Hanford Environmental Dose Reconstruction Project

Monthly Report

June 1989

Prepared for the Technical Steering Panel

DISCLAIMER

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HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT

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June 1989

Prepared for the Technical Steering Panel

Pacific Northwest Laboratory
Richland, Washington 99352

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HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

Compiled by: B. S. Dennis
B. S. Dennis, Project Coordinator
Hanford Environmental Dose Reconstruction Project

Approved By: H. A. Haerer
H. A. Haerer, Project Manager
Hanford Environmental Dose Reconstruction Project

Approved By: W. L. Templeton
W. L. Templeton, Manager
Office of Hanford Environment

ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ
"АВТОМАТИКА"

Уполномоченный

Исполнительный директор
И. В. Иванов

Уполномоченный

Исполнительный директор
В. В. Петров

Уполномоченный

ИВАНОВ В. В. ИВАНОВ В. В. ИВАНОВ В. В. ИВАНОВ В. В. ИВАНОВ В. В.

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PREFACE

This monthly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project (structure shown in Figure 1) being conducted at Pacific Northwest Laboratory (PNL) under the direction of a Technical Steering Panel (TSP). The TSP is composed of experts in numerous technical fields related to this project and represents the interests of the public. The U.S. Department of Energy (DOE) funds the project.

Figure 1. Hanford Environmental Dose Reconstruction Project Organization Structure

EXECUTIVE SUMMARY*

The objective of the Hanford Environmental Dose Reconstruction Project is to estimate the radiation doses that populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by Pacific Northwest Laboratory under the direction of an independent Technical Steering Panel.

The Technical Steering Panel consists of experts in environmental pathways, epidemiology, surface-water transport, ground-water transport, statistics, demography, agriculture, meteorology, nuclear engineering, radiation dosimetry, and cultural anthropology. Included among the members are appointed technical members representing the States of Oregon and Washington, cultural and technical experts nominated by the Indian tribes in the region, and an individual representing the public.

* This Executive Summary was approved by the Technical Steering Panel in September 1988.

The project is divided into the following technical tasks. These tasks address each of the primary steps in the path from radioactive releases to dose estimates:

- source terms
- environmental transport
- environmental monitoring data
- demographics, agriculture, and food habits
- environmental pathways and dose estimates.

The source terms task will develop estimates of radioactive emissions from Hanford facilities since 1944. These estimates will be based on historical measurements and production information.

The environmental transport task will reconstruct the movement of radioactive materials from the areas of release to populations. Movement via the atmosphere, surface water (Columbia River), and ground water will be studied.

The environmental monitoring task will assemble, evaluate, and report historical environmental monitoring data. A major effort of this task is to separate Hanford as a source of radionuclide concentrations in the environment from concentrations due to natural sources and nuclear testing fallout.

The demographics, agriculture, and food habits task will develop the data needed to determine the populations that could have been affected by the releases. Population and demographic information will be developed for the general population within the study area. This information will also be developed for several special population groups including the Native American Tribes in the study area, Army personnel stationed at Hanford, Hanford construction workers, and migrant farm workers.

In addition to population and demographic data, the food and water consumption patterns and sources of food and water for these populations must be estimated since these provide a primary pathway for the intake of radionuclides.

Historical dairy farming practices and milk distribution systems will be studied because milk is a significant pathway for iodine-131 to enter the human body. Cows could have eaten vegetation contaminated with this radionuclide.

The environmental pathways and dose estimates task will use the information produced by the other tasks to estimate the radiation doses populations could have received from Hanford.

Project reports, which have been approved by the Technical Steering Panel, and references used in the reports will be made available to the public in a public reading room. Project progress will be documented in monthly reports, which are available to the public.

MANAGEMENT SUMMARY

PROGRESS

This summary covers progress for the month of June 1989:

- completed the following scheduled milestones:*

03 Dissolution Dates for PUREX 1984-1986

04 Atmospheric Model Development

- presented project status update to staff at DOE Headquarters in Washington, DC
- continued revision of work plan to reflect phased approach; distributed working copy (not for public release) to TSP for review and comment
- released for TSP review the milestone report 03, *Description of Major Hanford Site Operations and Facilities, 1944-1972*
- initiated internal PNL clearance on draft reports for milestones 03, *Recommendation Regarding Development of Libraries Specific to Hanford Reactors for ORIGEN Code*, and *Radionuclide List/Decay Schemes*
- continued preparing a summary of available information for the Columbia River between Priest Rapids Dam and McNary Dam for a poster presentation planned for the July TSP meeting
- completed modification of the MESOILT code for the Phase I calculations and began preparing simple computer codes for input of data and output of results
- continued entering meteorological data from Hanford into the meteorological data base
- drafted for internal review the preliminary biases report for measurements of iodine-131 activity in vegetation from 1945 through 1947
- completed a preliminary data collection and statistical summary of measured fish concentrations by year, season, river section and species for the years 1963 through 1966
- received proposals from the Yakima, Spokane, and Nez Perce tribes

* All milestones are internal unless otherwise indicated. All internal milestones contribute to the Phase I summary report.

