICAL; WASTE TREATMENT, LIQUID; MONITOR, ENVIRONMENTAL; GROUND WATER, NUCLEAR OCCURRENCE; GROUND WATER, PROPERTY; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE MANAGEMENT; HYDROLOGY; ION EXCHANGE; RIVERS; EXCHANGE; DISPERSION

<068>

PUB DATE: 1960

AUTHOR: MCPICH, R.J.

TITLE: MANAGEMENT AND DISPOSAL OF RADIOACTIVE WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: RADIOACTIVE WASTE MANAGEMENT AND THE ATTENDANT ENVIRONMENTAL MONITORING PROGRAMS ARE DISCUSSED. THE LIMITED LIFE EXPECTANCY OF TANKS, THE POTENTIAL RADIOACTIVITY HAZARDS, AND THE PRODUCTION OF HEAT BY RADIOACTIVE DECAY LIMIT THE USEFULNESS OF TANKS FOR ULTIMATE DISPOSAL. DISPOSAL IN SALT, FIXATION IN SOLID MEDIA, AND CALCINATION OFFER MOST PROMISE FOR EARLY DEVELOPMENT FOR HIGH-LEVEL ACTIVITY WASTE MANAGEMENT. DEEP-WELL DISPOSAL AND OCEAN DISPOSAL WILL REQUIRE ACCUMULATION OF MORE INFORMATION BEFORE THEIR FEASIBILITY CAN BE ADEQUATELY DETERMINED. SELECTIVE RECOVERY OF FISSION PRODUCTS ONLY ALLEVIATES AND DOES NOT SOLVE THE DISPOSAL PROBLEM. LOW- AND INTERMEDIATE-LEVEL WASTES CAN BE TREATED AND DISPERSED INTO THE ENVIRONMENT. ENVIRONMENTAL MONITORING PROGRAMS ARE REQUIRED TO ASSURE THAT THE PUBLIC AND ITS RESOURCES ARE BEING PROTECTED FROM CONTROLLED AND ACCIDENTAL RELEASES OF ACTIVITY.

PUB DESC: NUCLEAR SAFETY, 1(4)- 6 PAGES, 18 REFERENCES- 60-73 (JUNE 1960)

KEYWORDS: SURVEY, ENVIRONMENT; REVIEW; WASTE DISPOSAL; WASTE STORAGE

<069>

PUB DATE: 1975

AUTHOR: MUDGE, L.R.; SCHNEPPELDE, G.F.; SULLIVAN, B.C.; WALTER, S.A.

TITLE: PYROLYSIS-INCUBATION OF SIMULATED COMBUSTIBLE ALPHA WASTES

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: DESIGN, FABRICATION, AND INSTALLATION OF A UNIT TO DEMONSTRATE PYROLYSIS-INCUBATION OF SIMULATED ALPHA WASTES ARE DESCRIBED. FOUR RUNS WERE MADE DURING THE YEAR WITH AVERAGE PROCESSING RATES OF 12.2 KG/HR (27 LB/HR). THE COMPOSITION OF THE OFF-GAS FROM THE PROCESS WAS DETERMINED USING A GAS CHROMATOGRAPH. THE ASH COLLECTED DURING A 12-HOUR RUN HAD A DULK TAP DENSITY OF 0.76 G/CC SQUARED.

PUB DESC: BNL-1945, 50 PPS, 8 TABS, 20 FIGS, 9 REFS, OCT. 1975

KEYWORDS: INCUBATION; ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; PYROLYTIC; WASTE TREATMENT; ALPHA RADIATION; B AND B PROGRAM

<676>

PUB DATE: 1965

AUTHOR: BURBA, F.J.; SCHALL, R.L.

TITLE: AN MP: AISAL OF GASEOUS WASTE DISPOSAL INTO THE LITHOSPHERE AT THE BATHICAL BYDTON TESTING STATION, IDAHO

CORPORATE AUTHOR: IDAHO OPERATIONS OFFICE, U.S. ATOMIC ENERGY COMMISSION, IDAHO FALLS

ABSTRACT: HELIUM WAS USED AS A TRACER GAS TO IDENTIFY APPROXIMATELY 33 BILLION STANDARD CUBIC FEET OF AIR INJECTED INTO BOREHOLE BORES BOTH ABOVE AND BELOW THE NEUTRONAL WATER TABLE WITHIN THE SUBSURFACE BASALTS UNDERLYING THE STRIKE AND INTO THE UNCONSOLIDATED SANDY BEDDITE MATERIALS. THE BATHICAL DEPTH OF INJECTION WAS 400 FEET BELOW LAND SURFACE. OBSERVATIONS INDICATED THAT NO FINITE GEOLOGICAL RESERVOIR EXISTED IN THE SUBSURFACE AND THAT THE BEDDITE MATERIALS OFFERED THE MOST RESTRICTIVE BARRIER TO VERTICAL MOVEMENT. THE COST FOR A LITHOSPHERIC DISPOSAL SYSTEM IS ESTIMATED AT A MAXIMUM OF 250,000 DOLLARS.

PUB DESC: IDC-12626 141 PAGES, SEPTEMBER 1965

KEYWORDS: BILITICS; BUIS; TRACER, RADIOACTIVE; WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, ECONOMICS; SAMPLING; TRACER, GAS; WASTE DISPOSAL, GAS; HELIUM; DISPERSION; GEOLOGY, STRATIGRAPHY; GEOLOGY, GEOPHYSICAL

<671>

PUB DATE: 1975

AUTHOR: BURBY, P.B.; ABERTON, R.S.

TITLE: INEXPENSIVE, CONVENIENT REMOVAL DISPOSAL

CORPORATE AUTHOR: NUCLEAR MED. SECTION, DEPT. RADIOLOGY, MAYO COLLEGE OF MEDICINE

PUB DESC: HEALTH PHYSICS, 29(5), P. 779 (1975)

KEYWORDS: REMOVAL; WASTE DISPOSAL; ACTIVATED CHARCOAL; DOSE GAS; RADIOACTIVE WASTE;

<672>

PUB DATE: 1970

AUTHOR: NATIONAL ACADEMY OF SCIENCES (U.S.A.)

TITLE: DISPOSAL OF SOLID RADIOACTIVE WASTES IN BEDDED SALT DEPOSITS

CORPORATE AUTHOR: NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL

ABSTRACT: THIS METHOD OF WASTE MANAGEMENT WAS OFFICIALLY SUGGESTED IN 1957 BY ACADEMY ADVISORY COMMITTEE OF HAS AND HAS BEEN UNDER CONTINUOUS STUDY AND DEVELOPMENT SINCE THAT TIME BY THE OAK RIDGE NATIONAL LABORATORY. IN JUNE 1970, THE AEC ANNOUNCED ITS INTENTION TO INITIATE A DEMONSTRATION PROJECT TO PROVIDE TECHNICAL DATA AND EXPERIENCE ON OPERATIONAL METHODS AND COSTS OF LONG-TERM STORAGE OF SOLIDIFIED WASTES FROM THE PROCESSING OF SPENT NUCLEAR POWER FUELS. A SITE NEAR LYONS, KANSAS, WAS SELECTED TENTATIVELY AS THE LOCATION OF THE DEMONSTRATION PROJECT FOR A SALT DOME REPOSITORY. TO ASSIST IN THE EVALUATION OF THE AEC PLANS, THE CERN CONVENED A PANEL ON DISPOSAL IN SALT MINES. BASED ON THE RECOMMENDATIONS OF THE PANEL, THE COMMITTEE REACHED THE FOLLOWING CONCLUSIONS: 1. THE USE OF BEDDED SALT FOR THE DISPOSAL OF RADIOACTIVE WASTES IS SATISFACTORY. 2. THE SITE NEAR LYONS, KANSAS, SELECTED BY THE AEC IS SATISFACTORY. SUBJECT TO THE DEVELOPMENT OF CERTAIN ADDITIONAL CONFIRMATORY DATA AND EVALUATION. (MODIFIED BY AEST.)

PUB DESC: REPORT BY THE COMMITTEE ON RADIOACTIVE WASTE MANAGEMENT, (1970)

KEYWORDS: WASTE DISPOSAL; NATIONAL ACADEMY OF SCIENCES; OAK: PROJECT SALT DOME; KANSAS; WASTE DISPOSAL, SALT; SALT (SALT ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); WASTE TREATMENT; CALCINATION; WASTE TRANSPORTATION; GEOLOGY; ROCK MECHANICS; HYDROLOGY;

SITING; POPULATION DENSITY

<673>

PUB DATE: 1962

AUTHOR: NATIONAL ACADEMY OF SCIENCES (U.S.A.)

TITLE: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTE INTO PACIFIC COASTAL WATERS

CORPORATE AUTHOR: NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL

ABSTRACT: RADIOACTIVE WASTE IN AFFECTED CONTAINERS CAN BE DISPOSED OF ON THE PACIFIC COAST OF THE UNITED STATES AND CANADA IN FIVE-BY-FIVE-NAUTICAL-MILE DISPOSAL AREAS. THE DISPOSAL AREAS SHOULD BE REMOTE FROM SEABOARDS, TRENCHES, CANYONS, COASTAL BASINS AND SUBMARINE CABLES; AVOID UNUSUALLY STEEP COVERED BOTTOMS; AND NOT BE DISPOSAL AREAS FOR OTHER PURPOSES. TWENTY DISPOSAL AREAS ARE THE LIMIT FOR THE COAST FROM THE MEXICAN BORDER TO THE COLUMBIA RIVER, WITH A SIMILAR NUMBER NORTH OF THE COLUMBIA RIVER. SIX AND TWO DISPOSAL SITES, RESPECTIVELY, ARE PROBABLY ADEQUATE AT PRESENT FOR THESE TWO REGIONS.

PUB DESC: PUBLICATION 965, 87 PAGES, TABLES, 1962

KEYWORDS: ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE DISPOSAL, OCEAN; WASTE HANDLING; OCEAN, PACIFIC; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); STORAGE CONTAINER

<674>

PUB DATE: 1971

AUTHOR: NATIONAL INDUSTRIAL POLLUTION CONTROL COUNCIL (U.S.A.)

TITLE: WASTE DISPOSAL IN DEEP WELLS

CORPORATE AUTHOR: NATIONAL INDUSTRIAL POLLUTION CONTROL COUNCIL, WASHINGTON, D.C.

ABSTRACT: DEEP WELLS HAVE BEEN USED BY THE PETROLEUM INDUSTRY FOR OVER 40 YEARS TO DISPOSE OF OIL-FIELD SPILLS. DISPOSAL OF OTHER WASTES BY THIS METHOD IS CURRENTLY DEBATED. HOWEVER, THE POPULARITY OF DEEP-WELL DISPOSAL HAS GAINED MOMENTUM IN THE LAST 20 YEARS. THE IMPETUS FOR THIS INCREASED POPULARITY IS DERIVED FROM THE MOUNTING COMPLEXITY OF OUR TECHNOLOGY AND FROM THE NECESSITY FOR EVER MORE STRINGENT WATER QUALITY CONTROL. *** A PROGRESSIVE HISTORY OF SUCCESSFUL INSTALLATIONS HAS PROVED THE FEASIBILITY OF DEEP WELL DISPOSAL. IN FACT, THIS MAY BE THE ONLY LOGICAL METHOD OF DISPOSAL FOR CERTAIN WASTES. THE FEW INSTANCES OF FAILURE HAVE POINTED TO THE NECESSITY FOR MORE STUDY AND ADDITIONAL KNOWLEDGE.

PUB DESC: CCM-71-50, 242, 20 PAGES, FEBRUARY 1971

KEYWORDS: WASTE MANAGEMENT; OIL; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, DEEP WELL

<675>

PUB DATE: 1969

AUTHOR: OAK RIDGE NATIONAL LABORATORY (U.S.A.)

TITLE: HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1968

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: PROGRESS OF THE HEALTH PHYSICS DIVISION AT ORNL IS REPORTED AS FOLLOWS - PART I, RADIOACTIVE WASTE DISPOSAL - (1) RATE OF TRACE ELEMENTS AND RADIOISOTOPES IN TERRESTRIAL ENVIRONMENT, (2) DISPOSAL OF HYDRAULIC FRACTURING, (3) DISPOSAL IN NATURAL SALT FORMATIONS, (4) ENGINEERING, ECONOMIC, AND SAFETY EVALUATIONS, (5) EARTHQUAKE AND REACTOR SAFETY, (6) DOSE ESTIMATION STUDIES RELATED TO PEACEFUL USES OF NUCLEAR EXPLOSIVES, (7) RELATED CO-OPERATIVE PROJECTS. PART II, RADIATION BIOLOGY. PART III, RADIATION PHYSICS. PART IV, RADIATION DOSEIMETRY RESEARCH. PART V, INTERNAL DOSEIMETRY.

PUB DESC: ORNL-4316, 324 PAGES, OCTOBER 1968

(875) CONT.

KEYWORDS: ECOLOGY; COMPUTER PROGRAM; DOSIMETRY; HEALTH PHYSICS TRAINING; REACTOR SAFETY SYSTEM; TRITIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, ECONOMIC; WASTE CALCULATION, INTERNAL; POPULATION RESPONSE; WASTE MANAGEMENT; DOSE CALCULATION, INTERNAL; RADIATION SAFETY AND CONTROL; EARTHQUAKE; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; THEORETICAL INVESTIGATION; TOXIC ORGANISM

(876)

PUB DATE: 1967
AUTHOR: ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

TITLE: DISPOSAL OF RADIOACTIVE WASTES INTO THE OCEANS

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA; EUROPEAN NUCLEAR ENERGY AGENCY (ENEA), ORNL

ABSTRACT: PROCEEDINGS OF A SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO THE OCEANS, JOINTLY ORGANIZED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY AND THE EUROPEAN NUCLEAR ENERGY AGENCY OF THE CEEC AND HELD IN VIENNA, MAY 29 - JUNE 2, 1967.

PUB DESC: DISPOSAL OF RADIOACTIVE WASTES INTO THE OCEANS, VIENNA, MAY 29 THROUGH JUNE 2, 1967, 666 PAGES, 13 FIGURES, 3 TABLES, 56 REFERENCES

KEYWORDS: ACCIDENT; IAEA; ENEA (SEE ALSO EUROPEAN NUCLEAR ENERGY AGENCY); DANISH; CEYLON; DIFFUSION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMIC); SITING; SOIL; RADIOACTIVE CONTAMINATION THROUGH; SYMPOSIUM; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; WASTE DISPOSAL, ECONOMIC; GROUND WATER, NUCLIDE OCCURRENCE; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; CONTAMINATION; ION EXCHANGE; RADIATION SAFETY AND CONTROL; SORPTION (SEE ALSO ADSORPTION); DISPERSION; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, SALT; WASTE DISPOSAL, BEDROCK; DOMINION; SEDIMENT; MURKIN, ABC (SEE ALSO BSANC)

(877)

PUB DATE: 1969
AUTHOR: OSLOCH, J.N.

TITLE: RADIOACTIVE WASTE DISPOSAL DATA FOR THE NATIONAL REACTOR TESTING STATION - IDAHO OPERATIONS OFFICE

CORPORATE AUTHOR: IDAHO OPERATIONS OFFICE, U.S. ATOMIC ENERGY COMMISSION, IDAHO FALLS

ABSTRACT: THE INFORMATION IN THIS REPORT INCLUDES DATA ON RADIOACTIVE WASTE ASSOCIATED WITH REACTOR OPERATIONS OR RESEARCH STUDIES AT THE NATIONAL REACTOR TESTING STATION DURING 1968. THE RADIOACTIVE WASTES ARE IDENTIFIED ACCORDING TO QUANTITY, PHYSICAL FORM, NUCLIDE CONTENT, AND THE INSTALLATION OF AREA ORIGINATING THE WASTE. RADIOACTIVE WASTE DATA FOR THE YEARS 1955 THROUGH 1967 ARE ALSO GIVEN IN SUMMARY FORM. A MORE DETAILED PRESENTATION OF DISPOSAL DATA FOR YEARS PRIOR TO 1968 IS AVAILABLE IN REPORTS IEO-12000 AND IEO-12000 SUPPLEMENTS NO. 1, NO. 2, AND NO. 3.

PUB DESC: IEO-12000, SUPPL. 4, 15 PAGES, 6 FIGURES, 11 TABLES, APRIL 1, 1969

KEYWORDS: CESIUM; CESIUM; COBALT; EUR 1 AND 2 (NR); IODINE; RUTS; RUTHERFORD; SYMPOSIUM; TRITIUM; CERIUM; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; IDAHO FALLS; REACTOR; FUEL REPROCESSING

(878)

PUB DATE: 1967
AUTHOR: OSLOCH, J.N.

TITLE: RADIOACTIVE WASTE DISPOSAL DATA FOR THE NATIONAL REACTOR TESTING STATION, IDAHO

CORPORATE AUTHOR: IDAHO OPERATIONS OFFICE, U.S. ATOMIC ENERGY COMMISSION, IDAHO FALLS

ABSTRACT: THE INFORMATION IN THIS REPORT INCLUDES THE QUANTITIES, TYPE, AND DISPOSITION OF RADIOACTIVE WASTE ASSOCIATED WITH REACTOR OPERATIONS OR RESEARCH PROJECTS DURING CALENDAR YEAR 1966. THE WASTES ARE IDENTIFIED ACCORDING TO PHYSICAL FORM, NUCLIDE CONTENT, AND THE FACILITY OR AREA ORIGINATING THE WASTE. PREVIOUSLY PUBLISHED REPORTS, IEO-12000, AND IEO-12000, SUPPLEMENT NO. 1, CONTAIN RADIOACTIVE-WASTE DISPOSAL DATA FOR THE YEARS 1955 THROUGH 1965.

PUB DESC: IEO-12000 (SUPPL. 2), 19 PAGES, NOVEMBER 1967

KEYWORDS: BUT; CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); ATMOSPHERIC POLLUTION; WASTE DISPOSAL; WASTE TREATMENT; CALCULATION; WASTE SOURCE AND TYPE; RADIATION SAFETY AND CONTROL; ENVIRONMENT

(879)

PUB DATE: 1967
AUTHOR: PARKER, P.L.

TITLE: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTES INTO THE OCEANS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTES INTO THE OCEANS IS INCREASING, NOT TO MENTION SUCH DISPOSALS ARE NEGLIGIBLE IN COMPARISON WITH FALLOUT IN THE OCEAN. INTERNAL DOSES TO POPULATIONS HAVE LIMITED DISCHARGE IN SOME CASES, BUT EXTERNAL DOSES HAVE ALSO LIMITED THE DISCHARGES FROM OTHER SITES. THE EFFECT OF SUCH DISCHARGES ON THE BIOTA HAS NOT YET BEEN RESOLVED.

PUB DESC: NUCLEAR SAFETY 8(8), PAGE 376-382, 3 TABLES, 60 REFERENCES

KEYWORDS: BCSE; LOW-LEVEL WASTE; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); WASTE DISPOSAL, OCEAN; DOSE CALCULATION, INTERNAL; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, SOLID; DOSE CALCULATION, EXTERNAL; CONCENTRATION; AQUATIC ORGANISM

(880)

PUB DATE: 1965
AUTHOR: PARKER, P.L.

TITLE: PROGRESS IN GEOLOGIC DISPOSAL AND ENVIRONMENTAL MOVEMENT OF NUCLIDES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY; OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: REPRINTS FROM HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1965. PROGRESS IS GIVEN FOR RESEARCH AND ENGINEERING PROJECTS AS DISPOSAL OF GASES INTO PENETRABLE FORMATIONS, DISPOSAL BY HYDRAULIC FRACTURING AND IN NATURAL SALT FORMATIONS, STUDIES OF EFFLUENT RELEASES TO THE CLINTON RIVER AND SUBSEQUENT DISPERSION AND SEDIMENTATION, AND MOVEMENT OF NUCLIDES IN TERRESTRIAL ENVIRONMENT. BIFURCATED EXCHANGE AND ENGINEERING ECONOMIC AND SAFETY EVALUATIONS ARE REPORTED.

PUB DESC: ORNL-3049, 42P. (1965)

KEYWORDS: WASTE DISPOSAL; HEALTH PHYSICS; ENVIRONMENT; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); WASTE DISPOSAL, SALT; GEOLOGY; GAS; ADSORPTION (SEE ALSO SORPTION); SOIL; HYDRAULIC FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); BEDROCK (SEE ALSO WASTE DISPOSAL, BEDROCK); SALT (SEE ALSO BEDDED SALT AND WASTE DISPOSAL, SALT); SALT CAVITY; RIVER, CLINTON; SEDIMENT; RADIOACTIVE MOVEMENT IN SOILS (SEE ALSO SOIL, RADIOACTIVE MOVEMENT); DESORPTION; DECONTAMINATION; LAND FILL (SEE ALSO BURIAL GROUND)

(881)

PUB DATE: 1964
AUTHOR: PARKER, P.L.; COUSER, E.L.; SCHUBERT,

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W.F.;CARBONAS, S.B.;FECESING, R.J.;FREDRICK, R.J.

TITLE: CLINCH RIVER STUDY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROGRESS IS REPORTED ON THE CLINCH RIVER STUDY. THIS COMPREHENSIVE STUDY PROJECT IS DESIGNED TO DETERMINE THE FATE OF RADIOISOTOPES RELEASED INTO SURFACE WATER SYSTEMS, ESPECIALLY FOR THOSE GENERATED AT ORO. HYDROLOGIC FACTORS, REACTIONS OF RADIOISOTOPES WITH BOTTOM SEDIMENTS, AND BIOLOGICAL UPTAKE ARE CONSIDERED IN ESTIMATING THE HAZARDS OF SUCH RELEASES.

PUB DESC: ORNL-3697, OCTOBER 1964, PAGES 32-82 OF HEALTH PHYSICS DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JULY 31, 1964

KEYWORDS: CALCIUM; CESIUM; COBALT; RADIOLYTIC; DILUTION; DISEMINATION; SEDIMENTATION; TRACER; FLUORESCENT; SURFACE WATER; ISOTOPE OCCURRENCE; SURFACE WATER, SUSPENDED MATERIAL; SURFACE WATER, TRACER; DIETARY HABIT; ORO; RIVER, CLINCH; SURFACE WATER, SEDIMENT; WASTE DISPOSAL, LIQUID; WASTE ANALYSIS; MINERAL EXCHANGE; RIVER, TENNESSEE; SURFACE WATER, PROPERTY; DISPERSION; CONCENTRATION; AQUATIC ORGANISM; SEDIMENT

<882>

PUB DATE: 1964

AUTHOR: PARKER, P.B.;FECESING, R.J.;OPHEL, I.L.;PARKER, P.L.;SEIDING, W.C.

TITLE: SOUTH AMERICAN EXPERIENCE IN THE RELEASE OF LOW-LEVEL WASTE TO RIVERS AND LAKE

CORPORATE AUTHOR: BANCORP ATOMIC PRODUCTS OPERATION, BIRMINGHAM, ALABAMA; ATOMIC ENERGY OF CANADA, LIMITED; OAK RIDGE NATIONAL LABORATORY; BANCORP OF TENNESSEE AND COMPANY, Aiken, S.C.; SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: RADIOACTIVE MATERIALS ENTERING RIVERS ADJACENT TO NUCLEAR NORTH AMERICAN ATOMIC ENERGY SITES RECEIVE CONTINUOUS ATTENTION--THEIR FATE IN ENVIRONMENT AND SEVERAL IMPORTANT EXPOSURE PATHWAYS CAN BE EVALUATED. TOTAL DOSE TO THE PUBLIC FROM MULTIPLE ENVIRONMENTAL SOURCES HAS BEEN WELL WITHIN APPROPRIATE LIMITS AT ALL SITES. ENVIRONMENTAL STUDIES INDICATE SOUND AND CONTINUOUS CONTROL OF RADIOACTIVE EFFLUENTS. RELEASES HAVE BEEN EXCEEDINGLY SMALL--NOT TO THE PUBLIC NEGLIGIBLE. METHODS ARE AVAILABLE WHICH CAN PROVIDE THE NECESSARY CONTINUED RELIABLE CONTROL OF LIQUID EFFLUENTS ASSOCIATED WITH THE EXPECTED GROWTH OF THE NUCLEAR POWER INDUSTRY AND SUCH EFFLUENTS WOULD NOT BE A DETERIMENT TO THAT GROWTH.

PUB DESC: U. S. INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, SWITZERLAND, AUGUST 1964 15 PAGES, 2 TABLES, 25 REFERENCES

KEYWORDS: GROUND WATER; GROUND TRANSPORT (SEE ALSO WATER TRANSPORT, GROUND); WATER TRANSPORT, GROUND (SEE ALSO SOIL, RADIOISOTOPE MOVEMENT); HAZARD, RELATIVE; RIVER; SOIL, RADIOISOTOPE MOVEMENT THROUGH; SURFACE WATER; WASTE DISPOSAL, TERRESTRIAL

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PUB DATE: 1963

AUTHOR: PATTERSON, C.C.;CLOYDA, E.P.

TITLE: RADIOACTIVITY TRANSPORT IN WATER--THE DISPERSION OF RADIOISOTOPES IN OPEN CHANNEL FLOW

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO; UNIVERSITY OF TEXAS

ABSTRACT: THE COLORADO RIVER IN TEXAS AND THE PIERCE CANAL WERE SELECTED AS TEST BEACHES FOR EVALUATING THE DISPERSION OF COMPARTMENTS IN A FLOWING MEDIUM. IN COMPARISON WITH WATERWAYS TESTED BY OTHER INVESTIGATORS, THE COLORADO RIVER IS WIDE, SHALLOW, AND SLOW MOVING. LONGITUDINAL DISPERSION WAS MEASURED IN THE COLORADO RIVER AND THE PIERCE CANAL AND TRANSVERSE DISPERSION WAS MEASURED IN THE COLORADO

RIVER.

PUB DESC: ORO-679, 87 PAGES, 3 TABLES, 21 FIGURES--JUNE 1963

KEYWORDS: DIFFUSION; DILUTION; HYDRAULIC ANALYSIS; HYDRAULIC EXPERIMENT; HOSPITAL, LIQUID; RIVER; SURFACE WATER; TRACER, FLUORESCENT; RADIOLYTIC; SURFACE WATER, TRACER; WASTE DISPOSAL, RIVER; SURFACE WATER, DISPOSAL MEDIA; SURFACE WATER, PROPERTY; DISPERSION

<884>

PUB DATE: 1960

AUTHOR: FRANKSALL, S.C.;WILSHUS, W.

TITLE: DISPOSAL OF CHEMICAL AND RADIOACTIVE WASTE. PART TWO

CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

ABSTRACT: METHODS OF WASTE DISPOSAL ARE REVIEWED, WITH EMPHASIS ON DILUTION AND STORAGE UNTIL IT HAS DECAYED TO A SUFFICIENTLY LOW LEVEL FOR RELEASE.

PUB DESC: J. CHEM. EDUC., 45, PAGES A677-8 AND A683-4, A686 (SEPTEMBER 1968)

KEYWORDS: DECAY HEAT; REVIEW; DILUTION; EFFLUENT; WASTE DISPOSAL, OCEAN; WASTE STORAGE; WASTE DISPOSAL, RIVER; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, LAKE

<885>

PUB DATE: 1960

AUTHOR: PETERSON, J.A.;LOLEY, A.J.;SPENCER, C.W.;BLANCH, R.A.

TITLE: SEDIMENTARY HISTORY AND ECONOMIC GEOLOGY OF SAN JUAN BASIN, NEW MEXICO AND COLORADO

CORPORATE AUTHOR: UNIVERSITY OF MONTANA; EL PASO NATURAL GAS COMPANY; TEXACO, INC.

ABSTRACT: MUCH OF THE SAN JUAN BASIN IS CONSIDERED POTENTIALLY SUITABLE FOR WASTE DISPOSAL, CONTINGENT UPON SUCH FACTORS AS DEPTH, VOLUME OF WASTE, PETROLEUM AND MINING ACTIVITIES, PRESENT AND FUTURE GROUND WATER NEEDS, AND OTHER INDUSTRIAL AND CULTURAL CONSIDERATIONS. THE CHACO SLOPE PROBABLY IS THE MOST FAVORABLE AREA FOR WASTE DISPOSAL.

PUB DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS - A STUDY OF DESERVING STRATA, 1960 24 FIGURES, REFERENCES, PG 186-231

KEYWORDS: GEOLOGY, NEW MEXICO; COLORADO; MINING; SITING, WASTE DISPOSAL; WASTE DISPOSAL; HYDROLOGY; POPULATION DISTRIBUTION

<886>

PUB DATE: 1964

AUTHOR: PETTIGREW, G.L.

TITLE: RADION DISPOSAL PROJECT

CORPORATE AUTHOR: U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

ABSTRACT: SUMMARIZES THE RADION WASTE DISPOSAL ACTIVITIES OF THE RADIOACTIVE MATERIALS SECTION, DATA, SUPPLIED WITH SURPLUS SOURCES, IS TABULATED WITH SPECIAL CONSIDERATION GIVEN TO MEDICAL SOURCES, SOURCE TYPES, AGE, AND LEAKAGE.

PUB DESC: HCBP-67-2, 8 PAGES, 3 FIGURES, 2 TABLES, JAN. 1969

KEYWORDS: SOURCE, RADIATION; HOSPITAL WASTES (SEE ALSO THERAPY); WASTE DISPOSAL; WASTE HANDLING; RADION; WASTE TRANSPORTATION; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIOLOGICAL ASSISTANCE; LEAK

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PUB DATE: 1960

AUTHOR: PFAUDIER, P.

<687> COST.

TITLE: DISPOSAL OF RADIOACTIVE WASTES FROM NUCLEAR REACTORS IN THE ARCTIC. A FINAL ENGINEERING REPORT.

PUB DESC: NADC-TR-60-170, AD-240660

KEYWORDS: WASTE DISPOSAL; REACTOR; RADIOISOTOPE

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PUB DATE: 1964

AUTHOR: PICKERING, R.J.; CARRIGAN, P.H.; PARKER, P.L.

TITLE: THE CLINCH RIVER STUDY- AN INVESTIGATION OF THE FATE OF RADIO-NUCLIDES RELEASED TO A SURFACE STREAM

CORPORATE AUTHOR: CAS DICKE NATIONAL LABORATORY

ABSTRACT: THE CLINCH RIVER STUDY IS A MULTI-AGENCY EFFORT TO EVALUATE THE PHYSICAL, CHEMICAL, AND BIOLOGICAL EFFECTS OF THE RELEASE TO THE CLINCH RIVER OF LOW-LEVEL RADIOACTIVE WASTES FROM THE OAK RIDGE NATIONAL LABORATORY. THE MAJOR RADIOISOTOPES RELEASED ARE RUTHENIUM-106, CESIUM-137, COBALT-60, AND STRONTIUM-90. HYDROLOGIC AND BIOLOGIC STUDIES HAVE INDICATED THAT RADIATION DOSEAGES RESULT FROM EXPOSURE ARE BELOW CRITICAL THRESHOLD LEVELS. RADIOISOTOPE CONCENTRATIONS IN RIVER WATER HAVE BEEN MEASURED AT SEVEN SAMPLING STATIONS ON THE CLINCH AND TENNESSEE RIVERS. MASS BALANCE CALCULATIONS FOR 48 WEEKS OF SAMPLING INDICATE THAT LOSSES OF RADIOISOTOPES FROM THE WATER PHASE TO RIVER BOTTOM SEDIMENTS REPRESENT ONLY A VERY SMALL PORTION OF THE TOTAL RADIOACTIVITY RELEASED TO THE RIVER. A STUDY OF CLINCH RIVER BOTTOM SEDIMENT CORES COLLECTED IN 1962 HAS DISCLOSED A RECORDING PATTERN OF VARIATION IN RADIOACTIVITY WITH DEPTH WHICH MAY REFLECT PAST EVENTS IN WASTE DISPOSAL OPERATIONS AT THE LABORATORY. CURRENT INVESTIGATIONS ARE EXPECTED TO PROVIDE INFORMATION ABOUT THE CHEMICAL FORMS IN WHICH THE MAJOR RADIOISOTOPES EXIST AND THE MECHANISMS BY WHICH THEY WERE INCORPORATED IN THE SEDIMENTS.

PUB DESC: AICOR FIFTY SECOND NATIONAL MEETING ON POLYMER ENGINEERING, FEBRUARY 2-5, 1964, 24 PAGES, 3 TABLES, 9 FIGURES- MEMPHIS, TENNESSEE- SOURCE 24 PAGES, 3 TABLES, 9 FIGURES

KEYWORDS: CESIUM; COBALT; EFFLUENT; ELEMENTS AND ISOTOPES; HYDRAULIC ANALYSIS; HYDRAULIC EXPERIMENT; MAXIMUM PERMISSIBLE CONCENTRATION (MPC); MONITOR; LIQUID; PARTICLE SIZE; RUTHENIUM; STRONTIUM; SURVEY; ENVIRONMENT; FISSION PRODUCT TRANSFER; MAXIMUM PERMISSIBLE DOSE (MPD); RADIATION; WASTE DISPOSAL; RIVER; WATER; DRINKING; OIL; RIVER, CLINCH; WASTE DISPOSAL, LIQUID; POPULATION EXPOSURE; HAZARDS ANALYSIS; HYDROLOGY; ION EXCHANGE; METAL EXCHANGE; RIVER, TENNESSEE; SCORPTION (SEE ALSO ADSORPTION); SEDIMENT

<689>

PUB DATE: 1974

AUTHOR: PLATO, P.

TITLE: USE OF RIVERS TO PREDICT ACCUMULATION IN SEDIMENT OF RADIOISOTOPES DISCHARGED FROM NUCLEAR POWER STATIONS

ABSTRACT: THE LIQUID DISCHARGE CHARACTERISTICS, WHICH INCLUDE FLOW RATE, SUSPENDED SOLIDS CONTENT, AND RADIOACTIVITY OF THE DONALD C. COOK AND PALISADES NUCLEAR POWER PLANTS ARE SIMILAR TO THOSE FROM THE ST. JOSEPH AND BLACK RIVERS, RESPECTIVELY, IN SOUTHERN LAKE MICHIGAN. THE BASE OF INFLUENCE OF THE RIVERS ON LAKE MICHIGAN ARE DEFINED BY DIRECT MEASUREMENT OF THE ACCUMULATION OF FALLOUT CS 137 IN THE SEDIMENTS NEAR THE MOUTHS OF THE RIVERS. THE AREAS OF INFLUENCE OF THE RIVERS ARE USED TO PREDICT THE AREAS OF INFLUENCE EXPECTED FROM THE TWO NUCLEAR POWER PLANTS AFTER TWO ESCAPES OF DISCHARGING RADIOACTIVE WASTES INTO LAKE MICHIGAN. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 26(6), P. 609 (1974)

KEYWORDS: HEALTH PHYSICS; WASTE DISPOSAL, RIVER; ACCUMULATION; DECONTAMINATION; DISCHARGE; EFFLUENT; NUCLEAR POWER PLANTS; LIQUID; FALLOUT; MEASUREMENT;

PUBLIC HEALTH; SEDIMENT; CESIUM; LAKE MICHIGAN; RIVER, BLACK; RIVER, ST. JOSEPH; REACTOR, POWER; PALISADES;

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PUB DATE: 1975

AUTHOR: ECOT, E.A.

