WHC-EP-0172
Revision 1

Inventory of Chemicals Used at Hanford Site Production Plants and Support Operations (1944-1980)

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Prepared for the U.S. Department of Energy
Assistant Secretary for Defense Programs

Westinghouse
Hanford Company Richland, Washington

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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M. J. Klem

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**WESTINGHOUSE HANFORD COMPANY
INVENTORY OF CHEMICALS USED AT HANFORD
SITE PRODUCTION PLANTS AND SUPPORT
OPERATIONS (1944-1980)**

**M. J. Klem
Westinghouse Hanford Company**

ABSTRACT

A complete list of chemicals used in the production facilities and support operations of the U.S. Department of Energy Hanford Site is presented to aid development of plans for characterizing the radioactive liquid chemical wastes stored in the 149 single-shell tanks. The complete chemical list is compared to the list provided by the regulatory agencies to identify hazardous chemicals stored in the single-shell tanks. A reduced list has been developed by others and is used to identify the chemical constituents for analysis in the Waste Characterization Plan for the Hanford Site Single-Shell Tanks. The chemical list is based on chemical process flowsheets, essential material consumption records, letters, reports, and other historical data.

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LIST OF TERMS

AEA	Atomic Energy Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DST	double-shell tank
DVB	divinyl benzene
Ecology	Washington State Department of Ecology
HDW-EIS	Hanford Defense Waste-Environmental Impact Statement
HWMA	Hazardous Waste Management Act
IX	ion exchange
OES/TLV	Occupational Exposure Standards/Threshold Limit Values.
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
SST	single-shell tank
WAC	Washington Administrative Code

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INVENTORY OF CHEMICALS USED AT HANFORD SITE PRODUCTION PLANTS AND SUPPORT OPERATIONS (1944-1980)

1.0 INTRODUCTION

1.1 PURPOSE

This document contains a comprehensive list of the nonradioactive chemicals used by production plants and support operation activities that stored mixed waste in single-shell tanks (SST) between 1944 and 1980 at the U.S. Department of Energy Hanford Site. This information has been used to develop a reduced list of chemical constituents for analysis in the *Waste Characterization Plan for the Hanford Site Single-Shell Tanks*.¹

1.2 BACKGROUND

Radioactive wastes on the Hanford Site have been generated since 1944 as part of the program required to support national defense activities. Liquid radioactive and chemical waste from the nuclear materials production and support activities were transferred to underground, reinforced concrete, steel-lined tanks (commonly referred to as SSTs) for storage. The SSTs were used for storage of several types of liquid waste before 1971. The tank-in-tank design [commonly referred to as a double-shell tank (DST)] was designed, fabricated, and then placed into service beginning in 1971. The DSTs have monitoring equipment to detect leakage from the inner shell and the capability to pump leaked waste from the space between the two steel shells. Since November 1980, DSTs have been used exclusively for receipt of new waste.

A total of 149 SSTs with capacities ranging from 55,000 to 1 Mgal each were constructed on the 200 Area plateau of the Hanford Site between 1943 and 1964.² Waste from several of the SSTs was retrieved in the 1950's for extraction of uranium and in the 1960's and 1970's for extraction of cesium and strontium fission products. During the 1970s, the volume of liquid waste stored in these tanks was reduced by evaporating the liquids, leaving moist sludge and saltcake in the SSTs. The evaporation effort also served to reduce the environmental impacts of potential releases from the tanks by minimizing the volume of drainable liquids available to contaminate the soil around the tanks. The SSTs now contain about 37 Mgal of saltcake, sludge, interstitial, and nonpumpable supernatant liquids.

A large variety of chemicals were used in the production plants and support operations that generated the SST waste. Several of these chemicals are currently classified as hazardous. At the time the wastes were generated, there were no definitions or regulations for dangerous or mixed wastes. In May 1987, DOE issued a mixed byproduct waste ruling stating that the hazardous component of the waste is regulated by the Resource Conservation and Recovery Act (RCRA).³ In November 1987, the Environmental Protection Agency authorized the Washington State Department of Ecology (Ecology) to regulate the hazardous constituents of mixed wastes.⁴

Activities supporting final disposal of the SST wastes are underway. The Hanford Defense Waste-Environmental Impact Statement (HDW-EIS) Record of Decision and the *Hanford Federal Facility Agreement and Consent Order* commit to additional development and evaluation before making a final disposal decision on SST waste.^{5,6} A key part of this evaluation is characterization of

the waste according to regulatory requirements. The hazardous constituents are subject to regulation under the RCRA⁷ and Washington State Hazardous Waste Management Act (HWMA)⁸ while the radioactive constituents of the mixed waste are subject to regulation under the Atomic Energy Act (AEA).⁹ Statutes other than RCRA, HWMA, and AEA may provide guidance in the waste characterization effort.

The waste contained in the SSTs will be characterized to identify the risks to the public and to the environment from the contemplated disposal actions. In particular, hazardous chemicals must be quantified to support additional environmental protection activities. Previous sampling efforts have been focused largely on determining the amounts of radionuclides stored in the SSTs; thus, identification of hazardous chemicals has not been fully addressed. The waste characterization plan addresses both radionuclides and hazardous chemicals and has been submitted to Ecology for approval.

This document identifies the nonradioactive chemicals used by the production plants and support operation activities that transferred mixed waste to the SSTs. This information has been used to develop a reduced list of chemical constituents for the SST waste characterization plan. The inventory list of chemicals is compared to the list provided by the regulatory agencies to identify hazardous chemicals that may be stored in the SSTs.

The tables list the chemicals that were added during processing and support operations. It is recognized that chemical reactions (e.g., oxidation-reduction, neutralization, precipitation, radiolysis) have converted many of these chemicals into different chemical compounds. These tables, therefore, do not necessarily represent the forms of these chemicals as they now exist. Also not all of these chemicals may have found their way into the SSTs.

Because records are unavailable, quantities of chemicals and the composition of several trade name products could not be determined. Quantities vary from a few pounds to several thousand pounds depending on the operation. Approximately 150 of the chemicals and name products have been identified as hazardous or containing hazardous chemicals, based on substances in the regulations and threshold limit values.

Revision 1 is based on the current level of information about past operations and identification of chemicals that may be regulated. This revision includes addition of ferrocyanide to T Plant and deletion of ferrocyanide from B Plant.

2.0 WASTE QUALIFICATION

The following chemical processes have contributed to the waste stored in the SSTs: the bismuth phosphate process, the uranium recovery (tributyl phosphate) process, the REDOX process, the PUREX process, the Waste Fractionation/Encapsulation Process and the Plutonium Reclamation Process, along with N Reactor and respective support operations. The chemicals used in these operations were derived from the chemical process flowsheets, essential material consumption records, letters, reports, and other historical data. The other historical data originated in reactor systems and operations groups of the 100 Areas, chemical and fuel reprocessing facilities, tank farms, equipment decontamination, and the analytical laboratories of the 200 Areas, and production support laboratories of the 300 Area.

There is uncertainty about the chemicals used in the laboratory support operations of the 300 Area because not all the identified chemicals were routed to the SSTs. Before 1971, certain wastes from the 300 Area were transported to the 200 Areas for disposal in the cribs or storage in the underground waste tanks. After 1971, radioactive liquid waste was transported to the 200 Area for storage in the underground waste tanks. In addition, certain laboratory waste was mixed or packaged with absorbent materials and then stored as solid waste.

The chemicals listed in this report represent the bulk of nonradioactive chemicals used in facilities that generated and stored radioactive waste in the SSTs since 1944. This information was derived from many sources. The total amounts of chemicals from the laboratory facilities were small compared to the production plants (i.e., 1 pound versus 10,000 pounds). Information on the chemicals used for laboratory support of the early separation plants could not be located.

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3.0 RESULTS

Table 1 is the composite list of chemicals used in Hanford Site facilities that possibly discharged waste to the SSTs. The list identifies the chemicals that may be regulated per References 7 and 10 through 14 and is intended for reference purposes. Tables 2 through 35 are individual lists of Hanford Site facilities and chemicals used by these facilities and approximate dates that waste would have been added to the SSTs. Table 36 contains a glossary of product names.

The chemical names shown in the tables are commonly accepted names and are not necessarily those used in rigorous chemical compound nomenclature.

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 1 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$		X		X	X
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	X	X	X	X	X
Alizarin Yellow (Dihydroxyanthraquinone)	$\text{C}_{14}\text{H}_8\text{O}_4$					
Aluminum	Al				X	X
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$				X	X
Aluminum Nitrate (Mono Basic)	$\text{Al}(\text{OH})(\text{NO}_3)_2$				X	X
Aluminum Nitrate (Di Basic)	$\text{Al}(\text{OH})_2(\text{NO}_3)$				X	X
Aluminum Sulfate	$\text{Al}_3(\text{SO}_4)_2$		X		X	X
Ammonia (Anhydrous)	NH_3		X		X	X
Ammonium Acetate	$\text{NH}_4\text{C}_2\text{H}_3\text{O}$		X			
Ammonium Bisulfate	$\text{NH}_4\text{HSO}_4 \cdot \text{H}_2\text{O}$					
Ammonium Chloride	NH_4Cl		X		X	X
Ammonium Fluoride	NH_4F		X		X	X
Ammonium Hydroxide	NH_4OH		X			
Ammonium Molybdate	$(\text{NH}_4)_2\text{MoO}_4$				X	X
Ammonium Nitrate	NH_4NO_3					
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$		X			
Ammonium Fluosilicate	$(\text{NH}_4)_2\text{SiF}_6$		X		X	X
Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4$					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 2 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Ammonium Sulfite	$(\text{NH}_4)_2\text{SO}_3 \cdot \text{H}_2\text{O}$		X			
Ammonium Thiocyanate	NH_4CNS		X			
Ammonium Thiosulfate	$(\text{NH}_4)_2\text{S}_2\text{O}_3$		X			
Antimony Chloride	$\text{Sb}(\text{Cl})_3$	X	X		X	X
Antimony Nitrate	$\text{Sb}(\text{NO}_3)_3$	X	X		X	X
Arsenic Trioxide	As_2O_3	X	X	X		X
Barium Nitrate	$\text{Ba}(\text{NO}_3)_2$	X	X	X	X	X
Benzene	C_6H_6	X	X	X	X	X
Beryllium	Be	X	X	X	X	X
Boric Acid	H_3BO_3					
Boron Carbide	B_4C					
Bromine	Br_2				X	X
Bromocresol Purple	$\text{C}_7\text{H}_6\text{OHBr}$	X	X	X	X	X
Bromonaphthalene	$\text{C}_{10}\text{H}_7\text{Br}$					
Butanol	$\text{C}_4\text{H}_9\text{OH}$	X	X	X	X	X
Cadmium Nitrate	$\text{Cd}(\text{NO}_3)_2$	X	X	X		X
Calcium	Ca					
Calcium Carbonate	CaCO_3				X	X
Calcium Chloride	CaCl_2					
Calcium Nitrate	$\text{Ca}(\text{NO}_3)_2$					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 3 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Carbon Dioxide	CO ₂				X	X
Carbon Tetrachloride	CCl ₄	X	X	X	X	X
Ceric Ammonium Nitrate	Ce(NH ₄) ₂ (NO ₃) ₆					
Ceric Fluoride	CeF ₄				X	X
Ceric Iodate	Ce(IO ₃) ₄					
Ceric Nitrate	Ce(NO ₃) ₄					
Ceric Sulfate	Ce(SO ₄) ₂					
Cerous Nitrate	Ce(NO ₃) ₃					
Cesium	Cs					
Cesium Chloride	CsCl					
Cesium Nitrate	CsNO ₃					
Cesium Nitrite	CsNO ₂					
Chloroplatinic Acid	H ₂ PtCl ₆ ·6H ₂ O				X	X
Chromic Acid	H ₂ CrO ₄	X	X	X	X	X
Chromium Nitrate	Cr(NO ₃) ₃	X	X	X	X	X
Chromous Sulfate	CrSO ₄ ·7H ₂ O	X	X	X	X	X
Citric Acid	C ₃ H ₄ OH(COOH) ₃					
Cobalt Sulfate	CoSO ₄ ·7H ₂ O					
Copper	Cu		X		X	X
Copper Nitrate	Cu(NO ₃) ₂		X			
Cupric Sulfate	CuSO ₄ ·5H ₂ O		X			