- completed expert judgment estimates of milk production and distribution for the 1944 through 1947 time period
- held a workshop with Dr. Gerald Ward, Animal Science Department, Colorado State University to discuss dairy cow feeding practices
- continued work on the system design requirements for the project Geographic Information System
- continued declassifying early-day, Hanford-originated documents of potential interest/use in the HEDR Project
- initiated work to fulfill TSP Directive 89-7, "Presentation of Technical Material to the Public;" began developing, collecting, and reviewing ideas, references, and communication methods
- continued developing the strategy and detailed procedures necessary to estimate doses and their uncertainties.

MAJOR ISSUES AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- complete the following milestones in July:
 - 05 Iodine-131 Sample Vegetation Data
 - 05 Develop Concentration Ratios
- present project status update and review of iodine-129 at the TSP meeting to be held July 20-22 in Richland
- hold working session on the dose calculational model with PNL staff and TSP members
- conduct QA tour for members of the TSP
- receive and incorporate comments from the TSP on the revised work plan
- continue to add input to numerical data base and define the structure of the HEDR data base
- hold a workshop for tribal technical staff on methods and strategies of data collection

- continue contract negotiations with tribes
- continue to assess the use of historical bioassay data
- continue to declassify reports that address activities from reactor startup to about mid-year 1945
- continue developing the strategy and procedures for dose estimation and uncertainty analyses for Phase I.

BUDGET STATUS

Projected expenditures through June 1989 \$ 2282K

Actual expenditures through June 1989 \$ 2345K

VARIANCE EXPLANATION

Milestone 07, *Bioassay Data-Tabulate Thyroid Data* , due June 1989, was not met and has been rescheduled to August 1989. The missed milestone resulted from administrative difficulties in identifying and funding a staff member to conduct the work; a staff member has now been identified to begin the work.

CAPITAL STATUS

No FY 1989 capital budget.

PROJECT SUMMARY REPORT

1. IDENTIFICATION NUMBER: DE-AC076RLO 1830		2. PROGRAM/PROJECT TITLE: HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION					3. REPORTING PERIOD: JUNE 1989								
4a. PARTICIPANT NAME AND ADDRESS: PACIFIC NORTHWEST LABORATORY P. O. BOX 999 RICHLAND, WA 99352		4b. CLIENT NAME AND ADDRESS: DOE/RL RICHLAND WA 99352					5. START DATE: OCTOBER 1988								
							6. COMPLETION DATE: SEPTEMBER 1989								
7. FY 89	8. MONTHS	O	N	D	J	F	M	A	M	J	J	A	S	FY90	
9. COST STATUS:															
a. \$ EXPRESSED IN THOUSANDS															
b. BUDGET & REPORTING NO./SUB. ACCT NO.															
12578 GEO2210110															
c. FIN. NO.															
d. ACTUAL COSTS PRIOR YEARS															
3016															
e. FY BUDGET															
3289															
f. TOTAL BUDGET															
g. FY FUNDS AUTH															
3289															
h. TOTAL FUNDS AUTH															
5829															
COSTS		I. PLANNED	203	162	312	253	212	260	300	260	320	280	320	400	
		J. ACTUAL	193	178	275	180	398	241	362	290	221				
		K. VARIANCE	10	-16	37	73	-186	19	-62	-30	99				
		L. CUM PLANNED	203	365	677	930	1142	1402	1702	1962	2282	2562	2882	3282	
		M. CUM ACTUAL	193	371	646	834	1231	1472	1834	2124	2345				
		N. CUM VARIANCE	10	-6	31	96	-89	-70	-132	-162	-63				
10. LEGEND: PLANNED ACTUAL _____ PROJECTED FUNDS AUTH. _____ 90% FUNDS SPENT ▴															
11. MILESTONES															
01 Phase I Report															
03 Description of Major Hanford Site Operations and Facilities, 1944-1972 0302-B															
03 Radionuclide Source Terms from Fuel Processing 1944-1947 0303-A															
03 Dissolution Dates for PUREX 1984-1986 0303-B															
03 Radionuclide List/Decay Schemes 0303-C															
03 Radionuclide Source Locations/Stacks/Stack Parameters															
03 Radionuclide Release Fractions by Major Facility as Function of Time for Gases, Particulates, Volatiles 0303-D															
LEGEND: SCHEDULED ▴ TO TSP ○ TIME LINE _____ DEVIATION TIME NOW: _____															
COMPLETED ▴● DEVIATION ◇ PROGRESS _____															
12. NAME/SIGNATURE OF PARTICIPANTS PROG/PROJ MANAGER & DATE H A Haerer															