TITLE: AN IMPROVED RECEPTACLE FOR RADIOACTIVE WASTE

CORPORATE AUTHOR: DIRECTOR, CENTER FOR RADIATION SAFETY, WESTERN UNIVERSITY

PUB DESC: HEALTH PHYSICS, 29(5), P. 601 (1975)

KEYWORDS: RADIOACTIVE WASTE; CONTAINMENT DESIGN; TRANSPORTATION; RADIOACTIVE SHIPMENT

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PUB DATE: 1970

AUTHOR: FRACEL, J.; PASCHUS, P.J.; BALASEK, E.

TITLE: THE VOLUME REDUCTION OF LOW-ACTIVITY SOLID WASTES

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: DESCRIBES TECHNIQUES OF MECHANICAL FRAGMENTATION AND COMPACTING AND INCINERATION. THE TWO TECHNIQUES ARE TREATED AS COMPLEMENTARY AND ARE INTENDED MAINLY FOR WASTES OF LARGE VOLUME AND LOW ACTIVITY.

PUB DESC: STI/DOC-10/106, 44 PAGES, 22 FIGURES, 20 REFERENCES, 1970

KEYWORDS: DECONTAMINATION; LOW-LEVEL WASTE; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); IDEA; WASTE STORAGE; WASTE DISPOSAL, SOLID; COMPACTING; INCINERATION

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PUB DATE: 1970

AUTHOR: PRESTON, A.; JEFFERIES, D.F.; MITCHELL, R.T.

TITLE: EXPERIENCE GAINED FROM THE CONTROLLED INTRODUCTION OF LIQUID RADIOACTIVE WASTE TO COASTAL WATERS

CORPORATE AUTHOR: FISHERIES RADIOBIOLOGICAL LABORATORY, MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, LONDON, ENGLAND

ABSTRACT: THE BEHAVIOR OF SPECIFIC RADIOISOTOPES DISCHARGED IN A CONTINUOUS, ROUTINE AND CONTROLLED MANNER FROM ESTABLISHED RAPID OUTFALLS IS DESCRIBED, TOGETHER WITH THE EQUILIBRIUM LEVELS FOUND IN THE ENVIRONMENT. THE EXAMPLES INCLUDE THE DISCHARGE FROM THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY FUEL REPROCESSING PLANT AT WINDSCALE AND FROM THE BRASSILL NUCLEAR POWER STATION OF THE CENTRAL ELECTRICITY GENERATING BOARD - THESE AND OTHER EXAMPLES PROVIDE EVIDENCE OF THE BEHAVIOR OF A RANGE OF RADIOACTIVE POLLUTANTS, PRINCIPALLY THE NUCLIDES OF RUTHERFORD. THE WAY IN WHICH EXPERIENCE FROM THESE CONTROLLED DISPOSALS MAY BE APPLIED TO OTHER PROBLEMS OF POLLUTION, INCLUDING CHEMICAL POLLUTION, ARE EXAMINED. USED AS A RESEARCH TOOL, THE MONITORING OF SUCH DISCHARGES CAN SHOW NOT ONLY HOW SOME CATEGORIES OF POLLUTANT DISTRIBUTION AND DISPERSAL IN THE WATER MASS, BUT ALSO THE EXTENT TO WHICH ENVIRONMENTAL INTERACTION OCCURS THROUGH CONCENTRATION INTO A RANGE OF BIOLOGICAL AND PHYSICAL MATERIALS.

PUB DESC: STI/PUB-268, 15 PAGES, PAGE 629-84, OCTOBER 1970

KEYWORDS: EFFLUENT; UNITED KINGDOM; WINDSCALE; FUEL DISTRIBUTION; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); MONITOR, ENVIRONMENTAL; WASTE DISPOSAL, LIQUID; RADIATION SAFETY AND CONTROL; DISPERSION; RADIOACTIVITY RELEASE; FUEL REPROCESSING; OPERATING EXPERIENCE; EQUILIBRIUM; DISCHARGE

<093>

PUB DATE: 1959
AUTHOR: POOT, W.E.

TITLE: ADSORPTION OF FISSION PRODUCTS BY SAVANNAH RIVER PLANT SOIL

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: DATA ARE PRESENTED FOR THE EQUILIBRIUM DISTRIBUTION OF CESIUM, STRONTIUM, PLUTONIUM, BARIUM, AND ZIRCONIUM-DIPLUOBTIUM IRRADIATED SOIL OF THE SAVANNAH RIVER PLANT AND VARIOUS AQUEOUS SOLUTIONS. LOW CATION CONCENTRATION AND A PH RANGE OF 7 TO 9 WERE MOST FAVORABLE FOR ADSORPTION OF THESE ELEMENTS ON THE SOIL.

PUB DESC: DP-390- 16 PAGES, 10 FIGURES, 6 REFERENCES- JULY 1959

KEYWORDS: CESIUM; SAVANNAH RIVER PLANT; PLUTONIUM; BARIUM; SOIL; RADIOACTIVE WASTE; STRONTIUM; WASTE DISPOSAL; ZIRCONIUM

<094>

PUB DATE: 1976
AUTHOR: BARNAN, R.A.; GLENN, R.A.; HOUSE, D.L.;

TITLE: SITE CHARACTERISTICS OF CONCENTRIC SOLID RADIOACTIVE-WASTE BURIAL FACILITIES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THE REPORT DESCRIBES IN DETAIL THE OPERATIONAL PRACTICES PRESENTLY BEING EMPLOYED BY FIVE SHALLOW LAND BURIAL SITES USED FOR DISPOSAL OF SOLID LOW-LEVEL RADIOACTIVE WASTE-POOR IN THE WORLD CLIMATE OF THE EASTERN U.S. AND ONE IN THE MID ZONE OF THE WESTERN U.S. AVAILABLE REPORTS, RECORDS, AND INFORMATION HAVE BEEN THOROUGHLY REVIEWED TO GATHER INFORMATION ABOUT TOPOGRAPHY, HYDROGEOLOGY, HYDROLOGY AND GEOGRAPHY OF EACH SITE. FURTHERMORE, OPERATIONAL RECORDS HAVE BEEN EXAMINED TO DETERMINE COSTS AND PRACTICES EMPLOYED AT EACH SITE. THE POSSIBLE REQUIREMENT FOR FUTURE CARE OF EACH SITE HAS BEEN ADDRESSED AND SOME POSSIBLE REMEDIAL ACTIONS HAVE BEEN SUGGESTED.

PUB DESC: OORL-TN-5610 1976 (REV.)

KEYWORDS: WASTE DISPOSAL; BURIAL GROUND (SEE ALSO COMMERCIAL BURIAL GROUND); SITING; SOLID; LOW-LEVEL WASTE; TOPOGRAPHY; HYDROGEOLOGY; HYDROLOGY (SEE ALSO AIR); DEMOGRAPHY (SEE ALSO POPULATION); COSTS; OPERATION;

<095>

PUB DATE: 1965
AUTHOR: SANDER, R.

TITLE: SITING INVESTIGATIONS FOR A PROTOTYPE CAVITY FOR RADIOACTIVE WASTE STORAGE

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG UND, ERLANGEN, GERMANY

ABSTRACT: SALINE PERMEATIONS IN THE SUBSOIL OF THE FEDERAL REPUBLIC OF GERMANY OFFER MANY POSSIBILITIES FOR ULTIMATE STORAGE OF RADIOACTIVE WASTES. THESE TYPES OF ROCK, ESPECIALLY THE PURE HALITE ROCK, ARE PRACTICALLY IMPERMEABLE, HAVE A GOOD THERMAL CONDUCTIVITY, AND PERMIT THE EXCAVATION OF LARGE UNDERGROUND ROOMS AT LOW COST. THE STORAGE OF RADIOACTIVE WASTES IS POSSIBLE EITHER IN ACCESSIBLE EXCAVATIONS (AS IN PILES) OR IN INACCESSIBLE ROOMS (AS IN STORAGE CAVERNS), WHICH ARE FORMED BY THE SOLUTION METHOD.

PUB DESC: BWV-FR-65-66, 40 PAGES, DECEMBER, 1965, (18 GERMAN)

KEYWORDS: WASTE DISPOSAL; SOLID; GERMANY; WASTE DISPOSAL; SALT; GEOLOGY; SALT STRUCTURE

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PUB DATE: 1962
AUTHOR: REICHERT, S.O.

TITLE: RADIOCLIDES IN GROUNDWATER AT THE SAVANNAH RIVER PLANT WASTE DISPOSAL FACILITIES

CORPORATE AUTHOR: REPORT OF RECORDS AND COMPANY, Aiken, S.C.

ABSTRACT: DISPOSAL OF RADIOACTIVITY TO THE GROUND HAS BEEN LIMITED TO THE BURIAL OF SOLID WASTE AND THE DISCHARGE OF VERY-LOW-LEVEL WASTE TO OPEN SEEPAGE BASINS. NO RADIOCLIDES HAVE BEEN DETECTED IN GROUNDWATER FROM THIS SOURCE. SEEPAGE BASIN RETENTION OF RADIOCLIDES HAS BEEN LESS SATISFACTORY. ALL OF THE RADIOCLIDES RELEASED TO THE SEEPAGE BASINS, EXCEPT PLUTONIUM, HAVE BEEN DETECTED IN THE SURROUNDING GROUNDWATER. TRITIUM IS NOT ABSORBED AND THIS SERVES AS A USEFUL GROUNDWATER TRACER. STRONTIUM 90 IS POORLY ABSORBED ON LOCAL SOIL AND IS DETECTABLE IN SAND LAYERS, AT CONCENTRATIONS LESS THAN THE RADIOACTIVITY CONCENTRATION GUIDE, AS FAR AS 500 FEET FROM THE BASINS. THE PATH OF RADIOCLIDE MIGRATION FROM SEEPAGE BASINS IS DETERMINED BY THE GEOLOGY AND HYDROLOGY OF EACH AREA.

PUB DESC: JOURNAL OF GEOPHYSICAL RESEARCH 67, NO. 11, PP. 4363-4374 1962 (OCT.)

KEYWORDS: ADSORPTION; PLANT; GROUND; GEOLOGY; STRONTIUM; TRACER, RADIOACTIVE; TRITIUM; WASTE DISPOSAL; TERRESTRIAL; GROUND WATER; NUCLEIDE OCCURRENCE; SAVANNAH RIVER PLANT; HYDROLOGY; SURVEILLANCE PROGRAM; MONITOR, AREA; CONCENTRATION

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PUB DATE: 1950
AUTHOR: REICHERT, S.O.

TITLE: GEOLOGY AND HYDROLOGY FOR DISPOSAL OF RADIOACTIVE WASTES TO GROUND AT THE SAVANNAH RIVER PLANT

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, Aiken, SOUTH CAROLINA

ABSTRACT: DATA OBTAINED FROM MONITORING WELLS SHOW THAT SEEPAGE BASINS ARE EFFECTIVELY PERCOLATING AND DECONTAMINATING LARGE VOLUMES OF LOW LEVEL RADIOACTIVE LIQUIDS AT THE SAVANNAH RIVER PLANT. STRATIGRAPHIC PANEL DIAGRAMS AND HYDROLOGIC MAPS GIVE A GOOD PICTURE OF THE FACTORS THAT ARE IMPORTANT IN EVALUATING THE PERFORMANCE OF SEEPAGE BASINS AND OTHER PITS. A GENERAL METHOD IS OUTLINED FOR DETERMINING THE FITTED PLACEMENT OF A SEEPAGE BASIN OF BURIAL GROUND AREA AND FOR EVALUATING AND MONITORING ITS PERFORMANCE.

PUB DESC: DP-390- 24 PAGES, 9 FIGURES, 9 REFERENCES- DECEMBER 1950

KEYWORDS: EFFLUENT; STRATIGRAPHY (SEE ALSO GEOLOGY, STRATIGRAPHY); GEOLOGY; GROUND WATER; SITING; WASTE DISPOSAL; WASTE DISPOSAL, TERRESTRIAL

<098>

PUB DATE: 1967
AUTHOR: REIST, P.C.

TITLE: THE DISPOSAL OF RADIOACTIVE WASTE-95 IN POROUS MEDIA

CORPORATE AUTHOR: HARVARD UNIVERSITY. SCHOOL OF PUBLIC HEALTH, BOSTON, MASS.

ABSTRACT: THE PROBLEM OF CONTAINMENT OF RD-95 RESULTING FROM OPERATION OF FISSION REACTORS WAS INVESTIGATED. AREAS INCLUDED IN THE STUDY WERE - (1) GAS MOVEMENT IN A POROUS MEDIUM, (2) STORAGE OF OTHER GASES IN UNDERGROUND RESERVOIRS, (3) LABORATORY INVESTIGATIONS OF PROPERTIES OF REPTON AND REPTON-AIR MIXTURES, AND (4) A DESCRIPTION OF A POSSIBLE DISPOSAL OPERATION OF THE WEST VALLEY, N. Y., SITE OF NUCLEAR FUEL SERVICES.

PUB DESC: BYC-991-7, 189 PAGES, 27 FIGURES, 25 TABLES, 75 REFERENCES, JULY 1967

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KEYWORDS: KRYPTON (SEE ALSO NOBLE GAS); WEST VALLEY; POROUS MEDIA; WASTE DISPOSAL, GAS; HFS

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PUB DATE: 1960

AUTHOR: DODGER, R.L.

TITLE: RADIOACTIVE WASTE DISPOSAL

PUB DESC: ARL-6233

KEYWORDS: EFFLUENT; WASTE DISPOSAL; WATER; REACTOR; RADIOISOTOPE

<900>

P1 RTZ: 1975
AUTHOR: MUEHNTSCHE, I.D.; TRIVICKSKIL, R.B.

TITLE: MAXIMUM PERMISSIBLE DISCHARGES OF RADIOACTIVE MATERIALS INTO THE ATMOSPHERE

ABSTRACT: WITH THE OPERATION OF ATOMIC POWER PLANTS THERE IS ASSOCIATED THE RELEASE OF RADIOACTIVE MATERIALS (THAT GASES, AEROSOLS, VAPORS) DIFFERING IN PHYSICOCHEMICAL STATES AND PROPERTIES INTO THE SURFACE LAYER OF THE ATMOSPHERE. IN THE STANDARDIZATION OF DISCHARGES LEADING TO AN EXTERNAL RADIATION EFFECT, A VALUE OF THE MAXIMUM PERMISSIBLE DISCHARGE (MPD) IS ESTABLISHED FOR EACH ISOTOPE RELEASED INTO THE ATMOSPHERE SUCH THAT THE TOTAL ANNUAL DOSE OF EXTERNAL RADIATION FROM ALL ISOTOPES DOES NOT EXCEED THE AMOUNT PERMITTED PER YEAR BY 'RADIATION SAFETY STANDARDS (PDR-64)'. *

PUB DESC: SOVIET ATOMIC ENERGY, 37(3), PP. 945-58, 4 TABS., 12 REFS., (SEPT. 1974)

KEYWORDS: POPULATION EXPOSURE; USSR; DOSE CALCULATION; EXTERNAL; WASTE DISPOSAL; ATMOSPHERIC; AIRBORNE RELEASE

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PUB DATE: 1975
AUTHOR: SAUER, R.L.; FREERAN, R.R.; HANSON, H.S.; KICKEVER, D.L.

TITLE: DECONTAMINATION AND DECOMMISSIONING OF NUCLEAR FACILITIES - A LITERATURE SEARCH

CORPORATE AUTHOR: BATTLE MOUNTAIN LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS BIBLIOGRAPHY INCLUDES 829 UNCLASSIFIED REFERENCES TO THE DECONTAMINATION AND DECOMMISSIONING OF NUCLEAR FACILITIES. THE REFERENCES ARE ARRANGED IN CHRONOLOGICAL ORDER AND COVER THE PERIOD FROM 1944 THROUGH 1974. SUBJECT AND AUTHOR INDEXES ARE PROVIDED.

PUB DESC: BNWL-1917 1975 (BAT)

KEYWORDS: NUCLEAR FACILITIES; WASTE DISPOSAL ALTERNATIVES; DECOMMISSIONING; DECONTAMINATION; BIBLIOGRAPHY (SEE ALSO REVIEW); REFERENCES; PUBLICATIONS; DOCUMENTATION; ;

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PUB DATE: 1968
AUTHOR: SCHAPPEL, W.P.; BOGLEY, W.J.; BRADSHAW, R.L.; PARKER, F.L.

TITLE: PROJECT SALT VAULT - DESIGN OF EQUIPMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: A PREVIOUS PAPER IN THIS JOURNAL (VOL. 3 NO. 1, 1966) SHOWED THAT PLASTICITY OF THE MATERIAL IS THE DECISIVE FACTOR IN THE PREVIOUS PHENOMENON, AT LEAST AS FAR AS CRACK INITIATION IS CONCERNED. THE PRESENCE OF A STRESS CONCENTRATION EXAGGERATES THE EFFECT OF THIS PLASTICITY AND MAY BE EXPECTED TO REDUCE FATIGUE LIFE. THE ASSUMPTION IS MADE THAT FAILURE OF THE STRUCTURE IS GOVERNED BY THE MAXIMUM

STRESS DEVELOPED IN THE VICINITY OF A STRESS RAISER. THE MAXIMUM STRESS IS COMPUTED FROM WELL KNOWN FORMULAS WHICH TAKE PLASTICITY OF THE MATERIAL INTO ACCOUNT. THE STRESS SO COMPUTED IS THEN USED TO CALCULATE THE NUMBER OF CYCLES TO FAILURE IN ACCORDANCE WITH THE PROCEDURE OUTLINED TO THE PREVIOUS PAPER. COMPARISON OF FATIGUE LIFE WITH TEST RESULTS ON NOTCHED SPECIMENS OF 7075-T6 ALUMINUM ALLOY SHOWS GOOD AGREEMENT.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN, 8(3), PAGES 321-336 (OCTOBER 1968) 10 FIGURES, 3 REFERENCES

KEYWORDS: DESIGN CRITERIA; PROJECT SALT VAULT; PLASTIC FLOW; SHIPPING CONTAINERS; WASTE HANDLING; WASTE STORAGE; WASTE TRANSPORTATION; RADIATION SAFETY AND CONTROL; SHIELDING; WASTE DISPOSAL, SALT; EQUIPMENT DESIGN; EQUIPMENT; FUEL ELEMENTS

<903>

PUB DATE: 1965
AUTHOR: SCHAPPEL, W.P.; BOGLEY, W.J.; BRADSHAW, R.L.; PARKER, F.L.

TITLE: PROJECT SALT VAULT - DESIGN OF EQUIPMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: HANDLING, TRANSFER, AND STORAGE TECHNIQUES APPLICABLE TO HIGH-LEVEL SOLID WASTE DISPOSAL OPERATIONS WERE SUCCESSFULLY DEMONSTRATED WITH SHORT-COOLED HTS FUEL ASSEMBLIES. THE DESIGN OF EQUIPMENT FOR THE ENCAPSULATION OF THE FUEL ASSEMBLIES, CROSS-COUNTRY SHIPMENT, TRANSFER FROM THE SURFACE TO THE BINE LEVEL, MOVEMENT WITHIN THE BINE, AND TRANSFER INTO STORAGE IS DESCRIBED. THE OPERATIONS ARE UNIQUE IN THAT HIGH-LEVEL RADIOACTIVE MATERIALS ARE TRANSFERRED FROM A SHIPPING CASE ON THE SURFACE TO THE BINE LEVEL 1000 FT BELOW WITHOUT THE USE OF HOT CELLS.

PUB DESC: ORNL-P-3918, 23 PAGES, REFERENCES, 1965

KEYWORDS: SHIPPING CONTAINERS; PROJECT SALT VAULT; ORNL; KANSAS; TRANSPORTATION AND HANDLING; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE STORAGE; WASTE TREATMENT; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, SOLID; WASTE TRANSPORTATION; WASTE TREATMENT, SOLID

<904>

PUB DATE: 1964
AUTHOR: SCHAPPEL, W.P.; BOGLEY, W.J.; PARKER, F.L.; BRADSHAW, R.L.; EMERSON, F.H.; MCCLAIN, W.C.

TITLE: PROJECT SALT VAULT - DESIGN AND DEMONSTRATION OF EQUIPMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: HANDLING, TRANSFER, AND STORAGE TECHNIQUES APPLICABLE TO HIGH-LEVEL SOLID WASTE DISPOSAL OPERATIONS HAVE BEEN SUCCESSFULLY DEMONSTRATED WITH SHORT-COOLED HTS FUEL ASSEMBLIES. THE DESIGN OF PROJECT SALT VAULT EQUIPMENT FOR THE ENCAPSULATION OF THE FUEL ASSEMBLIES, CROSS COUNTRY SHIPMENT, TRANSFER FROM THE SURFACE TO THE BINE LEVEL, MOVEMENT WITHIN THE BINE, AND TRANSFER INTO STORAGE IS DESCRIBED. THE OPERATIONS ARE UNIQUE IN THAT HIGH-LEVEL RADIOACTIVE MATERIALS ARE TRANSFERRED FROM A SHIPPING CASE ON THE SURFACE TO THE BINE LEVEL 1000 FEET BELOW WITHOUT THE USE OF HOT CELLS.

PUB DESC: ORNL-P-1987, CONF-660208-4, 36 PAGES, (1964), FROM SYMPOSIUM ON SOLIDIFICATION OF LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

KEYWORDS: WASTE HANDLING; PROJECT SALT VAULT; KANSAS; WASTE TRANSPORTATION; WASTE DISPOSAL, SALT; FUEL ELEMENTS

<905>

PUB DATE: 1975

<905> CONT.

AUTHOR: SCHEFFLER, K.; BIRGE, W.; HILD, W.; JAKUBICK, A.T.

TITLE: LONG-RANGE BEHAVIOUR OF BLS GLASSES; A CONTRIBUTION TO THE EVALUATION OF PROBLEMS RELATED TO THE DISPOSAL OF I-BEARING WASTE FROM REPROCESSING AND FUEL-ELEMENT PRODUCTION

CORPORATE AUTHOR: GESELLSCHAFT FÜR KERNFORSCHUNG GfK

ABSTRACT: LONG-RANGE BEHAVIOUR OF BLS GLASSES; A CONTRIBUTION TO THE EVALUATION OF PROBLEMS RELATED TO THE DISPOSAL OF ALPHA-BEARING WASTE FROM REPROCESSING AND FUEL-ELEMENT PRODUCTION. AN EVALUATION OF QUESTIONS CONCERNING THE SAFETY ASPECTS DURING PERPETUAL STORAGE OF RADIOACTIVE WASTES IS PERFORMED ON THE BASIS OF THE CONCENTRATION OF ALPHA EMITTERS IN THE WASTES, THE RELATIVE TOXICITIES OF THESE ALPHA EMITTERS AND THE LONG-RANGE STABILITY OF THE SOLIDIFIED PRODUCTS TOWARDS THE DISINTEGRATION OF THESE ALPHA NUCLIDES. IN THIS CONTEXT AN OVERVIEW IS GIVEN ON ALL CATEGORIES OF ALPHA EMITTING WASTES FROM FUEL-REPROCESSING AND REPAACKAGING. AS AN EXAMPLE THE LONG-RANGE BEHAVIOUR OF HIGH-LEVEL WASTE GLASSES IS DISCUSSED AN INVESTIGATION BY AN ACCELERATED EXPERIMENT WITH REPRESENTATIVE CR-242 SPIRED GLASS COMPOSITIONS. (A078)

PUB DESC: RTE-2170 (1975)

KEYWORDS: WASTE STORAGE; SAFETY EVALUATION; ALPHA EMITTER; TOXICITY; STABILITY; OVERVIEW; FUEL REPROCESSING; FUEL FABRICATION (SEE ALSO FABRICATION); HAZARD, RELATIVE; GLASS (SEE ALSO VITRIFICATION); CORIUM

<906>

PUB DATE: 1970

AUTHOR: SCHLÖSSER, K.; OSTUSZKY, P.J.F.

TITLE: FUTURE MANAGEMENT OF RADIOACTIVE WASTES IN AUSTRIA

CORPORATE AUTHOR: ÖSTERREICHISCHE STUDIENGESellschaft FÜR ATOMENERGIE G.N.B.N., SEIBERSDOOP, INSTITUT FÜR STRAHLUNGSTECHNIK

ABSTRACT: DESCRIBES EFFORTS AND MEANS OF SAFE WASTE DISPOSAL TO THE FUTURE RIVED SYSTEM WITHOUT ENDANGERING ITS BIOLOGICAL EQUILIBRIUM OR COMPROMISING COST OF WASTE MANAGEMENT AND HIGH STANDARDS OF SAFETY.

PUB DESC: SCAR-PT-33/1970, CONT-700905-13, 16 PAGES, PAPER PRESENTED AT SYMPOSIUM ON DEVELOPMENTS IN THE MANAGEMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTES; AIX-EN-BOUVENCE, FRANCE, SEPTEMBER 7, 1970

KEYWORDS: DILUTION; RIVER, DANGER; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); WASTE STORAGE; WASTE TREATMENT; AUSTRIA; WASTE DISPOSAL, RIVER; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL

<907>

PUB DATE: 1974

AUTHOR: SCHMIDT, J.

TITLE: THE WASTE DISPOSAL SYSTEM IN THE NUCLEAR FUEL CYCLE

ABSTRACT: PROVIDES THE DETAILS OF A WASTE DISPOSAL SYSTEM AND BRIEFLY DESCRIBES THE LIGHT WATER REACTOR, HIGH TEMPERATURE REACTOR, AND REEFER.

PUB DESC: ARC-TR-7573, 17 PAGES, PRESENTED AT REACTOR CONFERENCE OF THE GERMAN ATOM FORUM, APRIL 1, 1974

KEYWORDS: WASTE DISPOSAL; TVA; RADWASTE SYSTEM; GERMAN; REVIEW; FUEL CYCLE

<908>

PUB DATE: 1972

AUTHOR: SCHNEIDER, K.

TITLE: METHOD FOR THE DISPOSAL OF LIQUID RADIOACTIVE WASTE EFFLUENTS

ABSTRACT: IT IS PROPOSED TO DISPOSE OF RADIOACTIVE WASTE LIQUIDS BY MEANS OF HYDROFRACTURING OF ROCKS USING THE METHOD TRIED WITH SUCCESS IN THE OIL AND NATURAL GAS INDUSTRY TO ENHANCE THE YIELD. IT INVOLVES DRILLING A HOLE WITH A DIAMETER OF A FEW CENTIMETERS AND A DEPTH OF ABOUT 1000 M, FORCING THE LIQUID INTO IT UNDER A PRESSURE EXCEEDING 160 ATM. THIS CAUSES VERTICAL OR HORIZONTAL CRACKS, DEPENDING ON THE POSITION, OF SEVERAL TIMES OF HOLE DIAMETER IN THE IMPERMEABLE ROCK. CEMENT IS ADDED TO THE WASTE LIQUIDS AND THE GROUT IS ALLOWED TO SOLIDIFY IN THE CAVITY, CREATING LAYERS OF IMPERVIOUS ROCK-LIKE CONCRETE. COST ESTIMATE OF THE PROCESS IS GIVEN. (XU POLISU)

PUB DESC: PZERN. CHEM., 1 PAGE, 51(17), P. 746 (NOVEMBER 1972)

KEYWORDS: CONCRETE; GEOLOGY; WASTE DISPOSAL, LIQUID; POLAND; WASTE DISPOSAL, HYDRAULIC FRACTURING; ROCK MECHANICS

<909>

PUB DATE: 1969

AUTHOR: SHOCKLEY, W.E.; FITZGERALD, C.L.; GODDER, A.W.; DAVIS, H.H.

TITLE: DISPOSAL OF SOLID WASTE FROM THE REPROCESSING OF NUCLEAR FUELS BY THE FLUIDIZED-BED FLUORIDE-VOLATILITY PROCESS - EVALUATION OF THE CANNING OF WASTE POWDERS.

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: THE DEVELOPMENT OF METHODS FOR DISPOSING OF SOLID WASTES THAT WOULD BE GENERATED BY THE FLUIDIZED-BED VOLATILITY PROCESSING OF POWER REACTOR FUELS WAS DIRECTED, PRIMARILY, TOWARD EVALUATING THE PROBLEMS ASSOCIATED WITH SIMPLY CANNING (I.E. SEALING IN A STAINLESS STEEL POT) THE UNTREATED POWDERS. BASED ON THE RESULTS OF THE STUDIES DESCRIBED IN THIS REPORT, CANNING APPEARS TO BE A SUITABLE METHOD FOR DISPOSING OF THESE WASTES. MUCH OF THIS INFORMATION WILL HAVE APPLICATION IN THE DISPOSAL OF WASTE SOLIDS FROM THE FUEL-BURN METHOD FOR REPROCESSING GRAPHITE-BASED FUELS FROM HIGH-TEMPERATURE GAS-COOLED REACTORS (FTRG).

PUB DESC: OOL-0100, 36 PAGES, 13 FIGURES, 1 TABLE, 7 REFERENCES, DECEMBER 1969

KEYWORDS: WASTE STORAGE; FLUIDIZED BED; CONTAINERS (SEE ALSO PACKAGING); WASTE TREATMENT; WASTE DISPOSAL, SOLID; WASTE MANAGEMENT; VOLATILITY PROCESS; FUEL REPROCESSING; COOPER

<910>

PUB DATE: 1968

AUTHOR: SMITH, P.J.; VOORESS, H.E.; SHELKER, H.H.

TITLE: BIBLIOGRAPHIES OF INTEREST TO ATOMIC ENERGY PROGRAM

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION

ABSTRACT: A TOTAL OF 516 UNNOTATED REFERENCES IS GIVEN TO BIBLIOGRAPHIES AND LITERATURE SURVEYS IDENTIFIED BY THE DIVISION OF TECHNICAL INFORMATION EXTENSION, USAEC, AS BEING OF INTEREST TO THE ATOMIC ENERGY PROGRAM. REFERENCES TO RECENT LITERATURE ARE ARRANGED ALPHABETICALLY UNDER THE ISSUING ORGANIZATIONS - PUBLISHED-LITERATURE CITATIONS ARE GROUPED SEPARATELY. SUBJECT, AUTHOR, AND REPORT NUMBER AND AVAILABILITY INDICES ARE PROVIDED.

PUB DESC: TID-3043 (REV. 2) (SUPPL. 2), 100 PAGES, 1968

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); ECOLOGY; WASTE DISPOSAL; AGRICULTURE; AGENCY, AEC (SEE ALSO USAEC);

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AUTHOR: SOVIET UNION
PUB DATE: 1969

TITLE: HANDLING OF RADIOACTIVE WASTE AT SOVIET ATOMIC POWER STATIONS

ABSTRACT: DESCRIBES THE ATOMIC POWER PLANTS IN THE SOVIET UNION, THEIR WASTE DISPOSAL PRACTICES, PLUS ENVIRONMENTAL MONITORING PROCEDURES OF AIR, WATER, AND SOIL.

PUB DESC: JPRS-88229, 15 PAGES, FIGURES, JUNE 13, 1969

KEYWORDS: CONTAINMENT; IMMUNIZATION; ATMOSPHERIC POLLUTION; WASTE DISPOSAL; CONTAINMENT; INTEGRITY; REACTOR, POWER; REACTOR; USSR; ENVIRONMENT; WATER POLLUTION; MONITORING PROGRAM, ENVIRONMENTAL; THERMAL POLLUTION; CONCENTRATION

<912>

AUTHOR: SPITSYN, V.I.; BALUKOVA, V.D.; YUDIN, P.P.; FIRENOV, N.K.
PUB DATE: 1974

TITLE: PHYSICAL AND CHEMICAL FACTORS GOVERNING THE DISPOSAL OF HIGH-ACTIVITY LIQUID WASTE INTO DEEP GEOLOGICAL FORMATION

CORPORATE AUTHOR: USSR STATE COMMITTEE ON THE UTILIZATION OF ATOMIC ENERGY

ABSTRACT: A STUDY OF THE THERMAL FIELD OF A FORMATION AFTER THE INJECTION OF RADIOACTIVE WASTES SHOWS THAT THERE IS A LIMITING ACTIVITY, ABOVE WHICH THE INJECTION OF WASTE INTO THE GROUND IS NOT PERMISSIBLE; THIS LIMIT IS DETERMINED BY SPECIFIC GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS SUCH AS THE THICKNESS OF THE FORMATION, THE MINERALOGICAL AND LITHOLOGICAL COMPOSITION OF THE ROCK IN THE ABSORBING LAYERS, AND VARIOUS OTHER FACTORS. THE MAIN LIMITING FACTOR IS THE TEMPERATURE TO WHICH THE STRATUM IS HEATED UP IN THE INJECTION REGION; THIS TEMPERATURE SHOULD NOT EXCEED THE BOILING POINT OF THE WATER IN THE FORMATION AT THE PREVAILING PRESSURE. THE PAPER PRESENTS THE RESULTS OF THERMAL AND PHYSICAL CALCULATIONS OF THE HEATING UP OF THE INJECTION REGION IN THE CASE OF DIFFERENT ACCUMULATIONS OF RADIOISOTOPES IN THE GROUND. ON THE BASIS OF STUDIES AND CALCULATIONS PERFORMED WITH THE AID OF A COMPUTER THE AUTHORS FORMULATE THE CONDITIONS UNDER WHICH HIGH-LEVEL WASTES CAN BE BURIED IN DEEP GEOLOGICAL FORMATIONS WITHOUT RADIATION HAZARD. (MOD. AUTH. ABST)

PUB DESC: OCEC-OCER, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 987-1001 (1974)

KEYWORDS: THERMAL; USSR; COMPUTER PROGRAM; GEOLOGY; HYDROLOGY; MINERALOGY; HIGH-LEVEL WASTE; LITHOLOGY; PHYSICAL FACTORS; CHEMICAL FACTORS; WASTE DISPOSAL; HIGH-LEVEL WASTE; LIQUID WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); GEOLOGICAL FORMATIONS

<913>

AUTHOR: SPITSYN, V.I.; ZAKHAROVA, K.P.; AZANAYEVA, L.D.
PUB DATE: 1973

TITLE: DISPOSAL OF RADIOACTIVE WASTE

CORPORATE AUTHOR: JOINT PUBLICATIONS RESEARCH SERVICE

ABSTRACT: PRESENTS FIVE IAEA PAPERS DEALING WITH THE TECHNICAL AND ECONOMIC ASPECTS OF HANDLING LIQUID WASTES WITH INTERMEDIATE AND HIGH LEVELS OF RADIOACTIVITY, THE POSSIBILITY OF USING REFINORIZATION FOR PROCESSING HIGHLY ACTIVE WASTES, A TECHNICAL-ECONOMIC COMPARISON OF THE METHODS OF SOLIDIFICATION AND LONG STORAGE FOR HIGHLY ACTIVE LIQUID WASTES FROM THE PROCESSING OF SPENT FUEL ELEMENTS OF WATER-COOLED WATER-MODERATED POWER REACTORS, SCIENTIFIC PREREQUISITES FOR BURYING HIGHLY ACTIVE LIQUID WASTES IN DEEP GEOLOGICAL FORMATIONS AND THE DEVELOPMENT OF METHODS FOR PREPARING THE WASTES

FROM METAPLASTIC TECHNOLOGY FOR BURIAL.