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 4 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Diatomaceous Earth	SiO ₂				X	X
Di2-Ethyl Hexyl Phosphoric Acid	C ₁₆ H ₃₄ O ₂ POOH					
Dibutyl Butyl Phosphonate	CH ₃ (CH ₂) ₃ PO ₃ [CH ₃ (CH ₂) ₃] ₂					
Dibutyl Phosphate	(n-C ₄ H ₉) ₂ HPO ₄				X	X
Dodecane	CH ₃ (CH ₂) ₁₀ CH ₃					
Ethanol	C ₂ H ₅ OH				X	X
Ethyl Ether	(CH ₃ CH ₂) ₂ O	X	X	X	X	X
Ethylene Glycol	HOCH ₂ CH ₂ OH				X	X
Ferric Ammonium Sulfate	FeNH ₄ (SO ₄) ₂				X	X
Ferric Nitrate	Fe(NO ₃) ₃ ·6H ₂ O		X		X	X
Ferric Sulfate	Fe ₂ (SO ₄) ₃		X		X	X
Ferrous Ammonium Sulfate	Fe(NH ₄) ₂ (SO ₄) ₂ ·6H ₂ O		X		X	X
Ferrous Sulfamate	Fe(SO ₃ NH ₂) ₂				X	X
Ferrous Sulfate	FeSO ₄		X		X	X
Formaldehyde (Solution)	CH ₂ O	X	X	X	X	X
Gallium	Ga					
Gallium Oxide	Ga ₂ O ₃					
Glycolic Acid	HOCH ₂ CO ₂ H					
Glycerol	CH ₂ OHCHOHCH ₂ OH					
Gold	Au					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 5 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	X	X	X	X	X
Hydrobromic Acid	HBr				X	X
Hydrochloric Acid	HCl		X		X	X
Hydrofluoric Acid	HF	X	X	X	X	X
Hydrogen Peroxide	H_2O_2				X	X
Hydrogen Sulfide	H_2S	X	X	X	X	X
Hydroiodic Acid	HI					
Hydroxyacetic Acid	CH_3OCOOH					
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$					
Hydroxylamine Nitrate	$\text{NH}_2\text{OH} \cdot \text{HNO}_3$					
Hydroxyquinoline	$\text{C}_9\text{H}_6\text{NOH}$					
Iodine	I_2				X	X
Iron	Fe					
Isoamyl Acetate	$\text{C}_7\text{H}_{14}\text{O}_2$				X	X
Isopropyl Alcohol	$\text{C}_3\text{H}_7\text{OH}$				X	X
Kerosene (Inhibited)	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$ + Cl_2CCHCl	X	X	X	X	X
Kerosene	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$					
Lanthanum Chloride	LaCl_3					
Lanthanum Fluoride	LaF_3				X	X
Lanthanum Hydroxide	$\text{La}(\text{OH})_3$					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 6 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Lanthanum-Neodymium Nitrate	$\text{La}(\text{NO}_3)_3\text{-Nd}(\text{NO}_3)_2$					
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$					
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	X	X	X		
Lithium	Li					
Magnesium	Mg					
Magnesium Carbonate	MgCO_3					
Magnesium Nitrate	$\text{Mg}(\text{NO}_3)_2$					
Magnesium Oxide	MgO				X	X
Mandelic Acid	$\text{C}_6\text{H}_5\text{CHOHCO}_2\text{H}$					
Mercury	Hg	X	X	X	X	X
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2\cdot\text{H}_2\text{O}$	X	X	X	X	X
Mercuric Thiocyanate	$\text{Hg}(\text{SCN})_2$	X	X	X	X	X
Methanol	CH_3OH	X	X	X	X	X
Methyl Ethyl Ketone	$\text{CH}_3\text{COC}_2\text{H}_5$	X	X	X	X	X
Methyl Isobutyl Ketone	$\text{CH}_3\text{COC}_4\text{H}_9$	X	X	X	X	X
Methyl Lactic Acid	$\text{CH}_3\text{CH}(\text{OH})\text{CO}_2\text{CH}_3$					
Molybdate Citrate, Reagent	$\text{MoO}_3\cdot\text{XH}_2\text{O} + (\text{NH}_4)_3\text{C}_6\text{H}_5\text{O}_7$				X	X
Molybdenum	Mo					
Morpholine	$\text{C}_4\text{H}_9\text{NO}$				X	X
Naphthylamine	$\text{C}_{10}\text{H}_9\text{N}$	X	X	X		X
Neodymium Chloride	NdCl_3					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 7 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Neodymium Nitrate	$\text{Nd}(\text{NO}_3)_3$					
Nickel	Ni	X	X	X	X	X
Nickel Nitrate	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	X	X	X	X	X
Nickel Sulfate	NiSO_4	X	X	X	X	X
Niobium	Nb					
Nitric Acid	HNO_3		X		X	X
Nitrilotriacetic Acid (NTA)	$\text{N}(\text{CH}_2\text{COOH})_3$					
Nitrous Acid	HNO_2					
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$					
O-phenanthroline	$\text{C}_{12}\text{H}_8\text{N}_2$					
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$				X	X
Pentasodium Diethylene-Triamine Penta Acetate (DTPA)	$\text{N}_3(\text{C}_2\text{H}_2)_2(\text{COONa})_5$					
Perchloric Acid	HClO_4					
Periodic Acid	HIO_4					
Phosphoric Acid	H_3PO_4		X		X	X
Phosphorous Pentoxide	P_2O_5					
Phosphotungstic Acid	$\text{H}_3[\text{P}(\text{W}_3\text{O}_{10})_4] \cdot 14\text{H}_2\text{O}$				X	X
Platinum	Pt				X	X

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 8 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Potassium Acetate	$\text{KC}_2\text{H}_3\text{O}_2$					
Potassium Bicarbonate	KHCO_3					
Potassium Bisulfite	$\text{K}_2\text{S}_2\text{O}_5$					
Potassium Carbonate	K_2CO_3					
Potassium Cyanide	KCN	X	X	X	X	X
Potassium Dichromate	K_2CrO_7	X	X	X	X	
Potassium Ferricyanide	$\text{K}_3\text{Fe}(\text{CN})_6$	X	X	X	X	X
Potassium Ferrocyanide	$\text{K}_4\text{Fe}(\text{CN})_6$	X	X	X	X	X
Potassium Fluoride	KF				X	X
Potassium Hydroxide	KOH		X		X	X
Potassium Iodate	KIO_3					
Potassium Oxalate	$\text{K}_2\text{C}_2\text{O}_4$					
Potassium Oxide	K_2O					
Potassium Permanganate	KMnO_4		X			
Potassium Persulfate	$\text{K}_2\text{S}_2\text{O}_8$					
Praseodymium Chloride	PrCl_2					
Praseodymium Nitrate	$\text{Pr}(\text{NO}_3)_2$					
S-diphenyl Carbazide	$(\text{C}_6\text{H}_5\text{NH}\cdot\text{HN})_2\text{CO}$					
Selenium Chloride	SeCl_4	X	X	X	X	X
Selenium Nitrate	$\text{Se}(\text{NO}_3)_4$	X	X	X	X	X

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 9 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Silicon	Si				X	X
Silico Tungstic Acid	H ₄ [Si(W ₃ O ₁₀) ₄]·26H ₂ O				X	X
Silver	Ag	X	X	X	X	X
Silver Chloride	AgCl	X	X	X	X	X
Silver Nitrate	AgNO ₃	X	X	X	X	X
Silver Oxide	Ag ₂ O	X	X	X	X	X
Sodium	Na		X			
Sodium Acetate	NaC ₂ H ₃ O ₂					
Sodium Bicarbonate	NaHCO ₃					
Sodium Bismuthate	NaBiO ₃					
Sodium Bisulfate	NaHSO ₄ ·H ₂ O					
Sodium Bromate	NaBrO ₃					
Sodium Carbonate	Na ₂ CO ₃					
Sodium Dichromate	Na ₂ Cr ₂ O ₇ ·2H ₂ O	X	X	X	X	X
Sodium Ferrocyanide	Na ₄ Fe (CN) ₆	X	X	X	X	X
Sodium Fluoride	NaF		X		X	X
Sodium Gluconate	(CHOH) ₄ CO ₂ HCH ₂ ONa					
Sodium Hydroxide	NaOH		X		X	X
Sodium Hypochlorite	NaOCl		X			
Sodium Iodide	NaI					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 10 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Sodium Nitrate	NaNO_3					
Sodium Nitrite	NaNO_2		X			
Sodium Oxalate	$\text{Na}_2\text{C}_2\text{O}_4$					
Sodium Persulfate	$\text{Na}_2\text{SO}_2\text{O}_8$					
Sodium Phosphate	Na_3PO_4		X			
Sodium Silicate	$\text{Na}_2\text{O} \cdot \text{SiO}_2$					
Sodium Sulfate	Na_2SO_4					
Sodium Sulfide	Na_2S					
Sodium Tartrate	$\text{Na}_2\text{C}_2\text{H}_4\text{O}_6 \cdot 2\text{H}_2\text{O}$					
Sodium Thiocyanate	NaSCN					
Sodium Thiosulfate	$\text{Na}_2\text{S}_2\text{O}_3$					
Stainless Steel	FeNiCr	X	X	X	X	X
Strontium Chloride	SrCl_2					
Strontium Fluoride	SrF_2				X	X
Strontium Nitrate	$\text{Sr}(\text{NO}_3)_2$					
Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$				X	X
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$					
Sulfonic Acid (chloro)	ClHSO_3		X			
Sulfuric Acid	H_2SO_4		X		X	X
Tartaric Acid	$\text{C}_2\text{H}_2(\text{OHCOOH})_2$					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 11 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Tantalum	Ta				X	X
Tetrasodium Ethylene Diamine-Tetra Acetate (EDTA)	$N_2C_2H_4(C_2H_2O_2Na)_4$		X			
Tetrabromoethane	$(CHBr_2)_2$					
Tetraphenyl Boron	$(C_6H_5)_4B$					
Thenoyltrifluoroacetone	$(CH)_3SCOCH_2COCF_3$					
Thorium Chloride	$ThCl_4$					
Thorium Nitrate	$Th(NO_3)_4$					
Thymolphthalein	$C_{28}H_{30}O_4$					
Tin Chloride	$SnCl_4$				X	X
Tin Nitrate	$Sn(NO_3)_4$				X	X
Titanium Chloride	$TiCl_4$					
Toluene	$C_6H_5CH_3$	X	X	X	X	X
Tributyl Phosphate	$(C_4H_9)_3PO_4$				X	X
Trichloroethane	CH_3CCl_3	X	X	X	X	X
Tri-n-dodecylamine	$[CH_3(CH_2)_{11}]_3N$					
Tri-Iso-octylamine	$[(CH_3)_2CH(CH_2)_5]_3N$					
Tri-n-octylamine	$[CH_3(CH_2)_7]_3N$					
Tris(hydroxymethyl) Amino Methane	$(CH_2OH)_3CNH_2$					
Trisodium Hydroxyethyl Ethylene-Diamine Triacetate (HEDTA)	$N_2C_2H_4(C_2H_2O_2Na)_3(C_2H_4OH)$					