PROJECT SUMMARY REPORT

PROJECT SUMMARY REPORT

PROJECT SUMMARY REPORT

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Organization of the Project
 National Environmental Policy Act (NEPA) Requirements

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Source Terms

OBJECTIVE

Source terms are the amount and type of radioactive materials released to the environment. Members of the Source Terms Task will develop estimates of radioactive emissions since 1944 from Hanford facilities based on historical measurements and production information. Source term estimates will be used by Environmental Transport Task members to reconstruct the concentrations of radionuclides in the environment.

Uncertainty in calculated and measured data can result from many factors. Uncertainties in measured emissions may result from early measurement techniques; for calculated emissions, the from differences in the published variables that are used to perform calculations. By comparing the uncertainty in the available data, task staff will determine the most accurate method for developing source terms. For time periods where measured values do not exist, source terms must be calculated from available information. The proposed methods and results of this task will be reviewed, evaluated, and approved by the TSP.

PROGRESS

Activities for this reporting period included the following:

- updated the Source Term Task bibliographic data base, which currently contains more than 570 entries, and revised the programming to permit printing of individual bibliographic data sheets from document number identification only

Milestone 03, *Recommendation Regarding Development of Libraries Specific to Hanford Reactors for ORIGEN Code*, due March 1989 and complete:

- initiated internal PNL clearance of the draft report originally completed in March 1989 and revised to incorporate the informal review comments received from the TSP's Source Terms Subcommittee during the March working session

Milestone 03, *Description of Major Hanford Site Operations and Facilities, 1944-1972*, due March 1989 and complete:

- obtained internal PNL clearance of the draft report completed in March 1989. The report was released to the TSP for review.

Milestone 03, *Radionuclide List/Decay Schemes*, due March 1989 and complete:

- initiated internal PNL clearance of the draft report originally completed in April 1989

Milestone 03, *Radionuclide Source Terms from Fuel Processing, 1944-1947*, due May 1989 and complete:

- continued preparing a final draft report of atmospheric emissions of iodine-131 from fuel processing, 1944-1947. The report will be submitted for internal PNL clearance.

Milestone 03, *Description of Chemical Form and Atmospheric Chemistry of Iodine Emissions*, due May 1989 and complete:

- continued preparing a final draft report describing the chemical form and atmospheric chemistry of iodine emissions at the Hanford Site. The report will be submitted for internal PNL clearance.

Milestone 03, *Best Estimate of Iodine-131 Contained in Irradiated Fuel at Time of Dissolution, 1944-1945*, due May 1989 and complete:

- continued preparing a draft report of calculated estimates of iodine-131 contained in irradiated fuel at the time of its dissolution, 1944 through 1945. The report will be submitted for internal PNL clearance.

Milestone 03, *Dissolution Dates for PUREX 1984-1986*, due June 1989:

- identified the sources of information necessary to determine the fuel dissolution dates at the PUREX Plant from 1984 through 1986. This information will be used to help calibrate the atmospheric transport model. Actual dates will be extracted and incorporated into a preliminary draft report in July 1989.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes:

- document fuel dissolution dates at the PUREX Plant, 1984-1986 from identified records
- continue to prepare various preliminary draft reports as input to the draft annual report and initiate internal PNL clearance of the reports
- continue acquiring and documenting information regarding radioactive emissions to the atmosphere from fuel processing, 1944-1947
- continue data input to task numerical data base.

- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983
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- compare data from 1980 to 1981 and 1982 to 1983
- compare data from 1980 to 1981 and 1982 to 1983

PLANNED WORK FOR SUBSEQUENT MONTHS

1984

PLANNED WORK FOR SUBSEQUENT MONTHS

Environmental Transport

OBJECTIVE

Members of the Environmental Transport Task will reconstruct the movement of radioactive materials (the source term information) from the areas of release to the accessible environment. Movement via the atmosphere, Columbia River, and ground water will be studied.