PUB DESC: JPRS-58768, 71 PAGES, FIGURES, APRIL 17, 1973

KEYWORDS: EFFLUENT; ASPHALT; SOURCE, RADIATION; WASTE HANDLING; WASTE DISPOSAL, BIOCHEMICS; REACTOR, POWER; HIGH-LEVEL WASTE; WASTE MANAGEMENT; USSR; WASTE DISPOSAL, SALT; WASTE DISPOSAL, BIOCHEM; FUEL REPROCESSING; COMPARISON; WASTE SOLIDIFICATION; FUEL ELEMENTS

<916>

AUTHOR: SPITSYN, V.I.; FIRENOV, N.K.; YUDIN, P.P.; BALUKOVA, V.D.
PUB DATE: 1971

TITLE: SCIENTIFIC BASIS AND PRACTICE OF LIQUID RADIOACTIVE WASTES DISPOSAL IN DEEP GEOLOGICAL STRATA

CORPORATE AUTHOR: STATE ATOMIC ENERGY COMMITTEE, USSR

ABSTRACT: THE DISPOSAL AND TREATMENT OF LIQUID WASTES FROM THE NUCLEAR INDUSTRY AND NUCLEAR POWER STATIONS IS THE SUBJECT OF LARGE SCALE STUDIES IN THE USSR. THE BURIAL OF RADIOACTIVE WASTES INTO DEEP GEOLOGICAL STRATA IS ONE OF PROMISING APPROACHES. IN THIS PAPER THERE ARE CONSIDERED THE GENERAL GEOLOGICAL AND HYDROGEOLOGICAL PRECONDITIONS AND THE PRACTICE OF SUBTERRANEAN DISPOSAL OF WASTE SOLUTIONS AND OTHER HIGH-ACTIVITY LIQUID RESIDUES INTO POROUS WEAKLY MINERALIZED AQUIFERS. DETAIL IS APPORTIONED ON SUCH ASPECTS OF THE METHOD AS CHARACTERISTICS OF THE LIQUID WASTE, INTERACTION OF LIQUID WASTES WITH STRATUM MATERIAL AND OBSERVATION OF WASTE MIGRATION.

PUB DESC: A/CONF-69/P/826, CONF-710931-376, 33 PAGES, 2 FIGURES, 5 TABLES, 6 REFERENCES, FROM THE 13TH INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY, GENEVA, SEPTEMBER 6, 1971

KEYWORDS: WASTE TREATMENT; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; HYDROLOGY; USSR; GEOLOGY, STRATIGRAPHY; WASTE DISPOSAL, DEEP WELL

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AUTHOR: SPITSYN, V.I.
PUB DATE: 1970

TITLE: PHYSICAL AND CHEMICAL CONDITIONS OF BURIAL OF LIQUID RADIOACTIVE WASTES IN VARIOUS GEOLOGICAL FORMATIONS

CORPORATE AUTHOR: INSTITUTE OF PHYSICAL CHEMISTRY, USSR ACADEMY OF SCIENCES, CENTRAL STATION OF RADIATION SHIELDING

ABSTRACT: THE PHYSICO-CHEMICAL FUNDAMENTALS OF UNDERGROUND DISPOSAL OF RADIOACTIVE WASTES IN GEOLOGICAL HORIZONS CONSISTING OF SANDSTONES, ALUMINOLITES AND CARBONATES, ARE DISCUSSED IN THIS REPORT. ON THE BASIS OF STUDIES OF THE COMPOSITIONS AND PROPERTIES OF WASTES AND COMPOSITIONS OF CONTIGUOUS RESERVOIR-STRATA, THE REQUIREMENTS PLACED ON WASTES FOR THEIR COMPATIBILITY WITH THE FORMATION CONDITIONS ARE CONSIDERED. DATA ARE PRESENTED IN CONNECTION WITH THE DEVELOPMENT OF METHODS OF TECHNOLOGICAL PREPARATION OF WASTES PRIOR TO THEIR BURIAL IN WELLS. CHEMICAL METHODS OF BREAKING OF THE OPERATING ELEMENTS OF INJECTION WELLS, I.E., METHODS TO PREVENT THEIR FILLING WITH SILT DEPOSITIONS, ARE DESCRIBED.

PUB DESC: SB-137/75, STI/PDB-268, CONF-700905, 11 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, SEPTEMBER 7-11, 1970

KEYWORDS: GEOLOGY; IAEA; WASTE DISPOSAL, LIQUID; HYDROLOGY; SOIL; USSR; PROPERTY, CHEMICAL; WASTE DISPOSAL, DEEP WELL

<916>

AUTHOR: SPITSYN, V.I.; YUDIN, P.P.; FIRENOV, N.K.
PUB DATE: 1970

<916> CONT.

M.K.:BAROV, V.A.;BALONOVA, V.D.;ZABABOV, S.I.;REYALINIKOV, S.V.

TITLE: EXPERIENCE IN THE OPERATION OF INSTALLATION FOR UNDERGROUND DISPOSAL OF LIQUID RADIOACTIVE WASTES

CORPORATE AUTHOR: SCIENCE RESEARCH INSTITUTE OF ATOMIC REACTORS, KIEV, USSR

ABSTRACT: REPORTS ON INSTALLATION FOR BURYING DECONTAMINATED RADIOACTIVE SOLUTIONS IN GEOLOGICAL INSPECTING DRILL HOLES. GENERAL INFORMATION CONCERNING THE OPERATION OF THE INSTALLATION DURING THE FOUR-YEAR PERIOD AND ANALYSIS OF THE BASIC INDICES OBTAINED DURING THE OPERATION OF THE INSTALLATION ARE DISCUSSED.

PUB DESC: SN-137/74, STI/PUB-264, CONF-700905, 24 PAGES, PAPER PRESENTED AT THE IAEA SYMPOSIUM ON MANAGEMENT OF LOW- AND INTERMEDIATE-LEVEL RADIOACTIVE WASTES, AIX-EN-PROVENCE, FRANCE, SEPTEMBER 7-11, 1970

KEYWORDS: GEOLOGY; IAEA; WASTE DISPOSAL, LIQUID; HYDROLOGY; USSR; OPERATING EXPERIENCE; WASTE DISPOSAL, DEEP WELL

<917>

PUB DATE: 1964

AUTHOR: STEINBERG, R.;MOTZAR, C.;BARCOWITZ, B.

TITLE: NEUTRON BURNING OF LONG-LIVED FISSION PRODUCTS FOR WASTE DISPOSAL

CORPORATE AUTHOR: BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK

ABSTRACT: AN ALTERNATIVE TO STORAGE OF FISSION PRODUCTS IS THE POSSIBILITY OF THE TRANSMUTATION OF THESE NUCLIDES IN A REACTOR. THESE FISSION PRODUCTS CAN BE SEPARATED FROM GROSS WASTES DURING FUEL REPROCESSING AND CONVERTED INTO FORMS SUITABLE FOR INSERTION INTO A FURNER REACTOR OF SOME OTHER NEUTRON FIELD. IN SUCH A FACILITY, THESE NUCLIDES WILL BE CONVERTED, OR BURNED, INTO SHORT-LIVED ISOTOPES BY MEANS OF NEUTRON ABSORPTION. THE RESULTING WASTES WILL THEN BE STORED FOR A SHORT PERIOD UNTIL A HARMLESS ACTIVITY LEVEL IS REACHED.

PUB DESC: BNL 3558, 27 PAGES- SEPTEMBER 1964

KEYWORDS: CESIUM; TRANSMUTATION; KRYPTON (SEE ALSO MOBILE GAS); STRONTIUM; WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT, LIQUID; WASTE MANAGEMENT

<918>

PUB DATE: 1973

AUTHOR: STOGNER, J.R.

TITLE: METHOD FOR UNDERGROUND DISPOSAL OF RADIOACTIVE WASTE

ABSTRACT: A METHOD IS DESCRIBED FOR DISPOSING OF SOLID RADIOACTIVE PARTICULATE MATERIAL. DRY CEMENTITIOUS MATERIAL IS MIXED WITH FLUID COMPRISING WATER AND LESS THAN 5% OF OTHER LIQUIDS, SUCH AS OILS, THAT DO NOT REACT WITH HYDRAULIC CEMENT. THE MIXTURE IS AGITATED, AND THE RADIOACTIVE WASTE MATERIAL IS INJECTED WHILE STILL AGITATED, TO UNIFORMLY DISPERSE THE PARTICLES. THE RADIOACTIVE MIXTURE IS PUMPED TO A WELL BORE, WHILE MAINTAINING A CONTINUOUS PRESSURE IN IT, AND SUFFICIENT PRESSURE IS APPLIED TO CAUSE WELL PENETRATION FRACTURE AND FORCE THE MIXTURE INTO THE FRACTURE. THE FRACTURE IS KEPT OPEN BY THE SOLID RADIOACTIVE WASTE MATERIAL, WHICH IS ALLOWED TO SOLIDIFY WITHIN THE FRACTURED STRUCTURE.

PUB DESC: BRITISH PATENT 1,309,281 +. 6 PAGES, MARCH 7, 1973

KEYWORDS: UNITED KINGDOM; CEMENT; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; WASTE DISPOSAL, HYDRAULIC FRACTURING; PATENT

<919>

PUB DATE: 1967

AUTHOR: TAYLOR, J.;CONSER, E.F.

TITLE: UNDERGROUND DISPOSAL OF KRYPTON-85 FROM NUCLEAR FUEL REPROCESSING PLANTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: EVALUATES DIFFERENT METHODS FOR LARGE-SCALE REMOVAL OF KR-85 FROM THE OFF-GAS STREAM OF A PROCESSING PLANT AND OF THE FEASIBILITY OF UNDERGROUND DISPOSAL OF KR-85. ALTHOUGH THE APPARENT ADVANTAGES OF UNDERGROUND DISPOSAL ARE ITS RELATIVE SIMPLICITY AND EFFECTIVENESS, ONE SEVERE REQUIREMENT IS THAT THE DISPOSAL FORMATION MUST BE ESSENTIALLY FREE OF VERTICAL CHANNELS. THE PRINCIPAL MECHANISMS BY WHICH KR-85 MAY BE RETAINED OR RETAINED UNDERGROUND INCLUDE ADSORPTION AND TRAPPING. IN THE ABSENCE OF CONVECTIVE TRANSPORT, VERTICAL UNDERGROUND MOVEMENT IS INFLUENCED BY MOLECULAR DIFFUSION. THESE MECHANISMS ARE EVALUATED FOR QUANTITIES OF KR-85 AND VOLUMES OF OFF-GAS ASSUMED TO BE PRODUCED AT A 10 TONS/DAY REPROCESSING PLANT.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN 6(3) PAGE 243-250, 1 FIGURE, 36 REFERENCES, (OCTOBER 3, 1967)

KEYWORDS: ADSORPTION; DIFFUSION; KRYPTON (SEE ALSO MOBILE GAS); WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, GAS; SOLVENT EXTRACTION; FUEL REPROCESSING

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PUB DATE: 1967

AUTHOR: TAYLOR, J.;CONSER, E.F.

TITLE: UNDERGROUND DISPOSAL OF KRYPTON-85 FROM NUCLEAR FUEL REPROCESSING PLANTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: REPORT INDICATES THAT, CONSIDERING ADSORPTION AND MOLECULAR DIFFUSION OF KR-85, UNDERGROUND DISPOSAL OF KR-85 FROM REPROCESSING PLANTS MAY BE FEASIBLE, PROVIDED THAT A SUITABLE GEOLOGIC SETTING IS AVAILABLE AT THE PLANT SITE.

PUB DESC: CONF-670432, 2 PAGES, 5 REFERENCES, AND TRANSACTIONS 1C(1) PAGES 159 AND 160 (JUNE 1967), PRESENTED AT THE 1967 ANNUAL MEETING OF THE AMERICAN NUCLEAR SOCIETY, SAN DIEGO, CALIFORNIA, JUNE 11-15, 1967

KEYWORDS: KRYPTON (SEE ALSO MOBILE GAS); SITING; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, TERRESTRIAL; WASTE DISPOSAL, GAS

<921>

PUB DATE: 1975

AUTHOR: TAUBE, R.;LIGON, J.;BUCHER, K.R.

TITLE: TRANSMUTATION OF FISSION PRODUCTS (137CS, 90SR) IN A LIQUID FUELLED FAST FISSION REACTOR WITH THERMAL COLUMN

CORPORATE AUTHOR: HEDERBERGSSCHES INST. FÜR REAKTORFORSCHUNG, SWITZERLAND

ABSTRACT: THE POSSIBILITIES FOR THE TRANSMUTATION OF CESIUM-137 AND STRONTIUM-90 IN A HIGH-FLUX FAST REACTOR WITH HEAVY PLUTONIUM CHLORIDES AND WITH A THERMAL COLUMN IS DISCUSSED. THE EFFECTIVE HALF LIFE OF CS-137 COULD BE DECREASED FROM 30 YEARS TO 4-5 YEARS, AND FOR SR-90 TO 2-3 YEARS.

PUB DESC: ZIB-270, 43 PPS, 9 FIGS, FEB. 1975

KEYWORDS: WASTE TREATMENT; TRANSMUTATION; FISSION PRODUCT, VOLATILE; WASTE MANAGEMENT; RADIATION EFFECT; NEUTRON INTERACTION; CESIUM; RADIOISOTOPE; PLUTONIUM; CHLORIDE; STRONTIUM

<922>

PUB DATE: 1971

AUTHOR: TENFELTON, W.L.

TITLE: DISPOSAL OF LIQUID WASTES INTO COASTAL WATERS

<922> CONF.

CORPORATE AUTHOR: METTLE MONTWIST LABORATORY,
RICKLAND, WASHINGTON

ABSTRACT: METHODS EMPLOYED TO ASSESS THE RISKS
POSED BY RADIOACTIVE WASTE DISPOSAL ARE DISCUSSED AND
THEIR APPLICATION TO MONITORING THE EFFECTS OF OTHER
POLLUTANTS, SUCH AS PESTICIDES, IS CONSIDERED.
SPECIAL EMPHASIS IS MADE TO THE WINDSCALE AND
HADDON HILL NUCLEAR POWER PLANT SITES.

FOR DESC: EFFLUENT AND WASTE TREATMENT JOURNAL,
11(5), PP. 251-266 FIGURES, 31 REFERENCES

KEYWORDS: EFFLUENT; JUNE; MONITORING; OCEAN
AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); RADIATION IN
PERSPECTIVE; WASTE DISPOSAL, LIQUID; LIND: RADIATION .
SAFETY AND CONTROL; DISPERSION; DECONTAMINATION;
POLLUTION IN PERSPECTIVE; DEWITT VS RISK; DECONTAMINATION;
BENEFICIAL USE, AQUACULTURE

<923>

PUB DATE: 1976

AUTHOR: WREDA, D.F.

TITLE: SITE FACILITY DECONTAMINATION AND
DISPOSITION FINAL REPORT

CORPORATE AUTHOR: ROCKWELL INTERNATIONAL

ABSTRACT: THE DECONTAMINATION AND DISPOSITION (DDP)
OF BUILDING 220, SHIELD TEST IRRADIATION REACTOR (STIR)
FACILITIES, ARE COMPLETED. THE CORE TANK, THE ACTIVATED
CONCRETE STRUCTURES SURROUNDING THE CORE TANK, THE
THERMAL COLUMN, THE REACTOR SHIELD, THE TEST VALVE
CARRIAGE, THE WATER COOLING SYSTEMS, AND THE WATER
SHIELD POOL WERE REMOVED, AND THE FACILITY EXHAUST
SYSTEM WAS PARTIALLY DISMANTLED. THE FACILITIES WERE
DECONTAMINATED TO LEVELS WHICH WERE AS LOW AS
PRACTICABLE, BUT IN ALL CASES TO LEVELS BELOW THE
LIMITS DESCRIBED AS ACCEPTABLE FOR FUTURE UNRESTRICTED
USE. THE MORE SIGNIFICANT DDP ACTIVITIES ARE
SUMMARIZED, AND SPECIAL TECHNIQUES ARE NOTED. RESULTS
OF THE RADIOLOGICAL MONITORING IN SUPPORT OF THE DDP
OPERATIONS AND OF THE FINAL RADIOLOGICAL SURVEY ARE
PRESENTED.

FOR DESC: AI-220A-13160 1976 (AUG.)

KEYWORDS: DECONTAMINATION; POWER PLANT, NUCLEAR;
DISMANTLING; AS LOW AS PRACTICABLE (ALAP); MONITORING
(SEE ALSO SURVEY); SURVEY; DECOMMISSIONING;

<924>

PUB DATE: 1968

AUTHOR: VAN EVERDINGEN, D.F.

TITLE: FLUID MECHANICS OF DEEP-Well DISPOSALS

CORPORATE AUTHOR: ROCKWELL AND HADDON

ABSTRACT: THE FUNDAMENTAL LAW WHICH GOVERNS THE
FLOW OF SLIGHTLY COMPRESSIBLE FLUIDS IN PERMEABLE
FORMATION HAS BEEN USED TO COMPUTE THREE UNIT
FUNCTIONS USEFUL IN WELL CO RESERVOIR ANALYSIS. THESE
UNIT FUNCTIONS GIVE QUANTITATIVE INFORMATION OF (1)
THE CHANGE OF PRESSURE IN THE WELL OR FORMATION AS A
RESULT OF UNIT RATE OF INJECTION DURING A PERIOD OF
TIME, (2) THE AMOUNT OF FLUID WHICH CAN BE DISPOSED OF
PER UNIT PRESSURE INCREASE IN A GIVEN TIME, AND (3)
THE EFFECT OF AN ENLARGED BOREHOLE ON THE INJECTION
PRESSURE. NUMERICAL DATA ON THE FIRST TWO FUNCTIONS
HAVE BEEN PUBLISHED PREVIOUSLY (VAN EVERDINGEN AND
BROOK, 1969). THE DATA FOR THE FUNCTION GIVING THE
EFFECT OF AN ENLARGED BOREHOLE ARE PRESENTED FOR THE
FIRST TIME.

FOR DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS -
A STUDY OF RESERVOIR STRATA, 1968 3 FIGURES, 3 TABLES,
6 REFERENCES, PG 32-42

KEYWORDS: GEOLOGY; HYDRAULIC FRACTURING (SEE ALSO
WASTE DISPOSAL, HYDRAULIC FRACTURING); HYDRAULIC
EFFECT; HYDROSTATIC STABILITY; HYDRODYNAMIC ANALYSIS;
WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, DEEP WELL

<925>

PUB DATE: 1976

AUTHOR: VANIGLI, H.E.; STEIGMEYER, D.E.; WILLIAMS,
D.E.; COOLEY, C.B.

TITLE: SURVEY OF ALPHA WASTE GENERATION AND
DISPOSAL AS SOLIDS IN THE U.S. NUCLEAR FUEL INDUSTRY

CORPORATE AUTHOR: METTLE MONTWIST LABORATORY,
RICKLAND, WASHINGTON;

ABSTRACT: HIGH COMMERCIAL FUEL-ELEMENT-FABRICATION
AND FUEL SEED-FUEL-REPROCESSING COMPANIES WERE
SURVEYED TO LEARN THEIR CURRENT PRACTICES REGARDING
GENERATION AND DISPOSAL OF SOLID ALPHA CONTAMINATED
WASTES. THE INFORMATION WAS OBTAINED BY VISITING
PROCESSORS THROUGHOUT THE UNITED STATES IN JUNE 1976.
SPECIAL EMPHASIS WAS PLACED ON WASTES CONTAMINATED
WITH PLUTONIUM. CURRENT PRACTICES ARE REPORTED FOR
EACH OF THE TWO INDUSTRIES, AND EXTRAPOLATIONS ARE
MADE TO THE YEAR 1990.

FOR DESC: BWPL-8-36, 43 PAGES, (DECEMBER 1976)

KEYWORDS: ALPHA EMITTER; FUEL FABRICATION (SEE ALSO
FABRICATION); PLUTONIUM; EXTRAPOLATION FACTOR; WASTE
DISPOSAL, SOLID; RADIOCHEMICAL PROCESSING; FUEL
REPROCESSING; SURVEY; PRODUCTION; FUEL ELEMENTS

<926>

PUB DATE: 1970

AUTHOR: VARGA, J.A.; JACOBS, D.C.

TITLE: DISSOLUTION OF CALCIUM - STIBOITE CARBONATE
AND ITS SUBSEQUENT MOVEMENT IN THE GROUND

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A SERIES OF LABORATORY EXPERIMENTS WAS
PERFORMED TO DETERMINE THE RELATIVE BEHAVIOR OF
STIBOITE AND CALCIUM IN THE DISSOLUTION OF STIBOITE-
CONTAMINATED CALCIUM CARBONATE AND SUBSEQUENT MOVEMENT
THROUGH A DIAPHRAGM EXCHANGE SYSTEM. THE BEHAVIOR OF THE
TWO ELEMENTS WAS FOUND TO BE SIMILAR, AND THEIR
RELEASE FROM THE SYSTEM WAS DIRECTLY RELATED TO THE
AMOUNT OF HYDROCHLORIC ACID USED IN THE LEACHING
PROCESS. (AUTH)

FOR DESC: CSM-TH-3130 1970 (NOV.)

KEYWORDS: BIPHASIC EXCHANGE; GROUND TRANSPORT (SEE
ALSO WATER TRANSPORT, GROUND); BEHAVIOR; MOVEMENT,
RADIOACTIVITY; TRANSPORT; DISSOLUTION; CALCIUM
CARBONATE; CONTAMINATION; HYDROCHLORIC ACID; LEACHING;
EFFECT, PH

<927>

PUB DATE: 1968

AUTHOR: WADDER, D.L.

TITLE: SUBSURFACE DISPOSAL OF LIQUID INDUSTRIAL
WASTES BY DEEP-Well INJECTION

CORPORATE AUTHOR: DEPARTMENT OF THE INTERIOR

ABSTRACT: DISPOSAL OF CONCENTRATED, SUSPENDED,
RELATIVELY GROUNDABLE LIQUID WASTES IS AN IMPORTANT
PROBLEM IN WATER-POLLUTION CONTROL. DEEP-Well
INJECTION IS ONE MEANS FOR DISPOSING OF SUCH WASTES.
THE FEASIBILITY OF DEEP-Well INJECTION DEPENDS ON SITE
SUITABILITY, WASTE CHARACTERISTICS, ECONOMICS, AND
LOCAL CONSIDERATIONS. GEOLOGIC FACTORS DETERMINE SITE
SUITABILITY AND HAVE AN IMPORTANT INFLUENCE ON
ECONOMICS AND THE SUITABILITY OF WASTE FOR INJECTION.
THUS, CAREFUL GEOLOGIC EVALUATION IS A PREREQUISITE
FOR DEEP-Well WASTE INJECTION.

FOR DESC: SUBSURFACE DISPOSAL IN GEOLOGIC BASINS -
A STUDY OF RESERVOIR STRATA, 1968 2 FIGURES,
REFERENCES, PG 11-20

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL,
ECONOMICS); GEOLOGY; LIND; SITING, WASTE DISPOSAL;
WASTE SOURCE AND TYPE; WASTE DISPOSAL, LIQUID; WASTE
DISPOSAL, DEEP WELL

<920>

PUB DATE: 1970

AUTHOR: NEEDER, R.C.; DOUTON, C.B.; DE LAGUNA, R.; MCCUE, J.C.

TITLE: HYDROFRACTURE SITE PROOF STUDY AT OAK RIDGE NATIONAL LABORATORY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A STUDY WAS CARRIED OUT IN FY-70 TO VERIFY THAT A SITE PROPOSED FOR A NEW HYDROFRACTURE WASTE DISPOSAL FACILITY AT THE OAK RIDGE NATIONAL LABORATORY WAS SUITABLE FOR HYDROFRACTURE OPERATIONS. AN INJECTION WELL AND FOUR MONITORING WELLS WERE DRILLED AND CASED, AND A TEST INJECTION WAS MADE USING A GRUNT TAGGED WITH RADIOISOTOPE TRACER. THE RESULTS OF THE STUDY INDICATE THAT THE PROPOSED SITE IS SATISFACTORY.

PUB DESC: OREL-TH-4713 1970(MOV.)

KEYWORDS: SITING; WASTE DISPOSAL; HYDRAULIC FRACTURING; GRUNT; CEMENT; SHALE; INJECTION; INTERMEDIATE-LEVEL WASTE; GEOLOGY; CORE;

<929>

PUB DATE: 1966

AUTHOR: NEEDER, R.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING - PART II, DESIGN OF SHALE FRACTURING PLANT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ABSTRACT: THE SHALE FRACTURING PROGRAM HAS BEEN CONCERNED WITH THE DEVELOPMENT OF A TECHNIQUE FOR THE SAFE AND ECONOMIC DISPOSAL OF LARGE BATCHES OF RADIOACTIVE WASTE BY MIXING THE WASTE WITH CEMENT AND INJECTING THE MIXTURE DEEP OF SHALE AT DEPTHS OF ABOUT 1000 FT. A FACILITY WAS BUILT AT OREL TO MAKE A SERIES OF SEVEN EXPERIMENTAL INJECTIONS. LARGE VOLUMES OF WASTE SOLUTION (UP TO 150,000 GALLONS PER INJECTION) WERE SUCCESSFULLY INJECTED. PRECISE CONTROL OF THE PROPERTIES OF CEMENT AND WASTE SOLUTION REMAINS A DIFFICULT PROBLEM. THE FACILITY IS NOW SCHEDULED FOR MODIFICATION FOR REGULAR DISPOSAL OF LABORATORY WASTE.

PUB DESC: NUCLEAR ENGINEERING AND DESIGN 4(1) PAGES 108-117, (MAY, JUNE 1966) 10 PAGES, 8 FIGURES, 1 TABLE, 8 REFERENCES, APRIL 26, 1966

KEYWORDS: CORE; CEMENT; SHALE; WASTE DISPOSAL, LIQUID; WASTE DISPOSAL, HYDRAULIC FRACTURING; GEOLOGY, GEOPHYSICAL

<930>

PUB DATE: 1966

AUTHOR: NEEDER, R.C.

TITLE: DISPOSAL OF RADIOACTIVE WASTES BY HYDRAULIC FRACTURING- PART IV, DESIGN OF CORE SHALE-FRACTURING PLANT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ABSTRACT: THE SHALE FRACTURING PROGRAM HAS BEEN CONCERNED WITH THE DEVELOPMENT OF A TECHNIQUE FOR THE SAFE AND ECONOMIC DISPOSAL OF LARGE BATCHES OF RADIOACTIVE WASTE BY MIXING THE WASTE WITH CEMENT AND INJECTING THE MIXTURE DEEP OF SHALE AT DEPTHS OF ABOUT 1000 FEET. A FACILITY WAS BUILT AT OREL TO MAKE A SERIES OF SEVEN EXPERIMENTAL INJECTIONS. LARGE VOLUMES OF WASTE SOLUTION (UP TO 150,000 GALLONS PER INJECTION) WERE SUCCESSFULLY INJECTED. PRECISE CONTROL OF THE PROPERTIES OF CEMENT AND WASTE SOLUTION REMAINS A DIFFICULT PROBLEM. THE FACILITY IS NOW SCHEDULED FOR MODIFICATION FOR REGULAR DISPOSAL OF LABORATORY WASTE.

PUB DESC: ENCL-P-2174, 8 FIGURES, 8 REFERENCES, 1 TABLE, 1966

KEYWORDS: WASTE HANDLING; CEMENT; SHALE; CORE; SHALE; WASTE TREATMENT, FIXATION; WASTE DISPOSAL, HYDRAULIC FRACTURING

<931>

PUB DATE: 1966

AUTHOR: WRATTON J.; THORPILL, A.P.

TITLE: HTS FUEL DISPOSAL STUDY

CORPORATE AUTHOR: UNITED KINGDOM ATOMIC ENERGY AUTHORITY, BISLEY (ENGLAND)

ABSTRACT: THE HANDLING OF FUEL FROM A SINGLE-DRAGON-TYPE B.T.G.C. POWER REACTOR IS CONSIDERED. THE STUDY COMPARES THE RELATIVE COSTS OF A SELECTED NUMBER OF ALTERNATIVE METHODS OF STORAGE OF THE FUEL AND OTHER FUELS DISCHARGED FROM A CONCEPTUAL 512 MW(e) REACTOR. THE METHODS CONSIDERED ARE STORAGE OF NUCLEAR FUEL ELEMENTS AND VARIOUS PROCESSES TO REDUCE THE VOLUME OF THE FUEL BEFORE STORAGE. IT IS FOUND THAT THE REDUCED VOLUME SCHEMES ARE LESS SAFE AND COST MORE THAN ANY SAVING MADE IN STORAGE SPACE. INTERIM COOLING OF THE FUEL WITHIN THE REACTOR BUILDING FOR THE FIRST 200 DAYS AFTER DISCHARGE IS RECOMMENDED, FOLLOWED BY CANNING OF WHOLE FUEL ELEMENTS, AND THEIR TRANSFER TO A GAS-COOLED FACILITY IN A SEPARATE BUILDING FOR LONG-TERM STORAGE.

PUB DESC: DR-REPORT-450, 36 PAGES, JULY 1966

KEYWORDS: WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; REACTOR, POWER; WASTE MANAGEMENT; OILIER KINGTON; FUEL ELEMENTS

<932>

PUB DATE: 1970

AUTHOR: WILLIAMS, I.C.F.

TITLE: PROBLEMS OF RADIOACTIVE WASTE MANAGEMENT

CORPORATE AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY (ENEA), CECH

ABSTRACT: DISCUSSES A SPECIAL STUDY BY ENEA OF THE POSSIBILITIES AND PROBLEMS OF WASTE DISPOSAL IN THE ATLANTIC OCEAN BY ITS MEMBER COUNTRIES.

PUB DESC: AMERICAN NUCLEAR SOCIETY, 13(2), PG. 466-467 1 REFERENCE, (NOVEMBER 1970)

KEYWORDS: SITING, WASTE DISPOSAL; WASTE DISPOSAL, OCEAN; EUROPEAN NUCLEAR ENERGY AGENCY (ENEA); WASTE TRANSPORTATION; RADIATION SAFETY AND CONTROL; OCEAN, ATLANTIC

<933>

PUB DATE: 1969

AUTHOR: WISCONSIN MICHIGAN POWER COMPANY (U.S.A.)

TITLE: VOLUME III - SYSTEM DESCRIPTION

CORPORATE AUTHOR: WISCONSIN ELECTRIC POWER COMPANY; WISCONSIN MICHIGAN POWER COMPANY

ABSTRACT: CONTAINS DESCRIPTIONS AND EVALUATIONS FOR THE FOLLOWING SYSTEMS - ELECTRICAL, AUXILIARY AND EMERGENCY, STEAM AND POWER CONVERSION, WASTE DISPOSAL AND RADIATION PROTECTION. INCLUDES SECTIONS ON CONDUCT OF OPERATIONS, AND INITIAL TESTS AND OPERATIONS.

PUB DESC: FINAL SAFETY ANALYSIS REPORT FOR POINT BEACH 1 AND 2, MARCH 1969, DOCKETS 50-266/301, TYPE--PUB, SVC--WEST., AT--BENTLEY, 100 PAGES, FIGURES, TABLES

KEYWORDS: REACTOR, PWR; REACTOR DESCRIPTION; REPORT, SAF; ELECTRIC POWER; REACTOR STARTUP TESTING; WASTE MANAGEMENT; EMERGENCY SYSTEM; RADIATION SAFETY AND CONTROL; SYSTEM DESCRIPTION; POINT BEACH 1 (PWR);

<934>

PUB DATE: 1971

AUTHOR: UGLIAN, R.O.; STAGGER, J.W.; GORE, P.J.

<934> CONT.

TITLE: DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTES AT A LARGE UNIVERSITY INCINERATOR

CORPORATE AUTHOR: UNIVERSITY OF MINNESOTA, MINNEAPOLIS

ABSTRACT: THE UNIV. OF MINNESOTA INCINERATOR IS USED FOR DISPOSAL OF LOW-LEVEL COMBUSTIBLE RADIOACTIVE WASTE. CALCULATIONS HAVE BEEN MADE TO DETERMINE THE CONCENTRATION OF RADIOACTIVE MATERIAL IN THE AIR AND ASH EFFLUENT. AIR FILTERS VOLUMES ARE DETERMINED BY CONTINUOUS AIRFLOW AND TEMPERATURE MONITORING DEVICES. IT IS DEMONSTRATED THAT SUCH AN INCINERATOR CAN BE USED TO DISPOSE OF LOW-LEVEL RADIOACTIVE WASTE WITHIN PRESCRIBED LIMITS.

PUB DESC: AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL, 32(9), PP. 625-632 (SEPTEMBER 1971), 3 FIGURES, 2 TABLES, 5 REFERENCES

KEYWORDS: DILUTION; LOW-LEVEL WASTE; EFFLUENT; MEASUREMENT; WASTE DISPOSAL; WASTE TREATMENT; AIR; WASTE MANAGEMENT; DOSE CALCULATION; RADIATION; INCINERATORS; DISPERSION; CONCENTRATION

<935>

PUB DATE: 1969

AUTHOR: MOLLAN, D.C.; DOCK, D.J.; STAIER, J.W.

TITLE: RADIOACTIVE WASTE DISPOSAL AT A LARGE UNIVERSITY

CORPORATE AUTHOR: UNIVERSITY OF MINNESOTA, MINNEAPOLIS

ABSTRACT: THE RADIATION PROTECTION PROGRAM OPERATED BY THE UNIVERSITY HEALTH SERVICE AT THE UNIVERSITY OF MINNESOTA IS DESCRIBED. THE PROCEDURES AND TECHNIQUES USED FOR THE TRANSPORT AND DISPOSAL OF WASTE FROM THE USE OF RADIOISOTOPES IN THE DIAGNOSIS AND TREATMENT OF DISEASE AND IN RESEARCH ARE DISCUSSED. THE CATEGORIES OF RADIOACTIVE WASTE INCLUDE SOLID NONCOMBUSTIBLE, SOLID COMBUSTIBLE, LIQUIDS, WATER SOLUBLE LIQUIDS, FLAMMABLE, ORGANIC, IMMISCIBLE SOLVENTS, AND CONTAMINATED ANIMAL CARCASSES.