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 12 of 16)

Compound name	Formula	RCRA	CERCLA	WAC	OSHA	OES TLV
Urea	$\text{CO}(\text{NH}_2)_2$					
Vanadium	V					
Vanadium Pentoxide	V_2O_5	X	X	X	X	X
Xylene	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	X	X	X	X	X
Yttrium Nitrate	$\text{Y}(\text{NO}_3)_3$					
Zinc Amalgam	ZnHg	X	X	X	X	X
Zinc Chloride	ZnCl_2		X		X	X
Zinc Nitrate	$\text{Zn}(\text{NO}_3)_2$		X			
Zirconium	Zr				X	X
Zirconyl Nitrate	$\text{ZrO}(\text{NO}_3)_2$				X	X
Zirconyl Phosphate	ZrOPO_4				X	X

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 13 of 16)

Miscellaneous	Comments ^a	RCRA	CERCLA	WAC	OSHA	OES TLV
American Cyanamid S 4058 FLOC	Product Name					
Anti-Foam 60	Product Name					
Arsenazo III	Contains Arsenic	X	X	X	X	X
Buffer Solution	Phosphate/Acetate Base					
Clayton Kerful Kleaner	NaOH		X		X	X
Diversy Chemical 159	Product Name					
Dow N-20 FLOC	Product Name					
Dow XD 7889 FLOC	Product Name					
Dow Anti-Foam B	Silicon Emulsion					
Dowex 50 (IX Resin)	Sulfonate Polystyrene DVB					
Dowex 21K/Amberlite XE-270 (IX Resin)	Styrene DVB with Trimethyl Ammonium					
Duolite ARC-359 (IX Resin)	Sulfonated Phenolic					
Hyflo-Super-Cel	Contains Silica				X	X
Immunol 1468-2	Product Name					
Ionac A-580/Permutit SK (IX Resin)	Polyvinyl Pyridine with Methyl Groups					
Jasco Paint Stripper	Methylene Chloride, Methanol	X	X	X	X	X
Keolite 25E	Product Name					
Keraff	Product Name					

^aRegulation and exposure identifications are based on these substances.

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 14 of 16)

Miscellaneous	Comments ^a	RCRA	CERCLA	WAC	OSHA	OES TLV
Kleenox Bowl	HCl, NH ₄ Cl		X		X	X
Magniflox 581-C	Product Name					
Mineral Oil	Light Hydrocarbons					
Mistron	MgSiO ₃				X	X
Oakite Clear Guard	Product Name					
Oakite LSD	NaOH		X		X	X
Oakite Rust Stripper	Product Name					
Oakite Swiff	Trichloroethane	X	X	X	X	X
Orvus K	Product Name					
Pace-S-Teen	Product Name					
Penvert 192	Product Name					
Perokleen	Product Name					
Portland Cement	CaSi(OH) ₂ , CaO·SiO ₂ , CaO·Al ₂ O ₃ ·Fe ₂ O ₃				X	X
Resin IRN-150	Styrene Divinyl Benzene					
Saf-tee Solvent F.O. 128	Product Name					
Sani-Flush	NH ₄ Cl, Diethylthiourea		X		X	X
Shell Spray Base	Kerosene					
Shell E-2342	Naphthalene and Paraffins	X	X	X	X	X
Soltrol-170	Paraffins					

^aRegulation and exposure identifications are based on these substances.

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 15 of 16)

Miscellaneous	Comments ^a	RCRA	CERCLA	WAC	OSHA	OES TLV
Spartan DC 13	No Hazardous Compounds					
Spic-n-Span (Detergent)	Na ₃ PO ₄ , Na ₂ SO ₄ , Na Silicates		X			
Tide (Detergent)	Na ₃ PO ₄ , Na ₂ CO ₃ , Na Silicates		X			
Turco (Fabrifilm)	Toluene, Butanol, Isopropanol, Acetone	X	X	X	X	X
Turco EPO Strip	Product Name					
Turco EPO Strip NP	Product Name					
Turco 2822	Methylene Chloride, Acetic Acid	X	X	X	X	X
Turco 2844	Product Name					
Turco 4306 B,C,&D	NaHSO ₄ , NH ₂ SO ₃ H					
Turco 4358-4A	Product Name					
Turco 4501 A	KOH, Diamine Compounds		X		X	X
Turco 4502 D	KOH, K ₂ CrO ₄ , KMnO ₄	X	X	X	X	X
Turco 4512 A	H ₃ PO ₄		X		X	X
Turco 4518	HO ₂ CCO ₂ H·2H ₂ O, Sodium Dodecyl Benzene Sulfonate		X		X	X
Turco 4521	(NH ₄) ₂ C ₂ O ₄ , HO ₂ CCO ₂ H·2H ₂ O, Sodium Dodecyl Benzene Sulfonate		X		X	X
Turco 4605-8	Product Name					

^aRegulation and exposure identifications are based on these substances.

Table 1. Summary List of Chemicals Used at Hanford Site Production Plants and Support Operations that Stored Waste in the Single-Shell Tanks (1944-1980). (Sheet 16 of 16)

Miscellaneous	Comments ^a	RCRA	CERCLA	WAC	OSHA	OES TLV
Turco 4669	Product Name					
Turco 4715	Product Name					
Turco 4738 (Thin)	Product Name					
Turco T-5561	2-Butoxyethanol, Dioctylphthalate, Morpholine, Mineral Oil	X	X	X	X	X
Turco T-5589	Isopropanol, NH ₄ OH		X		X	X
Turco Alkaline (Rust Remover)	NaOH, Kerosene		X		X	X
Turco Deseal Zit 2	Methylene Chloride, Acetic Acid	X	X	X	X	X
Turco Plaudit	No Hazardous Compounds					
West Lode Degreaser	Contains Aromatic Hydrocarbons	X	X	X	X	X
Wyandotte Kelvar	Product Name					
Wyandotte MF	Product Name					
Wyandotte P1075	Product Name					
Wyandotte 1112	Product Name					
Zeolite AW-500 (IX Resin)	Al ₂ (SiO ₅) ₂ (OH) ₂					
Zeolon 900 (IX Resin)	Al ₂ (SiO ₅) ₂ (OH) ₂					

^aRegulation and exposure identifications are based on these substances.

The following tables represent the list of chemicals used by each facility that stored waste in the SSTs.

Table 2. N Reactor Decontamination (100 Area) (1972-1976).

Compound name	Formula	Comments
Ammonia Bisulfate	$\text{NH}_4\text{HSO}_4 \cdot \text{H}_2\text{O}$	
Citric Acid	$\text{C}_3\text{H}_4\text{OH}(\text{COOH})_3$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Morpholine	$\text{C}_4\text{H}_9\text{NO}$	Water treatment
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Potassium Permanganate	KMnO_4	
Sodium Hydroxide	NaOH	
Sodium Nitrite	NaNO_2	
Turco 4512 A	H_3PO_4	Product name

**Table 3. PUREX Plant (A Plant): Fuel Reprocessing (200 East Area) (1955-1972).
(Sheet 1 of 2)**

Compound name	Formula	Comments
Aluminum	Al	Fuel element constituent
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Aluminum Nitrate (Mono Basic)	$\text{Al}(\text{OH})(\text{NO}_3)_2$	
Ammonium Fluoride	NH_4F	
Ammonium Nitrate	NH_4NO_3	
Beryllium	Be	Fuel element constituent
Cadmium Nitrate	$\text{Cd}(\text{NO}_3)_2$	
Dibutyl Butyl Phosphonate	$\text{CH}_3(\text{CH}_2)_3\text{PO}_3$ $[\text{CH}_3(\text{CH}_2)_3]_2$	
DOW Anti-Foam B	Silicon Emulsion	
Dowex 21 K/Amberlite XE-270 (IX Resin)	Polystyrene DVB with Trimethyl Ammonia	Product name
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Formaldehyde (Solution)	CH_2O	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydroxylamine Nitrate	$\text{NH}_2\text{OH} \cdot \text{HNO}_3$	
Ionac A-580/Permutit SK (IX Resin)	Polyvinyl Puridine with Methyl Groups	Product name
Iron	Fe	Fuel element constituent
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$	
Nitric Acid	HNO_3	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Fluoride	KF	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO_4	
Shell E-2342	Naphthalene and Paraffins	Product name

Table 3. PUREX Plant (A Plant): Fuel Reprocessing (200 East Area) (1955-1972).
(Sheet 2 of 2)

Compound name	Formula	Comments
Silicon	Si	Fuel element constituent
Silver Nitrate	AgNO ₃	
Sodium Carbonate	Na ₂ CO ₃	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO ₃	
Sodium Nitrite	NaNO ₂	
Sodium Thiosulfate	Na ₂ S ₂ O ₃	
Soltrol-170	C ₁₀ H ₂₂ to C ₁₆ H ₃₄	Product name
Sugar	C ₁₂ H ₂₂ O ₁₁	
Sulfamic Acid	NH ₂ SO ₃ H	
Sulfuric Acid	H ₂ SO ₄	
Tartaric Acid	C ₂ H ₂ (OHCOOH) ₂	
Tributyl Phosphate	(C ₄ H ₉) ₃ PO ₄	
Trichloroethane	CH ₃ CHCl ₃	Equipment degreasing
Tri-n-dodecylamine	[CH ₃ (CH ₂) ₁₁] ₃ N	
Zirconium	Zr	Fuel element constituent