To track the releases to the atmosphere from the Hanford Site, meteorological data are needed including wind speed, wind direction, and other data that affect the dispersion of the releases. Mathematical models will be applied to these meteorological data and the source term data to calculate concentrations of radionuclides in the air and on the ground. The TSP will review, evaluate, and provide direction concerning the proposed models.

Reconstruction of the transport of radionuclides in the Columbia River will be based primarily on historical studies of the Columbia River and its tributaries. Computer models will be used to reconstruct radionuclide concentrations in the river for time periods when data were limited or unavailable.

The movement of radionuclides in the ground water will be initially reconstructed by using ground-water monitoring data to estimate the contribution to the surface-water pathway. As in the case of the surface-water pathway, some modeling might be required where data are lacking.

PROGRESS

Activities for this reporting period included the following:

- continued preparing a summary of available information for the Columbia River between Priest Rapids Dam and McNary Dam for a poster

presentation to the TSP at the July 1989 meeting. The posters were shown to the TSP in draft form on May 18, 1989.

Milestone 04, *Development of Conceptual Model of Radionuclide Transport in the Columbia River/Phase I*, due August 1989:

- began estimating radionuclide concentrations in the Columbia River at locations where monitoring data are not available. The calculations involve routing radionuclide concentrations through the Hanford reach to locations where Columbia River water was withdrawn for use.

Milestone 04, *Atmospheric Model Development*, due June 1989:

- completed modification of the MESOILT code for the Phase I calculations. The code was modified to include a straight-line model for estimating concentrations near the point of release and a module which accounts for plume rise at the source. In addition, the calculational procedures and input and output modules were modified, greatly decreasing code execution time. The code has been tested and verified, and independent review of the code modifications by PNL atmospheric transport staff is underway.

Milestone 04, *Status Report on Meteorological Data Base Development*, due September 1989:

- continued entering meteorological data from Hanford into the meteorological data base. Entry of meteorological data for 1983 through 1987 for use in the Phase I calculations is near completion. Data have been entered for meteorological stations near Walla Walla, The Dalles, Moses Lake, Ephrata, Wenatchee, Omak, and Colville. The data base for 1983 through 1987 already included data from Pendleton, Lewiston, Spokane, Stampede Pass, Yakima, Pasco, and the telemetry stations at Hanford.

Milestone 04, *Monthly Average Air Concentrations/Surface Contamination by Location and Radionuclide*, due August 1989:

- continued the Phase I calculations using 1983 through 1987 meteorological data. The MESOILT code has been modified for the Phase I calculations and preparation of simple computer codes for input of data and output of results has begun.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

WORK PLANNED FOR SUBSEQUENT MONTHS

Work planned for subsequent weeks includes the following:

- finalize the poster summarizing available information for the Columbia River between Priest Rapids Dam and McNary Dam for 1964 to 1966 time period
- complete independent review of the MESOILT code modifications
- complete entry of the 1983 to 1987 meteorological data into the data base
- estimate the monthly water and sediment concentrations in the Columbia River for use in the Phase I dose calculations
- estimate the monthly time-integrated air concentrations, average deposition rates, and surface contaminations for use in the Phase I dose calculations.

WORK PLANNED FOR SUBSEQUENT MONTHS

MAJOR PROBLEMS AND ACTION TAKEN

Environmental Monitoring Data

OBJECTIVE

Members of the Environmental Monitoring Data Task will assemble, evaluate, and summarize key historical measurements of the concentrations of radionuclides in the environment around Hanford. Radionuclide concentrations have been measured at various times in such media as air, drinking water, foods, fish, the Columbia River, soil and in other sample materials. These measurements will be evaluated to estimate their accuracies and then used by Environmental Pathways and Dose Estimates Task staff to estimate radiation doses and by Environmental Transport Task staff to calibrate computer models. Methods to attain this objective will be proposed to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

Milestone 05, *Determine Vegetation Iodine-131 Concentrations (45-47)*, due July 1989:

- continued creating data files of measured radionuclide concentrations in vegetation for 1946 identifying the time, location and results
- developed mean monthly decay correction factors based on information in original data sheets which provided time intervals between sample collection and counting
- drafted the preliminary biases report for measurements of iodine-131 activity in vegetation from 1945 through 1947 for internal review. The revision reflects recently acquired early documents and notebooks, prior review comments, information gathered from a meeting with veteran Hanford employees, a re-review of early documents, and revision of original correction factors based on additional analysis (such as mean effective distance and decay intervals).