PUB DESC: JOURNAL OF THE AMERICAN COLLEGE HEALTH ASSOCIATION, VOL. 17, PG. 315-320 (APRIL 1969)

KEYWORDS: PROCEDURES AND MANUALS; WASTE DISPOSAL; WASTE TRANSPORTATION; RADIOLOGICAL ASSISTANCE; DOSIMETRY, CLINICAL; THERAPY

<936>

PUB DATE: 1968

AUTHOR: YURIN, F.F.; FINEBOV, B.R.; BAZAROV, A.I.; ZAKHAROV, S.I.; METALNIKOV, S.V.; SEDOV, V.N.

TITLE: EXPERIENCE WITH LIQUID RADIOACTIVITY WASTE DISPOSAL

ABSTRACT: SEVERAL STUDIES ON LIQUID RADIOACTIVE WASTE DISPOSAL INTO DEEP EARTH FORMATIONS HAVE BEEN MADE ON THE INDUSTRIAL PILOT PLANT AT THE SCIENTIFIC RESEARCH INSTITUTE OF ATOMIC REACTORS. IT IS SHOWN THAT RADIOACTIVE WASTE DISPOSAL USING BORING AS A METHOD OF REMEDYING THESE WASTES HARMLESS IS A PROSPECTIVE ONE WHICH PROVIDES MEDICAL AND RADIOACTIVE SAFETY AT CERTAIN GEOLOGICAL CONDITIONS. THIS METHOD IS ECONOMICALLY FEASIBLE.

PUB DESC: AT. ENERG. (USSR), 25, PAGES 120-33 (1968), IN RUSSIAN

KEYWORDS: GEOLOGY; WASTE DISPOSAL, ECONOMICS; WASTE DISPOSAL, LIQUID; HYDROLOGY; RADIATION SAFETY AND CONTROL; USSR; WASTE DISPOSAL, HYDRAULIC FRACTURING; WASTE DISPOSAL, BEDROCK

<937>

PUB DATE: 1967

AUTHOR: LAJIC, J.

TITLE: GEOLOGICAL STUDIES ON THE POSSIBILITIES OF STORING RADIOACTIVE WASTES IN THE CSSE

CORPORATE AUTHOR: INSTITUT FÜR ERGEBNIS-GEOLGISCHE UND B. BIOLOGISCHE FORSCHUNG, PRAGUE

ABSTRACT: INVESTIGATIONS ON THE UTILIZATION OF GEOLOGIC FORMATIONS FOR THE DISPOSAL OF RADIOACTIVE WASTES IN THE C.S.S.R. ARE DESCRIBED. THE POSSIBILITIES OF STORAGE IN AN ABANDONED MINE (COAL FORMATION) OR IN AN ISOLATED NONPRODUCTIVE PETROLEUM STRUCTURE (BUDCEK) ARE DESCRIBED. FINALLY, THE STATE OF STUDIES ON THE UTILIZATION OF THE ADSORPTIVE PROPERTIES OF LOOSE ROCKS AND SOILS FOR PURIFYING WASTE LIQUIDS ARE DISCUSSED.

PUB DESC: KERNENERGIE, 10, PAGES 312-316 (OCT. 1967)

KEYWORDS: GEOLOGY; CZECHOSLOVAKIA; FILTER, PRE; SOIL PROPERTY; WASTE DISPOSAL, TERRESTRIAL; WASTE STORAGE; SCILL; SCRIPTION (SEE ALSO ABSCRIPTION);

<938>

PUB DATE: 1972

AUTHOR: ZELIEN, E.J.; SAUNDERS, R.F.

TITLE: RADIOACTIVE WASTE DISPOSAL, A SUGGESTION FOR A PERMANENT INTERNATIONAL POLAR HIGH-LEVEL RADIOACTIVE WASTE DEPOSITORY

CORPORATE AUTHOR: UNIVERSITY OF KANSAS, LAWRENCE

ABSTRACT: BASED ON A PRELIMINARY STUDY, IT IS SUGGESTED THAT THE WASTES BE PLACED UNDER THE ICE CAP IN ANTARCTICA (OR POSSIBLY GREENLAND). ALL AVAILABLE EVIDENCE INDICATES THAT IF THE WASTES WERE CONVERTED TO SOLID GLASS CYLINDERS, THEY COULD BE PRACTICALLY AND SAFELY TRANSPORTED TO THE INTERIOR OF THE ICE CAP. IF PLACED ON THE SURFACE OF THE ICE, THEY WOULD MELT THEIR OWN REPLACEMENT SHAFTS WHICH WOULD RAPIDLY MELT BY FREEZING AND PLASTIC FLOW. THE CYLINDERS WOULD SINK TO THE ICE-ROCK INTERFACE WHERE THEY WOULD REMAIN SAFELY ISOLATED FROM THE BIOSPHERE FOR MORE THAN 10,000 TO 100,000 YEARS.

PUB DESC: CCO-1057-59, 36 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1972

KEYWORDS: WASTE STORAGE; WASTE DISPOSAL, ICE SHEET; WASTE TREATMENT; WASTE DISPOSAL, SOLID; HIGH-LEVEL WASTE; WASTE MANAGEMENT; GLASS (SEE ALSO VITRIFICATION); RADIATION SAFETY AND CONTROL; ICELAND; PLASTICITY; SNOW; SOLID; COMBUSTION, ARCTIC; ORGANIZATION, INTERNATIONAL

<939>

PUB DATE: 1969

AUTHOR: ZIEGLER, D.L.

TITLE: DISPOSAL OF CONTAMINATED LITHIUM-METAL SCRAP

CORPORATE AUTHOR: DOW CHEMICAL COMPANY, COLCRAIG

ABSTRACT: THE FOLLOWING TWO METHODS OF DISPOSAL FOR PLUTONIUM CONTAMINATED LITHIUM SCRAP WERE EXPLORED IN THE LABORATORY. - (1) REACT THE LITHIUM METAL WITH WATER SATURATED ETHYLENE FORMING THE LITHIUM HYDROXIDE PRECIPITATE, (2) REACT THE LITHIUM WITH BUTANOL FORMING THE ALKOXIDE WHICH WAS HYDROLYZED WITH WATER. THE SECOND METHOD WAS MORE ATTRACTIVE FOR LABORATORY SCALE DISPOSAL AND WAS SCALED UP TO A SIZE SUITABLE FOR REACTING 500 GRAMS OF LITHIUM PER BATCH. ONE AND ONE HALF KILOGRAMS OF LITHIUM TURNINGS AND 31 LITERS OF LITHIUM-CONTAMINATED OIL WERE DISPOSED OF BY THIS METHOD.

PUB DESC: REP-1307, 7 PAGES, 2 FIGURES, 2 TABLES, SEPTEMBER 19, 1969

KEYWORDS: CHEMICAL REACTION; DECONTAMINATION; PLUTONIUM; NOCTE FLATS; WASTE DISPOSAL, LIQUID; LITHIUM; EXPERIMENT

<940>

PUB DATE: 1965

AUTHOR: AIRCRAFT-GENERAL CORPORATION (U.S.A.)

<960> COST.

TITLE: CALIFORNIA WASTE MANAGEMENT STUDY. A REPORT TO THE STATE OF CALIFORNIA, DEPARTMENT OF HEALTH

CORPORATE AUTHOR: ARJOJET-GENERAL CORPORATION

ABSTRACT: THE WASTE-HANDLING METHODS PRESENTLY USED ARE DISCUSSED IN CONSIDERABLE DETAIL. WASTE SUBSYSTEMS ARE EVALUATED WHICH ARE USED, IN LARGE MEASURE, ON STATE-OF-THE-ART EQUIPMENT. THE RESULTS OF THIS STUDY INDICATE THAT IN THIS PARTICULAR AREA, NO MAJOR PROBLEM IS ANTICIPATED IN THE WASTE SYSTEM THAT CANNOT BE ADEQUATELY HANDLED USING PRESENT APPROACHES. THIS ASSURES THAT RECICVAL CONSIDERATIONS AND REQUIREMENTS DO NOT INTERFERE SEVERELY ON THIS AREA. HOWEVER, MORE ADVANCED EQUIPMENT, COMBINED WITH A FULLY INTEGRATED APPROACH, MUST SIGNIFICANTLY REDUCE THE SYSTEM COSTS AND INCREASE SYSTEM BENEFITS. IT IS ALSO RECOGNIZED THAT THE WASTE-MANAGEMENT PROBLEM WILL INCREASE FIVE FOLD IN THE FUTURE YEARS.

PUB DESC: ACC-3056 (FINAL) *. 506 PAGES, FIGURES, TABLES, 39 REFERENCES, AUGUST 1965

KEYWORDS: ALUMINUM SULFATE; FEDERAL RADIATION COUNCIL (FRC); IONIZATION; ALPHA RADIATION; WASTE DISPOSAL, OCEAN; WASTE HANDLING; WASTE STORAGE; WASTE DISPOSAL, ECONOMICS; WASTE TREATMENT; WASTE TRANSPORTATION; POPULATION EXPOSURE; COSMIC RADIATION; RADIATION SAFETY AND CONTROL; NEUTRON; WATER POLLUTION; CONCENTRATION; AQUATIC ORGANISM; RAD

<961>

PUB DATE: 1973

AUTHOR: MUIJS, K.; MULLER, V.

TITLE: HANDLING EXPERIENCE WITH TRANSPLUTONIUM ELEMENTS

CORPORATE AUTHOR: EUROPEAN ATOMIC ENERGY COMMUNITY, EARLSHORE, WEST GERMANY

ABSTRACT: THE HANDLING OF TRANSPLUTONIUM ELEMENTS OF HIGH SPECIFIC ACTIVITY IS DETERMINED BY THE DECAY PROPERTIES OF THESE NUCLEI: IN GENERAL, CRITICALITY CAN BE NEGLECTED. THE MOST IMPORTANT TRANSPLUTONIUM NUCLIDES, ESPECIALLY THOSE WHICH CAN BE USED FOR PRACTICAL APPLICATIONS, DECAY BY ALPHA PARTICLE EMISSION OR BY SPONTANEOUS FISSION. ALPHA AND NEUTRON RADIATION ARE ACCOMPANIED BY GAMMA AND X-RAY EMISSION. THEREFORE, THE HANDLING AND SHIELDING REQUIREMENTS FOR TRANSPLUTONIUM ELEMENTS ARE DIFFERENT FROM THOSE FOR PLUTONIUM OR IRRADIATED FUEL. FOR NUCLIDES WITH HIGH SPECIFIC ALPHA-RADIOACTIVITY, ADDITIONAL PROBLEMS ARE CAUSED BY THE INTERACTION OF ALPHA PARTICLES WITH MATTER: DECAY HEAT, RADIOLYSIS, CORROSION OR EROSION, FORMATION OF NEUTRONS BY (ALPHA, N) REACTIONS.

PUB DESC: EUR-9952E, 28 PAGES, 5 FIGURES, 12 REFERENCES, APRIL 1973

KEYWORDS: DECAY HEAT; ALPHA RADIATION; TRANSPORTATION AND HANDLING; WASTE HANDLING; WASTE STORAGE; ACTIVATION PRODUCT; CORROSION (SEE ALSO STEELS CORROSION); EROSION; SHIELDING; TRANSPLUTONIUM ELEMENT

<962>

PUB DATE: 1970

AUTHOR: DEPARTMENT OF TRANSPORTATION (U.S.A.)

TITLE: TRANSPORTATION OF RADIOACTIVE MATERIALS

CORPORATE AUTHOR: ATOMIC INDUSTRIAL POWER, INC.

ABSTRACT: DIR. OF DEPT. OF TRANSPORTATION OFFICE OF HAZARDOUS MATERIALS REVIEWED REGULATIONS AND EXPERIENCE OF TRANSPORTING RADIOACTIVE MATERIALS. HE POINTS OUT THAT THE WORST POSSIBLE TRANSPORTATION ACCIDENT -- THE COMPLETE RELEASE OF A SPENT FUEL SHIPMENT -- IS DOUBTLESS EQUAL TO THE POTENTIAL HAZARD OF A TANK CAR OF COAL OIL. IN 25 YEARS OF TRANSPORTING RADIOACTIVE MATERIALS, NEVER ANYBODY KILLED OR INJURED AS A RESULT OF RELEASE -- A SAFETY RECORD THAT IS ABSOLUTELY UNEQUALLED. THERE HAS BEEN A TOTAL OF 119 INCIDENTS, IN 84 NO RELEASE OF RADIOACTIVITY WHATSOEVER. IN OTHER 35 CASES, ONLY ONE RESULTED IN ANY DISPERSAL IN AIR AND IN ONLY ONE CASE

HAS ANY COSTLY CLEANUP INVOLVED.

PUB DESC: INFO ISSUE NO. 27 (SUPPLEMENT), PG 4 (MAY 1970)

KEYWORDS: TRANSPORTATION AND HANDLING; TANKER BOGE (PUB); ACCIDENT, PROBABILITY OF; WASTE TRANSPORTATION; DATA COLLECTION; SPENT FUEL, FEDERAL

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PUB DATE: 1960

AUTHOR: EDISON ELECTRIC INSTITUTE (U.S.A.)

TITLE: RADIOACTIVE WASTE HANDLING IN THE NUCLEAR POWER INDUSTRY (A REPORT OF THE TECHNICAL APPRAISAL TASK FORCE ON NUCLEAR POWER TO THE BOARD OF DIRECTORS OF THE EDISON ELECTRIC INSTITUTE)

CORPORATE AUTHOR: EDISON ELECTRIC INSTITUTE, NEW YORK

ABSTRACT: THIS REPORT DEALS PRIMARILY WITH WASTE DISPOSAL (GAS, LIQUID, SOLID) FROM POWER REACTORS. IT PRESENTS PROPOSED SCHEMES FOR VARIOUS EARLY REACTORS AND ECONOMICS OF SPECIFIC DISPOSAL SCHEMES.

PUB DESC: ERI PUBLICATION NO. 60-06, 89 PAGES-MARCH 1960

KEYWORDS: REACTOR, BWR; PRESSES 1 (BWR); PRESS 1 (BWR); REACTOR, GRAPHITE MODERATED; BALLAN (LWR); INDIAN POINT 1 (PWR); REACTOR, LWR; REACTOR, PWR; SHIPPINGPORT (PWR); WASTE DISPOSAL; TANKER BOGE (PWR); REACTOR, POWER; WASTE MANAGEMENT

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PUB DATE: 1970

AUTHOR: ENERGY RESEARCH AND DEVELOPMENT ADMIN. (U.S.A.)

TITLE: TRANSPORTATION OF HIGH-LEVEL NUCLEAR WASTES

CORPORATE AUTHOR: U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ABSTRACT: PRESENTS THE RESULTS OF A PANEL STUDY TO EVALUATE THE RISK INVOLVED WITH THE SHIPMENT OF NUCLEAR WASTES. CONCLUSIONS OF THE PANEL WERE: (1) THE OVERWHELMING RISK IN TRANSPORTATION IS FROM CONVENTIONAL TRAFFIC ACCIDENTS UNRELATED TO RADIATION; (2) EXPOSURES TO TRANSPORTATION WORKERS IS SEVERAL ORDERS OF MAGNITUDE LOWER THAN THE BEST RESTRICTIVE ACCEPTABLE LEVEL; AND (3) THE PANEL AGREED WITH THE AEC THAT THE OVERALL PUBLIC RISK FACTORS DESCRIBED IN WASH-1230 FOR SHIPMENTS OF SPENT FUEL WERE ACCEPTABLE.

PUB DESC: EDDA-R, 4 PAGES, NOVEMBER 1970

KEYWORDS: RISK (SEE ALSO BENEFIT VS RISK); ADVISORY COMMITTEE ON REACTOR SAFEGUARDS; WASTE TRANSPORTATION; TRANSPORTATION AND HANDLING; ACCIDENT, CONSEQUENCES; ACCIDENT, PROBABILITY OF; INDUSTRY, TRANSPORTATION

<965>

PUB DATE: 1974

AUTHOR: FAUST, L.G.; BRACKENBUSH, L.W.

TITLE: HIGH EXPOSURE PLUTONIUM FUELS FROM LIGHT WATER REACTORS

CORPORATE AUTHOR: INTELLIGENT NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS PAPER CONSIDERS SOME OF THE RADIATION PROBLEMS WHICH ARE EXPECTED TO OCCUR DURING THE SHIPPING AND HANDLING OF PLUTONIUM PRODUCED IN LIGHT WATER REACTORS IN THE YEARS 1975 THROUGH 1985. CURRENT METHODS FOR SHIPPING PLUTONIUM FROM A PROCESSING PLANT, FURNACING THE PLUTONIUM INTO MIXED OXIDE FUEL ELEMENTS, AND SHIPPING THE FUEL ELEMENTS TO REACTORS WILL HAVE TO BE CHANGED. SEVERAL METHODS FOR ESTIMATING PHOTON AND NEUTRON DOSE EQUIVALENTS ARE PRESENTED WITH SOME SUGGESTION TO REDUCE THE RISK OF PERSONNEL RADIATION EXPOSURE PROBLEMS.

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PUB DESC: BNEL-5A-5004, CONF-741104-1, 20 PAGES, PRESENTED AT THE 22ND CONFERENCE ON REACTOR SYSTEMS TECHNOLOGY, HELD IN WASHINGTON, D.C., NOV. 1974

KEYWORDS: PLUTONIUM; FORECAST; TRANSPORTATION AND HANDLING; WASTE HANDLING; WASTE TREATMENT; WASTE TRANSPORTATION; RADIATION SAFETY AND CONTROL

<946>

PUB DATE: 1975
AUTHOR: GREGG, J.; DISCUSSED, J.L.

TITLE: RADIOACTIVE WASTE - PLANT TO DISPOSAL

CORPORATE AUTHOR: TENNESSEE VALLEY AUTHORITY, CHATTANOOGA

ABSTRACT: COMPARES THE TVA BARCASTE SHIPPING SYSTEM TO THAT OF A VESSEL SHIPPING SYSTEM AND LISTS THE ADVANTAGES OF A UTILITY OWNED SHIPPING CASE AND THE ADVANTAGES OF CONTRACTED SERVICES.

PUB DESC: AMERICAN POWER CONFERENCE, HELD IN CHICAGO, ILLINOIS, 16 PAGES, APRIL 21-23, 1975

KEYWORDS: TVA; WASTE MANAGEMENT; WASTE TRANSPORTATION; SHIPPING CONTAINERS; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMIC);

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PUB DATE: 1967
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: THE MANAGEMENT OF RADIOISOTOPE WASTES PRODUCED BY RADIOISOTOPE CESSES. TECHNICAL ANNEX. SAFETY SERIES NO. 19

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA

ABSTRACT: PRESENTS PROCEDURES AND PROCEDURES IN THE HANDLING OF RELATIVELY SMALL QUANTITIES OF WASTE ARISING FROM THE USE OF RADIOISOTOPES IN LABORATORIES, HOSPITALS, AND INDUSTRY. TOPICS DISCUSSED ARE - TYPES OF WASTE ASSOCIATED WITH A NUMBER OF RADIOISOTOPES, WASTE-COLLECTION CONTAINERS AND SYSTEMS, DIRECT DISPOSAL OF RADIOACTIVE WASTES TO SEWERS, LIQUID-WASTE TREATMENT SUITABLE FOR USERS OF RADIOISOTOPES, SOLID-WASTE TREATMENT AND DISPOSAL BY INDIVIDUAL USERS OF RADIOISOTOPES, AND AIRBORNE-WASTE MANAGEMENT.

PUB DESC: STI-PUB-119, 86 PAGES, 23 FIGURES, 12 TABLES, 32 REFERENCES, 1966

KEYWORDS: ALUMINUM; STYRENE; WASTE DISPOSAL, ATMOSPHERIC; WASTE TREATMENT, LIQUID; FILTERED THROAT; PHOSPHATE; WASTE TRANSPORTATION; WASTE TREATMENT, SOLID; WASTE MANAGEMENT; CORROSION; EVAPORATION; INCINERATION; ION EXCHANGE; RADIOISOTOPE

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PUB DATE: 1969
AUTHOR: KILYCHEV, B.S.; KATYEV, A.B.; KROKHIVICH, A.A.

TITLE: RADIOACTIVE WASTE HANDLING AT SOVIET ATOMIC POWER STATIONS

ABSTRACT: THE PROBLEMS OF RADIOACTIVE WASTE HANDLING AT ATOMIC POWER STATIONS IN THE USSR ARE DISCUSSED. HANDLING PROCEDURES INCLUDE RADIOACTIVE WASTE TREATMENT, DECONTAMINATION, LONG-TERM STORAGE, TRANSPORTATION AND DISPOSAL. THESE PROBLEMS WERE STUDIED ON THE DATA OBTAINED FROM THE OPERATION OF THE NOVOPOLNOYE AND BELOMOYE ATOMIC POWER STATIONS AND ON THE RESULTS OF THE RESEARCH WORK AT THE BELOMOYE ATOMIC REACTOR RESEARCH INSTITUTE. SOME DATA ON THE RESEARCH AND DEVELOPMENT IN THIS FIELD ARE PRESENTED.

PUB DESC: ATOMIC ENERGY/U.S.S.R., VOL. 24, PG. 440-478 (MAY 1969) (IN RUSSIAN)

KEYWORDS: DECONTAMINATION; B AND B PROGRAM; WASTE DISPOSAL; WASTE HANDLING; WASTE STORAGE; WASTE

TREATMENT; REACTOR, POWER; WASTE TRANSPORTATION; WASTE MANAGEMENT; USSR

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PUB DATE: 1975
AUTHOR: LOFF, D.; VOYES, R.E.; SMITH, D.B.

TITLE: VES SHIPPING CASE

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO; UNIVERSITY OF CALIFORNIA

ABSTRACT: A LARGE WELL-SHIELDED SHIPPING CONTAINER, COMMONLY KNOWN AS THE BOWER CASE, HAS BEEN DESIGNED TO ACCOMMODATE FUEL ELEMENTS FROM THE BOWER AND TROT IIC REACTORS IN COMPLIANCE WITH EXISTING REGULATORY REQUIREMENTS. BACKGROUND MATERIAL AND APPROVALS ARE GIVEN IN THE APPENDICES.

PUB DESC: LA-5034-MS 1975(AUG.)

KEYWORDS: SHIPPING CONTAINER; CASE; SHIELDING; DESIGN; REGULATION (SEE ALSO STANDARDS, RADIATION); TRANSPORTATION;

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PUB DATE: 1975
AUTHOR: BARABAN, W.J.; MCNEESE, W.D.; STAFFORD, R.C.

TITLE: CONTAINMENT FACILITIES FOR HANDLING PLUTONIUM

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: PLUTONIUM HANDLING ON A MULTIGRAM SCALE BEGAN IN 1944. EARLY CRITERIA, EQUIPMENT, AND TECHNIQUES FOR CONTAINING CONTAMINATION HAVE BEEN SUPERSED BY MORE STRINGENT CRITERIA AND FASTLY IMPROVED EQUIPMENT AND TECHNIQUES FOR IN-PROCESS CONTAMINATION CONTROL, EFFLUENT AIR CLEANING AND TREATMENT OF LIQUID WASTES. THIS PAPER DESCRIBES THE EVOLUTION OF EQUIPMENT AND PRACTICES TO MINIMIZE EXPOSURE OF WORKERS AND ESCAPE OF CONTAMINATION INTO WORK AREAS AND INTO THE ENVIRONMENT. EARLY AND CURRENT CONTAMINATION CONTROLS ARE COMPARED. (AUTHOR)

PUB DESC: HEALTH PHYSICS, 29(4), P. 449 (1975)

KEYWORDS: CONTAINMENT FACILITY; CONTAINMENT BUILDING; FILTRATION; RADIOACTIVE WASTE; PLUTONIUM

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PUB DATE: 1964
AUTHOR: WOODBAY, R.P.

TITLE: RADIOACTIVE LIQUID WASTE HANDLING AND DISPOSAL AT CHALK RIVER

CORPORATE AUTHOR: ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER

ABSTRACT: THE REPORT DESCRIBES THE ACTIVE LIQUID WASTE HANDLING PROCEDURES AND ULTIMATE DISPOSAL METHODS USED AT THE CHALK RIVER NUCLEAR LABORATORIES. EXPERIENCE OF THE PAST EIGHT YEARS, INCLUDING ESTIMATES OF THE AMOUNTS OF WASTE HANDLED, IS OUTLINED.

PUB DESC: CIND-1194 (AECL-1974), 18 PAGES, 1 FIGURE, 9 REFERENCES- JANUARY 1964- AECL

KEYWORDS: GROUND WATER; SURFACE WATER; WASTE DISPOSAL, TERRESTRIAL; WASTE HANDLING; WASTE TREATMENT, LIQUID; WASTE DISPOSAL, SEWER

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PUB DATE: 1974
AUTHOR: FRYCS, R.A.

TITLE: IRRADIATED FUEL AND CONTROL RODS TRANSPORT FROM A DECOMMISSIONED POWER REACTOR

ABSTRACT: THE DECOMMISSIONING OF THE BOILING NUCLEAR SUPERHEATER (BOWS) REACTOR IN WINCO, PUERTO RICO, INVOLVED THE TRANSPORT TO THE CENTRALIZED UNITED STATES OF IRRADIATED FUEL ELEMENTS AS WELL AS THE SEED

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AND CONTROL BODS FOR REPROCESSING AND DISPOSAL, RESPECTIVELY. THE RESPONSIBILITY WAS ASSIGNED BY THE U.S.A.E.C. TO THE OAK RIDGE OPERATIONS OFFICE. TASKS INCLUDED CASE SELECTION, CASE AND SPECIAL EQUIPMENT PREPARATION, TRANSPORTATION ARRANGEMENTS, DOCUMENTATION, AND SHIPMENT EXECUTION. SAFETY CONSIDERATIONS WERE FACTORED INTO EACH WASTE AND SAFETY ANALYSIS REPORTS WERE PREPARED FOR THE CASE AND FOR THE FUEL AND CONTROL ROD TASKS. TRIAL RUNS WITH THE CASE AND SPECIAL EQUIPMENT WERE CONDUCTED PRIOR TO SHIPMENT TO PUERTO RICO. THE APPLICABLE REGULATIONS OF THE USARC ARE THE DEPARTMENT OF TRANSPORTATION'S ARE FOLLOWED. THE COMPLETE TASK REPRESENTS THE COOPERATIVE EFFORTS OF TWO USARC OPERATIONS OFFICES AND TWO USARC PRIME CONTRACTOR ORGANIZATIONS.

PUB DESC: CONF-741010, SYMPOSIUM ON POPULATION EXPOSURES. PROCEEDINGS OF THE EIGHTH ANNUAL TOPICAL SYMPOSIUM OF THE HEALTH PHYSICS SOCIETY. P 375-382, 2 FIG, 1 TAB, 3 REF. (1974)

KEYWORDS: WASTE DISPOSAL; FUEL ELEMENTS; NUCLEAR POWER PLANTS; DECOMMISSIONING; PUERTO RICO; TRANSPORTATION; FUEL REPROCESSING; PUBLIC HEALTH; USARC (SEE ALSO AGENCY, ARC); ORO; WASTE CASE; DOCUMENTATION; SHIPPING; SAFETY EVALUATION; HAZAROUS ANALYSIS; REGULATION (SEE ALSO STANDARDS, RADIATION);

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PUB DATE: 1973

AUTHOR: SCHINDLER, V.J.

TITLE: SAFETY AND ENVIRONMENTAL PROTECTION PROBLEMS IN THE HANDLING OF RADIOACTIVE WASTES

ABSTRACT: ON THE BASIS OF THE IMPOSED SAFETY AND ENVIRONMENTAL PROTECTION REQUIREMENTS AND OF TECHNICAL PROGRESS THE MEASURES TAKEN BY THE FIRST FOREIGN NUCLEAR ENERGY CITIES FOR THE HANDLING OF RADIOACTIVE WASTE ARE NO LONGER APPROPRIATE. A NEW SOURCE OF RESEARCH AND DEVELOPMENT WORK HAS STARTED. THE PAPER DEALS PARTICULARLY WITH THE SAFETY PROBLEMS IN THE TREATMENT OF HIGHLY ACTIVE WASTE SOLUTIONS IN REPROCESSING PLANTS, THE SPECIAL SITUATION IN THE USA WITH THE PROBLEMS OF THE END DISPOSAL OF RADIOACTIVE WASTE IN THE GROUND, THE INTERMEDIATE STORAGE OF SOLIDIFIED ACTIVE RESIDUES IN BUILDINGS AS WELL AS THE ADVANCED AND FUTURE CONCEPTS OF THE END DISPOSAL OF RADIOACTIVE WASTE. (IN GERMAN)

PUB DESC: ATOMISTSCHAFT-ATOMTECHNIK, 10(5), PP. 231-234 (MAY 1973)

KEYWORDS: WASTE DISPOSAL; ENVIRONMENT; WASTE TREATMENT; WASTE MANAGEMENT; GERMAN; REVIEW; FUEL REPROCESSING

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PUB DATE: 1974

AUTHOR: UNION CARBIDE CORP. NUCLEAR DIVISION, USARC

TITLE: PROCEEDINGS OF THE 8TH INTERNATIONAL SYMPOSIUM ON PACKAGING AND TRANSPORTATION OF RADIOACTIVE MATERIALS. SEPT. 22-27, 1974, ISABE BEACH, FLORIDA.

CORPORATE AUTHOR: UNION CARBIDE CORPORATION, NUCLEAR DIVISION AND THE USARC

ABSTRACT: THE GROWING USE OF RADIOACTIVE MATERIALS IN THE INDUSTRIAL AND MEDICAL FIELDS HAS MADE IT HIGHLY DESIRABLE THAT THE TRANSPORT OF SUCH MATERIALS SHOULD BE CARRIED OUT WITH THE MINIMUM OF HINDRANCE AND A MAXIMUM OF SAFETY. THE FOLLOWING TOPICS WERE DISCUSSED: I REGULATIONS: INTERNATIONAL, FEDERAL, AND STATE. II SAFEGUARDS. III PACKAGE DESIGN. IV CONTAINER TESTING. V TRANSPORT STUDIES, PROJECTIONS AND INNOVATIONS. VI SHIPMENT OF RADIOACTIVE WASTE. VII NONDESTRUCTIVE TESTING STANDARDS, AND QUALITY ASSURANCE. VIII NUCLEAR CRITICALITY SAFETY. IX CONTAINER TESTING-HEAT TRANSFER. X RISK ASSESSMENT. XI TRANSPORTATION PACKAGING. XII TRANSPORT EXPERIENCE.

PUB DESC: CONF. 740901-P1,-2,-3.

KEYWORDS: PACKAGING; WASTE TRANSPORTATION; REGULATION (SEE ALSO STANDARDS, RADIATION); SAFETY; SAFEGUARDS; NUCLEAR MATERIAL; CONTAINERS (SEE ALSO PACKAGING); CONTAINER INTEGRITY; RISK (SEE ALSO BENEFIT VS RISK);

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PUB DATE: 1974

AUTHOR: BARTLETT, J.W.; BURNS, R.L.; BRAY, L.A.; WUDCO, L.L.; BYAS, J.L.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES - WASTE PARTITIONING.

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: AN ALTERNATIVE APPROACH IN MANAGING HIGH-LEVEL RADIOACTIVE WASTE INVOLVES SEPARATING THE TOTAL WASTE INTO FRACTIONS OF DIFFERENT HALF-LIVES. SHORT-LIVED FRACTIONS WOULD THEN DECAY TO BECOME RADIOACTIVELY NON-TOXIC IN RELATIVELY SHORT TIMES -- TIMES SHORT ENOUGH TO BE WITHIN MAN'S ABILITY TO CONTROL THE WASTE STORAGE. LONG-LIVED FRACTIONS -- SIGNIFICANTLY REDUCED IN MASS, VOLUME AND RADIOACTIVE DECAY HEAT OUTPUT -- COULD BE CONSIDERED FOR OTHER TREATMENT, E.G., TRANSPORTATION TO NON-RADIOACTIVE OR SHORT-LEVEL DEPOSITS, EXTRATERRESTRIAL DISPOSAL, OR SPECIAL TERRESTRIAL DISPOSAL. (AUTH)

PUB DESC: BNWL-1900, MAY 1974, VOL. 4, SECTION 7, 37 P, 3 FIG, 1 TAB, 14 REF.

KEYWORDS: FUEL REPROCESSING; TRANSPORTATION; FRACTIONATION; EXTRA-TERRESTRIAL DISPOSAL; NUCLEAR POWER; WASTE PARTITIONING; HALF-LIFE; WASTE SEPARATION; WASTE DISPOSAL; WASTE TREATMENT; DECAY; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); HIGH-LEVEL WASTE

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PUB DATE: 1974

AUTHOR: ECFRMAN, J.L.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES - SUMMARY, BACKGROUND AND DATA BASE, AND EVALUATION METHODOLOGY

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS SECTION IS A SUMMARY OF A COMPREHENSIVE OVERVIEW STUDY OF POTENTIAL ALTERNATIVES FOR LONG-TERM MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE SPONSORED BY THE U.S. ATOMIC ENERGY COMMISSION DIV. OF WASTE MANAGEMENT AND TRANSPORTATION. THE REPORT DESCRIBES THE VARIOUS WASTE MANAGEMENT ALTERNATIVES THAT HAVE BEEN STUDIED BY THE PACIFIC NORTHWEST LABORATORY AND OUTLINES THE METHODS BEING USED FOR EVALUATION. THE FOLLOWING OBJECTIVES FOR EACH WASTE MANAGEMENT ALTERNATIVE ARE REPORTED: 1) TECHNICAL FEASIBILITY INFORMATION; 2) SAFETY INFORMATION AND METHODOLOGY FOR ANALYSIS; 3) POLICY, ENVIRONMENTAL, AND PUBLIC RESPONSE CONSIDERATIONS; 4) ADVANTAGES AND DISADVANTAGES; 5) DESIRED RESEARCH AND DEVELOPMENT; 6) RESEARCH AND DEVELOPMENT COSTS; AND 7) SCHEDULES AND CAPITAL AND OPERATING COSTS FOR IMPLEMENTATION. (AUTH)

PUB DESC: BNWL-1900, VOL. 1, 1974 MAY, 441 PP, 42 FIG, 48 TAB, 131 REF, 16 APPEND.

KEYWORDS: R AND D PROGRAM; TECHNOLOGY; METHODOLOGY; SAFETY EVALUATION; ECONOMIC STUDY; BENEFIT VS RISK; COST-BENEFIT ANALYSIS; NUCLEAR WASTES; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); HIGH-LEVEL WASTE; USARC (SEE ALSO AGENCY, ARC);

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PUB DATE: 1974

AUTHOR: BRONNELLER, R.; BROWN, C.L.; GIBBS, E.J.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES EXTRATERRESTRIAL DISPOSAL.