**Table 4. PUREX Plant (A Plant): Analytical Laboratory
(200 East Area) (1955-1972).**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Carbon Tetrachloride	CCl_4	
Ceric Sulfate	$\text{Ce}(\text{SO}_4)_2$	
Ceric Fluoride	CeF_4	
Ferrous Sulfate	FeSO_4	
Hydrobromic Acid	HBr	
Hydrochloric Acid	HCl	
Hydrogen Peroxide	H_2O_2	
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$	
Isopropyl Alcohol	$\text{C}_3\text{H}_7\text{OH}$	
Lanthanum Fluoride	LaF_3	
Lanthanum Hydroxide	$\text{La}(\text{OH})_3$	
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$	
Magnesium	Mg	
Nitric Acid	HNO_3	
Periodic Acid	HIO_4	
Phosphorous Pentoxide	P_2O_5	
Potassium Oxalate	$\text{K}_2\text{C}_2\text{O}_4$	
Potassium Permanganate	KMnO_4	
Silver Nitrate	AgNO_3	
Sodium Bisulfate	$\text{NaHSO}_4 \cdot \text{H}_2\text{O}$	
Sodium Bromate	NaBrO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sulfuric Acid	H_2SO_4	
Thenoyltrifluoroacetone	$(\text{CH}_3)_3\text{SCOH}_2$ COCF_3	
Zirconyl Phosphate	ZrOPO_4	

**Table 5. PUREX Plant (A Plant): Fission Product Recovery
(200 East Area) (1960-1966).**

Compound name	Formula	Comments
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$	
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Hydroxyacetic Acid	$\text{CH}_3\text{OCO}_2\text{H}$	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Nickel Nitrate	$\text{Ni}(\text{NO}_3)_2$	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Silver Nitrate	AgNO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Ferrocyanide	$\text{Na}_4\text{Fe}(\text{CN})_6$	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Sulfate	Na_2SO_4	
Tartaric Acid	$\text{C}_2\text{H}_2(\text{OHCO}_2\text{H})_2$	

Table 6. B Plant: Fuel Reprocessing (200 East Area) (1945-1952).

Compound name	Formula	Comments
Aluminum	Al	Fuel element constituent
Ammonium Nitrate	NH_4NO_3	
Ammonium Silicofluoride	$(\text{NH}_4)_2\text{SiF}_6$	
Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4$	
Ammonium Sulfite	$(\text{NH}_4)_2\text{SO}_3$	
Ceric Nitrate	$\text{Ce}(\text{NO}_3)_4$	
Ferrous Sulfate	FeSO_4	
Hydrogen Fluoride	HF	
Hydrogen Peroxide	H_2O_2	
Hyflo-Super-Cel	Contains Silica	Product name
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO_4	
Silicon	Si	Fuel element constituent
Sodium Bismuthate	NaBiO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sulfuric Acid	H_2SO_4	
Trichloroethane	CH_3CHCl_3	Equipment degreasing
Zirconyl Nitrate	$\text{ZrO}(\text{NO}_3)_2$	

Table 7. B Plant: Strontium Recovery and Waste Fractionization
 (200 East Area) (1965-1976). (Sheet 1 of 2)

Compound name	Formula	Comments
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Ammonia (Anhydrous)	NH_3	
Calcium Carbonate	CaCO_3	
Carbon Dioxide	CO_2	
Chromium Nitrate	$\text{Cr}(\text{NO}_3)_3$	
Citric Acid	$\text{C}_3\text{H}_4\text{OH}(\text{COOH})_3$	
Di2-Ethyl Hexyl Phosphoric Acid	$\text{C}_{16}\text{H}_{34}\text{O}_2\text{POOH}$	
Duolite ARC-359 (IX Resin)	Sulfonated Phenolic	Product name
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Hydrogen Peroxide	H_2O_2	
Hydroxyacetic Acid	CH_3OCOOH	
Lanthanum-Neodymium Nitrate	$\text{La}(\text{NO}_3)_3 \cdot \text{Nd}(\text{NO}_3)_2$	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Magnesium Nitrate	$\text{Mg}(\text{NO}_3)_2$	
Magnesium Carbonate	MgCO_3	
Nickel Nitrate	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	
Nitric Acid	HNO_3	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphotungstic Acid	$\text{H}_3[\text{P}(\text{W}_3\text{O}_{10})_4] \cdot 14\text{H}_2\text{O}$	
Potassium Permanganate	KMnO_4	
Silver Nitrate	$\text{Ag}(\text{NO}_3)_2$	
Sodium Acetate	$\text{NaC}_2\text{H}_3\text{O}_2 \cdot 3\text{H}_2\text{O}$	
Sodium Bisulfate	NaHSO_4	
Sodium Carbonate	Na_2CO_3	
Sodium Gluconate	$(\text{CHOH})_4\text{CO}_2\text{HCH}_2\text{ONa}$	
Sodium Hydroxide	NaOH	

**Table 7. B Plant: Strontium Recovery and Waste Fractionization (200 East Area)
(1965-1976). (Sheet 2 of 2)**

Compound name	Formula	Comments
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sodium Persulfate	$\text{Na}_2\text{S}_2\text{O}_8$	
Sodium Phosphate	Na_3PO_4	
Sodium Sulfate	Na_2SO_4	
Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$	
Tartaric Acid	$\text{C}_2\text{H}_2(\text{OHCOOH})_2$	
Tetrasodium Ethylene Diamine-Tetra Acetate (EDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_4$	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Trichloroethane	CH_3CHCl_3	Equipment degreasing
Trisodium Hydroxyethyl Ethylene-Diamine Triacetate (HEDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_3$ $(\text{C}_2\text{H}_4\text{OH})$	
Zeolite AW-500 (IX Resin)	$\text{Al}_2(\text{SiO}_5)_2(\text{OH})_2$	Product name

Table 8. B Plant: Waste Encapsulation (200 East Area) (1974-1976).

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Boric Acid	H_3BO_3	
Calcium Chloride	CaCl_2	
Cesium Chloride	CsCl	
Hydrochloric Acid	HCl	
Hydrogen Peroxide	H_2O_2	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Permanganate	KMnO_4	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Phosphate	Na_3PO_4	
Strontium Fluoride	SrF_2	
Trichloroethane	CH_3CCl_3	

Table 9. Semiworks Pilot Plant (200 East Area) (1955-1967). (Sheet 1 of 2)

Compound name	Formula	Comments
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Calcium Nitrate	$\text{Ca}(\text{NO}_3)_2$	
Chromium Nitrate	$\text{Cr}(\text{NO}_3)_3$	
Citric Acid	$\text{C}_3\text{H}_4\text{OH}(\text{COOH})_2$	
Di2-Ethyl Hexyl Phosphoric Acid	$\text{C}_{16}\text{H}_{34}\text{O}_2\text{POOH}$	
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Ferric Sulfate	$\text{Fe}_2(\text{SO}_4)_3$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Glycolic Acid	$\text{HOCH}_2\text{CO}_2\text{H}$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrogen Peroxide	H_2O_2	
Hydroxyacetic Acid	CH_3OCOOH	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Nickel Nitrate	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	
Nitric Acid	HNO_3	
Nitrilotriacetic Acid (NTA)	$\text{N}(\text{CH}_2\text{COOH})_3$	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Pentasodium Diethylene Triamine Penta Acetate (DTPA)	$\text{N}_3(\text{CH}_2)_4(\text{COONa})_5$	
Potassium Bicarbonate	KHCO_3	
Potassium Permanganate	KMnO_4	
Potassium Persulfate	$\text{K}_2\text{S}_2\text{O}_8$	
Shell Spray Base	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	Product name
Shell E-2342	Naphthalene and Paraffins	Product name
Silver Nitrate	AgNO_3	

Table 9. Semiworks Pilot Plant (200 East Area) (1955-1967). (Sheet 2 of 2)

Compound name	Formula	Comments
Sodium Acetate	$\text{NaC}_2\text{H}_3\text{O}_2 \cdot 3\text{H}_2\text{O}$	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sodium Persulfate	$\text{Na}_2\text{SO}_2\text{O}_8$	
Sodium Phosphate	Na_3PO_4	
Sodium Sulfate	Na_2SO_4	
Soltrol-170	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	Product name
Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$	
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$	
Sulfuric Acid	H_2SO_4	
Tartaric Acid	$\text{C}_2\text{H}_2(\text{OHCOOH})_2$	
Tetrasodium Ethylene Diamine-Tetra Acetate (EDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_4$	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Trisodium Hydroxyethyl Ethylene-Diamine Triacetate (HEDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_3(\text{C}_2\text{H}_4\text{OH})$	

**Table 10. REDOX Plant (S Plant): Fuel Reprocessing
(200 West Area) (1951-1967). (Sheet 1 of 2)**

Compound name	Formula	Comments
Aluminum	Al	Fuel element constituent
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Aluminum Nitrate (Mono Basic)	$\text{Al}(\text{OH})(\text{NO}_3)_2$	
Ammonium Fluoride	NH_4F	
Ammonium Nitrate	NH_4NO_3	
Anti-Foam 60 (GE)	Silicone Emulsion	Product name
Boric Acid	H_3BO_3	
Ceric Ammonium Nitrate	$\text{CeNH}_4(\text{NO}_3)_6$	
Dibasic Aluminum Nitrate	$\text{Al}(\text{OH})_2\text{NO}_3$	
Ferrous Ammonium Sulfate	$\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Iron	Fe	Fuel element constituent
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$	
Methyl Isobutyl Ketone	$\text{CH}_3\text{COC}_4\text{H}_9$	
Mistron	MgSiO_3	Product name
Nitric Acid	HNO_3	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Periodic Acid	HIO_4	
Potassium Fluoride	KF	
Potassium Permanganate	KMnO_4	
Silicon	Si	Fuel element constituent
Silver Nitrate	$\text{Ag}(\text{NO}_3)_2$	
Sodium Bismuthate	NaBiO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	

**Table 10. REDOX Plant (S Plant): Fuel Reprocessing
(200 West Area) (1951-1967). (Sheet 2 of 2)**

Compound name	Formula	Comments
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO ₃	
Sodium Nitrite	NaNO ₂	
Sulfamic Acid	NH ₂ SO ₃ H	
Sulfuric Acid	H ₂ SO ₄	
Tributyl Phosphate	(C ₄ H ₉) ₃ PO ₄	
Zirconium	Zr	Fuel element constituent