Milestone 05, *Determine Measured Fish Concentrations (64-66)*, due August 1989:

- completed a preliminary data compendium and statistical summary by year, season, eight river sections and twelve species for the years 1963-1966
- continued reviewing the analytical methods used as the basis for determining potential biases and the level of uncertainty in the results

Milestone 05, *Final River Water and Sediment Monitoring Data (64-66)*, due August 1989:

- continued reviewing the analytical methods as the basis for determining potential biases and the level of uncertainty in the results

Milestone 05, *Determine Fish Concentration Ratios (64-66)*, due July 1989:

- completed collecting and summarizing fish flesh concentration data. Work is underway to calculate concentration ratios for phosphorus-32 and zinc-65.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTH

- continue preparing vegetation data files for 1946 through 1947 and continue internal review of the draft vegetation biases report for 1945 through 1947
- continue creating the river water and sediment data file
- continue to evaluate monitoring data on river water and fish for biases
- complete estimates of fish concentration ratios.

Demographics, Agriculture, Food Habits

OBJECTIVE

Task members will develop the demographic, food consumption, and food production information needed to estimate doses.

Demographic information will be developed for the general population and for several special population groups that are not adequately represented by the U.S. Census, including Native American tribes, Army personnel stationed at Hanford, some Hanford construction workers, and migrant workers.

In addition to demographic data, the sources and quantities of food and water consumed must be estimated, because food and water provide pathways for the intake of radionuclides.

Airborne radionuclides from the plant stacks may have been deposited on fruits and vegetables. Consumption of these foods provided a pathway for radionuclide transport to humans. The pathways will be studied. In addition, milk produced from cows represents a significant food pathway for iodine-131 if the cows were fed vegetation contaminated with radionuclides. Dairy farming practices and milk distribution systems will be studied to locate the populations that may have consumed potentially contaminated milk.

Consumption of contaminated fish and shellfish is also a food pathway for exposure to radioactive materials. Estimates of the amount of potentially contaminated fish and shellfish consumed from the Columbia River and ocean bays will be developed through an extensive review of numerous past studies.

Treated Columbia River water was used by some community members downstream from Hanford. Drinking this water provided a pathway for exposure to

radioactive materials. To estimate the doses from this pathway, it is necessary to know the communities using the water, the amount of water withdrawn, the treatment process, the travel time through the system, and the amount of water consumed. Irrigation water usage downstream from Hanford will also be studied because the radioactive materials in the river water could have been deposited on crops consumed by people or animals. Recreational users of the river could also have been exposed to radiation from the river and shoreline. Food and lifestyle habits of Native Americans that differentiate them from the general population will also be considered. Methods to collect data and to estimate population densities and food consumption have been proposed to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

Milestone 06, *Native American Traditional Diet Description (River Pathway)*, due August 1989:

- met with members of the Warm Springs Tribe on June 16 to discuss HEDR data collection and contracting mechanisms
- met with a member of the TSP on June 22 who presented information on available secondary data for the Umatilla Tribe
- received proposals from the Yakima, Spokane, and Nez Perce tribes in response to the May 1 Request For Proposal

Milestone 06, *Demographic Information for 1944-1947 by Age Group, Urbanization Category, and Subpopulation by Year and Demographic Information for 1964-1966 Number and Age/Urbanization/Subgroup for River Recreation, Drinking River Water*, due August 1989:

- completed HEDR census division maps
- received review of population estimates from consultants
- initiated sub-county population estimation technique

Milestone 06, *Milk Production/Distribution/Consumption for 1944-1947 for Each Grid Cell*, due August 1989:

- completed expert judgment estimates of milk production and distribution. Gathered information on locations of milk producers during the 1944-1950 time period from haulers to Darigold in Yakima.

- completed expert judgment estimates of dairy cow feed intake
- held a workshop with Dr. Gerald Ward, Animal Science Department, Colorado State University on June 26-27, 1989. During the workshop, generic dairy cow feeding regimes typical of the 10-county area surrounding Hanford during the 1944-1947 period were developed and assigned to the HEDR census divisions. Pasturing and haying data also were collected and assigned to the HEDR census divisions.