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY,

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FICHLAND, WASHINGTON

ABSTRACT: THE BASIC CONCEPT OF EXTRATERRESTRIAL DISPOSAL INCLUDES PACKAGING WASTE MATERIALS IN A SAFE HARBOR AND TRANSPORTING THE MATERIAL BY ROCKET OR OTHER MEANS TO A LOCATION OFF THE EARTH. SEVERAL EFFICIENT TRAJECTORIES HAVE BEEN CONSIDERED. THESE INCLUDE: (1) 1. A HIGH EARTH ORBIT ON THE ORDER OF 150,000 KILOCYCLE. 2. TRANSPORT TO THE SUN. 3. A SOLAR ORBIT OTHER THAN THAT OF THE EARTH AND PLANETS. 4. SOLAR SYSTEM ESCAPE. VEHICLES USED IN THE ANALYSIS AS CURRENT TECHNOLOGY INCLUDE EXISTING SPACE VEHICLES AND THE PLANNED SPACE SHUTTLE AND TUGS. (AUTH)

PUB DESC: BNWL-1500, VOL. 8, SECTION 8, MAY 1978, 204 P, 51 FIG, 30 TAB, 126 REF, 6 APPEND.

KEYWORDS: WASTE TREATMENT; WASTE DISPOSAL, EXTRA-TERRESTRIAL (SEE ALSO EXTRA-TERRESTRIAL); EXTRA-TERRESTRIAL DISPOSAL; OUTER SPACE (SEE ALSO EXTRA-TERRESTRIAL); TECHNOLOGY; R AND D PROGRAM; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); PACKAGING; SPACECRAFT; SOLAR SYSTEM ESCAPE; HIGH-LEVEL WASTE; DATA

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AUTHOR: WUB, E.A. PUB DATE: 1973

TITLE: SOCIAL COSTS FOR ALTERNATE MEANS OF ELECTRICAL POWER GENERATION FOR 1900 AND 1990. VOL 3 - CHAPTER III COST-RISK-BENEFIT CONCEPTS AND MODEL. CHAPTER IV SOME REGULATIONS PERTINENT TO THE ENERGY SYSTEMS, CHAPTER V IMPACTS AND COSTS.

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY.

ABSTRACT: CHAPTER III DESCRIBES BENEFIT-COST CONCEPTS AND MODELS. THE BASIS FOR DEVELOPMENT OF THESE CONCEPTS AND MODELS IS THE THEORY OF WELFARE ECONOMICS IN WHICH BOTH PUBLIC AND THE PRIVATE GOOD ARE CONSIDERED. OBJECTIVE OF CHAPTER IV IS TO CATALOG AND BRIEFLY DESCRIBE SOME OF THE REGULATIONS THAT HAVE MAJOR IMPACT IN THE AREAS OF CONCERN IN THIS STUDY. OBJECTIVE OF CHAPTER V IS TO DISCUSS AND TABULATE ITEMS CONTRIBUTING TO SOCIAL COST OF GENERATING POWER, BUT BEFORE THE DISCUSSION, A BRIEF REVIEW OF UNITS OF VALUE USED TO MEASURE IMPACT, FRAMEWORK FOR THE STUDY, AND MODEL TO ASSIGN COSTS IS APPROPRIATE. (UNCLASSIFIED AUTH. ABST.)

PUB DESC: ANL-8093, VOL 3) MARCH 1973, 396P, 16 FIG, 87 TAB, 313 REF.

KEYWORDS: MODEL STUDIES; SOCIAL COST; BENEFIT VS RISK; COST-BENEFIT ANALYSIS; REGULATION, FEDERAL; ; REGULATION (SEE ALSO STANDARDS, RADIATION); STATE (SEE ALSO AGENCY); ENVIRONMENTAL EFFECT; BIOLOGICAL EFFECT; ATMOSPHERIC POLLUTION; WATER POLLUTION; SOIL, NOCLIDE OCCURRENCE; THERMAL POLLUTION; COSTS; WASTE MANAGEMENT

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AUTHOR: WUB, E.A. PUB DATE: 1973

TITLE: SOCIAL COSTS FOR ALTERNATE MEANS OF ELECTRICAL POWER GENERATION FOR 1900 AND 1990 - REFERENCE REPORT; CHAPTER VI - THERMAL DISCHARGE FROM POWER PLANTS, CHAPTER VII - FUEL CYCLE EFFECTS, 1900, 1990

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY.

ABSTRACT: THIS CHAPTER DESCRIBES AND DERIVES THE SOCIAL COSTS CAUSED BY REJECTION OF HEAT FROM THE WORKING FLUID USED IN THE POWER CONVERSION PORTION OF THE ENERGY SYSTEM; MAJOR DISCHARGE ON ENVIRONMENTAL AND OCEAN IMPACT. OTHER WASTE HEAT DISCHARGES FROM BURNING THROUGH POWER PRODUCTION SUCH AS STACK EMISSIONS IN FOSSIL POWER PLANTS NOT INCLUDED. OBJECTIVE OF THIS CHAPTER ON THERMAL DISCHARGE TO SHOW DOLLAR COSTS AND ENVIRONMENTAL IMPACTS OF ALTERNATIVE MEANS OF DISSIPATING HEAT FROM ELECTRICAL POWER GENERATING STATIONS. AN ACCURATE FORECAST OF THE SOCIAL COSTS OF ALTERNATE FUEL CYCLES DEPENDS UPON IDENTIFICATION, QUANTIFICATION, AND

PROJECTION OF PRINCIPAL SOURCES OF INTERNAL AND EXTERNAL COSTS. THIS CHAPTER SETS OUT BASIS FOR COST COMPARISON BY DESCRIBING IN PHYSICAL TERMS THE "EFFECTS" (OR RESOURCE IMPACTS) OF THE ALTERNATE FUEL CYCLES, AS PROJECTED FOR THE YEARS 1900 AND 1990. (UNCLASSIFIED AUTH. ABST.)

PUB DESC: ANL-8093, VOL. 8, MARCH 1973, 135P, 7 FIG, 24 TAB., 85 REF.

KEYWORDS: ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); DISCHARGE; HEAT; COOLING; THERMAL POLLUTION; FUEL CYCLE; EFFECT; COST-RISK-BENEFIT; REGULATION (SEE ALSO STANDARDS, RADIATION); IMPACT; WASTE DISPOSAL; COST COMPARISON; HEAT DISSIPATION; SOCIAL COST; RESOURCE OPTIMIZING

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AUTHOR: WUB, E.A. PUB DATE: 1973

TITLE: SOCIAL COSTS FOR ALTERNATE MEANS OF ELECTRICAL POWER VOL. I GENERATION FOR 1900 AND 1990-REFERENCE REPORT, CHAPTER I

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: THIS STUDY PROVIDES A GENERAL FRAMEWORK WITHIN WHICH THE RESOURCE COSTS OF ALTERNATE SYSTEMS FOR GENERATING ELECTRICAL ENERGY ARE COMPARED. THE STUDY CONSIDERS COAL, OIL, AND NATURAL GAS SYSTEMS AND EACH OF THE NUCLEAR STEAM-SUPPLY SYSTEMS OF IMPORTANCE. AN IMPORTANT FEATURE OF THE STUDY IS THAT THE SYSTEM BOUNDARIES ARE DESIGNED TO INCLUDE ACTIVITIES ALONG THE ENTIRE ENERGY PATH FROM MINERAL FUEL EXTRACTION, THROUGH FUEL PROCESSING AND TRANSPORTATION, TO THE GENERATION OF ELECTRICAL ENERGY. IN ASSESSING THE RESOURCE COSTS OF THE ALTERNATE ENERGY SYSTEMS, THE STUDY REVIEWED AND ESTABLISHED A BROAD SPECTRUM OF SOCIAL COST CATEGORIES.

PUB DESC: ANL-8093 REFERENCE REPORT, 92 PAGES (1973) VOL. 1, CHAPTER I

KEYWORDS: COAL; OIL; GAS; MINING; EXTRACTION; PROCESSING; TRANSPORTATION; COMBUSTION; WASTE DISPOSAL; ENERGY PATHWAY; POWER PRODUCTION; SOCIAL COST

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AUTHOR: FREITER, R.P.; SCHNEIDER, E.J.; PUB DATE: 1974

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES - GEOLOGICAL DISPOSAL.

CORPORATE AUTHOR: BATTELLE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: DISCUSSES THE DETAILS OF INDIVIDUAL DISPOSAL CONCEPTS INCLUDING A DESCRIPTION OF THE CONCEPTS; WASTE MANAGEMENT SYSTEMS REQUIREMENTS BEGINNING WITH DISCHARGE OF HIGH-LEVEL LIQUID WASTE FROM A PLANT REPROCESSING "SPENT" NUCLEAR FUEL AND ENDING WITH FINAL WASTE EMPLACEMENT IN A GEOLOGIC FORMATION; CONCEPT RELATED GEOLOGIC CONSIDERATIONS; TECHNICAL FEASIBILITY; CONCEPT SAFETY, RESEARCH AND DEVELOPMENT NEEDS, INCLUDING ESTIMATED COSTS; TIME REQUIRED TO COMMISSION, AND ESTIMATE CAPITAL AND OPERATING COSTS ASSOCIATED WITH A FACILITY FOR DISPOSAL OF COMMERCIALLY GENERATED RADIOACTIVE WASTE; AND POLICY, ENVIRONMENTAL, AND PUBLIC RESPONSE CONSIDERATIONS. (UNCLASSIFIED AUTH. ABST.)

PUB DESC: BNWL-1960, VOL. 2, MAY 1974, 231 P, 54 FIG, 39 TAB, 149 REF, 7 APPEND.

KEYWORDS: ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); BASINMENT ROCK (SEE ALSO BEDROCK); GEOLOGY, STRATIGRAPHY; HIGH-LEVEL WASTE; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); WASTE TREATMENT; WASTE DISPOSAL, SOLID; LIQUID; SOLID; GAS; BEDROCK (SEE ALSO WASTE DISPOSAL, BEDROCK); SOIL; STRATIGRAPHY (SEE ALSO GEOLOGY, STRATIGRAPHY); GEOMORPHOLOGY; HYDRAULIC FRACTURING (SEE ALSO WASTE DISPOSAL, HYDRAULIC FRACTURING); ROCK MECHANICS

<962>

PUB DATE: 1974

AUTHOR: LIXALL, D.C.; BURMAN, J.D.; GORE, P.F.;

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES, TRANSMUTATION PROCESSING.

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: A POSSIBLE APPROACH TO THE MANAGEMENT OF RADIOACTIVE WASTE IS THE USE OF NUCLEAR PROCESSES THEMSELVES TO CHANGE (TRANSMUTE) THE TOXIC LONG-LIVED RADIOACTIVE CONSTITUENTS IN HIGH-LEVEL WASTE INTO SHORT-LIVED RADIOACTIVE OR NONRADIOACTIVE ISOTOPES. THIS SECTION OF THE REPORT DESCRIBED KNOWN PROCESSES WHICH COULD POTENTIALLY BE USED FOR TRANSMUTING TOXIC ISOTOPES INTO LESS TOXIC ISOTOPES. THE STUDY IS EXTENSIVE ENOUGH TO DETERMINE WHICH FUNDAMENTAL PROCESSES ARE THEORETICALLY NOT POSSIBLE IN LIGHT OF CURRENT TECHNOLOGY. AT THE SAME TIME THE STUDY WAS NOT EXTENSIVE IN THAT LITTLE OR NO OPTIMIZATION OF POSSIBLE PROCESSES WAS ATTEMPTED. THUS, THESE INITIAL CONCLUSIONS OF TECHNICAL AND/OR ECONOMIC INFEASIBILITY OF TRANSMUTATION SHOULD NOT DISMISS FUTURE RESEARCH ENTIRELY SINCE IT IS THE ONLY METHOD THAT HAS THE POTENTIAL FOR ACCELERATING NATURAL AGING PROCESSES OF WASTE. (AUTH)

PUB DESC: BNWL-1900, VOL. 4, SECTION 9, MAY 1974, 151 P, 22 FIG, 35 TAB, 78 REF, 5 APPEND.

KEYWORDS: WASTE DISPOSAL; TRANSMUTATION; DECAY; SEPARATION TECHNIQUES; STABLE STATE; HIGH-LEVEL WASTE; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); NUCLEAR REACTIONS; TECHNOLOGY; REACTOR DESIGN; FUSION PROCESSES; REACTOR FUSION; SEPARATION TECHNIQUES; RADIOISOTOPES

<963>

PUB DATE: 1974

AUTHOR: SCHWEIDEN, K.J.; PLATT, A.H.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: THIS REPORT IS A COMPREHENSIVE OVERVIEW STUDY OF POTENTIAL ALTERNATIVE METHODS FOR LONG-TERM MANAGEMENT OF HIGH-LEVEL RADIOACTIVE WASTE. THE STUDY INCLUDES A COMPILATION OF INFORMATION RELEVANT TO TECHNICAL FEASIBILITY, SAFETY, COST, ENVIRONMENTAL CONSIDERATIONS, POLICY CONFLICTS, PUBLIC RESPONSE AND RESEARCH AND DEVELOPMENT NEEDS FOR: (1) DISPOSAL IN TERRESTRIAL LOCATIONS A. IN GEOLOGIC SETTINGS OR LAND B. IN THE SEA BED C. IN ICE SHEETS (2) DISPOSAL INTO SPACE (MODIFIED AUTH. ABST.)

PUB DESC: BNWL-1900, 4 VOLUMES, 1974 MAY, 1367PP, 275 FIG, 165 TAB, 826 REF, 40 APPEND.

KEYWORDS: WASTE DISPOSAL; ICE SHEET; WASTE MANAGEMENT; HIGH-LEVEL WASTE; WASTE DISPOSAL; WASTE TREATMENT; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); HIGH TEMPERATURE GAS REACTOR (HTGR); LBR (SEE ALSO REACTOR, LBR); LMFBR (SEE ALSO REACTOR, LMFBR); DIETARY HABIT; PUBLIC RESPONSE (SEE ALSO OPPOSITION, PROPOSAL, AND POPULATION RESPONSE); WASTE STORAGE; LIQUID; SOLID; GAS; FUEL REPROCESSING; PROCESSING TECHNOLOGY; GEOLOGIC ISOLATION (SEE ALSO WASTE DISPOSAL, TERRESTRIAL); RADIOACTIVE WASTE; LEACHING; PARTITIONING (SEE ALSO SEPARATION, FRACTIONATION, AND WASTE PARTITIONING); WASTE PARTITIONING; EXTRA-TERRESTRIAL DISPOSAL; TRANSMUTATION;

<964>

PUB DATE: 1974

AUTHOR: TILLSCH, D.D.; WALLACE, D.W.; DIVINE, J.A.; PIFF, W.H.

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES - ICE SHEET DISPOSAL.

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY,

RICHLAND, WASHINGTON

ABSTRACT: THE CONCEPT FOR DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE IN ICE SHEETS, EITHER ANTARCTICA OR GREENLAND, HAS BEEN DESCRIBED PREVIOUSLY IN THE LITERATURE. A COPY OF ONE OF THE LATEST PROPOSALS HAS BEEN INCLUDED AS APPENDIX 5.A. FOR THIS STUDY A GENERALIZED SCENARIO OF THE OPERATIONS THAT WOULD BE REQUIRED FOR WASTE MANAGEMENT IN ICE SHEETS IS SHOWN IN FIGURE 5.1. THE BASIC OPERATIONS CONSIST OF TRUCK, RAIL OR BARGE TRANSPORT OF SOLID WASTE FROM A FUEL REPROCESSING PLANT OR INTERIM RETRIEVABLE SURFACE STORAGE FACILITY TO SPECIALIZED REMEDIATIONPORTS; MARINE TRANSPORT DURING 1 TO 3 MONTHS OF EACH YEAR BY SPECIALLY DESIGNED SHIP, WITH ICE-BREAKER ESCORTS NEAR THE ICE SHEET; OFF-LOADING OF THE WASTE CAPSULES AT A DEBARKATION FACILITY NEAR THE EDGE OF THE CONTINENT; OVER-ICE TRANSPORT BY SURFACE VEHICLES ON A YEAR-ROUND BASIS; AND OFF-LOADING AND ENCASEMENT AT THE DISPOSAL SITE. DISPOSAL OF THE HIGH-LEVEL WASTE WOULD BE BY ONE OF THREE CONCEPTS DESCRIBED AS FOLLOWS: (1) MELTDOWN ON FREE FLOW; (2) ANCHORED ENCASEMENT; AND (3) SURFACE STORAGE. (MOD. AUTH. ABST.)

PUB DESC: BNWL-1900, VOL. 3, SECTION 5, 199 P, 83 FIG, 7 TAB, 106 REF, 4 APPEND. (1974)

KEYWORDS: ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); SHIP; WASTE DISPOSAL; ICE SHEET; HIGH-LEVEL WASTE; ANTARCTICA; GREENLAND; ICE (SEE ALSO WASTE DISPOSAL, ICE); SEA ICE; FIRM (SEE ALSO SHIP); ICE JANS; MELT WATER; GEOLOGY; WASTE HANDLING

<965>

PUB DATE: 1974

AUTHOR: TILLSCH, D.D.; WALLACE, D.W.; DIVINE, J.A.; PIFF, W.H.;

TITLE: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT ALTERNATIVES - SEA BED WASTE MANAGEMENT SYSTEM.

CORPORATE AUTHOR: BATTIE NORTHWEST LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: SOME HIGH-LEVEL RADIOACTIVE WASTES ARE MANAGED BY A SYSTEM WHICH FEATURES DISPOSAL IN THE SEA BED, GENERALLY IN THE DEEPER AREAS OF THE TO THE SEA BED SITE AND WASTE ENCASEMENT AT THE SITE FROM EITHER A DRILLING SHIP OR A SEMI-SUBMERSIBLE DRILLING PLATFORM. DISPOSAL IS ACCOMPLISHED BY THE ENCASEMENT WITHIN THE BASEMENT ROCK, AND ISOLATION IS MAINTAINED BY NATURAL BARRIERS WITHIN OCEANIC COASTAL LAYERS AFTER SEALING OF ACCESS/ENCASEMENT DRILL HOLES, OR, IN ONE CONCEPT, BY FURTHER NATURAL BURIAL AS A RESULT OF THE GEOLOGIC NATURE OF THE SITE. (MOD. AUTH. ABST.)

PUB DESC: BNWL-1900, VOL. 3, SECTION 6, MAY 1974, 104 P, 20 FIG, 5 TAB, 122 REF, 2 APPEND.

KEYWORDS: ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); WASTE DISPOSAL; HIGH-LEVEL WASTE; SEA BED DISPOSAL (SEE ALSO WASTE DISPOSAL, OCEAN OR SEA BED); OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); SITING; WASTE BURIAL (SEE ALSO LAND BURIAL); SEDIMENT; SOLID; SHIPS;

<966>

PUB DATE: 1967

AUTHOR: AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

TITLE: USA STANDARD PROPOSED DEFINITION OF RADIOACTIVE WASTE CATEGORIES

CORPORATE AUTHOR: AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, NEW YORK

ABSTRACT: PROPOSED DEFINITIONS OF CATEGORIES OF RADIOACTIVE WASTES AS DEVELOPED BY THE AMERICAN STANDARDS ASSOCIATION ARE PRESENTED. THE FOLLOWING PROPOSED CATEGORIES ARE DESCRIBED. CLASS A (POPULATION LEVEL), CLASS B (OCCUPATIONAL LEVEL), CLASS C (LOW LEVEL), CLASS D (INTERMEDIATE LEVEL, AND CLASS E (HIGH LEVEL).

PUB DESC: NE-17206, 10 PAGES, 1967

<1966> CONT.

KEYWORDS: WASTE DISPOSAL; STANDARDS; RADIATION (SEE ALSO REGULATION); CLASSIFICATION (SEE ALSO WASTE CLASSIFICATION); RADIATION UNIT; DELAYS ANALYSIS; RADIATION PROTECTION; ORGANIZATION; WASTE MANAGEMENT; POPULATION DISTRIBUTION; RADIATION SAFETY AND CONTROL; RISKY LEVEL

<1967>

PUB DATE: 1973

AUTHOR: BLOMBERG, J.O.; SICHOLS, J.L.

TITLE: COMMERCIAL HIGH-LEVEL WASTE PROJECTIONS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: PROJECTIONS ARE PRESENTED OF THE HIGH-LEVEL SOLIDIFIED WASTES TO BE GENERATED THROUGH THE END OF THIS CENTURY BY THE U.S. NUCLEAR POWER INDUSTRY IN THE COURSE OF REPROCESSING SPENT REACTOR FUELS. THE INSTALLED NUCLEAR ELECTRIC CAPACITY OF THE U.S. IS TAKEN AS 134, 504, AND 1200 GW AT THE END OF CALENDAR YEARS 1980, 1990, AND 2000, RESPECTIVELY. THE REACTOR COMPLEX IS ASSUMED TO CONSIST OF 1000S, 1000S, AND 8- AND 16- FUEL LBS. IT IS ESTIMATED THAT THE EQUIVALENT OF 471,000 FT(3) OF HIGH-LEVEL SOLIDIFIED WASTES WILL HAVE BEEN GENERATED THROUGH THE YEAR 2000, AND THAT BY 2010, WHEN ALL OF THIS WASTE HAS BEEN SHIPPED TO A FEDERAL REPOSITORY, IT WILL CONTAIN 53,000 BQ OF ACTIVITY AND EVOLVE HEAT AT A RATE OF 195 MW. (AUTH)

PUB DESC: ORNL-TH-4220, MAY 1973. 19 P., 12 TAB., 9 IFF.

KEYWORDS: NUCLEAR WASTES; PROJECTION (SEE ALSO FORECAST); FORECAST; NUCLEAR INDUSTRY; NUCLEAR POWER PLANTS; OPERATION; FUEL REPROCESSING; FUEL; URANIUM; PLUTONIUM; LAFER (SEE ALSO REACTOR, LAFER); LAFER (SEE ALSO REACTOR, LAFER); HIGH TEMPERATURE GAS REACTOR (HTGR); INVENTION; HEAT DISSIPATION

<1968>

PUB DATE: 1974

AUTHOR: WANDER, R.P.; DAVIDSON, R.S.; LARSEN, R.J.; BAYLON

TITLE: OPERATIONAL EXPERIENCE IN THE EVAPORATION AND STORAGE OF HIGHLY-ACTIVE FISSION-PRODUCT WASTES AT WINDSCALE

CORPORATE AUTHOR: BRITISH NUCLEAR FUELS LIMITED, WINDSCALE & CALDER POWER, WINDSCALE.

ABSTRACT: FROM THE BEGINNING OF THE DESIGN OF THE WINDSCALE CHEMICAL PLANTS, THE NEED TO PROVIDE FOR SAFE, LONG TERM STORAGE OF THE FISSION PRODUCT WASTE WAS RECOGNIZED AS A MAJOR FACTOR IN THE SELECTION OF PROCESS AND PLANT. THE VALUE OF A 'SALT-FREE' FIRST CYCLE EFFLUENT WAS RECOGNIZED AND THE CHOICE OF DUTY AS A SOLVENT FOR THE FIRST SEPARATION PLANT ENABLED THIS AID TO BE ACHIEVED AS EARLY AS 1952. THE SECOND SEPARATION PLANT, OPERATIONAL IN 1964, WITH TUP AS SOLVENT, MAINTAINED THE SAME PHILOSOPHY, AND BY THE USE OF TWO CONCENTRATION CYCLES BEFORE THE SEPARATION OF U AND PU, OFFERED SALT FREE 1ST AND 2ND CYCLE EFFLUENTS, LEAVING ONLY 0.0002% OF THE FISSION PRODUCT WASTES TO BE ASSOCIATED WITH SALT-BEARING EFFLUENTS FROM THE SOLVENT WASHES AND THE RECYCLING CYCLES. THE STORAGE OF HIGHLY ACTIVE WASTE HAS EVOLVED THROUGH THREE SYSTEMS AS THE PLANTS HAVE BEEN OPERATED AND NEW ONES ADDED. (AUTH)

PUB DESC: ORNL-ORNL, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING - PROCEEDINGS OF SYMPOSIUM, 339-356 (1974)

KEYWORDS: OPERATING EXPERIENCE; WINDSCALE; EFFLUENT; WASTE STORAGE; SAFETY; EVAPORATION; PLANT DESIGN; STORAGE TANKS; WASTE TREATMENT; HIGH-LEVEL WASTE; FISSION PRODUCT

<1969>

PUB DATE: 1963

AUTHOR: LOEWENICK, T.P.

TITLE: MOVEMENT OF NUTRIENT IN THE BED OF WHITE OAK LAKE

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: AS WASTE WATER FROM COALS INTERMEDIATE-LEVEL WASTE PITS TRAVELLED THE BED OF FORMER WHITE OAK LAKE, A SIGNIFICANT PORTION OF NUTRIENT IS REMOVED FROM SOLUTION. THE REMAINDER MOVING THROUGH WHITE OAK CREEK INTO THE CLINCH RIVER. THE DISTRIBUTION AND MOVEMENT IN THE BED OF THE FORMER LAKE IS RELATED TO THE GEOLOGY OF THE AREA. ABOUT 70 % OF THE NUTRIENT IS IN THE TOP TWO FEET OF SOIL. SUBSURFACE LATERAL MOVEMENT IS SO SLOW THAT RADIOACTIVE DECAY REDUCES THE CONCENTRATIONS REACHING THE CREEK BY SIGNIFICANT PROPORTIONS. THE AMOUNT OF SURFACE FLOW, AND, CONSEQUENTLY, THE QUANTITY OF NUTRIENT THAT REACHES THE CREEK VARIES SEASONALLY.

PUB DESC: HEALTH PHYSICS 9- 835-85 (AUGUST 1963)

KEYWORDS: EFFLUENT; RIVER, CLINCH; WHITE OAK LAKE; NUTRIENT; SOIL, RADIOCLIDE MOVEMENT THROUGH; WASTE DISPOSAL, TERRESTRIAL; SURFACE WATER, NUCLEIC OCCURRENCE

<1970>

PUB DATE: 1975

AUTHOR: HOLCHAI, C.P.; GOLDSMITH, R.A.; ELDRIDGE, V.H.

TITLE: URANIUM TAILINGS BIBLIOGRAPHY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: A PRESSING PROBLEM ASSOCIATED WITH THE NUCLEAR FUEL CYCLE IS ADEQUATE LONG-TERM MANAGEMENT OF WASTES ASSOCIATED WITH MILLING OF THE URANIUM ORE. HISTORICAL MANAGEMENT PRACTICE FOR SOLID WASTE AT URANIUM MILLS HAS BEEN TO FILL THE ORE TAILINGS ON THE MILL PROPERTY. THESE TAILINGS PILES CONSIST OF THE ORIGINAL ORE DEPLETED OF ITS URANIUM. SINCE THE PROCESSING REMOVES MINIMAL AMOUNTS OF THE URANIUM DAUGHTER PRODUCTS, THESE NATURALLY-OCCURRING RADIOISOTOPES ARE CONCENTRATED IN THE TAILINGS. THUS THE PILES REPRESENT A POTENTIAL OR ACTUAL SOURCE OF RADIATION EXPOSURE TO MAN. THE FOCUS OF THIS LITERATURE SEARCH WAS UPON THE GENERAL PROBLEM OF REDUCING HUMAN EXPOSURE TO TAILINGS FILL RADIOISOTOPES. THE IMPACT OF THE SALT LAKE CITY URANIUM TAILINGS FILL PROBLEM DICTATED THAT THE INFORMATION AT HAND BE MADE AVAILABLE AS SOON AS POSSIBLE; CONSEQUENTLY, THIS DOCUMENT IS PUBLISHED IN ITS PRESENT FORM. THE 1,212 REFERENCES LISTED IN THIS BIBLIOGRAPHY HAVE BEEN DIVIDED INTO 7 BROAD CATEGORIES, BASED UPON THE PROBLEM IN QUESTION. NO ATTEMPT HAS BEEN MADE IN THIS PUBLICATION TO CROSS REFERENCE BETWEEN SECTIONS OR CITATIONS. EACH REFERENCE IS LISTED ONCE, IN THAT CATEGORY TO WHICH IT MAKES SPECIAL OR GENERAL CONTRIBUTION. (AUTH)

PUB DESC: ORNL-5109 1975 (DECEMBER)

KEYWORDS: BIVINE; URANIUM; HAZARD, RELATIVE; BACKGROUND RADIATION; STAPLES, RADIATION (SEE ALSO REGULATION); DECONTAMINATION; TRANSPORT; MILL TAILINGS (SEE ALSO TAILINGS); TAILINGS (SEE ALSO MILL TAILINGS); MILLING; BIBLIOGRAPHY (SEE ALSO REVIEW); NUCLEAR ENERGY; POPULATION EXPOSURE; IMPACT; ENVIRONMENT; ASSESSMENT; EVALUATION; DECONTAMINATION

<1971>

PUB DATE: 1960

AUTHOR: PARKER, P.L.

TITLE: PROBLEMS OF WASTE DISPOSAL INTO FRESH-WATER SYSTEMS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: MOST NUCLEAR POWERS USE FRESH-WATER SYSTEMS FOR DILUTION AND DISPOSAL OF LOW-LEVEL-ACTIVITY WASTES. IN THE EARLY DAYS DISCHARGES WERE REGULATED SOLELY BY ICRP OR ECRT REGULATIONS, BUT IT IS NOW REALIZED THAT DUE TO POSSIBLE RECONCENTRATIONS OF SPECIFIC NUCLEIDES, THE TOTAL DOSEAGE TO MAN MUST EXCEED THE LIMITS OF

<971> CONT.

DISCHARGE. SINCE EACH SITE DIFFERS FROM ANY OTHER SITE, INDIVIDUAL SITES MUST BE STUDIED AND PAPERS DEALING WITH PROCEDURES AND METHODS FOR A SITE EVALUATION ARE NECESSARILY GENERAL. BECAUSE OF THE COMPLEXITIES OF THE VARIOUS PROCESSES INVOLVED IN DILUTION, DISPERSION, AND SELECTIVE UPTAKE, ONLY SIMPLIFIED MODELS ARE AVAILABLE FOR PREDICTING RADIOACCLIDE BEHAVIOR.

PUB DESC: NUCLEAR SAFETY, 1(4) - 3 PAGES, 10 REFERENCES- 73-75 (JUNE 1966)

KEYWORDS: SURFACE WATER; WASTE DISPOSAL, RIVER

<972>

PUB DATE: 1976

AUTHOR: MUELLER, H.L.; SMITH, B.L.; MURPHY, J.L.; SMITH, B.J.

TITLE: BURIAL GROUNDS - SUBMITTEE TO INTERNATIONAL SYMPOSIUM ON THE MANAGEMENT OF WASTES FROM THE LWR FUEL CYCLE, JULY 11-16, 1976 PROCEEDINGS

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO; UNIVERSITY OF CALIFORNIA

ABSTRACT: MAJOR BURIAL FACILITIES FOR THE DISPOSAL OF RADIOACTIVE WASTE ARE PRESENTLY OPERATED AT FIVE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA) FACILITIES, AND AT SIX COMMERCIAL SITES. THIS PAPER DESCRIBES THE HISTORY AND PRESENT OPERATIONS AT ALL COMMERCIAL SITES, INCLUDING THE WASTE TYPES RECEIVED, BURIAL TECHNIQUES USED, PRESENT RADIOACCLIDE INVENTORY, LICENSING PROCEDURES, AND THE NATURE OF PLANS FOR ULTIMATE DISPOSITION OF THE SITES. THE CONTAINMENT CAPABILITY OF THE VARIOUS SITES IS ANALYZED THROUGH A DESCRIPTION OF THE HYDROGEOLOGY OF EACH SITE, THE PRESENT MONITORING PROGRAMS, AND ANY OBSERVED RADIOACCLIDE MIGRATION. SIMILAR DESCRIPTIONS OF ERDA-OPERATED SITES ARE INCLUDED TO PROVIDE A THOROUGH UNDERSTANDING OF PRESENT RADIOACTIVE WASTE BURIAL PRACTICES. KNOWLEDGE OF THE RADIOACCLIDE MIGRATION AT ERDA OR COMMERCIAL SITES HAS ENDANGERED PUBLIC HEALTH OR SAFETY. HOWEVER, IN KEEPING WITH THE CONCEPT THAT RADIOACCLIDE RELEASES TO MAN'S ENVIRONMENT SHOULD BE AS LOW AS PRACTICABLE, MODIFICATIONS TO PRESENT BURIAL PRACTICES ARE DISCUSSED THAT COULD IMPROVE THE CONTAINMENT CAPABILITY OF EXISTING SITES.

PUB DESC: LA-68-76-1722 AND CONT. 76-0701, JULI, 1976, PP329-339

KEYWORDS: BURIAL GROUNDS (SEE ALSO COMMERCIAL BURIAL GROUNDS); WASTE DISPOSAL, TERRESTRIAL; TECHNOLOGY; INVENTORY; COMMERCIAL BURIAL GROUNDS (SEE ALSO BURIAL GROUNDS); LICENSING; MONITORING (SEE ALSO SURVEY); HYDROGEOLOGY; REGULATION (SEE ALSO STANDARDS, RADIATION);

<973>

PUB DATE: 1976

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: GENERIC ENVIRONMENTAL STATEMENT MIXED OXIDE FUEL (RECYCLE PLUTONIUM IN LIGHT WATER-COOLED REACTORS) VOLUME I SUMMARY AND CONCLUSIONS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THIS DRAFT GENERIC ENVIRONMENTAL STATEMENT ON THE USE OF MIXED OXIDE FUELS IN LIGHT WATER COOLED REACTORS (GEMO) HAS BEEN PREPARED PRINCIPALLY BY THE DIRECTORATE OF LICENSING-FUELS AND MATERIALS, OF THE ATOMIC ENERGY COMMISSION. GEMO HAS BEEN PREPARED TO BE RESPONSIVE TO THE ATOMIC ENERGY COMMISSION'S RESPONSIBILITIES UNDER THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (P.L. 91-190), THE COUNCIL ON ENVIRONMENTAL QUALITY'S (CEQ) GUIDELINES OF AUGUST 1, 1973 (38 FR 20550) AND TO CFR PART 51 OF THE EC'S REGULATIONS.

PUB DESC: WASH-1327, VOL.1, 1976 (AUG.) DRAFT

KEYWORDS: FUEL; OXIDE; NUCLEAR POWER PLANTS; LICENSING; LAW; REGULATION (SEE ALSO STANDARDS,

RADIATION); GEMO; PLUTONIUM; RECYCLING; ADMINISTRATIVE AGENCY; USAR (SEE ALSO AGENCY, AEC); GUIDELINES (SEE ALSO STANDARDS, RADIATION); ENVIRONMENTAL IMPACT; LWR (SEE ALSO REACTOR, LWR);

<974>

PUB DATE: 1976

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: SITING OF FUEL REPROCESSING PLANTS AND RELATED WASTE MANAGEMENT FACILITIES

CORPORATE AUTHOR: UNITED STATES ATOMIC ENERGY COMMISSION, LICENSING AND PRODUCTION FACILITIES

ABSTRACT: ON JUNE 3, 1969, THE ATOMIC ENERGY COMMISSION PUBLISHED IN THE FEDERAL REGISTER (34 P.R. 8712), AND INVITED PUBLIC COMMENT ON, A PROPOSED STATEMENT OF POLICY, IN THE FORM OF AN APPENDIX TO 10 CFR PART 50, CONCERNING THE SITING OF FUEL REPROCESSING PLANTS AND FACILITIES OF REPROCESSING PLANTS AND RELATED WASTE MANAGEMENT FACILITIES. THE FUNCTION OF REPROCESSING PLANTS IS TO RECOVER VALUABLE USED NUCLEAR FUEL FROM FUEL ELEMENTS REMOVED FROM REACTORS WHEN THE ELEMENTS HAVE REACHED THE END OF THEIR USEFUL LIVES. IN ADDITION TO THE USED FUEL, THE ELEMENTS CONTAIN RADIOACTIVE FISSION PRODUCTS GENERATED DURING REACTOR OPERATION. THEY EMERGE FROM THE CHEMICAL REPROCESSING AS LIQUID OR SOLID WASTES WHICH MUST BE SAFELY DISPOSED OF.