**Table 11. REDOX Plant (S Plant): Analytical Laboratory
(200 West Area) (1951-1976). (Sheet 1 of 2)**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Ammonium Hydroxide	NH_4OH	
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$	
Bromonaphthalene	$\text{C}_{10}\text{H}_7\text{Br}$	
Ceric Sulfate	$\text{Ce}(\text{SO}_4)_2$	
Di2-Ethyl Hexyl Phosphoric Acid	$\text{C}_{16}\text{H}_{34}\text{POOH}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Ferrous Sulfate	FeSO_4	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrochloric Acid	HCl	
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$	
Hydroxyquinoline	$\text{C}_9\text{H}_6\text{NOH}$	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Mercuric Thiocyanate	$\text{Hg}(\text{SCN})_2$	
Methyl Ethyl Ketone	$\text{CH}_3\text{COC}_2\text{H}_5$	
Methyl Isobutyl Ketone	$\text{CH}_3\text{COC}_4\text{H}_9$	
Mineral Oil	Light Hydrocarbons	
Nitric Acid	HNO_3	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
O-phenanthroline	$\text{C}_{12}\text{H}_8\text{N}_2$	
Potassium Fluoride	KF	
Potassium Oxalate	$\text{K}_2\text{C}_2\text{O}_4$	
Potassium Permanganate	KMnO_4	
S-diphenyl Carbazide	$(\text{C}_6\text{H}_5\text{NH} \cdot \text{HN})_2\text{CO}$	
Shell Spray Base	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	Product name

**Table 11. REDOX Plant (S Plant): Analytical Laboratory
(200 West Area) (1951-1976). (Sheet 2 of 2)**

Compound name	Formula	Comments
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrite	NaNO_2	
Sulfuric Acid	H_2SO_4	
Tetrabromoethane	$(\text{CHBr}_2)_2$	
Tetraphenyl Boron	$(\text{C}_6\text{H}_5)_4\text{B}$	
Thenoyltrifluoroacetone	$(\text{CH}_3)_3\text{SCOCH}_2\text{COCF}_3$	
Titanium Chloride	TiCl_4	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Tri-iso-octylamine	$[(\text{CH}_3)_2\text{CH}(\text{CH}_2)_5]_3\text{N}$	
Tri-n-octylamine	$[\text{CH}_3(\text{CH}_2)_7]_3\text{N}$	
Xylene	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	
Zinc Amalgam	ZnHg	

Table 12. T Plant: Fuel Reprocessing (200 West Area) (1944-1956).

Compound name	Formula	Comments
Aluminum	Al	Fuel element constituent
Ammonium Nitrate	NH_4NO_3	
Ammonium Fluosilicate	$(\text{NH}_4)_2\text{SiF}_6$	
Ammonium Sulfate	NH_4SO_4	
Ammonium Sulfite	$(\text{NH}_4)_2\text{SO}_3$	
Ceric Nitrate	$\text{Ce}(\text{NO}_3)_4$	
Ferrous Sulfate	FeSO_4	
Hydrogen Fluoride	HF	
Hydrogen Peroxide	H_2O_2	
Hyflo-Super-Cel	Contains Silica	Product name
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO_4	
Silicon	Si	Fuel element constituent
Sodium Bismuthate	NaBiO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sulfuric Acid	H_2SO_4	
Trichloroethane	CH_3CHCl_3	Equipment degreasing
Zirconyl Nitrate	$\text{ZrO}(\text{NO}_3)_2$	

Table 13. T Plant: In-Plant Scavenging (200 West Area) (1955).

Compound name	Formula	Comments
Potassium Ferrocyanide	$\text{K}_4\text{Fe}(\text{CN})_6$	
Nickel Sulfate	NiSO_4	
Sodium Hydroxide	NaOH	

**Table 14. 221-T Plant: Containment Systems Experiment
(200 West Area) (1967-1972).**

Compound name	Formula	Comments
Boric Acid	H_3BO_3	
Sodium Hydroxide	NaOH	
Sodium Thiosulfate	$\text{Na}_2\text{S}_2\text{O}_3$	

**Table 15. T Plant: Containment Systems Test Facility
(200 West Area) (1977).**

Compound name	Formula	Comments
Sodium	Na	

**Table 16. 221-T Plant: Equipment Decontamination
(200 West Area) (1964-1980). (Sheet 1 of 3)**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Clayton Kerful Cleaner	NaOH	Product name
Diversy Chemical 159	Unknown	Product name
Hydrochloric Acid	HCl	
Immunol 1468-2	Unknown	Product name
Jasco Paint Stripper	Methylene Chloride, CH_3OH	Product name
Kelite 25E	Unknown	Product name
Keraff	Unknown	Product name
Kerosene	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	
Kleenow Bowl	HCl , NH_4Cl	Product name
Nitric Acid	HNO_3	
Oakite Clear Guard	Unknown	Product name
Oakite LSD	NaOH	Product name
Oakite Rust Stripper	Unknown	Product name
Oakite Swiff	Trichloroethane	Product name
Orvus K	Unknown	Product name
Pace-S-Teen	Unknown	Product name
Penvert 192	Unknown	Product name
Peroklean	Unknown	Product name
Phosphoric Acid	H_3PO_4	
Potassium Fluoride	KF	
Potassium Permanganate	KMnO_4	
Saf-tee Solvent F.O. 128	Unknown	Product name
Sodium Bisulfate	$\text{NaHSO}_4 \cdot \text{H}_2\text{O}$	
Sodium Hydroxide	NaOH	
Sodium Nitrite	NaNO_2	

Table 16. 221-T Plant: Equipment Decontamination
 (200 West Area) (1964-1980). (Sheet 2 of 3)

Compound name	Formula	Comments
Spartan DC 13	No Hazardous Compounds	Product name
Sulfuric Acid	H ₂ SO ₄	
Tide (Detergent)	Sodium Silicate Compounds	Product name
Trichloroethane	CH ₃ CCl ₃	
Turco EPO Strip	Unknown	Product name
Turco EPO Strip NP	Unknown	Product name
Turco (Fabrifilm)	Toluene, Butanol, Isopropanol, Acetone	Product name
Turco 2822	Methylene Chloride, Acetic Acid	Product name
Turco 2844	Unknown	Product name
Turco 4306 B, C, & D	NaHSO ₄ , NH ₂ SO ₃ H	Product name
Turco 4358-4A	Unknown	Product name
Turco 4501 A	KOH, Hydroxy-diamine Compounds	
Turco 4502D	KOH, K ₂ CrO ₄ , KMnO ₄	Product name
Turco 4512 A	H ₃ PO ₄	Product name
Turco 4518	HO ₂ CCO ₂ H·2H ₂ O, Sodium Dodecyl Benzene Sulfonate	Product name
Turco 4521	(NH ₄) ₂ C ₂ O ₄ , HO ₂ CCO ₂ H·2H ₂ O, Sodium Dodecyl Benzene Sulfonate	Product name
Turco 4605-8	Unknown	Product name
Turco 4669	Unknown	Product name
Turco 4715	Unknown	Product name
Turco 4738 (Thin)	Unknown	Product name

**Table 16. 221-T Plant: Equipment Decontamination
(200 West Area) (1964-1980). (Sheet 3 of 3)**

Compound name	Formula	Comments
Turco T-5561	2-Butoxyethanol, Dioctyl Phtalate, Morpholine, Mineral Oil	Product name
Turco T-5589	Isopropanol, NH ₄ OH	Product name
Turco Alkaline (Rust Remover)	NaOH, Kerosene	Product name
Turco Deseal Zit 2	Methylene Chloride, Acidic Acid	Product name
Turco Plaudit	No Hazardous Compounds	Product name
West Lode Degreaser	Aromatic Compounds	Product name
Wyandotte Kelvar	Unknown	Product name
Wyandotte MF	Unknown	Product name
Wyandotte P1075	Unknown	Product name
Wyandotte 1112	Unknown	Product name

**Table 17. U Plant: (UO₃) Uranium Conversion
(200 West Area) (1952-1971).**

Compound name	Formula	Comments
Nitric Acid	HNO ₃	
Potassium Permanganate	KMnO ₄	
Sulfuric Acid	H ₂ SO ₄	

**Table 18. U Plant: Uranium Recovery and In-Plant Scavenging
(200 West Area) (1952-1958).**

Compound name	Formula	Comments
Calcium Carbonate	CaCO_3	
Calcium Nitrate	$\text{Ca}(\text{NO}_3)_2$	
Cobalt Sulfate	$\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$	
Ferrous Ammonium Sulfate	$\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Nickel Sulfate	NiSO_4	
Nitric Acid	HNO_3	
Phosphoric Acid	H_3PO_4	
Potassium Ferrocyanide	$\text{K}_4\text{Fe}(\text{CN})_6$	
Shell Spray Base	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	Product name
Shell E-2342	Naphthalene and Paraffins	Product name
Sodium Carbonate	Na_2CO_3	
Sodium Ferrocyanide	$\text{Na}_4\text{Fe}(\text{CN})_6$	
Sodium Hydroxide	NaOH	
Sodium Sulfate	Na_2SO_4	
Strontium Nitrate	$\text{Sr}(\text{NO}_3)_2$	
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$	
Sulfuric Acid	H_2SO_4	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Trichloroethane	CH_3CHCl_3	Equipment degreasing

**Table 19. U Plant: Analytical Laboratory
(200 West Area) (1952-1958).**

Compound name	Formula	Comments
Ammonium Fluoride	NH_4F	
Ammonium Nitrate	NH_4NO_3	
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$	
Barium Nitrate	$\text{Ba}(\text{NO}_3)_2$	
Boric Acid	H_3BO_3	
Carbon Tetrachloride	CCl_4	
Ceric Iodate	$\text{Ce}(\text{IO}_3)_4$	
Chloroplatinic Acid	$\text{H}_2\text{PtCl}_6 \cdot 6\text{H}_2\text{O}$	
Chromous Sulfate	$\text{CrSO}_4 \cdot 7\text{H}_2\text{O}$	
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	
Ethyl Ether	$(\text{CH}_3\text{CH}_2)_2\text{O}$	
Hydrobromic Acid	HBr	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydroiodic Acid	HI	
Lanthanum Fluoride	LaF_3	
Molybdate-Citrate Reagent	$\text{MoO}_3 \cdot \text{XH}_2\text{O} + (\text{NH}_4)_3\text{C}_6\text{H}_5\text{O}_7$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphorous Pentoxide	P_2O_5	
Potassium Carbonate	K_2CO_3	
Potassium Fluoride	KF	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO_4	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sulfuric Acid	H_2SO_4	

**Table 20. U Plant: Equipment Decontamination
(200 West Area) (1961-1963).**

Compound name	Formula	Comments
Clayton Kerful Cleaner	NaOH	Product name
Nitric Acid	HNO ₃	
Phosphoric Acid	H ₃ PO ₄	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO ₄	
Sani-Flush	HCl, HO ₂ CCO ₂ H·2H ₂ O, Alkyltrimethyl, Ammonium Chloride, Diethylthiourea	Product name
Sodium Hydroxide	NaOH	
Sulfuric Acid	H ₂ SO ₄	