Milestone 06, *Food Consumption Parameters 1944-1947 for Each Food Type by Age, Sex, Urbanization, Category, Subpopulation, and Food Consumption Parameters 1964-1966 Kg/Mo Consumed for Each Food Type by Age, Sex, Urbanization Category, Subpopulation*, due August 1989:

- received initial food consumption estimates for HEDR study groups for 1977
- initiated work to adjust 1977 Food Consumption Survey data for Phase I study period

Milestone 06, *Location and Quantity of Irrigation Water Withdrawals*, due August 1989:

- delivered report to Environmental Transport task.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

- participate in another discussion with the Warm Springs Tribal Council on data collection and contracting mechanisms
- schedule a workshop on secondary data collection methods for August
- continue gathering information for the milk model
- develop a quantified model of the dairy cow feeding processes that are sensitive to contamination by iodine-131 for the 10-county area
- complete back casting technique for food consumption task
- finalize county population estimates.

Environmental Pathways and Dose Estimates

OBJECTIVE

Task members will use calculated and measured concentrations of radionuclides provided by members of the Environmental Transport Task and the Environmental Monitoring Data Task to calculate doses to populations, typical individuals, and specific individuals. These calculations will include doses via direct transfer of radionuclides from concentrations in air and water to people (via breathing, drinking, immersion, etc.). The calculations will also include doses via radionuclide concentrations in air and water transferred through environmental pathways, such as soil, plants, animals, and fish, to people. All significant decisions on exposure models and input parameters will be presented to the TSP for review, evaluation, and approval.

PROGRESS

Activities for this reporting period included the following:

Milestone 07, *GIS and Data Base Recommendation*, due September 1989:

- continued work on first drafts of the system design requirements (what the code has to do) and the code design specification (how the code has to do it). These are vital QA-related documents. A code logic diagram was prepared and preparations for data transfer to a single mainframe computer began.
- continued to refine the strategy for uncertainty calculations; a Monte Carlo technique, performed in stages. Output data distributions from one stage will be the input distributions for the next stage.

MAJOR PROBLEM AREAS AND ACTION TAKEN

The milestone *Bioassay Data-Tabulate Thyroid Data* was not met because of administrative difficulties in identifying and funding a staff member to conduct the work. A staff member has been identified and work will begin soon.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for the subsequent months includes:

- continue defining the overall structure of the needed HEDR data base and on the type of data processing equipment needed for smooth project integration
- complete the code design requirements and code design specification documents.

Information Resources

OBJECTIVE

Members of the Information Resources Task will work with the other task members to meet information needs, including ensuring that all data referenced in the reports are publicly available and establishing a microcomputer-based tracking system for ready retrieval of historical information.

PROGRESS

Activities for this reporting period included the following:

- declassified 7 early-day, Hanford-originated documents of potential interest/use in the HEDR Project and provided them to appropriate task leaders and the public domain
- provided the DOE-RL Public Reading Room with 2 Hanford-Site originated documents of potential interest/use in the HEDR Project. Approximately 113 remain to be sent.
- inventoried several boxes at the Records Holding Area to determine the existence/non-existence of older logbooks of potential use/interest to HEDR
- continued to search for documents that address silver reactor capabilities, performance, and incidents
- continued to search for documents containing pertinent information of stack filter samples and scrubber samples during the year 1946 through 1949
- added new citations to the tracking system.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Planned work for subsequent months includes the following:

- continue to add input to the information resources tracking data base
- continue to provide documents to the DOE-RL Public Reading Room in an orderly, timely fashion
- develop a list of Hanford-originated raw data logs/notes of potential interest/use to the HEDR Project
- declassify, with or without deletions, duPont operating history volumes that address activities from startup to about mid-year 1946
- identify and collect significant documents that address silver reactor capabilities, performance, and incidents, especially at the Redox Plant
- continue to identify and collect documents and/or data of potential interest/use to the HEDR Project that address activities during the years from reactor startup through 1949
- identify documents that present information on stack filter samples and scrubber samples for 1946 through 1949
- watch for information that may explain in detail, and support data in, green run document HW-17381 DEL.

Records Management

OBJECTIVE

Members of the Records Management Task provide storage and control of completed project records, maintain an automated inventory of all project documentation, and provide a reference service to project staff and the TSP.

PROGRESS

Activities for this reporting period included the following:

- received and processed project records
- transferred one document consisting of 44 pages to the DOE-RL Public Reading Room.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- continue processing incoming project records
- continue transferring processed project records to the DOE-RL Public Reading Room.

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Quality Assurance

OBJECTIVE

The objective of this task is to ensure continuous quality assurance (QA) support and coordination with all project tasks. This objective is met through the identification and documentation of QA requirements in the form of a QA Plan and periodic monitoring of project activities during the life of the project to ensure compliance with these requirements.