PUB DESC: FED. REGISTER VOL. 35 NO.222 17529-17533 1970

KEYWORDS: FUEL REPROCESSING; LICENSING; WASTE MANAGEMENT; REGULATION (SEE ALSO STANDARDS, RADIATION); GUIDELINES (SEE ALSO STANDARDS, RADIATION); WASTE DISPOSAL; STANDARDS, RADIATION (SEE ALSO REGULATION); WASTE TREATMENT; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); AEC (SEE ALSO AGENCY);

<975>

PUB DATE: 1972

AUTHOR: BRYANT, P.H.; JONES, J.A.

TITLE: THE FUTURE IMPLICATIONS OF SOME LONG-LIVED FISSION PRODUCT NUCLEIDES DISCHARGED TO THE ENVIRONMENT IN FUEL REPROCESSING WASTE

CORPORATE AUTHOR: NATIONAL RADIOLOGICAL PROTECTION BOARD, HARWELL, ENGLAND

ABSTRACT: CURRENT REPROCESSING PRACTICE LEADS TO THE DISCHARGE TO THE ENVIRONMENT OF VIRTUALLY ALL THE KRYPTON 85 AND TRITIUM, AND A LARGE FRACTION OF THE IODINE 129, FORMED AS FISSION PRODUCTS IN REACTOR FUEL. AS NUCLEAR POWER PROGRAMS EXPAND THE GLOBAL INVENTORY OF THESE LONG-LIVED NUCLEIDES IS INCREASING. THE RADIOLOGICAL SIGNIFICANCE OF THESE DISCHARGES IS ASSESSED IN TERMS OF RADIATION EXPOSURE OF VARIOUS POPULATION GROUPS DURING THE NEXT FEW CENTURIES. THE RESULTS OF THIS ASSESSMENT SHOW THAT KRYPTON 85 WILL GIVE HIGHER DOSE RATES THAN TRITIUM OR IODINE 129, BUT THAT ON CONVENTIONAL RADIOLOGICAL PROTECTION CRITERIA THESE DO NOT JUSTIFY TAKING ACTION TO REMOVE KRYPTON 85 FROM REPROCESSING PLANT EFFLUENTS BEFORE THE 21ST CENTURY. (AUTH)

PUB DESC: CPCD NUCLEAR ENERGY AGENCY AND THE INTERNATIONAL ATOMIC ENERGY AGENCY, NOV. 27 1972-ENC. 1, 1972 PP 131-151

KEYWORDS: WASTE DISPOSAL; FUEL REPROCESSING; INVENTORY; DOSE RATE; ASSESSMENT; ORCP (SEE ALSO ERDA); RADIOACTIVITY RELEASE; ENVIRONMENT; KRYPTON (SEE ALSO MOBILE GAS); TRITIUM; IODINE; POPULATION EXPOSURE; ASSESS; SAFETY EVALUATION; EFFLUENT; WASTE TREATMENT

<976>

PUB DATE: 1972

AUTHOR: BRYANT, P.H.; JONES, J.A.

TITLE: THE FUTURE IMPLICATIONS OF SOME LONG-LIVED FISSION PRODUCT NUCLEIDES DISCHARGED TO THE ENVIRONMENT

<976> CONT.
IN FUEL REPROCESSING WASTES

CORPORATE AUTHOR: NATIONAL RADIOLOGICAL PROTECTION BOARD, HARWELL, ENGLAND

ABSTRACT: CURRENT REPROCESSING PRACTICE LEADS TO THE DISCHARGE TO THE ENVIRONMENT OF VIRTUALLY ALL THE KRYPTON-85 AND THORIUM, AND A LARGE FRACTION OF THE IODINE-129, FORMED AS FISSION PRODUCTS IN REACTOR FUEL. AS NUCLEAR POWER PROGRAMMES EXPAND THE GLOBAL INVENTORY OF THESE LONG-LIVED NUCLEIDES IS INCREASING. THE RADIOLOGICAL SIGNIFICANCE OF THESE DISCHARGES IS ASSESSED IN TERMS OF RADIATION EXPOSURE OF VARIOUS POPULATION GROUPS DURING THE NEXT TEN DECADES. THE RESULTS OF THIS ASSESSMENT SHOW THAT KRYPTON-85 WILL GIVE HIGHER DOSE-RATES THAN THORIUM OR IODINE-129, BUT THAT ON CONVENTIONAL RADIOLOGICAL PROTECTION CRITERIA THESE DO NOT JUSTIFY TAKING ACTION TO REMOVE KRYPTON-85 FROM REPROCESSING PLANT EFFLUENTS BEFORE THE 21ST CENTURY.

PUB DESC: CONF-721107, 15 PAGES, 5 FIGURES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: DECONTAMINATION; ENVIRONMENT; EFFLUENT; IODINE; KRYPTON (SEE ALSO NOBLE GAS); THORIUM; WASTE DISPOSAL; POPULATION EXPOSURE; WASTE MANAGEMENT; RADIOLOGICAL ASSISTANCE; SAFETY EVALUATION; FUEL REPROCESSING; FORECAST; DISCHARGE

<977>

PUB DATE: 1970
AUTHOR: CHEMICAL TECHNOLOGY DIVISION STAFF, ORNL

TITLE: AQUEOUS PROCESSING OF LATER FUELS - TECHNICAL ASSESSMENT AND EXPERIMENTAL PROGRAM DEFINITION

ABSTRACT: THIS REPORT PRESENTS, IN DETAIL, THE DEVELOPMENT PROGRAM THAT HAS BEEN INITIATED FOR THE RESOLUTION OF PROBLEMS POSED BY THE PROCESSING OF SPENT FUELS FROM LIQUID METAL FAST BREEDER REACTORS. THESE FUELS CANNOT BE TRANSPORTED AND PROCESSED BY METHODS CURRENTLY EMPLOYED FOR LIGHT WATER REACTOR FUELS DUE TO THE HIGH DECAY HEAT EVOLUTION AND TO THE HIGH PLUTONIUM CONTENT, WHICH ALTERS CHEMICAL REQUIREMENTS AND NECESSITATES CONSIDERATIONS OF CRITICALITY 1.

PUB DESC: ORNL-4436, 409 PAGES (1970)

KEYWORDS: FUEL REPROCESSING; SHIPPING; STORAGE (SEE ALSO RETRIEVABLE STORAGE STORAGE); DISSOLUTION; SOLVENT EXTRACTION; SHIELDING; CRITICALITY SAFETY; WASTE TREATMENT; RESEARCH AND DEVELOPMENT (SEE ALSO R AND D PROGRAM); OFF GAS TREATMENT; PUREX (SEE ALSO PARTITIONING); SODIUM; PLUTONIUM; PARTITIONING (SEE ALSO SEPARATION, PARTITIONING, AND WASTE PARTITIONING); DOSE RATE; NEUTRON; INPBB (SEE ALSO REACTOR, LBRBB);

<978>

PUB DATE: 1967
AUTHOR: COOPER, R.E.; TADROS, J.; JACOBS, D.G.; DORGLY, D.J.

TITLE: EVALUATION OF ENVIRONMENTAL HAZARDS FROM RELEASE OF KR-85 AND R-3 IN AN EXPANDING NUCLEAR FUEL REPROCESSING INDUSTRY

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, HEALTH PHYSICS DIVISION

ABSTRACT: PRESENT STUDIES ARE CONCERNED WITH ESTIMATES OF THE DOSE EQUIVALENTS TO MAN THAT MAY RESULT FROM THE COMPLETE RELEASE OF KR-85 AND R-3 DURING REPROCESSING OF SPENT REACTOR FUEL. BASED ON ESTIMATES OF THE FREE-WORLD NUCLEAR POWER GROWTH, THE WORLDWIDE DISTRIBUTION OF THESE RADIOISOTOPES IN YEAR 2000 MAY RESULT IN A TOTAL BODY DOSE RATE OF 1.0 MREM/YR FROM KR-85 AND A BODY TISSUE DOSE RATE OF 0.0021 MREM/YR FROM R-3. RISK TO "4" WORLD'S POPULATION IS EVALUATED IN TERMS OF POTENTIAL EFFECT.

PUB DESC: HEALTH PHYSICS 13, ABSTRACT, 1 PAGE, 17, PAGE 943, (1967), PAPER PRESENTED AT THE THIRTEENTH ANNUAL MEETING OF THE HEALTH PHYSICS SOCIETY, WASHINGTON, D. C., JUNE 18-22, 1967

KEYWORDS: KRYPTON (SEE ALSO NOBLE GAS); HEALTH PHYSICS; RELEASE RATE; THORIUM; WASTE TREATMENT; GAS; DOSE CALCULATION; INTERNAL; ORAL; WASTE DISPOSAL; GAS; DOSE CALCULATION; EXTERNAL; ENVIRONMENT; FUEL REPROCESSING

<979>

PUB DATE: 1974
AUTHOR: ESCOBAR, H.; GREL, J.VAN; DETILLEUX, P.

TITLE: MANAGEMENT OF FUEL REPROCESSING WASTES BY EUROCHEMIC

CORPORATE AUTHOR: EUROCHEM

ABSTRACT: THE PRESENT PRACTICES, CURRENT DEVELOPMENTS AND FUTURE ASPECTS OF THE TREATMENT AND STORAGE OF EUROCHEMIC'S FUEL REPROCESSING WASTES ARE REVIEWED. DATA ON THE PRODUCTION ARE CHARACTERIZED FROM THE DIFFERENT STEPS OF THE CHEMICAL PROCESSING OF LOW AND HIGHLY-ENRICHED URANIUM FUELS, ARE PRESENTED. RECENT DEVELOPMENTS ON A LOW TEMPERATURE PROCESS FOR THE SOLIDIFICATION OF HIGH-LEVEL WASTES AND ON THE BITUMINIZATION PROCESS FOR MEDIUM LEVEL WASTES, ARE SUMMARIZED. NEW PROCEDURES ARE DESCRIBED WHICH ARE APPLICABLE TO THE TREATMENT OF SPENT THORIUM-230 PHOSPHATE-KNOXIDE SOLVENTS. FINALLY THE FUTURE WASTE MANAGEMENT POLICY AT EUROCHEMIC IS OUTLINED. (AUTH)

PUB DESC: OECD-OCDE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING PROCEEDINGS OF SYMPOSIUM, 313-337 (1974)

KEYWORDS: FUEL REPROCESSING; BELGIUM; WASTE STORAGE; EFFLUENT; URANIUM; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); HIGH-LEVEL WASTE; BITUMINIZATION (SEE ALSO ASPHALT); EUROCHEMIC; WASTE TREATMENT; SOLVENTS

<980>

PUB DATE: 1968
AUTHOR: GOODLETT, C.B.

TITLE: CONCENTRATION OF RADIOACTIVE WASTES

CORPORATE AUTHOR: SAVANNAH RIVER LABORATORY, BIKEN, SOUTH CAROLINA

ABSTRACT: RADIOACTIVE WASTES FROM THE PROCESSING OF IRRADIATED FUEL ELEMENTS CAN BE REDUCED TO AN IMMOBILE CONCENTRATE WITH ABOUT 1/3 OF ITS ORIGINAL VOLUME BY ONE OR MORE SUCCESSIVE EVAPORATIONS OF THE DECONTAMINABLE LIQUID. DURING THESE CONCENTRATIONS THE CS-137 CONCENTRATION INCREASES ABOUT 17-FOLD. THE CONCENTRATE CAN BE BENCHLIZED AT RATES EXCEEDING 0.1 FT/HR, IF NECESSARY, BY THE ADDITION OF WATER.

PUB DESC: DP-1135, 36 PAGES, 24 FIGURES, 10 TABLES, 1 REFERENCE, JUNE 1968

KEYWORDS: CESION; DILUTION; SAVANNAH RIVER PLANT; WASTE TREATMENT; SOLID; WASTE MANAGEMENT; WASTE TREATMENT; ECONOMICS; EVAPORATION; FUEL REPROCESSING; DISSOLUTION; FUEL ELEMENTS

<981>

PUB DATE: 1972
AUTHOR: KINY, W.P.

TITLE: KRYPTON 85 - A REVIEW OF THE LITERATURE AND AN ANALYSIS OF RADIATION HAZARDS

CORPORATE AUTHOR: U.S. ENVIRONMENTAL PROTECTION AGENCY/OFFICE OF RESEARCH AND MONITORING

ABSTRACT: THIS REVIEW SUMMARIZES MOST OF THE EXISTING INFORMATION ON KRYPTON 85. MAJOR SUBJECT AREAS COVERED ARE (1) PHYSICAL, CHEMICAL AND RADIOLOGICAL DATA, (2) MAXIMUM PERMISSIBLE CONCENTRATION IN AIR (MPCA) AND ITS RATIONALE, (3) SOURCE DATA, (4) ATMOSPHERIC CONCENTRATIONS AND DOSE ESTIMATES FROM

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REPROCESSING FACILITIES AND WORLDWIDE, (5) PROPOSED CONTROL METHODS, (6) USES IN SCIENCE, ESPECIALLY MEDICINE, AND INDUSTRY, (7) CALCULATIONS OF DOSE TO VARIOUS ORGANS AND THEIR RELATIONSHIP TO THE (MPC)A, (8) UNEXPLAINED NOBLE GAS PHENOMENA, AND (9) METHODS OF SAMPLING AND ANALYSIS. THE IN VIVO INTERNAL RADIATION OF BSEB IS DISCUSSED IN DETAIL IN APPENDIX A AND PRELIMINARY DECONTAMINATION CURVES OBTAINED WITH BSEB ARE PRESENTED. THE REVIEW INCLUDES 200 REFERENCES.

PUB DESC: PS-207079, 1972 (JAN.)

KEYWORDS: REVIEW; SUMMARY REPORT; PHYSICAL ASPECTS; NOBLE GAS; REGULATIONS (SEE ALSO STANDARDS, RADIATION); CHEMICAL ASPECTS; RADIOLOGICAL ASPECTS; DATA COLLECTION; CONCENTRATION; ENVIRONMENTAL POLLUTION; FUEL REPROCESSING; SAMPLING; ANALYTICAL TECHNIQUE; WASTE DISPOSAL; DOSE; WASTE ISOLATION, OFFICE OF (OCVI); HAZARDOUS ANALYSIS; BIOINERT; QUINOL CLATHRATE; WEST VALLEY; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); HAZARDOUS REMEDIATION CONCENTRATION (RMC); RADIATION (SEE ALSO NOBLE GAS); METABOLISM;

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PUB DATE: 1970
AUTHOR: DUCH, C.; KOLAR, Z.; SMOL, M.; BIL, W.; DUCH, S.

TITLE: RECOVERY OF TRANSURANIC ELEMENTS FROM FUEL REPROCESSING HIGH-LEVEL WASTE SOLUTIONS

CORPORATE AUTHOR: FEDERAL REPUBLIC OF GERMANY

ABSTRACT: A PROCESS FOR THE RECOVERY OF AMERICIUM AND CURIUM FROM PUREX-TYPE HIGH-LEVEL WASTE SOLUTIONS IS UNDER DEVELOPMENT AT ERLANGEN. THE HIGH-LEVEL WASTE IS REDISTILLED AND THE RESULTING FISSION PRODUCT PRECIPITATE SENT TO RED-SOLIDIFICATION. THE ACTINIDE/LANTHANIDE FRACTION WHICH HAS BEEN KEPT IN SOLUTION IS SEPARATED BY A DEEP SOLVENT EXTRACTION CYCLE. THE LANTHANIDES ARE SENT TO WASTE SOLIDIFICATION, WHILE THE AM/CM IS FURTHER PURIFIED BY CATION EXCHANGE. RESULTS OF "COLD" PLASMID TESTS ARE REPORTED. (MTH)

PUB DESC: OERI-OCER, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING - PROCEEDINGS OF SYMPOSIUM, 1001-1110 (1970)

KEYWORDS: WASTE TREATMENT; GERMANY; WASTE PARTITIONING; SEPARATION TECHNIQUES; AMERICIUM; CURIUM; PUREX (SEE ALSO PARTITIONING); HIGH-LEVEL WASTE; WASTE SOLIDIFICATION; SOLVENT EXTRACTION; CATION EXCHANGE

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PUB DATE: 1972
AUTHOR: HAGNC, P.-J.; HEAVY, T.C.; APIDIANAKIS, J.C.

TITLE: IODINE-129 IN THE ENVIRONMENT AROUND A NUCLEAR FUEL REPROCESSING PLANT

CORPORATE AUTHOR: ENVIRONMENTAL PROTECTION AGENCY U.S.

ABSTRACT: THE SPECIFIC ACTIVITY OF IODINE-129, I.E., THE RATIO OF THE ACTIVITY OF IODINE-129 TO THE WEIGHT OF STABLE IODINE, WAS MEASURED IN THE ENVIRONMENT AROUND THE NUCLEAR FUEL SERVICES REPROCESSING PLANT, WEST VALLEY, N.Y., DURING THE SUMMER OF 1971. THESE MEASUREMENTS SHOWED THAT THE DISCHARGES OF IODINE-129 FROM NUCLEAR FUEL SERVICES PRODUCED SPECIFIC ACTIVITIES AS HIGH AS 0.62 UCI/G OF IODINE IN THE AQUEOUS ENVIRONMENT AND 0.28 UCI/G OF IODINE IN THE TERRESTRIAL ENVIRONMENT AROUND THE PLANT. THESE VALUES ARE ABOUT 100000 TIMES GREATER THAN BACKGROUND LEVELS. THE AVERAGE SPECIFIC ACTIVITY OF IODINE-129 IN THE ENVIRONMENT AROUND THE PLANT WAS 0.1 UCI/G OF IODINE OR 7 PERCENT OF THE SPECIFIC ACTIVITY WHICH IF PRESENT IN THE HUMAN THYROID WOULD RESULT IN THE INDIVIDUAL DOSE . THIS SPECIFIED BY THE FEDERAL RADIATION COUNCIL. THE RESULTS OF THIS STUDY INDICATED A NEED FOR CONTROL OF IODINE-129 DISCHARGES FROM NUCLEAR FUEL REPROCESSING PLANTS AND SURVEILLANCE PROGRAMS TO EVALUATE THE ENVIRONMENTAL BUILDUP OF THIS

RADIOISOTOPE. ANALYTICAL PROCEDURES FOR DETERMINATION OF IODINE-129 BY NEUTRON ACTIVATION ANALYSIS AND BY LIQUID SCINTILLATION COUNTING ARE INCLUDED.

PUB DESC: OER/SIO 72-5 (NOV.)

KEYWORDS: IODINE; SPECIFIC ACTIVITY; ENVIRONMENTAL POLLUTION; MEASUREMENT; FUEL REPROCESSING; NAD; THYROID; DOSE; SURVEILLANCE PROGRAM; SAFETY; WEST VALLEY; ENVIRONMENTAL PROTECTION AGENCY (EPA) (SEE ALSO PUBLIC HEALTH); ANALYTICAL TECHNIQUE;

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PUB DATE: 1970
AUTHOR: HAGNC, P.-J.; HEAVY, T.C.; APIDIANAKIS, J.C.

TITLE: LIQUID WASTE EFFLUENTS FROM A NUCLEAR FUEL REPROCESSING PLANT

CORPORATE AUTHOR: U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; PUBLIC HEALTH SERVICE

ABSTRACT: THE LIQUID WASTE EFFLUENTS FROM NUCLEAR FUEL SERVICES WERE STUDIED IN DETAIL DURING A SIX-MONTH PERIOD MAY THROUGH OCTOBER 1969. THE CONCENTRATIONS AND AMOUNTS OF INDIVIDUAL RADIOISOTOPES DISCHARGED FROM THE PLANT WERE MEASURED AND THE AMOUNTS OF SEDIMENTATION OF INDIVIDUAL RADIOISOTOPES IN THE LAGOON SYSTEM WERE ESTIMATED. THORIUM, BUTHIUM-104, STRONTIUM-90, CESIUM-137, CESIUM-134 WERE THE PRINCIPAL RADIOISOTOPES DISCHARGED TO THE ENVIRONMENT DURING THIS PERIOD. NO RELATIONSHIP COULD BE ESTABLISHED BETWEEN THE AMOUNT AND DURATION OF FUEL PROCESSED AND THE AMOUNT OF ACTIVITY DISCHARGED FROM THE PLANT TO THE LAGOON SYSTEM DURING THIS STUDY. FOR THE YANKEE FUEL CAMPAIGN OF MAY-AUGUST 1969, THE WASTE MANAGEMENT PRACTICE AND NOT THE AMOUNT OF FUEL PROCESSED WAS THE CONTROLLING FACTOR IN THE AMOUNT OF ACTIVITY DISCHARGED FROM THE PLANT TO THE LAGOON SYSTEM. DURING JUNE AND NOVEMBER 1969 SIMULTANEOUS SAMPLING WAS CARRIED OUT AT THE POINT OF DISCHARGE OF THE WASTE AND SEVERAL LOCATIONS ON THE BUTTERHILLS AND CATTARAUGUS CREEKS. THORIUM, BUTHIUM-104, AND STRONTIUM-90 WERE THE RADIOISOTOPES PRESENT IN THE HIGHEST CONCENTRATION IN THESE STREAMS DURING THESE PERIODS. STREAM DILUTION AND ABSORPTION FACTORS WERE CALCULATED FOR INDIVIDUAL RADIOISOTOPES AT VARIOUS LOCATIONS ALONG THE STREAM SYSTEM. A COMPARISON OF THE CONCENTRATIONS OF THE RADIOISOTOPES IN CATTARAUGUS CREEK WITH 10CFR20 DISCHARGE CONCENTRATION LIMITS SHOWED THAT STRONTIUM-90 WAS ABOUT 20 PERCENT OF THE CONCENTRATION LIMIT DURING BOTH SAMPLING PERIODS. ALL OTHER RADIOISOTOPES WERE LESS THAN 10 PERCENT OF THE CONCENTRATION LIMITS DURING THESE PERIODS.

PUB DESC: DOE/NEHL 70-2 (1970 (NOV.))

KEYWORDS: LIQUID; WPS; RADIOACTIVE WASTE; RADIOACTIVITY RELEASE; EFFLUENT; FUEL REPROCESSING; CONCENTRATION; MEASUREMENT; RADIOISOTOPES; SEDIMENT; THORIUM; BUTHIUM; STRONTIUM; CESIUM; WASTE MANAGEMENT; SURFACE WATER; DILUTION; WEST VALLEY; ABSORPTION (SEE ALSO SORPTION); REGULATION (SEE ALSO STANDARDS, RADIATION);

<905>

PUB DATE: 1972
AUTHOR: LARTIN, A.; APSINOW, N.

TITLE: THE FORECASTING OF RADIOACTIVE WASTES ARISING FROM NUCLEAR FUEL REPROCESSING

CORPORATE AUTHOR: ASSOCIATED NUCLEAR SERVICES, LONDON

ABSTRACT: A MATHEMATICAL MODEL WAS DEVELOPED TO REPRESENT THE GENERATION AND SUBSEQUENT MOVEMENTS OF RADIOISOTOPES ARISING IN A NUCLEAR POWER PROGRAM. THE MODEL WAS WRITTEN INTO A COMPUTER PROGRAM, SIMROD, BY MEANS OF WHICH ESTIMATES MAY BE OBTAINED OF THE INVENTORIES AND THROUGHPUTS OF RADIOISOTOPES IN NUCLEAR INSTALLATIONS, INCLUDING REPROCESSING PLANTS AND STORAGE FACILITIES. THE OPERATION AND APPLICATION OF THE MODEL ARE ILLUSTRATED BY RESULTS OBTAINED ON THE BASIS OF A RECENT FORECAST OF THE NUCLEAR POWER PROGRAMME IN THE UK UP TO THE YEAR 2000 A.D.

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PUB DESC: CONF-721107, 22 PAGES, 9 TABLES, PAPER PRESENTED AT THE SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, HELD IN PARIS, NOVEMBER 27-DECEMBER 1, 1972

KEYWORDS: COMUTES PROGRAM; REACTOR, FAST; FUEL STORAGE; WASTE STORAGE; REACTOR, ISOPHASE; WASTE SECTE AND TYPE; ENERGY PRODUCTION; THERMAL CONSIDERATION; FUEL REPROCESSING; REACTOR; MODEL; FUEL, NUCLEAR

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PUB DATE: 1974

AUTHOR: MAEJIMA, I.

TITLE: MANAGEMENT OF FUEL REPROCESSING WASTES IN JAPAN

CORPORATE AUTHOR: ICRUS REACTOR AND NUCLEAR FUEL DEVELOPMENT CORP.

ABSTRACT: FUC, POWER REACTOR AND NUCLEAR FUEL DEVELOPMENT CORPORATION, IS PROCESSING A REPROCESSING PROJECT Aiming AT THE CONSTRUCTION OF PLANT OPERATION BY 1975. THIS PAPER IS DIVIDED INTO TWO SECTIONS, ONE ON THE HIGHLY RADIOACTIVE LIQUID WASTE (HALO) TREATMENT INCLUDING A DESCRIPTION OF EQUIPMENT FOR THE FIRST FIVE YEARS AND THE PHILOSOPHY OF LONG-TERM STORAGE COVERING SOLIDIFICATION, AND THE OTHER SECTION ON THE TREATMENT OF KRYPTON-85 AND TRITIUM ARISING FROM FUEL REPROCESSING IN THE FUC PLANT. B & D WORKS OF SOLIDIFICATION OF HALO COMBINE WITH LONG-TERM STORAGE OF SOLIDIFIED PRODUCT AND AN KRYPTON RECOVERY ARE GOING TO START IN THE NEAR FUTURE. PROVISIONAL APPROACHES OF THE ABOVE B & D ARE ALSO PRESENTED. (AUTH)

PUB DESC: ORCE-ORCE, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING, PROCEEDINGS OF SYMPOSIUM, 299-312 (1974)

KEYWORDS: FUEL REPROCESSING; HIGH-LEVEL WASTE; LIQUID; JAPAN; WASTE STORAGE; SOLID; WASTE TREATMENT; KRYPTON (SEE ALSO MOBILE GAS); TRITIUM; B AND D PROGRAM

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PUB DATE: 1976

AUTHOR: NUCLEAR REGULATORY COMMISSION (U.S.A.)

TITLE: NUCLEAR ENERGY CENTER SITE SURVEY-1975-SUMMARY AND CONCLUSIONS

CORPORATE AUTHOR: UNITED STATES NUCLEAR REGULATORY COMMISSION

ABSTRACT: THE ENERGY REORGANIZATION ACT REQUESTS THAT THE QUESTION OF NUCLEAR ENERGY CENTERS BE REVIEWED IN THE LIGHT OF THEIR FEASIBILITY AND PRACTICALITY. IN THE SURVEY, FEASIBILITY IS SYNONYMOUS WITH TECHNICAL PRACTICALITY. THUS, THE SURVEY CONSIDERED TECHNICAL ASPECTS, INCLUDING THE DISSIPATION OF WASTE HEAT FROM THE POWER-GENERATING FACILITIES, TRANSMISSION SYSTEM DESIGN AND RELIABILITY, ON-SITE FACILITY CONSTRUCTION TECHNIQUES, RADIOLOGICAL IMPACT, AND ENVIRONMENTAL IMPACT. THE SURVEY REPORT CONSIDERS PRACTICALITY IN THE SENSE OF A JUDGEMENT THAT IMPLEMENTATION WOULD NOT BE PRECLUDED BY MAN-MADE CONSTRAINTS AND WOULD NOT LEAD TO UNACCEPTABLE IMPACT ON THE PUBLIC INTEREST. THUS, PRACTICALITY ASPECTS CONSIDERED IN THE REPORT INCLUDED JURISDICTIONAL AND INSTITUTIONAL CONSTRAINTS, SOCIAL, POLITICAL, AND FINANCING ISSUES, QUESTIONS RELATED TO ACCIDENT RISK, NATURAL DISASTERS, AND NATIONAL SECURITY, AND SAFEGUARDING OF STRATEGIC SPECIAL NUCLEAR MATERIALS FROM THEFT AND NUCLEAR PLANTS FROM SABOTAGE. THE SURVEY COMPARES THE NUCLEAR ENERGY CENTER ALTERNATIVE WITH DISPENSED SITING PRACTICES. IN SUMMARY, THE NUCLEAR ENERGY CENT IN SITE SURVEY CONCLUDED THAT, DEPENDING ON LOCATION, IT CAN BE FEASIBLE AND PRACTICAL TO CONSTRUCT POWER PLANT CENTERS OF UP TO 20 NUCLEAR POWER REACTORS, FUEL CYCLE CENTERS AND COMBINED CENTERS. HOWEVER, IT DOES NOT INDICATE ANY GREAT OR UNEQUIVOCAL ADVANTAGE OR DISADVANTAGE FOR SUCH CENTERS. THE SURVEY FURTHER CONCLUDED THAT DISPENSED SITING OF NUCLEAR POWER FACILITIES REMAINS A FEASIBLE AND PRACTICAL, AND EVEN DESIRABLE, OPTION FOR MANY LOCATIONS.

PUB DESC: NUREG-0001 PART I AND IV JAN. 1976

KEYWORDS: WASTE MANAGEMENT; SITING; NUCLEAR ENERGY; ALTERNATIVES (SEE ALSO WASTE DISPOSAL ALTERNATIVES); ENVIRONMENT; IMPACT; SAFETY EVALUATION

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PUB DATE: 1972

AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

TITLE: SYMPOSIUM ON THE MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING

CORPORATE AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD), NUCLEAR ENERGY AGENCY; INTERNATIONAL ATOMIC ENERGY AGENCY

ABSTRACT: THE SYMPOSIUM, WHICH WAS HELD AT OECD HEADQUARTERS, IN PARIS, FROM 27TH NOVEMBER TO 1ST DECEMBER 1972, GATHERED TOGETHER 240 SPECIALISTS REPRESENTING 24 COUNTRIES AND 8 INTERNATIONAL ORGANIZATIONS. THE 44 PAPERS PRESENTED DURING THE VARIOUS SESSIONS, AS WELL AS THE RESULTING DISCUSSIONS SHOWED CONSIDERABLE EVOLUTION, IN PAST TEN YEARS, OF METHODS FOR CONTROL OF GASEOUS EFFLUENT RELEASES AND FOR TREATMENT AND STORAGE OF HIGHLY-RADIOACTIVE WASTES. THESE PROCEEDINGS, THEREFORE, RECORD A VERY DISTINCT PHASE OF EVOLUTION OF THE MAIN PURPOSE OF WHICH IS TO PROVIDE SATISFACTORY SOLUTIONS TO PROBLEMS OF STORAGE AND DISPOSAL OF RADIOACTIVE WASTE, THAT WILL GUARANTEE NO ADVERSE CONSEQUENCES IN THE SHORT OR THE LONG-TERM TO MAN AND HIS ENVIRONMENT.

PUB DESC: SOLUTION TO PROBLEMS OF STORAGE AND DISPOSAL OF RADIOACTIVE WASTES, OECD-PARIS-1972-OECD-1264P.

KEYWORDS: RADIOACTIVITY RELEASE; FUEL CYCLE; FUEL REPROCESSING; GAS; LIQUID; SOLID; EFFLUENT; WASTE TREATMENT; WASTE STORAGE; WASTE DISPOSAL; KRYPTON (SEE ALSO MOBILE GAS); TRITIUM; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); WASTE HANDLING; GEOLOGY; HYDROLOGY; MIXED EXCHANGE; SCILL; RETRIEVABLE SUBSPACE STORAGE

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PUB DATE: 1976

AUTHOR: TABERO, G.O.; HARRINGTON, P.L.; JOY, D.S.

TITLE: EFFLUENT CONTROL IN FUEL REPROCESSING PLANTS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: THIS REPORT SUMMARIZES A STUDY OF NON-EXTRAPOLATIONS OF CURRENT AND DEVELOPING TECHNOLOGY MIGHT BE APPLIED TO THE TASK OF REDUCING RADIOACTIVE EFFLUENTS FROM FUTURE FUEL REPROCESSING PLANTS TO "NEED ZERO". THE STUDY HAS INDICATED THAT VERY SIGNIFICANT REDUCTIONS OF EFFLUENTS CAN BE ACHIEVED BY INTEGRATING ADVANCED EFFLUENT CONTROL SYSTEMS WITH NEW CONCEPTS OF CONTAINMENT AND VENTILATION THAT WOULD REDUCE NET INLEAKAGE OF AIR TO THE PROCESS ENCLOSURES AND PROVIDE FOR EXTENSIVE RECYCLE OF GASES AND LIQUIDS. IN ONE PLANT EFFLUENT FLOW RATES CAN BE THUS REDUCED AND IF THE HIGHLY EFFICIENT FISSION PRODUCT REMOVAL SYSTEMS, UNDER DEVELOPMENT, DO IN FACT BECOME AVAILABLE, IT SHOULD BE POSSIBLE TO REDUCE THE DISCHARGE OF ACTIVITY TO THE ENVIRONMENT IN FUTURE PLANTS BY FOUR TO SIX ORDERS OF MAGNITUDE. OVERALL PLANT DETENTION FACTORS IN THE ORDER OF 10^{10} FOR IODINE, 10^{10} FOR TRITIUM AND KRYPTON, AND 10^{10} TO 10^{16} FOR PARTICULATES APPEAR POSSIBLE.

PUB DESC: OREL-78-3999

KEYWORDS: SUMMARY REPORT; TECHNOLOGY; CONTROL; EFFLUENT; FUEL REPROCESSING; CONTAINMENT; VENTILATION SYSTEM; RECYCLING; GASEOUS WASTE; LIQUID; DETENTION FACTOR; IODINE; TRITIUM; KRYPTON (SEE ALSO MOBILE GAS); PARTICULATES; ALAP

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PUB DATE: 1973

AUTHOR: ARNOLD, W.D.; SALMON, B.; LIP, K.B.