**Table 21. Plutonium Finishing Plant (Z Plant): Plutonium Conversion to Oxide
(200 West Area) (1973-1976).**

Compound name	Formula	Comments
Hydrogen Peroxide	H_2O_2	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Potassium Permanganate	KMnO_4	

Table 22. Plutonium Finishing Plant (Z Plant): Plutonium Reclamation and Waste Treatment (200 West Area) (1973-1976). (Sheet 1 of 2)

Compound name	Formula	Comments
Aluminum	Al	Feed constituent
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Aluminum Nitrate (Mono Basic)	$\text{Al}(\text{OH})(\text{NO}_3)_2$	
Beryllium	Be	Feed constituent
Calcium	Ca	Feed constituent
Carbon Tetrachloride	CCl_4	
Dibutyl Butyl Phosphonate	$\text{CH}_3(\text{CH}_2)_3\text{PO}_3[\text{CH}_3(\text{CH}_2)_3]_2$	
Dodecane	$\text{CH}_3(\text{CH}_2)_{10}\text{CH}_3$	Feed constituent
Dow Anti-Foam B	Silicon Emulsion	Product name
Gallium	Ga	Feed constituent
Gallium Oxide	Ga_2O_3	Feed constituent
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$	
Hydroxylamine Nitrate	$\text{NH}_2\text{OH} \cdot \text{HNO}_3$	
Iodine	I_2	Feed constituent
Iron	Fe	Scrap container
Magnesium Oxide	MgO	Feed constituent
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$	
Mistron	MgSiO_3	Product name
Molybdenum	Mo	Feed constituent
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Potassium Carbonate	K_2CO_3	

Table 22. Plutonium Finishing Plant (Z Plant): Plutonium Reclamation and Waste Treatment (200 West Area) (1973-1976). (Sheet 2 of 2)

Compound name	Formula	Comments
Sodium Carbonate	Na_2CO_3	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$	Feed constituent
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	

**Table 23. Plutonium Finishing Plant (Z Plant): Analytical Laboratory
(200 West Area) (1973-1976). (Sheet 1 of 2)**

Compound name	Formula	Comments
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$	
Acetone	$\text{CH}_3\text{C}_2\text{H}_3\text{O}$	
Alizarin Yellow	$\text{C}_{14}\text{H}_8\text{O}_4$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Aluminum Nitrate (Mono Basic)	$\text{Al}(\text{OH})(\text{NO}_3)_2$	
Aluminum Sulfate	$\text{Al}(\text{SO}_4)_3$	
Ammonium Chloride	NH_4Cl	
Ammonium Hydroxide	NH_4OH	
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4$	
Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4$	
Arsenazo III	Arsenic compounds	Product name
Boric Acid	H_3BO_3	
Bromocresol Purple	$\text{C}_7\text{H}_6\text{OHBr}$	
Carbon Tetrachloride	CCl_4	
Ceric Ammonium Nitrate	$\text{Ce}(\text{NH}_4)_2(\text{NO}_3)_6$	
Dibutyl Phosphate	$(n\text{-C}_4\text{H}_9)_2\text{HPO}_4$	
Ferric Ammonium Sulfate	FeNH_4SO_4	
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Ferrous Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4 \cdot \text{FeSO}_4 \cdot 6\text{H}_2\text{O}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Hydrazine	$\text{N}_2\text{H}_4 \cdot \text{H}_2\text{O}$	
Hydrobromic Acid	HBr	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydrogen Peroxide	H_2O_2	
Hydroiodic Acid	HI	
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$	

**Table 23. Plutonium Finishing Plant (Z Plant): Analytical Laboratory
(200 West Area) (1973-1976). (Sheet 2 of 2)**

Compound name	Formula	Comments
Hydroxylamine Nitrate	$\text{NH}_2\text{OH} \cdot \text{HNO}_3$	
Methanol	CH_3OH	
Napthylamine	$\text{C}_{10}\text{H}_9\text{N}$	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Acetate	$\text{KC}_2\text{H}_3\text{O}_2$	
Potassium Dichromate	K_2CrO_7	
Potassium Iodate	KIO_3	
Potassium Permanganate	KMnO_4	
Silver Oxide	AgO	
Sodium Bisulfate	NaHSO_4	
Sodium Carbonate	Na_2CO_3	
Sodium Fluoride	NaF	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sodium Oxalate	$\text{Na}_2\text{C}_2\text{O}_4$	
Sodium Tartrate	$\text{Na}_2\text{C}_2\text{H}_4\text{O}_6 \cdot 2\text{H}_2\text{O}$	
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$	
Sulfonic Acid (chloro)	ClHSO_3	
Sulfuric Acid	H_2SO_4	
Thenoyltrifluoroacetone	$(\text{CH})_3\text{SCOCH}_2\text{COCF}_3$	
Thymolphthalein	$\text{C}_{28}\text{H}_{30}\text{O}_4$	
Toluene	$\text{C}_6\text{H}_5\text{CH}_3$	
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Tri-Iso-Octylamine	$\text{C}_{24}\text{H}_{51}\text{N}$	
Tris (hydroxymethyl) Amino Methane	$(\text{CH}_2\text{OH})_3\text{CNH}_2$	
Xylene	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	

Table 24. Tank Farms (200 Areas): Equipment Decontamination and Waste Evaporation/Solidification (1944-1980).

Compound name	Formula	Comments
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$	
Anti-Foam 60	Unknown	Product name
Citric Acid	$\text{C}_3\text{H}_4\text{OH}(\text{COOH})_3$	
Diatomaceous Earth	SiO_2	
Duolite ARC-359 (IX Resin)	$\text{Al}_2(\text{SiO}_5)_2(\text{OH})_2$	Product name
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Pentasodium Diethylene Triamine Penta Acetate (DTPA)	$\text{N}_3(\text{CH}_2)_4(\text{COONa})_5$	
Potassium Permanganate	KMnO_4	
Portland Cement	Calcium compounds	
Sodium Carbonate	Na_2CO_3	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Spic and Span (Detergent)	$\text{Na}_3\text{PO}_4, \text{Na}_2\text{SO}_4, \text{Na Silicate}$	Product name
Tartaric Acid	$\text{C}_2\text{H}_2(\text{OHCOOH})_2$	
Tide (Detergent)	$\text{Na}_3\text{PO}_4, \text{Na}_2\text{CO}_3, \text{Na Silicate}$	Product name
Turco 4502 D	$\text{KOH}, \text{K}_2\text{CrO}_4, \text{KMnO}_4$	Product name
Turco 4518	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}, \text{Sodium Dodecyl Benzene Sulfonate}$	Product name
Turco Deseal Zit 2	Methylene Chloride, Acetic Acid	Product name
Zelon 900 (IX Resin)	$\text{Al}_2(\text{SiO}_5)_2(\text{OH})_2$	Product name

**Table 25. Tank Farms (200 Areas): Waste Scavenging and Sludge
Sluicing/Dissolution (1952-1976).**

Compound name	Formula	Comments
American Cyanamid S 4058 Floc	Hydrocarbon	Product name
Calcium Carbonate	CaCO_3	
Calcium Nitrate	$\text{Ca}(\text{NO}_3)_2$	
Dow N 20 Floc	Unknown	Product name
Dow XD 7889 Floc	Unknown	Product name
Nickel Sulfate	$\text{Ni}(\text{SO}_4)_2$	
Nitric Acid	HNO_3	
Sodium Ferrocyanide	$\text{Na}_4\text{Fe}(\text{CN})_6$	
Sodium Sulfide	Na_2S	

Table 26. Building 242 (200 East Area): Irradiation Rupture Prototype Loop (1959-1967).

Compound name	Formula	Comments
Carbon Dioxide	CO ₂	
Citric Acid	C ₃ H ₄ OH(COOH) ₃	
Oxalic Acid	HO ₂ CCO ₂ H·2H ₂ O	
Phosphoric Acid	H ₃ PO ₄	
Sodium Hydroxide	NaOH	
Trisodium Hydroxyethyl Ethylene-Diamine Triacetate (HEDTA)	N ₂ C ₂ H ₄ (C ₂ H ₂ O ₂ Na) ₃ (C ₂ H ₄ OH)	

The following tables list the chemicals used in the 300 Area facilities. There is uncertainty that these chemicals were routed to the SSTs.

**Table 27. Building 324: Chemical Engineering
Hot Cells (1966-1976).**

Compound name	Formula	Comments
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Aluminum Sulfate	$\text{Al}_2(\text{SO}_4)_3$	
Barium Nitrate	$\text{Ba}(\text{NO}_3)_2$	
Copper Nitrate	$\text{Cu}(\text{NO}_3)_2$	
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3$	
Molybdenum	Mo	
Nickel Nitrate	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Phosphoric Acid	H_3PO_4	
Potassium Dichromate	K_2CrO_7	
Potassium Permanganate	KMnO_4	
Silicon	Si	
Silver Nitrate	AgNO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO_3	
Sodium Phosphate	Na_3PO_4	
Strontium Nitrate	$\text{Sr}(\text{NO}_3)_2$	
Sulfamic Acid	$\text{NH}_2\text{SO}_3\text{H}$	
Turco 4501 A	KOH, Hydroxy-diamine compounds	Product name
Turco 4502 D	KOH, K_2CrO_4 , KMnO_4	Product name
Turco 4518	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$, Sodium Dodecyl Benzene Sulfonate	Product name
Turco 4521	$(\text{NH}_4)_2\text{C}_2\text{O}_4$, $\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$, Sodium Dodecyl Benzene Sulfonate	Product name

**Table 28. Building 325: Analytical Laboratory
(1953-1976). (Sheet 1 of 3)**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Ammonia (Anhydrous)	NH_3	
Ammonium Hydroxide	NH_4OH	
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$	
Bromocresol Purple	$\text{C}_7\text{H}_6\text{OHBr}$	
Calcium Carbonate	CaCO_3	
Calcium Chloride	CaCl_2	
Carbon Tetrachloride	CCl_4	
Ceric Sulfate	$\text{Ce}(\text{SO}_4)_2$	
Cesium Nitrate	CsNO_3	
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	
Ferrous Ammonium Sulfate	$\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydrogen Peroxide	H_2O_2	
Hydroiodic Acid	HI	
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH} \cdot \text{HCl}$	
Iodine	I_2	
Iron	Fe	
Kerosene	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$	
Magnesium Oxide	MgO	
Mercury	Hg	
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$	
Methanol	CH_3OH	
Methyl Ethyl Ketone	$\text{CH}_3\text{COC}_2\text{H}_5$	
Methyl Isobutyl Ketone	$\text{CH}_3\text{COC}_4\text{H}_9$	