PROGRESS

Activities for this reporting period included the following:

- attended the 1989 Health Physics Summer School session on "Pathway Analysis and Risk Assessment," which provided an update and demonstration of the methods used to estimate risk from radionuclide releases to the environment
- initiated contacts with the task leaders to determine which upcoming task activities may require formal surveillance to ensure compliance with QA requirements
- worked with Environmental Transport task staff to develop software control requirements for the code that is to be used for the atmospheric transport, diffusion, and deposition calculations for Phase I.

MAJOR PROBLEM AREAS AND ACTIONS TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- conduct a half-day QA seminar/tour for four members of the TSP and a member of the Washington state support staff on July 18
- assist in implementing QA program requirements for HEDR staff training and software control requirement identification
- perform surveillance of software control requirements and records control
- issue remaining HEDR procedures: HEDR-TP-3, *HEDR Documentation of Critical Decisions* and HEDR-TP-4, *HEDR Data Quality Objectives*.

Statistics

OBJECTIVE

Task members will provide statistical support to members of technical tasks and will be responsible for the development and application of sensitivity and uncertainty analyses. Sensitivity analyses will be used to identify parameters that have the greatest influence on the dose estimates. Using sensitivity analyses results project staff can focus project resources where the benefit in terms of accurate dose estimates is greatest. Uncertainty analyses enable the task leaders to determine the extent to which the accuracy and precision of the dose estimates are influenced by certain levels of accuracy and precision in the many input parameters.

PROGRESS

Activities this reporting period included the following:

- continued working with Environmental Pathways and Dose Estimates Task staff to develop the strategy and detailed procedures needed to estimate doses and their uncertainties in Phase I, including:
 - specifying the proposed method for generating random numbers from probability distributions needed for uncertainty analyses
 - specifying the proposed method for estimating monthly average iodine-131 vegetation concentrations for 1945-1947 using vegetation measurements collected during that time period
 - reviewing preliminary work by the Environmental Monitoring Task on the development of correction factors for iodine-131 vegetation measurements in 1945-1947.
- began work to contribute to TSP Directive 89-7, "Presentation of Technical Material to the Public." HEDR staff met to begin developing ideas and methods for discussing and presenting dose estimates and their uncertainties to the public. Available literature on these topics is

being collected. Graphical methods are being reviewed for their effectiveness in communicating dose, uncertainty, and risk information to specific individuals and to public and scientific audiences.

MAJOR PROBLEM AREAS AND ACTION TAKEN

None.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for subsequent months includes the following:

- prepare for an all-day working session with TSP members in Richland on July 19 to present in detail the proposed strategy for dose estimation and uncertainty analysis
- continue to help develop the strategy and detailed procedures for dose estimation and uncertainty analyses for Phase I
- continue to contribute to TSP Directive 89-7, "Presentation of Technical Material to the Public"
- conduct uncertainty analyses to approximate the uncertainty in correction factors being developed to obtain corrected iodine-131 measurements of vegetation for 1945-1947.

Project Technical Coordination

OBJECTIVE

The objective of the Project Technical Coordination Task is to provide a general technical overview of the project to ensure that appropriate information is generated from the technical tasks for performing the final dose calculations.

PROGRESS

Activities this reporting period included the following:

Milestone 12, *List Dominant Radionuclides*, due May 1989 and complete:

- prepared report for the TSP on selection of dominant radionuclides for Phase I. This information has been distributed to HEDR staff; final documentation is proceeding.
- identified and recovered original dose calculations and supporting material for all Hanford Site Annual Reports dating back to 1974. This material was scheduled for routine destruction and has been saved and added to the project files as important support material.

MAJOR PROBLEM AREAS AND ACTION TAKEN

Milestones 12, *Native American Diet Sensitivity Study - Air Pathway*, originally due May 1989, and *Native American Diet Sensitivity Study - River Pathway*, originally due May 1989, will not be completed until August 1989. Data necessary to complete these milestones are still being processed by the Demography, Agriculture, Food Habits Task. Information is being received and work is proceeding.

PLANNED WORK FOR SUBSEQUENT MONTHS

Work planned for the subsequent months includes:

- continue defining the overall structure of the needed HEDR data base and the type of data needed for smooth project integration.