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TITLE: PRELIMINARY EVALUATION OF METHODS FOR THE DISPOSAL OF TRITIATED WATER FROM NUCLEARLY STIMULATED NATURAL GAS WELLS

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: LARGE VOLUMES OF SLIGHTLY TRITIATED WATER WILL BE PRODUCED FROM NATURAL GAS FIELDS DEVELOPED VIA NUCLEAR STIMULATION. EVALUATIONS BASED ON FEASIBILITY, SAFETY, AND COST INDICATE THAT INJECTION INTO DEEP WELLS, EVAPORATION INTO STACKS, AND EVAPORATION FROM PONDAS ARE THE BEST DISPOSAL METHODS. AT THIS POINT, ONE OF THE THREE IS CLEARLY SUPERIOR TO THE OTHERS. EACH HAS POTENTIAL ADVANTAGES AND DISADVANTAGES THAT CAN BEST BE EVALUATED IN ACTUAL TESTS. THESE DISPOSAL TESTS CAN BE MADE IN CONJUNCTION WITH THE PRODUCTION TESTING OF THE FIRST BIG BLACK HILL. WHILE AN UNFAVORABLE ENVIRONMENTAL EFFECTS WOULD BE EXPECTED FROM THE TESTS, THEY CAN BE JUSTIFIED TO ENSURE THAT THIS IS THE CASE AND CAN BE TRITIATED TO IF NECESSARY.

PUB DESC: ORNL-TN-8020, 52 PAGES, FIGURES, TABLES, APRIL 1973

KEYWORDS: DECONTAMINATION; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); FLOWSHED; TRITIUM; WASTE STORAGE; STACK; WASTE TRANSFORMATION; EVAPORATION; GAS; WASTE DISPOSAL, DEEP WELL; STIMULATION; RESOURCE, NATURAL

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PUB DATE: 1973

AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: MONITORING, CONTROL, AND DISPOSAL OF TRITIUM. A SELECTED BIBLIOGRAPHY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, TECHNICAL INFORMATION CENTER

ABSTRACT: A SELECTED BIBLIOGRAPHY OF 351 REFERENCES ON TRITIUM. THE REFERENCES WERE OBTAINED FROM USA DATA BASE BY COMPUTER SEARCH AND INDEXING. REFERENCES ARE ARRANGED IN A SOMEWHAT CHRONOLOGICAL ORDER.

PUB DESC: TID-3337, 100 PAGES, MAY 1973

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); TRITIUM; WASTE DISPOSAL; MONITORING (SEE ALSO SURVEY); RADIATION SAFETY AND CONTROL

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PUB DATE: 1975

AUTHOR: WIEL, J.L.; KESSENER, C.J.; BRENNAN, T.E.

TITLE: RESEARCH/RECORD LABORATORY TRITIUM WASTE CONTROL TECHNOLOGY DEVELOPMENT PROGRAM

CORPORATE AUTHOR: MOUND LAB., MARIETTA, OHIO

ABSTRACT: OVER THE PAST FOUR YEARS, IMPLEMENTATION OF TRITIUM WASTE CONTROL PROGRAMS HAS RESULTED IN A 30-FOLD REDUCTION IN THE GASEOUS TRITIUM EFFLUENTS FROM MOUND LABORATORY. HOWEVER, TO REDUCE TRITIUM WASTE LEVELS TO THE "AS LOW AS PRACTICABLE" GUIDELINE POSES PROBLEMS THAT ARE BEING REPLY SOLUTION WITH STATE-OF-THE-ART TRITIUM CONTROL TECHNOLOGY. TO MEET THIS ADVANCED TECHNOLOGY NEED, A TRITIUM WASTE CONTROL TECHNOLOGY PROGRAM WAS INITIATED. ALTHOUGH THE INITIAL THOUGHT OF THE WORK (UNDER THIS PROGRAM WAS ORIENTED) TOWARD DEVELOPMENT OF GASEOUS EFFLUENT TREATMENT SYSTEMS, ITS NATURAL EVOLUTION HAS BEEN TOWARD THE LIQUID WASTE PROBLEM. OF COURSE THAT, OF ALL THE POSSIBLE APPROACHES TO DISPOSAL OF TRITIATED LIQUID WASTES, RECOVERY OFFERS THE GREATEST ADVANTAGES. THE PRODUCTS OF THE RECOVERY PROCESSES WOULD BE: 1) WATER DETRITIATED TO A LEVEL BELOW THE RADIOACTIVITY CONCENTRATION GUIDE (RAC) OR DETRITIATED TO A LEVEL THAT WOULD PERMIT SAFE RECYCLE IN A CLOSED LOOP OPERATION AND, 2) ENRICHED TRITIUM. THE DETRITIATED WATER EFFLUENT COULD BE EITHER RECYCLED IN A CLOSED LOOP OPERATION SUCH AS IN A FUEL REPROCESSING PLANT OR SAFELY RELEASED TO THE ATMOSPHERE, AND THE

RECOVERED TRITIUM COULD BE RECYCLED FOR USE IN FUSION REACTOR STUDIES OR OTHER APPLICATIONS. (AUTH)

PUB DESC: ORL-2262 1975 (DOC.)

KEYWORDS: WASTE CONTROL; TRITIUM; TECHNOLOGY; MOUND LABORATORY; EFFLUENT; GASEOUS WASTE; GUIDELINES (SEE ALSO STANDARDS, RADIATION); AS LOW AS PRACTICABLE (ALAP); WASTE TREATMENT; WASTE DISPOSAL; RECOVERY PROCESS

<993>

PUB DATE: 1960

AUTHOR: BLUMBERG, J.O.

TITLE: MANAGEMENT OF FISSION PRODUCT TRITIUM IN FUEL PROCESSING WASTES

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

ABSTRACT: TRITIUM, A FISSION PRODUCT OF VERY LOW YIELD, MAY HERETOFOR CONSIDERED FROM THE STANDPOINT OF ITS MANAGEMENT IN WASTES FROM FUEL PROCESSING. IN THE CASE OF PRESENT SOLVENT EXTRACTION PLANTS, AT LEAST 75% OF THE TRITIUM IN THE IRRADIATED FUEL IS DISCHARGED TO THE ENVIRONMENT IN LOW-LEVEL AQUEOUS WASTES. FUTURE PLANTS SITUATED LESS REMOTELY MAY BE RESTRICTED IN THE QUANTITY THEY CAN RELEASE TO THEIR IMMEDIATE ENVIRONS. IT WAS ESTIMATED THAT, UNDER PRESENT REGULATIONS, RELATIVELY LITTLE TRITIUM COULD BE RELEASED TO SURFACE STREAMS, BUT PLANTS PROCESSING FUEL AT RATES EQUIVALENT TO AS MUCH AS 100,000 THERMAL MEGAWATTS OF REACTOR POWER MIGHT DISPERSE THE TRITIUM SAFELY TO THE ATMOSPHERE. LARGER PLANTS MUST CONSIDER CONTAINMENT OF THE TRITIUM BY INTERNAL RECYCLE OF AQUEOUS STREAMS.

PUB DESC: ORNL-TN-551 13 PAGES- MAY 4, 1960

KEYWORDS: DISPOSITION; FISSION PRODUCT; AQUEOUS WASTE (SEE ALSO WASTE DISPOSAL, LIQUID); HISTORICAL SIGNIFICANCE; EFFLUENT; GEOLOGY; GROUND WATER; HAZARD, RELATIVE; ALLEG; SITING, WASTE DISPOSAL; TRITIUM; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, TERRESTRIAL; SURFACE WATER, NUCLEAR OCCURRENCE; WASTE DISPOSAL, RIVER

<994>

PUB DATE: 1973

AUTHOR: CHURSON, D.L.

TITLE: MAN-MADE TRITIUM

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, WASHINGTON

ABSTRACT: THE TOPIC OF MAN-MADE TRITIUM DIVIDES ITSELF INTO SEVERAL SUBTOPICS. THESE INCLUDE THE MECHANISMS FOR THE PRODUCTION OF MAN-MADE TRITIUM, THE EXTENT OF THIS PRODUCTION AS COMPARED TO NATURAL REPAIR OF PRODUCTION, PREDICTIONS OF THE RATE OF TRITIUM GENERATION BY HUMAN ACTIVITIES IN YEARS TO COME, SOME PROBLEMS CONCERNING THE MANAGEMENT OF MAN-MADE TRITIUM, AND SOME CONCLUSIONS AS TO MEASUREMENTS FOR REDUCTION OF TRITIUM IN THE ENVIRONMENT.

PUB DESC: TRITIUM, 5 PAGES, PP. 23-27, PUBLISHED BY HESSENER GRAPHICS, PHOENIX, ARIZONA, MAY 1973 (BOOK)

KEYWORDS: FISSION PRODUCT RELEASE; FORECAST; TRITIUM; REACTOR, ENVIRONMENTAL; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; RADIOACTIVITY RELEASE; SAFETY EVALUATION; FORECAST; PRODUCTION; CONCENTRATION

<995>

PUB DATE: 1975

AUTHOR: DIXON, R.W.; HOLLOWAY, C.F.; ROUSE, B.L.; JACOBS, D.G.

TITLE: INDEXED BIBLIOGRAPHY ON TRITIUM - ITS SOURCES AND PROJECTIONS, BEHAVIOR, MEASUREMENT AND MONITORING TECHNIQUES, HEALTH PHYSICS ASPECTS, AND WASTE MANAGEMENT

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY

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ABSTRACT: THIS BIBLIOGRAPHY CONTAINS 1291 DOCUMENTS WHICH WERE RETRIEVED FROM THE SOCIETY FOR THE INFORMATION CENTER (NSIC) DATA FILES USING THE KEYWORD "TRITIUM". FOR THE PURPOSE OF THIS BIBLIOGRAPHY, THE DOCUMENTS HAVE BEEN CATEGORIZED AS FOLLOWS: I. SOURCES AND PROJECTIONS; II. OPERATING EXPERIENCE; III. MODELING TECHNIQUES; IV. MEASUREMENT AND MONITORING TECHNIQUES; V. ENVIRONMENTAL BEHAVIOR; VI. BIOLOGICAL BEHAVIOR; VII. HEALTH PHYSICS ASPECTS; VIII. WASTE MANAGEMENT; IX. RESULTS OF ENVIRONMENTAL MONITORING; X. NON-COMPLIANCE AND ACCIDENT REPORTS; XI. RESPONSES TO ENVIRONMENTAL IMPACT QUESTIONS BECAUSE OF COSTS; SOME OF THE DOCUMENTS APPEAR IN MORE THAN ONE CATEGORY. TITLE, KEYWORDS, AND ABSTRACT (WHEN AVAILABLE) WERE USED TO CATEGORIZE THE DOCUMENTS. KEYWORD, AUTHOR, AND PUBLISHER TITLE INDEXES ARE PROVIDED FOR EACH CATEGORY TO SIMPLIFY USE OF THIS DOCUMENT. (AUTH)

PER DESC: CNBL-5457 1975 (ACCESS)

KEYWORDS: PUBLICATIONS; POSITIONING (SEE ALSO SURVEY); TRITIUM; BIBLIOGRAPHY (SEE ALSO REVIEW); ABSTRACTS; DOCUMENTATION; INFORMATION; EDUCATION (SEE ALSO RADIATION, PUBLIC EDUCATION); SOURCES; BEHAVIOR; MEASUREMENT; MONITORING (SEE ALSO SURVEY); WASTE MANAGEMENT

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PUB DATE: 1973

AUTHOR: BURE, C.A.; COFFIN, D.O.; STOLL, D.D.

TITLE: AN APPARATUS FOR THE DETECTION OF TRITIUM EMISSIONS INTO THE ATMOSPHERE

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO

ABSTRACT: CONVERSION OF TRITIUM TO TRITIATED WATER AND ABSORPTION ON A MOLECULAR SIEVE REDUCED THE TRITIUM CONTENT MORE THAN 250,000-FOLD FOR GASEOUS EFFLUENTS CONTAINING 0.5% TRITIUM. GAS TO BE TREATED WAS PULSED INTO A HOLDING TANK AT ABOUT 15 PSIG. AN AUTOMATIC PROGRAMMER REGULATES THE TREATMENT. AS A SAFETY FEATURE, THE SYSTEM IS DESIGNED TO SHUT DOWN IN THE EVENT OF POWER FAILURE.

PER DESC: LA-5303, 4 PAGES, 7 FIGURES, JUNE 1973

KEYWORDS: DECONTAMINATION; EFFLUENT; TRITIUM; ATMOSPHERIC POLLUTION; WASTE TREATMENT, GAS; PLANT PROTECTIVE SYSTEM; WATER VAPOR; ABSORPTION (SEE ALSO SCORPTION);

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PUB DATE: 1972

AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY

TITLE: TRITIUM

CORPORATE AUTHOR: EUROPEAN NUCLEAR ENERGY AGENCY (ENEA), ORNL

ABSTRACT: TRITIUM, WHICH IS A RADIOACTIVE ISOTOPE OF HYDROGEN (HYDROGEN 3) WITH A HALF-LIFE OF 12.3 YEARS, IS PRODUCED NATURALLY IN THE ENVIRONMENT AND SUBSTANTIAL QUANTITIES HAVE BEEN RELEASED AS A RESULT OF NUCLEAR WEAPONS TESTING. IT IS ALSO RELEASED DURING THE NORMAL OPERATION OF BOTH NUCLEAR REACTORS AND FUEL REPROCESSING PLANTS AND THE CONTRIBUTION TO THE TOTAL TRITIUM INVENTORY OF THE ENVIRONMENT FROM THESE TWO SOURCES WILL INCREASE AS THE NUCLEAR POWER INDUSTRY EXPANDS. THE RELEASES ARE USUALLY IN THE FORM OF TRITIATED WATER OR WATER VAPOR, WHICH BEHAVE PHYSICALLY AND CHEMICALLY IN MUCH THE SAME WAY AS ORDINARY WATER AND ARE READILY DISPERSED IN THE ATMOSPHERE AND ASSIMILATED INTO BIOLOGICAL SYSTEMS. IT IS THIS CHARACTERISTIC WHICH IS OF PARTICULAR SIGNIFICANCE RADIOLOGICALLY, THOUGH THE RADIOACTIVITY OF TRITIUM IS LOW BECAUSE OF THE VERY LOW ENERGY OF THE BETA PARTICLE EMITTED DURING RADIOACTIVE DECAY. NEVERTHELESS, THE TRITIUM DISCHARGED IS EVENTUALLY WIDELY DISTRIBUTED AND MAY BE, IN THE FUTURE, A POTENTIAL SOURCE OF IRRADIATION OF LARGE POPULATIONS. (AUTH)

PER DESC: OECD PUBLICATION, NO. 25, 979, 1972, PP. 93-96

KEYWORDS: TRITIUM; OECD (SEE ALSO ENEA); WASTE MANAGEMENT; ATMOSPHERIC POLLUTION; WATER POLLUTION; WEAPONS TESTING; NUCLEAR POWER; REACTOR; EFFLUENT; FUEL REPROCESSING; INVENTORY; BIOLOGICAL; METABOLISM; TRITIATED WATER; WATER VAPOR; EFFECT, GENETIC; OECD CHAIR; HAZARDS ANALYSIS

<998>

PUB DATE: 1975

AUTHOR: FURUKI, P.; KATSURAYAMA, K.

TITLE: FUNDAMENTAL STUDY ON LONGITUDINAL DISPERSION OF TRITIATED WATER THROUGH SATURATED POREOUS MEDIA

CORPORATE AUTHOR: RESEARCH REACTOR INSTITUTE, SOTO UNIVERSITY

ABSTRACT: DISPERSION PHENOMENA OF IONS OR MOLECULES THROUGH POREOUS MEDIA ARE FOUND NOT ONLY IN ENGINEERING FIELDS SUCH AS THE PROCESS OF ION EXCHANGE AND FILTRATION, BUT IN NATURAL HYDRO-SYSTEMS. PRESENTLY THE POLLUTION OF UNDERGROUND WATER DUE TO INDUSTRIAL WASTES HAS BEEN DISCUSSED, AND IT IS IMPORTANT TO FORECAST THE BEHAVIOR OF POLLUTANTS. THE PURPOSE OF THIS PAPER IS TO INVESTIGATE THE EFFECT OF THE AVERAGE ARIAL VELOCITY OF FLOW, THE EFFECT OF SIZE AND THE SHAPE OF POREOUS MEDIA AND FLOW LENGTH ON THE DISPERSION COEFFICIENT IN MORE DETAIL, AND TO ELABORATE THE APPLICATION OF DIFFUSION TYPE EQUATIONS TO DISPERSION PHENOMENA. MOREOVER, NUMERICAL ANALYSIS OF THE DIFFUSION EQUATION WAS TRIED UNDER A BOUNDARY CONDITION OF VARIABLE CONCENTRATION, WHICH WAS NOT SOLVED ANALYTICALLY IN GENERAL, AND THE SOLUTIONS WERE COMPARED WITH THE BREAKTHROUGH CURVES UNDER SUCH CONDITIONS. (AUTHOR)

PER DESC: HEALTH PHYSICS, 20(6), P. 717-(1975)

KEYWORDS: HEALTH PHYSICS; FLOW; POREOUS MEDIA; HYDROLOGY; MATHEMATICAL TREATMENT; TRITIUM; VICK'S LAW; TRITIATED WATER; DIFFUSION; DISPERSION

<999>

PUB DATE: 1968

AUTHOR: GEORGIA POWER COMPANY (U.S.A.)

TITLE: TRITIUM IN BWR, PRESSURE VESSEL DESIGN CRITERIA, AND REVISED PAGES

CORPORATE AUTHOR: GEORGIA POWER CO.

ABSTRACT: CONSISTS OF (1) REPLACEMENT PAGES, (2) ADDITIONAL INFORMATION ON THE PRESSURE VESSEL DESIGN CRITERIA, AND (3) TECHNICAL NOTES ON THE SIGNIFICANCE OF TRITIUM IN WATER REACTORS. DISCUSSION OF TRITIUM INCLUDES PROPERTIES, RADIATION PROTECTION, METHODS OF FORMATION, SIGNIFICANCE IN REACTORS, EXPERIENCE IN BWRs - SUPERHEAT REACTORS - GE TEST REACTOR AND BWR REFUELING, SIGNIFICANCE IN WASTE DISPOSAL BOTH LIQUID AND AIRBORNE, AND CONTROL OF T IN THE INITIAL BWR CORE. A 1960 ANALYSIS OF THE REACTOR WATER WITH TEMPORARY BORON CONTROL CONTAINS (FOR EXCESS REACTIVITY IN FIRST CORE) INDICATES THE CONTAINS CO NOT CONTRIBUTE SIGNIFICANTLY TO TRITIUM CONCENTRATION IN REACTOR WATER.

PER DESC: JATCH 1 LICENSE APPLICATION, 50321-5, 150 PAGES, FIGURES, TABLES, APPEND. 1, AUG. 9, 1968, SECRET 50-321

KEYWORDS: REACTOR, BWR; BOILING WATER REACTOR (BWR); BORON; DESIGN CRITERIA; PRESSURE VESSELS; HAZARD, RELATIVE; COMPARISON, THEORY AND EXPERIENCE; ARIAL, SPONGE; REACTOR, INTERNAL SUPERHEAT; TRITIUM; GENERAL ELECTRIC TEST REACTOR (GENT); WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; WASTE MANAGEMENT; RADIATION SAFETY AND CONTROL; REFUELING; PROPERTY, PHYSICAL; REPORT, PSAR; PROPERTY, CHEMICAL; CONTROL BODIES

<1000>

PUB DATE: 1964

AUTHOR: HADLEY, E.A.

<1000> CONT.

TITLE: FISSION-PRODUCT TRITIUM IN FUEL-PROCESSING WASTE

CORPORATE AUTHOR: BAFORD ENGINEERING DEVELOPMENT LABORATORY, RICHLAND, WASHINGTON

ABSTRACT: TRITIUM IS A PRODUCT OF URANIUM FISSION AND IS PRESENT IN PROCESS SOLUTIONS. THE INABILITY TO DECONTAMINATE WASTE OF TRITIUM REQUIRES THAT SAFETY OF DISPOSAL BE DEPENDENT ON FAVORABLE ENVIRONMENTAL CONDITIONS. AT BAFORD 47 TO 64 % OF THE TRITIUM IS DISCHARGED TO CHRS AND PCRS- MOST OF THAT REMAINING IS RELEASED TO THE ATMOSPHERE OR STORED IN HIGH-LEVEL LIQUID WASTE. AT SAVANNAH FIVE ABOUT 25 % OF THE TRITIUM IS NOT CONVERTED TO TRITIATED WATER AND IS DISCHARGED FROM A 195 FT STACK. AT BAFORD ONLY ABOUT 1 % OF THE TRITIUM WAS RELEASED TO THE ATMOSPHERE AND 75 % OF THIS WAS THE GASE. ENVIRONMENTAL MONITORING OF TRITIUM SERVES TWO PURPOSES- IT PROVIDES A BASE FOR EVALUATION OF TRITIUM HAZARDS AND ASSISTS IN DESCRIBING THE MOVEMENT OF GROUND WATER, WHICH IS USEFUL IN ASSESSING THE HAZARDS OF OTHER LONG-LIVED RADIONUCLIDES THAT MIGHT BE RELEASED TO THE GROUND.

PUB DESC: NUCLEAR SAFETY, 5(4) - 5 PAGES, 1 FIGURE, 1 TABLE- 399-003 (SUMMER 1964)

KEYWORDS: EFFLUENT; RIVER, SAVANNAH; BAFORD SITE; GROUND WATER; SOIL, RADIOISOTOPE MOVEMENT THROUGH; TRITIUM; WASTE DISPOSAL, ATMOSPHERIC; WASTE DISPOSAL, TERRESTRIAL; WATER

<1001>

PUB DATE: 1965

AUTHOR: DAWKINS, D.B.; SCHULTZ, E.L.

TITLE: ENVIRONMENTAL TRITIUM STUDIES AT THE NATIONAL REACTOR TESTING STATION

CORPORATE AUTHOR: IDAHO CRENTICS OFFICE, U.S. ATOMIC ENERGY COMMISSION, IDAHO FALLS

ABSTRACT: INFORMATION ON THE CONCENTRATION OF TRITIUM IN WASTE, PRECIPITATION, AND SURFACE AND GROUND WATER AT THE NATIONAL REACTOR TESTING STATION AND SURROUNDING AREAS IS PRESENTED. IT IS SHOWN THAT THE PRESENT CONCENTRATION OF TRITIUM IN THE ENVIRONMENTAL WATER IS ABOUT 100 TIMES PRE-HYDROGEN-BOMB LEVELS. WASTE OPERATIONS HAVE NOT SIGNIFICANTLY CONTRIBUTED TO THIS CONTAMINATION EXCEPT IN THE CASE OF GROUND WATER DOWN GRADIENT FROM THE CHEMICAL PROCESSING PLANT. INITIATED WATER EVAPORATING FROM THE IDAHO CHEMICAL PROCESSING PLANT HAS BEEN DETECTED DOWN THE GROUND-WATER GRADIENT OVER AN AREA OF ABOUT 75 SQUARE MILES. THE TRITIUM CONCENTRATION IN GROUND WATER DECREASES EXPONENTIALLY WITH DISTANCE FROM THE POINT OF INJECTION. AN EMPIRICAL EQUATION HAS BEEN DERIVED WHICH DESCRIBES THIS FUNCTION.

PUB DESC: IDC-12C43, CCEP-651104-1, 46 PAGES, 4 FIGURES, AUGUST 1965, PRESENTED AT SYMPOSIUM ON ISOTOPE TECHNIQUES, URBANA, ILLINOIS

KEYWORDS: WMS; RADIUM; TRITIUM; WASTE DISPOSAL, TERRESTRIAL; SURFACE WATER, NUCLEIC OCCURRENCE; GROUND WATER, NUCLEIC OCCURRENCE; WASTE DISPOSAL, LIQUID; HYDROLOGY; HYDROLOGY, RATE OF MOVEMENT (SEE ALSO GROUND WATER)

<1002>

PUB DATE: 1974

AUTHOR: HILD, W.; KRAUSE, H.; SAUER, R.; KESSLER, H.; FISCHER, W.; DEILHARD, C.; REUTHER, A.G.

TITLE: DEEP-Well DISPOSAL OF TRITIUM CONTAINING LIQUID EFFLUENTS

CORPORATE AUTHOR: FEDERAL REPUBLIC OF GERMANY

ABSTRACT: AT THE KARLSRUHE NUCLEAR RESEARCH CENTER DEEP-Well INJECTION OF TRITIUM-CONTAINING EFFLUENTS INTO ISOLATED DEPLETED OIL LOCATIONS OF THE DEEP SUBSURFACE IS BEING STUDIED AS AN APPROACH OF TRITIUM DISPOSAL, WHICH DOES NOT LEAD TO A POLLUTION OF THE BIOSPHERE. THE GEOLOGY OF THE OIL FIELD IN THE VICINITY OF THE CENTER, THE TECHNICAL UNWAGROUNE AND

SURFACE ADAPTATIONS OF THE SELECTED WELL, THE CONTROL AND SURVEILLANCE PROVISIONS ARE DESCRIBED TOGETHER WITH THE ESSENTIAL SAFETY CONSIDERATIONS AND THE ANTICIPATED OPERATION CONDITIONS. (AWEH)

PUB DESC: OECD-OECD, MANAGEMENT OF RADIOACTIVE WASTES FROM FUEL REPROCESSING-PROCEEDINGS OF SYMPOSIUM, 1003-1030 (1974)

KEYWORDS: WASTE DISPOSAL; TRITIUM; GERMANY; OIL; WASTE DISPOSAL, DEEP WELL; GEOLOGY; DEPLETED OIL FIELD; TECHNOLOGY; CONTROL; SURVEILLANCE; SAFETY EVALUATION; OPERATION

<1003>

PUB DATE: 1976

AUTHOR: EBERSWET, C.J.; BIER, J.C.

TITLE: TRITIUM EFFLUENT CONTROL PROJECT PROGRESS REPORT: JULY - SEPTEMBER 1975

CORPORATE AUTHOR: BOUND LAB., HIAWATHUNG, OHIO

ABSTRACT: REPORTS PROGRESS ON VARIOUS TECHNOLOGIES OF USE IN THE CONTROL AND HANDLING OF TRITIUM. A SHIPPING CONTAINER HAS BEEN DEVELOPED. ECONOMIC CONSIDERATIONS ARE ALSO REPORTED FOR EACH OF THE PROPOSED METHODS INCLUDING THE SHIPPING CONTAINER.

PUB DESC: HW-2208 1976 (MARCH)

KEYWORDS: CONTROL TECHNOLOGY; TRITIUM; ECONOMICS (SEE ALSO WASTE DISPOSAL, ECONOMICS); DECONTAMINATION; MOLECULAR EXCHANGE; ELECTROLYSIS; CATALYTIC EXCHANGE; SHIPPING CONTAINER

<1004>

PUB DATE: 1975

AUTHOR: KILIER, D.J.; TREVENOR, L.E.; STEINBERG, E.J.

TITLE: TRITIUM AND MOBILE-GAS FISSION PRODUCTS IN THE NUCLEAR FUEL CYCLE. II FUEL REPROCESSING PLANTS.

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: THE BEHAVIOR OF TRITIUM AND MOBILE GAS FISSION PRODUCTS IN FUEL REPROCESSING OPERATIONS IS DESCRIBED. ESTIMATES OF THE AMOUNTS OF TRITIUM AND MOBILE GASES IN PRESENT-DAY COMMERCIAL FUEL-REPROCESSING PLANTS, AS WELL AS THEIR PATHWAYS IN THE PROCESSING STEP, ARE PRESENTED. THE EFFECTS OF POSSIBLE FUTURE REACTOR MODIFICATIONS AND WASTE MANAGEMENT TECHNIQUES ON THE APPARAGE OF THESE FISSION PRODUCTS IN VARIOUS WASTE STREAMS ARE ESTIMATED. BRIEF DESCRIPTIONS OF AEC-OPERATED REPROCESSING FACILITIES AND FOREIGN REPROCESSING PLANTS AND TABLES OF PERTINENT PROPERTIES OF TRITIUM AND MOBILE GASES ARE INCLUDED IN APPENDIX FORM. (AUTHOR)

PUB DESC: ARL-8135, MARCH 1975 70P, 36 FIG., 19 TAB., 92 REF.

KEYWORDS: FUEL CYCLE; INVENTORY; CRITICAL NUCLEIC PATHWAY; RADIOACTIVITY RELEASE; FUEL REPROCESSING; TRITIUM; MOBILE GAS; WASTE MANAGEMENT; ; GAS; LIQUID; SOLID

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PUB DATE: 1971

AUTHOR: NAIVE YANKEE ATOMIC POWER CO. (U.S.A.)

TITLE: RESPONSE TO QUESTION 9.3 - CONTROL OF TRITIUM CONTAMINATION

CORPORATE AUTHOR: NAIVE YANKEE ATOMIC POWER COMPANY

ABSTRACT: DISCUSSES THE UNCERTAINTIES ASSOCIATED WITH ESTIMATING THE AMOUNTS OF TRITIUM GENERATED. PROVIDES ANALYSIS OF THE FRACTION OF PRIMARY COOLANT TRITIUM THAT WILL BE RELEASED TO THE CIRCULATING WATER DISCHARGE POINT. DESCRIBES THE METHODS TO BE EMPLOYED FOR MONITORING TRITIUM CONCENTRATIONS PRIOR TO DISCHARGE FROM THE PLANT. DISCUSSES THE SPECIAL PRECAUTIONS TO BE TAKEN CONCERNING TRITIUM DURING

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DISPERSED WITH RESPECT TO PLANT PERSONNEL AND RELEASES TO THE ENVIRONMENT.

PUB DESC: DOCKET-50309-31, 1 PAGE, PG. 9.3 OF
APPENDMENT 1: TO SAINE TANKER LICENSE APPLICATION,
MARCH 30, 1971, DOCKET 50-309, TYPE-PUB, NPG--CCRB.,
AL--STONE + WEBSTER

KEYWORDS: REACTOR, PUB; TRITIUM; WASTE HANDLING;
WASTE MANAGEMENT; RADIOACTIVITY RELEASE; RESPONSE TO
RDC QUESTION; DECONTAMINATION SYSTEM, SAINATION; SAINE
TANKER (PUB)

<1006>

PUB DATE: 1968
AUTHOR: MILASEY, E.

TITLE: TREATMENT OF RADIOACTIVE WASTES IN BULGARIA,
CZECHOSLOVAKIA, THE GERMAN DEMOCRATIC REPUBLIC,
HUNGARY, POLAND AND ROMANIA

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY
AGENCY, VIENNA, AUSTRIA

ABSTRACT: RESEARCH WORK ON DECONTAMINATION AND
TREATMENT OF RADIOACTIVE WASTE IS DIRECTED TOWARDS
IMPROVING EXISTING METHODS OF DECONTAMINATION,
TREATMENT AND STORAGE, AND ALSO TOWARDS THE DISCOVERY
AND USE OF PROGRESSIVE TECHNOLOGICAL PROCESSES AND NEW
MATERIALS GIVING A NUMBER OF ADVANTAGES OVER THOSE
USED AT PRESENT. THE PURPOSE OF THE INVESTIGATIONS IS
TO INCREASE THE EFFICIENCY OF DECONTAMINATION, TO
CONCENTRATE THE RADIOACTIVITY IN THE SOLID PHASE, TO
REDUCE THE VOLUME OF WASTE, AND TO LOWER THE COST OF
ITS TREATMENT AND STORAGE.

PUB DESC: ATOMIC ENERGY REVIEW, 5(4), PAGES 151-167
(1967)

KEYWORDS: DECONTAMINATION; WASTE TREATMENT; WASTE
TREATMENT, PLANT; CZECHOSLOVAKIA; GERMANY; HUNGARY;
POLAND; RADIATION SAFETY AND CONTROL; REACTOR POWER;
RADIOISOTOPE; RADIOLOGICAL ASSISTANCE; ROMANIA; R AND
D PROGRAM; ROMANIA

<1007>

PUB DATE: 1974
AUTHOR: MUSCARE, R.C.

TITLE: TRITIUM DISTRIBUTION IN THE NUCLEAR INDUSTRY
- THE REQUIREMENTS FOR CONTROL STRATEGIES

CORPORATE AUTHOR: ALLIED CHEMICAL, NATIONAL REACTOR
TESTING STATION

ABSTRACT: TRITIUM WHICH IS PRODUCED FROM THERMAL
FISSION IN NUCLEAR REACTORS WILL BE DILUTED AND
DISPERSED THROUGHOUT THE AQUEOUS STREAMS IN THE FUEL
REPROCESSING PLANTS. THE RANGES OF TRITIUM
CONCENTRATIONS EXPECTED IN THE REPROCESSING PLANT
STREAMS FOR DIFFERENT REACTOR TYPES ARE ESTIMATED. THE
REQUIREMENTS FOR TRITIUM CONTROL THROUGH RECYCLE AND
ISOTOPE SEPARATION ARE DESCRIBED.

PUB DESC: ECP-1041, 19 PAGES, 3 TABLES, 4 FIGURES,
8 REFERENCES, JANUARY 1974

KEYWORDS: EFFLUENT; ADVISORY TYPE ON REACTOR
SAFEGUARDS; FISSION GAS RELEASE, FOD, MOLDED SALT;
OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN);
SURFACE WATER; TRITIUM; WASTE DISPOSAL; WASTE
MANAGEMENT; REACTOR, LWR (SEE ALSO LWR); FUEL
REPROCESSING; REACTOR, BWR; REACTOR, LWR (SEE ALSO
LWR);

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PUB DATE: 1970
AUTHOR: OSTROM, R.J.

TITLE: TRITIUM SOURCES AND RELEASES TO THE
ENVIRONMENT

CORPORATE AUTHOR: ARGONNE NATIONAL LABORATORY

ABSTRACT: DIFFERENT SOURCES OF TRITIUM PRODUCED IN

NUCLEAR POWER PLANTS THROUGH THERMAL FISSION AND FROM
BORON AND LITHIUM COOLANT ADDITIVES WERE IDENTIFIED
AND THE TRANSPORT MECHANISMS AND LEVEL OF TRITIUM
ACTIVITY RELEASED TO THE ENVIRONMENT FROM POWER PLANTS
AND FUEL REPROCESSING PLANTS HAVE BEEN EVALUATED. THE
SIGNIFICANCE OF THESE TRITIUM LEVELS IN RELATIONSHIP
TO THOSE PRESENT FROM NATURAL PROCESSES AND NUCLEAR
WEAPONS TESTING ARE IN REGARD TO BEING A SOURCE OF
POPULATION EXPOSURE IS POINTED OUT.