**Table 28. Building 325: Analytical Laboratory
(1953-1976). (Sheet 2 of 3)**

Compound name	Formula	Comments
Methyl Lactic Acid	$\text{CH}_3\text{CH}(\text{OH})\text{CO}_2\text{CH}_3$	
Nitric Acid	HNO_3	
Nitrous Acid	HNO_2	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Perchloric Acid	HClO_4	
Periodic Acid	IO_4	
Phosphoric Acid	H_3PO_4	
Potassium Hydroxide	KOH	
Potassium Iodate	KIO_3	
Potassium Permanganate	KMnO_4	
Silver Nitrate	AgNO_3	
Sodium Carbonate	Na_2CO_3	
Sodium Hydroxide	NaOH	
Stainless Steel	FeNiCr	
Strontium Nitrate	$\text{Sr}(\text{NO}_3)_2$	
Sulfuric Acid	H_2SO_4	
Tetrasodium Ethylene Diamine- Tetra Acetate (EDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_4$	
Tetraphenyl Boron	$(\text{C}_6\text{H}_5)_4\text{B}$	
Thenoyltrifluoroacetone	$(\text{CH}_3)_3\text{SCOCH}_2\text{COCF}_3$	
Tide (Detergent)	Sodium silicate compounds	Product name
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Trichloroethane	CH_3CCl_3	
Tri-iso-octylamine	$[(\text{CH}_3)_2\text{CH}(\text{CH}_2)_5]_3\text{N}$	
Tri-n-octylamine	$[(\text{CH}_3)(\text{CH}_2)_7]_3\text{N}$	
Turco Alkaline (Rust Remover)	NaOH , Kerosene	Product name

**Table 28. Building 325: Analytical Laboratory
(1953-1976). (Sheet 3 of 3)**

Compound name	Formula	Comments
Turco Deseal Zit 2	Methylene Chloride, Acetic Acid	Product name
Turco Plaudit	No Hazardous Compounds	Product name
Vanadium Pentoxide	V_2O_5	
Xylene	$C_6H_4(CH_3)_2$	
Zirconyl Nitrate	$ZrO(NO_3)_2$	

Table 29. Building 325: Westinghouse Hanford Company Development Laboratory (1970-1976). (Sheet 1 of 3)

Compound name	Formula	Comments
Acetic Acid	$\text{CH}_3\text{CO}_2\text{H}$	
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum	Al	
Ammonia (Anhydrous)	NH_3	
Ammonium Oxalate	$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$	
Barium Nitrate	$\text{Ba}(\text{NO}_3)_2$	
Beryllium	Be	Fuel element constituent
Boric Acid	H_3BO_3	
Calcium Carbonate	CaCO_3	
Calcium Chloride	CaCl_2	
Calcium Nitrate	$\text{Ca}(\text{NO}_3)_2$	
Ceric Nitrate	$\text{Ce}(\text{NO}_3)_4$	
Cerous Nitrate	$\text{Ce}(\text{NO}_3)_3$	
Cesium	Cs	
Chromic Acid	H_2CrO_4	
Citric Acid	$\text{C}_3\text{H}_4\text{OH}(\text{COOH})_3$	
Diatomaceous Earth	SiO_2	
Ethanol	$\text{CH}_3\text{CH}_2\text{OH}$	
Ferric Ammonium Sulfate	$\text{Fe}_3\text{NH}_4(\text{SO}_4)_2$	
Ferric Nitrate	$\text{Fe}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$	
Ferric Sulfate	$\text{Fe}_2(\text{SO}_4)_3$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrochloric Acid	HCl	
Iodine	I_2	
Iron	Fe	
Isopropyl Alcohol	$\text{C}_3\text{H}_7\text{OH}$	
Lanthanum-Neodymium Nitrate	$\text{La}(\text{NO}_3)_3\text{-Nd}(\text{NO}_3)_3$	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Magnesium Nitrate	$\text{Mg}(\text{NO}_3)_2$	

Table 29. Building 325: Westinghouse Hanford Company Development Laboratory (1970-1976). (Sheet 2 of 3)

Compound name	Formula	Comments
Mercuric Nitrate	$\text{Hg}(\text{NO}_3)_2 \cdot \text{H}_2\text{O}$	
Methanol	CH_3OH	
Mineral Oil	Light Hydrocarbons	
Molybdenum	Mo	
Nitric Acid	HNO_3	
Nitrous Acid	HNO_2	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Phosphoric Acid	H_3PO_4	
Phosphorous Pentoxide	P_2O_5	
Potassium Bicarbonate	KHCO_3	
Potassium Carbonate	K_2CO_3	
Potassium Dichromate	$\text{K}_2\text{Cr}_2\text{O}_7$	
Portland Cement	Calcium compounds	
Potassium Permanganate	KMnO_4	
Silver Nitrate	AgNO_3	
Sodium Bicarbonate	NaHCO_3	
Sodium Bisulfate	$\text{NaHSO}_4 \cdot \text{H}_2\text{O}$	
Sodium Carbonate	Na_2CO_3	
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot \text{H}_2\text{O}$	
Sodium Hydroxide	NaOH	
Sodium Hypochlorite	NaOCl	
Sodium Iodide	NaI	
Sodium Nitrate	NaNO_3	
Sodium Nitrite	NaNO_2	
Sodium Oxalate	$\text{Na}_2\text{C}_2\text{O}_4$	
Sodium Phosphate	Na_3PO_4	
Sodium Silicate	$\text{Na}_2\text{O} \cdot \text{SiO}_2$	
Sodium Sulfate	Na_2SO_4	
Stainless Steel	FeNiCr	

Table 29. Building 325: Westinghouse Hanford Company Development Laboratory (1970-1976). (Sheet 3 of 3)

Compound name	Formula	Comments
Strontium Nitrate	$\text{Sr}(\text{NO}_3)_2$	
Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$	
Sulfuric Acid	H_2SO_4	
Tetrasodium Ethylene Diamine-TetraAcetate (EDTA)	$\text{N}_2\text{C}_2\text{H}_4(\text{C}_2\text{H}_2\text{O}_2\text{Na})_4$	
Tide (Detergent)	Na_3PO_4 , Na_2CO_3 , Na Silicate	Product name
Tributyl Phosphate	$(\text{C}_4\text{H}_9)_3\text{PO}_4$	
Turco 4502 D	KOH , K_2CrO_4 , KMnO_4	Product name
Turco 4518	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$, Sodium Dodecyl Benene Sulfonate	Product name
Urea	$\text{CO}(\text{NH}_2)_2$	
Vanadium	V	
Zinc Nitrate	$\text{Zn}(\text{NO}_3)_2$	
Zirconium	Zr	

Table 30. Building 325: Pacific Northwest Laboratory Development and Production Laboratory (1955-1976). (Sheet 1 of 2)

Compound name	Formula	Comments
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Ammonium Hydroxide	NH_4OH	
Carbon Tetrachloride	CCl_4	
Cesium Nitrate	CsNO_3	
Copper Nitrate	$\text{Cu}(\text{NO}_3)_2$	
Dowex 50 (IX Resin)	Sulfonate Polystyrene Divinyl Benzene	Product name
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydroxylamine Nitrate	$\text{NH}_2\text{OH} \cdot \text{HNO}_3$	
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$	
Methanol	CH_3OH	
Mercury	Hg	
Nitric Acid	HNO_3	
Nitrilotriacetic Acid (NTA)	$\text{N}(\text{CH}_2\text{COOH})_3$	
Normal Paraffin Hydrocarbon	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{14}\text{H}_{30}$	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Pentasodium Diethylene Triamine PentaAcetate (DTPA)	$\text{N}_3(\text{CH}_2)_4(\text{COONa})_5$	
Potassium Permanganate	KMnO_4	
Platinum	Pt	
Sodium Dichromate	$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	
Sodium Fluoride	NaF	

Table 30. Building 325: Pacific Northwest Laboratory Development and Production Laboratory (1955-1976). (Sheet 2 of 2)

Compound name	Formula	Comments
Sodium Hydroxide	NaOH	
Sodium Nitrate	NaNO ₃	
Sodium Phosphate	Na ₃ PO ₄	
Sodium Sulfate	Na ₂ SO ₄	
Strontium Nitrate	Sr(NO ₃) ₂	
Sulfuric Acid	H ₂ SO ₄	
Tetrasodium Ethylene Diamine-Tetraacetate (EDTA)	N ₂ C ₃ H ₄ (C ₂ H ₂ O ₂ Na) ₄	
Tributyl Phosphate	(C ₄ H ₉) ₃ PO ₄	
Trisodium Hydroxyethyl Ethylene-Diamine Triacetate (HEDTA)	N ₂ C ₂ H ₄ (C ₂ H ₂ O ₂ Na) ₃ (C ₂ H ₄ OH)	
Turco (Fabrifilm)	Toluene, Butanol, Isopropanol, Acetone	Product name
Turco 4502 D	KOH, K ₂ CrO ₄ , KMnO ₄	Product name
Turco 4518	HO ₂ CCO ₂ H·2H ₂ O, Sodium Dodecyl Benzene Sulfonate	Product name
Yttrium Nitrate	Y(NO ₃) ₃	
Zinc Nitrate	Zn(NO ₃) ₂	

Table 31. Building 326: Electropolishing of Irradiated Alloy for Electron-Microscopy (1963-1976).

Compound name	Formula	Comments
Acetic Acid	CH ₃ CO ₂ H	
Aluminum	Al	
Beryllium	Be	
Bromine	Br ₂	
Butanol	C ₄ H ₉ OH	
Copper	Cu	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Methanol	CH ₃ OH	
Molybdenum	Mo	
Niobium	Nb	
Nitric Acid	HNO ₃	
Perchloric Acid	HClO ₄	
Stainless Steel	FeNiCr	Fuel element constituent
Sulfuric Acid	H ₂ SO ₄	
Vanadium	V	
Zirconium	Zr	Fuel element constituent

**Table 32. Building 326: Metallography Laboratory
(1955-1976).**

Compound name	Formula	Comments
Aluminum	Al	
Acetic Acid	CH ₃ CO ₂ H	
Acetone	CH ₃ C ₂ OH ₃	
Chromic Acid	H ₂ CrO ₄	
Cupric Sulfate	CuSO ₄ ·5H ₂ O	
Ethanol	C ₂ H ₅ OH	
Ethylene Glycol	HOCH ₂ CH ₂ OH	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydrogen Peroxide	H ₂ O ₂	
Nitric Acid	HNO ₃	
Oxalic Acid	HO ₂ CCO ₂ H·2H ₂ O	
Perchloric Acid	HClO ₄	
Phosphoric Acid	H ₃ PO ₄	
Potassium Ferrocyanide	K ₄ Fe(CN) ₆	
Sodium Hydroxide	NaOH	
Sulfuric Acid	H ₂ SO ₄	