APPENDIX A

Communications Log

COMMUNICATIONS LOG - JUNE 1989

<u>INITIATED BY</u>	<u>CONTACT</u>	<u>AFFILIATION</u>	<u>TYPE</u>	<u>SUBJECT</u>
PNL/W. Haerer	John Till	TSP, Chairman	Telephone	Ongoing discussions re:HEDR Project
PNL/W. Haerer	Bernard Shleien	TSP, Executive Secretary	Telephone	Ongoing discussions re:HEDR Project
JS Stohr	Bonnie Dennis	PNL	Telephone	Ongoing discussions re: meeting planning
TSP/M. Robkin	Larry Morgan	PNL	Telephone	Source Term Subcommittee meeting
PNL/R. Darwin	Bob Duncan	WSU Ag Center	Telephone/person	Feeding dairy cattle
PNL/R. Darwin	Dr. Gerald Ward	Colorado State University	Telephone	Dairy cow feeding practices
PNL/E. Mart	J. W. Healy	HEDR consultant	Telephone	Early procedures for counting vegetation samples

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University of Nevada
4505 Maryland Parkway
Las Vegas, NV 89154

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2503 Wedgewood Court SE
Olympia, WA 98501

M. L. Blazek
Oregon Department of Energy
625 Marion Street N.E.
Salem, OR 97303

G. G. Caldwell
Deputy Director
Arizona Dept of Health Services
1740 W. Adams St.
Phoenix, AZ 95007

S. N. Davis
Dept of Hydrology &
Water Resources Bldg 11
University of Arizona
Tucson, AZ 85721

N. J. Germond
224 Iron Mountain Blvd.
Lake Oswego, OR 97034

P. C. Klingeman
College of Engineering
Merryfield Hall 100
Oregon State University
Corvallis, OR 97331-2410

K. J. Kopecky
Fred Hutchinson Cancer
Research Center
1124 Columbia Street
Seattle, WA 98104

R. L. Morrill
Dept of Geography
DP-10
University of Washington
Seattle, WA 98195

A. H. Murphy
Depts of Atmospheric Sciences
and Statistics
Strand Agricultural Hall Rm 331
Oregon State University
Corvallis, OR 97331

V. Nguyen
EWA, Inc.
133 1st Ave. N.
Minneapolis, MN 55401

D. W. Price
Agricultural Economics
Hulbert Hall Room 211
Washington State University
Pullman, WA 99163

M. A. Robkin
Radiological Sciences SB-75
University of Washington
Seattle, WA 98195

G. S. Roessler
% Ervin Roessler
410 E. Main
Elysian, MN 56028

B. Shleien
2421 Homestead Drive
Silver Springs, MD 20902

A. P. Slickpoo Sr.
P. O. Box 331
809 Nez Perce Lane
Kamiah, ID 83536

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Rt. 2 Box 122
Neeses, South Carolina 29107

D. E. Walker Jr.
P. O. Box 4147
Boulder, CO 80306

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Spokane Business Council
P. O. Box 100
Wellpinit, WA 99040

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Nez Perce Tribal Exec Committee
P. O. Box 305
Lapwai, ID 83540

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Confederated Tribes of the
Warm Springs Reservation
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Technical Information Center
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Oak Ridge, TN 37830

R. R. Mooney
Washington State Dept of
Social & Health Services
LE-13
Olympia, WA 98504-0095

- 10 J. S. Stohr
Office of Nuclear Waste Mgmt
Department of Ecology
Mail Stop PV-11
Olympia, WA 98504

D. Oliver, R.S., M.P.A.
Hazardous Waste Coordinator
Toxic Substances Section
Dept of Social & Health Services
LD-11
Olympia, WA 98504

J. Ruttenber
Centers for Disease Control
2858 Woodcock Blvd
Koger Center F-28
Atlanta, GA 30341

S. Simon
Dept of Environmental Science,
CB7400
University of North Carolina
Chapel Hill, NC 27599

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Safety & Environmental
Protection Division
Bldg 535A
Brookhaven National Laboratory
Upton, NY 11973

T. D'Arcy McGee
Counsellor (Energy)
Canadian Embassy
1746 Massachusetts Ave NW
Washington, DC 20036

J. D. Mulder
Public Health Liaison to EPA
U.S. EPA
1200 Sixth Ave.
Seattle, WA 98101

L. Duffy, S-1
Department of Energy
Forrestal Bldg Room 7B-118
1000 Independence Ave.
Washington, DC 20585

R. Geiger, EH-231
Department of Energy
Forrestal Bldg Room 3G-089
1000 Independence Ave.
Washington, DC 20585

C. Morris, DP-3
Department of Energy
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W. J. Roberds
Golder Associates
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Redmond, WA 98052

E. Magione, Director
Division of Disease Control
& Environmental Epidemiology
Colorado Dept of Health
4210 E. 11th Ave.
Denver, CO 80220

Conver, MA-295
Department of Energy
Forrestal Bldg Room 7E-054
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A. Fingeret, GC-22
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