PUB DESC: AMERICAN NUCLEAR SOCIETY, 13(2), PP.
406-407, 1 TABLE, 3 REFERENCES, (NOVEMBER 1970)

KEYWORDS: REACTOR, BWR; ENVIRONMENT; REACTOR, PUB;
TRITIUM; REGULATION, AEC; WASTE DISPOSAL, LIQUID;
POPULATION EXPOSURE; WASTE MANAGEMENT; PRODUCTION;

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PUB DATE: 1973
AUTHOR: ORGANIZATION FOR ECONOMIC COOPERATION AND
DEVELOPMENT

TITLE: RADIATION PROTECTION STANDARDS FOR GASEOUS
TRITIUM LIGHT DEVICES

CORPORATE AUTHOR: ORGANIZATION FOR ECONOMIC
COOPERATION AND DEVELOPMENT (OECD), IEA

ABSTRACT: INDIVIDUALLY OF THE PROBLEM OF
PROTECTING WORKERS ENGAGED IN THE MANUFACTURE AND,
WHERE APPROPRIATE, MAINTENANCE AND REPAIR OF GASEOUS
TRITIUM LIGHT DEVICES AND THE SOURCES WHICH ARE
CONTAINED THEREIN, IT IS FOR THE APPROPRIATE NATIONAL
AUTHORITIES TO DETERMINE THAT THE DEVICES IN QUESTION
OFFER A SUFFICIENT DEGREE OF SAFETY BEFORE APPROVING
THEIR USE, AND TO INSURE THAT THE USE AND DISPOSAL OF
SUCH DEVICES DO NOT GIVE RISE TO UNACCEPTABLE
RADIATION DOSES TO INDIVIDUAL MEMBERS OF THE PUBLIC
AND THE POPULATION AT LARGE, IN THE SEVERE DEFENSE IN
THE IEA GUIDE FOR SAFETY ANALYSIS AND CONTROL OF
PRODUCTS CONTAINING RADIOISOTOPES. (AUTH-DOE.)

PUB DESC: BULGARIAN ENERGY AGENCY - OECD, 1973, 21P.
6 REF.

KEYWORDS: PERSONNEL EXPOSURE, RADIATION; TRITIUM;
IEA (SEE ALSO EUROPEAN NUCLEAR ENERGY AGENCY);
POPULATION EXPOSURE; SAFETY; STANDARDS, RADIATION (SEE
ALSO REGULATION); GAS; RADIOISOTOPES; INDUSTRIAL;
TECHNOLOGY; LUMINESCENCE; RADIATION PROTECTION;
CONTAMINATION; WASTE DISPOSAL; ICRP

<1010>

PUB DATE: 1963
AUTHOR: P. DESCHES, P.J.

TITLE: THE MOVEMENT OF TRITIUM FROM THE CHALK RIVER
LIQUID DISPOSAL AREA.

PUB DESC: ADCL-1739, CERN-1106

KEYWORDS: DIFFUSION; RIVER, CHALK; RIVER; TRITIUM;
WASTE DISPOSAL; REACTOR; LIQUID

<1011>

PUB DATE: 1973
AUTHOR: PUGH, W.D.

TITLE: UNDERGROUND MOVEMENT OF TRITIUM FROM
SOLID-WASTE STORAGE SHAFTS

CORPORATE AUTHOR: LOS ALAMOS SCIENTIFIC LABORATORY,
NEW MEXICO

ABSTRACT: TRITIUM FROM CONTAMINATED WASTES PLACED
IN STORAGE SHAFTS HAS BEEN TRANSPORTED BY GROUNDWATER
INTO THE ADJACENT TUFF. A STUDY MADE TO DETERMINE THE
EFFECT AND GEOLOGIC FACTORS GOVERNING THIS MOVEMENT
INDICATES THAT 100 PCU/ML LEVELS HAVE MOVED BEYOND A
DISTANCE OF 100 FT IN 4 YR. MAJOR MOVEMENT HAS BEEN
ALONG THE CONTACT BETWEEN THE TWO ASHFLOW PENETRATED
BY THE SHAFTS, WITH SECONDARY TRANSPORT THROUGH OPEN
JOINTS AND THROUGH THE TUFF MATRIX. EVAPORATION FROM
SURFACE SOIL AND TUFF AND TRANSDUCATION FROM PLANTS
HAS BEEN A CONTRIBUTING FACTOR IN THE RELEASE OF
TRITIUM TO THE ATMOSPHERE.

<1011> CONT.

PUB DESC: LA-5204-DS, 7 PAGES, 4 TABLES, 4 FIGURES, MAY 1973

KEYWORDS: GEOLOGY; WATER TRANSPORT; COORDINATE (SEE ALSO SOIL, RADIOISOTOPE MOVEMENT); SURFACE CONTAMINATION; TRITIUM; ATMOSPHERIC POLLUTION; WASTE STORAGE; SOIL, NUCLEIC OCCURRENCE; EVAPORATION; RADIOACTIVITY RELEASE; WATER VAPOR; ROCK MECHANICS; TRANSPORT; TRANSPIRATION;

<1012>

PUB DATE: 1968

AUTHOR: DAY, J. W.

TITLE: TRITIUM IN POWER REACTORS

CORPORATE AUTHOR: BATTELLE RESEARCH INSTITUTE, COLUMBUS LABORATORIES

ABSTRACT: DISCUSSES HEALTH PHYSICS ASPECTS, PRODUCTION RATES IN POWER REACTORS, MIGRATION OF TRITIUM, AFFINITY FOR WATER, MIGRATION FROM FUEL PINS, CONTROL AND DISPOSAL. FOR A TYPICAL 1000-MW (E) REACTOR, 40 CURIES/DAY IS PRODUCED BY FISSION. FOR 1000-MW (E) FUEL WITH BORON CHEMICAL SHIM, ADDITIONAL TRITIUM IS GENERATED AS A BYPRODUCT OF NEUTRON CAPTURE BY BORON. THE PRODUCTION GRADUALLY INCREASES UNTIL 16 CURIES/DAY IS PRODUCED AFTER 365 DAYS OF OPERATION.

PUB DESC: REACTOR AND FUEL-PROCESSING TECHNOLOGY, 12(1), PAGES 19-26 3 FIGURES, 17 REFERENCES (WINTER 1968-1969)

KEYWORDS: ACTIVITY BUILDUP; INVENTORY; HEALTH PHYSICS; FISSION PRODUCT; VOLATILE; INGESTION; INHALATION; TRITIUM; WASTE DISPOSAL; REACTOR, POWER; REACTOR COOLANT; COOLANT CHEMISTRY; PERSONNEL EXPOSURE, RADIATION; CHEMICAL SHIM; HAIR COOLING SYSTEM; RADIATION EFFECT

<1013>

PUB DATE: 1973

AUTHOR: FRIDENHAUER, T. P.; LANFINGER, P. H.

TITLE: TRITIUM CONTROL TECHNOLOGY

CORPORATE AUTHOR: MOUND LAB., MARIETTA, OHIO

ABSTRACT: THE PURPOSE OF THIS TRITIUM CONTROL TECHNOLOGY REPORT IS TO SUMMARIZE CURRENT TRITIUM CONTROL PRACTICES IN THE UNITED STATES. THE PRACTICES, METHODS AND OPERATING EXPERIENCES OF AEC CONTRACTORS AND PRIVATE INDUSTRY IN AREAS OF TRITIUM MONITORING, HANDLING, CONTAINMENT, TRAPPING, REMOVAL, PACKAGING, STORAGE AND DISPOSAL ARE REPORTED. TRITIUM CONTROL PRACTICES OF GOVERNMENT-OWNED LABORATORY AND PROCESS FACILITIES, LIGHT- AND HEAVY-WATER REACTORS, FUEL REPROCESSING PLANTS AND WASTE DISPOSAL FACILITIES ARE DESCRIBED. EMPHASIS HAS BEEN PLACED ON CURRENT PRACTICE, DESIGN, TECHNOLOGY AND GENERATING TRITIUM CONTROL SYSTEMS. (NUCLEAR NOTE. BEST.)

PUB DESC: WASH-1269, 102 FIG., 24 TAB., 374 REF., 541 P., 1 BIBLIOG., DEC. 1973

KEYWORDS: TRITIUM; CONTACT; MONITORING (SEE ALSO SURVEY); HANDLING (SEE ALSO TRANSPORTATION AND HANDLING); CONTAINMENT; TRAPPING; WASTE STORAGE; WASTE DISPOSAL; REACTOR; POWER REACTORS (SEE ALSO REACTOR POWER); FUEL REPROCESSING; BIBLIOGRAPHY (SEE ALSO REVIEW); EFFLUENT; CONTRACTORS, USARC (SEE ALSO AGENCY, AEC);

<1014>

PUB DATE: 1975

AUTHOR: SHARP, R. L.; EASTBRY, C. R.

TITLE: TRITIUM INSTRUMENTATION FOR A FUSION REACTOR POWER PLANT

CORPORATE AUTHOR: CARL BIEGE NATIONAL LABORATORY

ABSTRACT: A REVIEW OF TRITIUM INSTRUMENTATION IS PRESENTED. THIS INCLUDES A DISCUSSION OF CURRENTLY AVAILABLE IN-PLANT INSTRUMENTATION AND METHODS

REQUIRED FOR SAMPLING STACKS, MONITORING PROCESS STREAMS AND REACTOR COOLANTS, ANALYZING OCCUPATIONAL WORK AREAS FOR AIR AND SURFACE CONTAMINATION, AND PERSONNEL MONITORING. OFF-SITE INSTRUMENTATION AND COLLECTION TECHNIQUES ARE ALSO PRESENTED. CONCLUSIONS ARE BASED CONCERNING THE ADEQUACY OF EXISTING INSTRUMENTATION IN RELATION TO THE MONITORING NEEDS FOR FUSION REACTORS.

PUB DESC: OSEL/TH-5300 1976 (EXPT)

KEYWORDS: TRITIUM; INSTRUMENTATION; ON SITE; OFF SITE; STACK EMISSIONS; SAMPLING; MONITORING (SEE ALSO SURVEY); SURFACE MONITORING; MONITOR, PERSONNEL; ASSESSMENT; SAFETY EVALUATION;

<1015>

PUB DATE: 1973

AUTHOR: SHEFAS, W. E.; CURTIS, B. L.

TITLE: NEW APPROACH TO TRITIUM LEAK RATE DETERMINATION

CORPORATE AUTHOR: MOUND LAB., MARIETTA, OHIO

ABSTRACT: A METHOD FOR DETERMINING LEAK RATES (ON THE ORDER OF 1×10^{-17} CURIES CM/SEC AND HIGHER) FROM CONTAINERS OF TRITIUM WASTE IS DESCRIBED. EACH CONTAINER IS SEALED IN A DISPOSABLE CAN. AFTER SEVERAL DAYS, THE ACCUMULATED TRITIUM IS FLUSHED FROM THE CAN WITH COMPRESSED AIR THROUGH AN ETHYLENE-GLYCOL BUBBLER WHERE THE HTO, BUT NOT THE HT, IS TRAPPED. THE OUTPUT OF THE BUBBLER IS CHANNELLED THROUGH A HEATED PALLADIUM CATALYST WHERE THE HT IS OXIDIZED. THE OXIDIZED HT IS COLLECTED IN A SECOND ETHYLENE-GLYCOL BUBBLER. THE TRITIUM COLLECTED IN BOTH BUBBLERS IS MEASURED BY LIQUID SCINTILLATION COUNTING.

PUB DESC: NLM-2007(OP), CONF-731112-8, 10 PAGES, PRESENTED AT THE NUCLEAR SCIENCE SYMPOSIUM, HELD IN SAN FRANCISCO, CALIFORNIA, NOV. 14, 1973

KEYWORDS: COUNTER; MEASUREMENT; TRITIUM; WASTE HANDLING; MONITORING (SEE ALSO SURVEY); LEAK RATE; SCINTILLATION

<1016>

PUB DATE: 1970

AUTHOR: T. B. SCHWALB, INC. (U.S.A.)

TITLE: REDUCTION OF TRITIUM CONCENTRATION RELEASED TO UNRESTRICTED AREAS

CORPORATE AUTHOR: THEODORE B. SCHWALB, INC.

ABSTRACT: 1969 AVERAGE CONCENTRATION RELEASED TO UNRESTRICTED AREAS WAS 0.81×10^{-6} (HT) MICROCURIE/CC WHICH IS 4 TIMES AEC (AIR). RUNNING STACK PAN CONTINUOUSLY NEW TO GET AN ADDITIONAL DILUTION FACTOR OF 4.2. VARIOUS MEASUREMENTS ARE BEING MADE TO STUDY THE DIFFUSION OF TRITIUM AFTER IT LEAVES THE STACK. A MODIFICATION TO THE STACK IS PROPOSED TO INCREASE DILUTION FACTOR.

PUB DESC: SCHWALB, INC. TO DIVISION OF COMPLIANCE (AEC) - MARCH 19, 1970

KEYWORDS: AIRBORNE RELEASE; CONCENTRATION, MAXIMUM; DIFFUSION; BYPRODUCT MATERIAL; TRITIUM; VENTILATION SYSTEM; STACK; AIR; WASTE DISPOSAL, GAS; EQUIPMENT DESIGN; OPERATING EXPERIENCE; OFF SITE

<1017>

PUB DATE: 1969

AUTHOR: YANFEE ATOMIC ELECTRIC COMPANY (U.S.A.)

TITLE: SELECTED ITEMS OF INTEREST

CORPORATE AUTHOR: YANFEE ATOMIC ELECTRIC COMPANY

ABSTRACT: CORE 7-B REFUELING CONTINUED. CORE A CRITICAL REACHED SEPT. 17. DURING PHYSICS TESTING PERIOD, LEAK DEVELOPED ON FIELD IN BLOWDOWN LINE OF NO. 4 STEAM GENERATOR AND THE PRESSURIZER LOW SET SAFETY VALVE WAS LEAKING. OUTAGE TIME FOR CORE 7-B REFUELING

<1017> CONT.

WAS 54 DAYS. WASTE DISPOSAL, LIQUID RELEASES CONTAINING 30.04 CUBES OF TITANIUM, SECONDARY PLANT WATER DISCHARGED CONTAINING 1.71 CUBES, AND 1.19 CUBES WAS EXCHANGED VIA STACK.

PUB DESC: YAMKEN CEMENTS REPORT NO. 105 FOR SEPTEMBER 1969, OCTOBER 22, 1969, DOCKET 58-29, TITLE--PUB, WPC--WSTL, AE--STON - WESTER, 11 PAGES

KEYWORDS: REACTOR, OPERATIONS; REACTOR, PUB; TITANIUM; YAMKEN DOME (PUB); STACK; WASTE DISPOSAL, GAS; WASTE DISPOSAL, LIQUID; PRESSURE RELIEF; REPELLING; LEAK; OPERATING EXPERIENCE; VALVES; PIPING

<1018>

PUB DATE: 1974
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: DECOMMISSIONING OF NUCLEAR FACILITIES - A BIBLIOGRAPHY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, TECHNICAL INFORMATION CENTER

ABSTRACT: A BIBLIOGRAPHY CONTAINING TWO REFERENCES DEALING WITH THE DECOMMISSIONING, RETIREMENT, OR DISMANTLING OF VARIOUS NUCLEAR FACILITIES. THE REFERENCES ARE FROM NUCLEAR SCIENCE ABSTRACTS, AND ARE ARRANGED CHRONOLOGICALLY BY USA VOLUME AND ABSTRACT NUMBER. (NOT AUTH ABST)

PUB DESC: TID-3344, APRIL 1974, 11P, 100 REF.

KEYWORDS: WASTE MANAGEMENT; TRANSPORTATION; DECOMMISSIONING; BIBLIOGRAPHY (SEE ALSO REVIEW); DISMANTLING; ABSTRACTS; DOCUMENTATION; NUCLEAR FACILITIES

<1019>

PUB DATE: 1973
AUTHOR: ATOMIC ENERGY COMMISSION (U.S.A.)

TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, TECHNICAL INFORMATION CENTER

ABSTRACT: AMONG THE SUBJECTS INDEXED IN THIS BIBLIOGRAPHY, THOSE RELATED TO WATER POLLUTION INCLUDE SURFACE WATERS (5 REF.), SEAS (9), SOIL CONTAMINATION (2), AND ENVIRONMENTAL EFFECTS (23). THE CITATIONS ARE ARRANGED BY THE ORIGINAL NUCLEAR SCIENCE ABSTRACT NUMBER. USING THE ADVANTAGE OF COMPUTER STORAGE AND PROCESSING, THE SUBJECT INDEXING IS DISPLAYED UNDER EACH CITATION TO SERVE AS A SUBSTITUTE FOR AN ABSTRACT.

PUB DESC: TID-3311 (SUPPL. 4), 119 PAGES, 464 REFERENCES, JANUARY 1973

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); CESIUM; CESIUM; COBALT; EFFLUENT; OCEAN AND SEA (SEE ALSO WASTE DISPOSAL, OCEAN); PLUTONIUM; RUTHENIUM; STRONTIUM; URANIUM; WASTE DISPOSAL; WASTE STORAGE; WASTE TREATMENT; ZIRCONIUM; SURFACE WATER, NUCLEIDE OCCURRENCE; SOIL, NUCLEIDE OCCURRENCE; CRITICAL NUCLEIDE PATHWAY; ENVIRONMENT; WATER POLLUTION; SEDIMENT; STATEMENT, ENVIRONMENTAL; REPORT, ENVIRONMENTAL

<1020>

PUB DATE: 1964
AUTHOR: CONNOLLY, T.F.

TITLE: BIBLIOGRAPHY ON NUCLEAR REACTOR FUEL REPROCESSING AND WASTE DISPOSAL

CORPORATE AUTHOR: OAK RIDGE NATIONAL LABORATORY, TENNESSEE

ABSTRACT: A BIBLIOGRAPHY OF TITLES AND ABSTRACTS TREATING THE SUBJECT MATTER UNDER THE GENERAL TOPICS OF COSTS, DECAY STORAGE, DISPOSAL METHODS, PLANT AND EQUIPMENT, RECOVERY OR REMOVAL OF MATERIALS, SURVEYS AND BIBLIOGRAPHIES, AND FUTURE PROJECTION.

PUB DESC: ORNL-2971 (VOL. 8), 81 PAGES, DECEMBER 26,

1969

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE STORAGE; WASTE TREATMENT; WASTE DISPOSAL, ECONOMICS; RECOVERY PROCESS; EQUIPMENT; SURVEY

<1021>

PUB DATE: 1964 -
AUTHOR: DAVIS, T.F.; VOESS, H.E.

TITLE: RADIOACTIVE WASTE PROCESSING AND DISPOSAL - AN ANNOTATED BIBLIOGRAPHY

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION

ABSTRACT: FIVE-HUNDRED EIGHTY-NINE ANNOTATED REFERENCES ARE GIVEN ON GASEOUS, LIQUID, AND SOLID WASTES.

PUB DESC: TID-3311 (SUPPL. 1)- 184 PAGES- JUNE 1964, GTS

KEYWORDS: AEROSOL, RADIOACTIVE; BIBLIOGRAPHY (SEE ALSO REVIEW); PARTICLE; WASTE DISPOSAL; WASTE TREATMENT; ANALYTICAL TECHNIQUE; MONITOR, ENVIRONMENTAL

<1022>

PUB DATE: 1964
AUTHOR: EUROPEAN ATOMIC ENERGY COMMUNITY

TITLE: LIST OF EURATOM SCIENTIFIC AND TECHNICAL REPORTS (UP TO DECEMBER 1963)

CORPORATE AUTHOR: EUROPEAN ATOMIC ENERGY COMMUNITY - EURATOM

ABSTRACT: THIS CATALOGUE LISTS ALL EURATOM REPORTS PUBLISHED UP TO 31 DECEMBER 1963. THESE REPORTS WERE WRITTEN CONCURRENTLY WITH THE CARRYING OUT OF THE EURATOM RESEARCH PROGRAM, EITHER IN THE ESTABLISHMENTS OF THE JOINT NUCLEAR RESEARCH CENTER, OR UNDER CONTRACT, OR IN ASSOCIATION WITH PRIVATE OR PUBLIC ORGANISATIONS WITHIN THE COMMUNITY. THE CATALOGUE DOES NOT INCLUDE REPORTS DRAFTED BY AMERICAN CONTRACT-EMPLOYEES UNDER THE RESEARCH AND DEVELOPMENT PROGRAM OF THE US/EURATOM AGREEMENT FOR COOPERATION.

PUB DESC: EUR-225.E, 202 PAGES, SEPTEMBER 1964, SOURCE

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); EURATOM; GEOLOGY; WASTE DISPOSAL; METEOROLOGY (SEE ALSO AIR);

<1023>

PUB DATE: 1965
AUTHOR: PETERMAN, A.

TITLE: CHEMICAL METHODS FOR CONTROL OF EFFLUENTS CONTAINING RADIOISOTOPES IN TRACE AMOUNTS

CORPORATE AUTHOR: CENTRE D'ETUDES NUCLEAIRES, COMMISSARIAT A L'ENERGIE ATOMIQUE, SACLAY, FRANCE

ABSTRACT: THIS BIBLIOGRAPHICAL STUDY ON THE MONITORING OF SO-CALLED INACTIVE EFFLUENT CONTAINING TRACES OF RADIOISOTOPES GIVES A NUMBER OF PUBLICATIONS (1960-1964) DESCRIBING SEPARATION METHODS AND OF MEASUREMENT OR DIRECT IDENTIFICATION OF THE RADIOISOTOPES PROBABLY PRESENT IN TRACE QUANTITIES.

PUB DESC: CEA-BIO-82, 84 PAGES, 99 REFERENCES- APRIL 1965

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); EFFLUENT; MONITOR, LIQUID; WASTE TREATMENT, LIQUID; SURFACE WATER, NUCLEIDE OCCURRENCE; WASTE DISPOSAL, LIQUID; RADIOCHEMICAL ANALYSIS

<1024>

PUB DATE: 1962
AUTHOR: INTERNATIONAL ATOMIC ENERGY AGENCY

TITLE: DISPOSAL OF RADIOACTIVE WASTES INTO MARINE AND FRESH WATERS

<1024> CONT.

CORPORATE AUTHOR: INTERNATIONAL ATOMIC ENERGY
AGENCY, VIENNA, AUSTRIAABSTRACT: THE BIBLIOGRAPHY CONTAINS APPROXIMATELY
2,000 REFERENCES TO REPORTS AND TO PUBLISHED
LITERATURE FROM MORE THAN TWENTY COUNTRIES ON SOURCE
AND NATURE OF WASTES, TREATMENT, INCINERATED STORAGE,
DISPOSAL, MONITORING, LEGAL ASPECTS, AND ECONOMICS.PUB DESC.: SII/PUB/21/5 365 PAGES- 1962-
(IAEA-BIBLIOGRAPHICAL SERIES NO. 5)- PRINTED BY TWP
IAE IN AUSTRIA, MARCH 1962- IAEAKEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); IAEA;
WASTE DISPOSAL; ATMOSPHERIC; WASTE STORAGE; WASTE
TREATMENT; WASTE SOURCE AND TYPE

<1025>

PUB DATE: 1972

AUTHOR: KELLY, F.C.

TITLE: A SELECTED, ANNOTATED BIBLIOGRAPHY OF THE
CIVIL, INDUSTRIAL, AND SCIENTIFIC USES FOR NUCLEAR
EXPLOSIONS (SUPPLEMENT)CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
DIVISION OF TECHNICAL INFORMATIONABSTRACT: THIS SUPPLEMENT TO BIBLIOGRAPHY, TID-3522
(9TH REV.), CONTAINS 250 ANNOTATED REFERENCES TO
REPORTS AND PUBLISHED LITERATURE ON THE USARC'S
FLASHBURN PROGRAM THAT WERE PUBLISHED IN VOLUME 25
(1971) OF NUCLEAR SCIENCE ABSTRACTS. THE REFERENCES
ARE ARRANGED BY SUBJECT CATEGORY. REPORT NUMBER AND
AVAILABILITY, FILE AND TAP, AUTHOR, AND EXPERIMENT
NUMBERS ARE INCLUDED.PUB DESC.: TID-3522 (REV. 9, SUPPL. 1), 51 PAGES,
REFERENCES, JUNE 1972KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); MINING;
FLASHBURN; SEISMOLOGY; TESTING; WASTE DISPOSAL;
NUCLEAR DETONATION; RADIATION; PUBLIC EDUCATION;
EXCAVATION, NUCLEAR; GAS; AEROSOL, AEC (SEE ALSO
USARC); INDUSTRY, NUCLEAR; RESOURCE, NATURAL; BENEFIT
VS RISK; BENEFICIAL USE; FOREN PLANT, GROTHERNAL

<1026>

PUB DATE: 1973

AUTHOR: OFFICE OF INF. SERVICES, TECH. INF. CENTER,
USARCTITLE: RADIOACTIVE WASTE MANAGEMENT - A
BIBLIOGRAPHY OF PUBLICITY, AVAILABLE LITERATURE
PERTAINING TO THE USARC'S OAK RIDGE, TENN. SITECORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
TECHNICAL INFORMATION CENTERABSTRACT: A BIBLIOGRAPHY CONTAINING ABSTRACTS OF
400 TECHNICAL REPORTS AND JOURNAL ARTICLES WHICH HAVE
APPEARED IN NUCLEAR SCIENCE ABSTRACTS FROM 1960
THROUGH JULY 1973 PERTAINING TO RADIOACTIVE WASTE
MANAGEMENT AT THE OAK RIDGE SITE. ABSTRACTS ARE
GROUPED INTO THE TEN FOLLOWING CATEGORIES: (1)
ENVIRONMENTAL MONITORING ECOLOGY AND RADIOLOGICAL SURVEYS,
(2) WHITE OAK LAKE AND CLINCH RIVER STUDIES, (3)
GROUND DISPOSAL AND SOIL STUDIES, (4) GEOLOGY
HYDROLOGY, AND METEOROLOGY, (5) STACK DISPOSAL, (6)
WASTE STORAGE TANKS AND CORROSION PROBLEMS, (7) WASTE
FIXATION AND SOLIDIFICATION, (8) WASTE PROCESSING AND
PROPERTIES, (9) WASTE MANAGEMENT, (10) MISCELLANEOUS.PUB DESC.: TID-3303, SEPT. 1973, 85P., 400 REF FROM
NSA 1960 THROUGH JULY 1973KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE
DISPOSAL ALTERNATIVES; WASTE STORAGE; RIVER, CLINCH;
ENVIRONMENT; SURVEY, RADIATION; WASTE TREATMENT; SOIL;
GEOLOGY; HYDROLOGY; METEOROLOGY (SEE ALSO AIR); STACK;
STORAGE CONTAINER; SOLIDIFICATION (SEE ALSO
CALCINATION, INCINERATION, VITRIFICATION, ETC.);
VITRIFICATION; CORROSION (SEE ALSO STRESS CORROSION);
HEAT TRANSFER; WASTE DISPOSAL, SALT; OAK

<1027>

PUB DATE: 1973

AUTHOR: OFFICE OF INF. SERVICES, TECH. INF. CENTER,
USARCTITLE: RADIOACTIVE WASTE MANAGEMENT - A
BIBLIOGRAPHY OF PUBLICLY AVAILABLE LITERATURE
PERTAINING TO THE USARC'S SAVANNAH RIVER PROMC.CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
TECHNICAL INFORMATION CENTERABSTRACT: A BIBLIOGRAPHY CONTAINING ABSTRACTS OF
197 TECHNICAL REPORTS AND JOURNAL ARTICLES WHICH HAVE
APPEARED IN NUCLEAR SCIENCE ABSTRACTS FROM JANUARY
1951 THROUGH JULY 1973 PERTAINING TO RADIOACTIVE WASTE
MANAGEMENT AT THE SAVANNAH RIVER SITE. ABSTRACTS ARE
GROUPED INTO TEN CATEGORIES AS FOLLOWS: (1) ENVIRONMENTAL
MONITORING ECOLOGY AND RADIOLOGICAL SURVEYS, (2)
SAVANNAH RIVER STUDIES, (3) GROUND DISPOSAL AND SOIL
STUDIES, (4) GEOLOGY, HYDROLOGY, AND METEOROLOGY, (5)
STACK DISPOSAL, (6) WASTE STORAGE TANKS AND CORROSION
PROBLEMS, (7) WASTE FIXATION AND SOLIDIFICATION, (8)
WASTE PROCESSING AND PROPERTIES, (9) WASTE MANAGEMENT,
(10) MISCELLANEOUS.PUB DESC.: TID-3301 (AUG. 1973), 36 P., 197 REF.
FROM NSA FROM JAN. 1951 THROUGH JULY 1973KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE
DISPOSAL ALTERNATIVES; WASTE DISPOSAL, ASSESSMENT (SEE
ALSO ASSESSMENT); ENVIRONMENTAL PROTECTION AGENCY
(EPA) (SEE ALSO PUBLIC HEALTH); MONITORING (SEE ALSO
SURVEY); ECOLOGY; RADIOLOGICAL SURVEY; RIVER,
SAVANNAH; WASTE STORAGE; STORAGE CONTAINER; CORROSION
(SEE ALSO STRESS CORROSION); BURIAL GROUND (SEE ALSO
COMMERCIAL BURIAL GROUND); SOIL; GEOLOGY; HYDROLOGY;
METEOROLOGY (SEE ALSO AIR); STACK; WASTE TREATMENT;
WASTE DISPOSAL; WASTE FIXATION; SOLIDIFICATION (SEE
ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.);
SAVANNAH RIVER PLANT

<1028>

PUB DATE: 1973

AUTHOR: OFFICE OF INF. SERVICES, TECH. INF. CENTER,
USARCTITLE: RADIOACTIVE WASTE MANAGEMENT - A
BIBLIOGRAPHY OF PUBLICLY AVAILABLE LITERATURE
PERTAINING TO THE USARC'S NATIONAL REACTOR TESTING
ST., IDAHO.CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION,
TECHNICAL INFORMATION CENTERABSTRACT: A BIBLIOGRAPHY CONTAINING ABSTRACTS OF
272 TECHNICAL REPORTS AND JOURNAL ARTICLES WHICH HAVE
APPEARED IN NUCLEAR SCIENCE ABSTRACTS FROM JAN. 1951
THROUGH JULY 1973 PERTAINING TO RADIOACTIVE WASTE
MANAGEMENT AT THE NATIONAL REACTOR TESTING STATION.
THE ABSTRACTS ARE GROUPED INTO NINE CATEGORIES AS
FOLLOWS: (1) ENVIRONMENTAL MONITORING, ECOLOGY, AND
RADIOLOGICAL SURVEYS, (2) GROUND DISPOSAL AND SOIL
STUDIES, (3) GEOLOGY, HYDROLOGY, AND METEOROLOGY, (4)
STACK DISPOSAL, (5) WASTE STORAGE TANKS AND CORROSION
PROBLEMS, (6) WASTE FIXATION AND SOLIDIFICATION, (7)
WASTE PROCESSING AND PROPERTIES, (8) WASTE MANAGEMENT,
(9) MISCELLANEOUSPUB DESC.: TID-3302, AUG. 1973, 56 P., 272 REF. FROM
NSA FROM JAN. 1951 THROUGH JULY 1973KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE
DISPOSAL ALTERNATIVES; IDAHO; MONITORING (SEE ALSO
SURVEY); ECOLOGY; ENVIRONMENT; RADIOLOGICAL SURVEY;
WASTE DISPOSAL; WASTE TREATMENT; FIXATION;
SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION,
VITRIFICATION, ETC.); WASTE STORAGE; STORAGE
CONTAINER; CORROSION (SEE ALSO STRESS CORROSION);
STACK DISPOSAL; WASTE PROCESSING; SOIL; GEOLOGY;
HYDROLOGY; METEOROLOGY (SEE ALSO AIR); VITRIFICATION;
REFS

<1029>

PUB DATE: 1973

AUTHOR: TECHNICAL INFORMATION CENTER, USARC

<1029> CONT.

TITLE: RADIOACTIVE WASTE MANAGEMENT. A BIBLIOGRAPHY OF PUBLICLY AVAILABLE LITERATURE PERTAINING TO THE USARC'S HANFORD, WASH. PROB.

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, TECHNICAL INFORMATION CENTER

ABSTRACT: A BIBLIOGRAPHY CONTAINING ABSTRACTS OF 1090 TECHNICAL REPORTS AND JOURNAL ARTICLES WHICH HAVE APPEARED IN NUCLEAR SCIENCE ABSTRACTS FROM JAN. 1951 THROUGH JULY 1973 PERTAINING TO RADIOACTIVE WASTE MANAGEMENT BY THE HANFORD SITE. THE ABSTRACTS ARE GROUPED INTO TEN CATEGORIES AS FOLLOWS: (1) ENVIRONMENTAL ECOLOGY, AND RADIOLOGICAL SURVEYS, (2) COLUMBIA RIVER STUDIES, (3) GROUND DISPOSAL AND SOIL STUDIES, (4) GEOLOGY, HYDROLOGY, AND HYDROBIOLOGY, (5) SLACK DISPOSAL, (6) WASTE STORAGE TANKS AND CORROSION PROBLEMS, (7) WASTE FIXATION AND SOLIDIFICATION, (8) WASTE PROCESSING AND PROPERTIES, (9) WASTE MANAGEMENT, (10) MISCELLANEOUS.

PUB DESC: TID-3340, AUG. 1973, 157 P., 1090 REP. FROM USA FROM JAN. 1951 THROUGH JULY 1973

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); WASTE DISPOSAL ALTERNATIVES; WASTE TREATMENT; WASTE STORAGE; WASTE DISPOSAL; MONITORING (SEE ALSO SURVEY); ECOLOGY; HYDROLOGY; GEOLOGY; HYDROBIOLOGY (SEE ALSO LIM); SLACK DISPOSAL; STORAGE CONTAINERS; CORROSION (SEE ALSO STRESS CORROSION); RADIOLOGICAL SURVEY; FISSION; SOLIDIFICATION (SEE ALSO CALCINATION, INCINERATION, VITRIFICATION, ETC.); VITRIFICATION; RIVER, COLUMBIA;

HANFORD SITE

<1030>

PUB DATE: 1971

AUTHOR: WEST, R.C.; KELLY, R.C.

TITLE: A SELECTED, ANNOTATED BIBLIOGRAPHY OF THE CIVIL, INDUSTRIAL, AND SCIENTIFIC USES FOR NUCLEAR EXPLOSIONS

CORPORATE AUTHOR: U.S. ATOMIC ENERGY COMMISSION, DIVISION OF TECHNICAL INFORMATION

ABSTRACT: THE BIBLIOGRAPHY CONTAINS 1594 ANNOTATED REFERENCES TO REPORTS AND PUBLISHED LITERATURE ON THE USARC'S PLCSHARE PROGRAM. THE REFERENCES ARE ARRANGED BY SUBJECT CATEGORY. REPORT NUMBER AND AVAILABILITY, FILM AND TAPE, AUTHOR, AND EXPEDIENT INDEXES ARE INCLUDED.

PUB DESC: TID-3522 (REV. 9), 350 PAGES, REFERENCES, SEPTEMBER 1971

KEYWORDS: BIBLIOGRAPHY (SEE ALSO REVIEW); MINING; PLOWSHARE; SEISMOLOGY; TESTING; WASTE DISPOSAL; NUCLEAR DETONATION; RADIATION; PUBLIC EDUCATION; RECAVATION, NUCLEAR; GAS; AGENCY, AEC (SEE ALSO USARC); INDUSTRY, NUCLEAR; RESOURCES, NATURAL; BENEFIT VS RISK; BENEFICIAL USE; POWER PLANT, GEOTHERMAL

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