**Table 33. Building 327: Post-Irradiation Testing Laboratory
(1953-1976). (Sheet 1 of 2)**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum	Al	Fuel element constituent
Benzene	C_6H_6	
Beryllium	Be	Fuel element constituent
Boron Carbide	B_4C	
Butanol	$\text{C}_4\text{H}_9\text{OH}$	
Carbon Tetrachloride	CCl_4	
Cesium Nitrate	CsNO_3	
Cesium Nitrite	CsNO_2	
Chromic Acid	H_2CrO_4	
Ethanol	$\text{C}_2\text{H}_5\text{OH}$	
Glycerol	$\text{CH}_2\text{OHCHOHC}$ H_2OH	
Gold	Au	
Hydrofluoric Acid	HF	
Hydrogen Peroxide	H_2O_2	
Isoamyl Acetate	$\text{C}_7\text{H}_{14}\text{O}_2$	
Isopropyl Alcohol	$\text{C}_3\text{H}_7\text{OH}$	
Kerosene (Inhibited)	$\text{C}_{10}\text{H}_{22}$ to $\text{C}_{16}\text{H}_{34}$ + Cl_2CCHCl	
Lithium	Li	
Methanol	CH_3OH	
Methyl Ethyl Ketone	$\text{CH}_3\text{COC}_2\text{H}_5$	
Mineral Oil	Light Hydrocarbons	
Molybdenum	Mo	
Nickel	Ni	
Nitric Acid	HNO_3	
Oxalic Acid	$\text{HO}_2\text{CCO}_2\text{H} \cdot 2\text{H}_2\text{O}$	
Perchloric Acid	HClO_4	
Platinum	Pt	
Potassium Hydroxide	KOH	
Potassium Permanganate	KMnO_4	

**Table 33. Building 327: Post-Irradiation Testing Laboratory
(1953-1976). (Sheet 2 of 2)**

Compound name	Formula	Comments
Potassium Oxide	K ₂ O	
Silver	Ag	
Silicon	Si	Fuel element constituent
Sodium Hydroxide	NaOH	
Sodium Phosphate	Na ₃ PO ₄	
Stainless Steel	FeNiCr	Fuel element constituent
Sulfuric Acid	H ₂ SO ₄	
Tantalum	Ta	
Trichloroethane	CH ₃ CCl ₃	
Toluene	C ₆ H ₅ CH ₃	
Xylene	C ₆ H ₄ (CH ₃) ₂	
Zirconium	Zr	Fuel element constituent

**Table 34. Building 329: Radiochemical Laboratory
(1952-1976). (Sheet 1 of 3)**

Compound name	Formula	Comments
Acetone	$\text{CH}_3\text{C}_2\text{OH}_3$	
Aluminum Nitrate Nonahydrate	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	
Ammonium Acetate	$\text{NH}_4\text{C}_2\text{H}_3\text{O}$	
Ammonium Chloride	NH_4Cl	
Ammonium Hydroxide	NH_4OH	
Ammonium Molybdate	$(\text{NH}_4)_2\text{MoO}_4$	
Ammonium Nitrate	NH_4NO_3	
Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4$	
Ammonium Sulfite	NH_4HS	
Ammonium Thiocyanate	NH_4CNS	
Ammonium Thiosulfate	$(\text{NH}_4)_2\text{S}_2\text{O}_3$	
Antimony Chloride	SbCl_3	
Antimony Nitrate	$\text{Sb}(\text{NO}_3)_3$	
Arsenic Trioxide	As_2O_3	
Benzene	C_6H_6	
Boric Acid	H_3BO_3	
Carbon Tetrachloride	CCl_4	
Cerous Nitrate	$\text{Ce}(\text{NO}_3)_3$	
Cesium Chloride	CsCl	
Cesium Nitrate	CsNO_3	
Ethanol	$\text{CH}_3\text{CH}_2\text{OH}$	
Ferrous Sulfamate	$\text{Fe}(\text{SO}_3\text{NH}_2)_2$	
Ferrous Sulfate	FeSO_4	
Hydrazine	$\text{H}_2\text{NNH}_2 \cdot \text{H}_2\text{O}$	
Hydrobromic Acid	HBr	
Hydrochloric Acid	HCl	
Hydrofluoric Acid	HF	
Hydrogen Sulfide	H_2S	

**Table 34. Building 329: Radiochemical Laboratory
(1952-1976). (Sheet 2 of 3)**

Compound name	Formula	Comments
Hydroxylamine Hydrochloride	$\text{NH}_2\text{OH}\cdot\text{HCl}$	
Lanthanum Chloride	LaCl_3	
Lanthanum Nitrate	$\text{La}(\text{NO}_3)_3$	
Lead Nitrate	$\text{Pb}(\text{NO}_3)_2$	
Mandelic Acid	$\text{C}_6\text{H}_5\text{CHOHCO}_2\text{H}$	
Mercury	Hg	
Neodymium Chloride	NdCl_3	
Neodymium Nitrate	$\text{Nd}(\text{NO}_3)_3$	
Nitric Acid	HNO_3	
Perchloric Acid	HClO_4	
Phosphoric Acid	H_3PO_4	
Potassium Bisulfite	$\text{K}_2\text{S}_2\text{O}_5$	
Potassium Cyanide	KCN	
Potassium Dichromate	$\text{K}_2\text{Cr}_2\text{O}_7$	
Potassium Ferricyanide	$\text{K}_3\text{Fe}(\text{CN})_6$	
Potassium Ferrocyanide	$\text{K}_4\text{Fe}(\text{CN})_6\cdot 3\text{H}_2\text{O}$	
Potassium Permanganate	KMnO_4	
Potassium Persulfate	$\text{K}_2\text{S}_2\text{O}_8$	
Praseodymium Chloride	PrCl_3	
Praseodymium Nitrate	$\text{Pr}(\text{NO}_3)_3$	
Selenium Chloride	SeCl_4	
Selenium Nitrate	$\text{Se}(\text{NO}_3)_4$	
Silico Tungstic Acid	$\text{H}_4[\text{Si}(\text{W}_3\text{O}_{10})_4]\cdot 26\text{H}_2\text{O}$	
Silver Chloride	AgCl	
Silver Nitrate	AgNO_3	
Sodium Acetate	$\text{NaC}_2\text{H}_3\text{O}_2$	
Sodium Bicarbonate	NaHCO_3	
Sodium Bismuthate	NaBiO_3	
Sodium Carbonate	Na_2CO_3	

**Table 34. Building 329: Radiochemical Laboratory
(1952-1976). (Sheet 3 of 3)**

Compound name	Formula	Comments
Sodium Hydroxide	NaOH	
Sodium Hypochlorite	NaOCl	
Sodium Iodide	NaI	
Sodium Nitrate	NaNO ₃	
Sodium Sulfide	Na ₂ S	
Sodium Thiocyanate	NaSCN	
Sodium Thiosulfate	Na ₂ S ₂ O ₃	
Strontium Chloride	SrCl ₂	
Strontium Nitrate	Sr(NO ₃) ₂	
Sulfuric Acid	H ₂ SO ₄	
Thorium Chloride	ThCl ₄	
Thorium Nitrate	Th(NO ₃) ₄	
Tin Chloride	SnCl ₄	
Tin Nitrate	Sn(NO ₃) ₄	
Toluene	C ₆ H ₅ CH ₃	
Xylene	C ₆ H ₄ (CH ₃) ₂	
Zinc Chloride	ZnCl ₂	
Zinc Nitrate	Zn(NO ₃) ₂	

Table 35. Building 340: Radioactive Liquid Waste Storage and Railcar Loadout Facility (1950-1976).

Compound name	Formula	Comments
Sodium Hydroxide	NaOH	
Sodium Nitrite	NaNO ₂	

Table 36. Glossary of Product Names. (Sheet 1 of 3)

Product name	Company
Amberlite XE-270	Rahom and Hass
American Cyanamid S4058 Floc	American Cyanamid
Antifoam 60	General Electric
Arseno III	Hatch Company
Clayton Kerful Kleaner	Clayton Manufacturing Company
Diversy Chemical 159	Not Available
Dow N-20 Floc	Dow Corning Corporation
Dow XD 7889 Floc	Dow Corning Corporation
Dow Antifoam B	Dow Corning Corporation
Dowex 21K	Dow Chemical
Dowex 50	Dow Chemical
Duolite ARC-359	Diamond Shamrock Chemical Company
Hyflo-Super-Cel	Manville Bulding Materials Corporation
Immunuol 1468-2	Harry Miller Corporation
Ionac A-580	Ionac Chemical Corporation
Jasco Paint Stripper	Jasco Chemical Corporation
Kelite 25E	Kelite Corporation
Keraff	Not Available
Kleeno Bowl	Penetone Corporation
Mistron	Cyprus Minerals Corporation
Oakite Clear Guard	Oakite Products Incorporated
Oakite LSD	Oakite Products Incorporated
Oakite Rust Stripper	Oakite Products Incorporated
Oakite Swiff	Oakite Products Incorporated
Orvus K	Procter and Gamble
Saf-Tee Solvent F.O. 128	Not Available
Sani-Flush	Boyle Midway Incorporated
Sparton DC 13	Not Available
Shell Spray Base	Shell Oil Company
Shell E-2342	Shell Oil Company

Table 36. Glossary of Product Names. (Sheet 2 of 3)

Product name	Company
Soltrol - 170	Phillips Chemical Company
Pace - S - Teen	Not Available
Penvert 192	Not Available
Permutit SK	Ionac Chemical Corporation
Perokleen	Not Available
Spic and Span	Procter and Gamble
Tide	Procter and Gamble
Turco Fabrifilm	Turco Products Incorporated
Turco EPO Strip	Turco Products Incorporated
Turco EPO Strip NP	Turco Products Incorporated
Turco 2822	Turco Products Incorporated
Turco 2844	Turco Products Incorporated
Turco 4306 B,C,&D	Turco Products Incorporated
Turco 4358-4A	Turco Products Incorporated
Turco 4501 A	Turco Products Incorporated
Turco 4502 D	Turco Products Incorporated
Turco 4512 A	Turco Products Incorporated
Turco 4518	Turco Products Incorporated
Turco 4605-8	Turco Products Incorporated
Turco 4669	Turco Products Incorporated
Turco 4715	Turco Products Incorporated
Turco 4738 (Thin)	Turco Products Incorporated
Turco T-5561	Turco Products Incorporated
Turco T-5589	Turco Products Incorporated
Turco Alkaline (Rust Remover)	Turco Products Incorporated
Turco Deseal Zit 2	Turco Products Incorporated
Turco Plaudit	Turco Products Incorporated
West Loade Degreaser	West Chemical Products

Table 36. Glossary of Product Names. (Sheet 3 of 3)

Product name	Company
Wyandotte Kelvar	Wyandotte Chemical Products
Wyandotte MF	Wyandotte Chemical Products
Wyandotte P1075	Wyandotte Chemical Products
Wyandotte 1112	Wyandotte Chemical Products
Zelon 900	Norton Company
Zeolite AW-500	Union Carbide Corporation

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