

## Appendix E

# Acronyms and Glossary

---

### *Acronyms*

ACGIH	—American Conference of Governmental Industrial Hygienists	FS	—Feasibility Study
ACLs	—Alternative Concentration Limits	FTE	—Full-time equivalent
ADSs	—Activities Data Sheets	FY	—Fiscal year
AEA	—Atomic Energy Act	GAO	—General Accounting Office
AEC	—Atomic Energy Commission	HA	—Health assessment
AIP	—Agreement in Principle	HAZWRAP	—Hazardous Waste Remedial Action Program (in the Department of Energy)
AL	—Albuquerque Operations Office	HEDRP	—Hanford Environmental Dose Reconstruction Project
ALARA	—As low as reasonably achievable	HHS	—Department of Health and Human Services
ARAR	—Applicable or relevant and appropriate requirement	HLW	—High-level waste
ATSDR	—Agency for Toxic Substances and Disease Registry	HRS	—Hazard Ranking System
BMAP	—Biological Monitoring and Abatement Program	HSWA	—Hazardous and Solid Waste Amendments
CDC	—Centers for Disease Control	IAG	—Interagency Agreement
CEARP	—Comprehensive Environmental Assessment and Response Program	ICPP	—Idaho Chemical Processing Plant
CEDR	—Comprehensive Epidemiologic Data Resource	ICRP	—International Commission on Radiological Protection
CEHIC	—Center for Environmental Health and Injury Control of the Centers for Disease Control	INEL	—Idaho National Engineering Laboratory
CERCLA	—Comprehensive Environmental Response, Compensation, and Liability Act	ISV	—In situ vitrification
CFR	—Code of Federal Regulations	LANL	—Los Alamos National Laboratory
CMS	—RCRA Corrective Measures Study	LDR	—Land-disposal restrictions
COCA	—Consent Order and Compliance Agreement	LLNL	—Lawrence Livermore National Laboratory
CORA	—Cost of Remedial Action	LLW	—Low-level waste
D&D	—Decontamination and decommissioning	MCL	—Maximum contaminant level
DHS	—Department of Health Services (California)	MEPAS	—Multimedia Environmental Pollutant Assessment System
DOE	—Department of Energy	MOU	—Memorandum of Understanding
DWPF	—Defense Waste Processing Facility	NEPA	—National Environmental Policy Act
EIS	—Environmental Impact Statement	NESHAPS	—National Emission Standards for Hazardous Air Pollutants
EM-CAT	—Environmental Restoration and Waste Management Cost Assessment Team	NIEHS	—National Institute for Environmental Health Science
EP	—Extraction Procedure	NIOSH	—National Institute of Occupational Safety and Health
EPA	—Environmental Protection Agency	NPDES	—National Pollutant Discharge Elimination System
ER	—Environmental restoration	NPL	—National Priorities List
ERG	—External Review Group for the Department of Energy's Priority System	NRC	—Nuclear Regulatory Commission
ESD	—Environmental Sciences Division at Oak Ridge National Laboratory	NRDC	—Natural Resources Defense Council
ES&H	—Environmental Safety and Health	NTS	—Nevada Test Site
FDA	—Food and Drug Administration	NWC	—Nuclear Weapons Complex
FDER	—Florida Department of Environmental Restoration	OMB	—Office of Management and Budget
FEA	—Federal Facility Agreement	ORNL	—Oak Ridge National Laboratory
FFCA	—Federal Facility Compliance Agreement	ORR	—Oak Ridge Reservation
FMPc	—Feed Materials Production Center (Fernald)	OSHA	—Occupational Safety and Health Administration
		OTA	—Office of Technology Assessment
		OTD	—Office of Technology Development (in the Department of Energy)
		OU	—Operable unit
		PA	—Preliminary Assessment

PA/SI	—Preliminary Assessment/Site Inspection
PCBs	—Polychlorinated biphenyls
PEIS	—Programmatic Environmental Impact Statement
PEL	—Permissible Exposure Limit
PNL	—Pacific Northwest Laboratory
POTW	—Publicly Owned Treatment Works
PUREX	—Plutonium and Uranium Extraction Facility
QRA	—Quantitative Risk Assessment
RCRA	—Resource Conservation and Recovery Act
R&D	—Research and development
RDDT&E	—Research, development, demonstration, testing, and evaluation
RFA	—RCRA Facility Assessment
RFA/YSI	—RCRA Facility Assessment/Visual Site Inspection
RFI	—RCRA Facility Investigation
RFI/RI	—RCRA Facility Investigation/Remedial Investigation
RI	—Remedial Investigation
RI/FS	—Remedial Investigation/Feasibility Study
RL	—Richland Operations Office
RMW	—Radioactive mixed waste
ROD	—Record of Decision
RRACES	—Remedial Response Construction Cost Estimation System
RWQCB	—Regional Water Quality Control Board (California)
SARA	—Superfund Amendments and Reauthorization Act
SCDHEC	—South Carolina Department of Health and Environmental Control
SDWA	—Safe Drinking Water Act
SEIS	—Supplemental Environmental Impact Statement
SI	—Site inspection
SITE	—Superfund Innovative Technology Evaluation
SPEERA	—Secretarial Panel for the Evaluation of Epidemiologic Research Activities for the U.S. Department of Energy
SREL	—Savannah River Ecology Laboratory
SRL	—Savannah River Laboratory
SR	—Savannah River Operations Office
SRS	—Savannah River Site
SWMU	—Solid Waste Management Unit
SWSA	—Solid Waste Storage Areas
TCE	—Trichloroethylene
TDHE	—Tennessee Department of Health and Environment
TLV	—Threshold Limit Value
TPA	—Tri-party agreement
TRU	—Transuranic
TSD	—Treatment, storage, and disposal
U.S.C.	—U.S. Code

U.S.C.A.	—U.S. Code Annotated
VOCs	—Volatile organic compounds
VSI	—Visual Site Inspection
WDOE	—Washington (State) Department of Ecology
WIPP	—Waste Isolation Pilot Plant
WSRC	—Westinghouse Savannah River Co.
WVDP	—West Vally Demonstration Project
Y-12	—Oak Ridge Y-12 Plant

## Glossary

**Bioremediation**—Techniques using biological processes to treat contaminated soil or groundwater. Bioremediation can occur either in situ or in bioreactors where contaminated media are placed in contact with organisms to degrade the contaminants in a controlled environment. Generally, the technique involves stimulating organisms by adding materials such as nutrients or oxygen to increase the rate of biodegradation.

**CERCLA Remedial Investigation**—Investigation(s) under CERCLA for locating, identifying, and evaluating the nature and extent of contamination from hazardous waste that has migrated on or from a site. It currently involves drilling wells, collecting and analyzing samples, modeling contaminant migration, and other activities necessary to gather site-specific information for the Feasibility Study.

**Certificate of Compliance**—Certificate granted by the Nuclear Regulatory Commission certifying that a prototype of DOE's TRUPAC-II radioactive waste transport containers has passed its review and testing for "normal" and "hypothetical" accident conditions.

**Characterization**—Site sampling, monitoring, and analysis to determine the extent and nature of releases. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

**Compliance Agreements**—Agreements between regulatory agencies and regulated parties setting standards and schedules for compliance with environmental laws. These agreements are legally binding and include Consent Order and Compliance Agreements, Federal Facilities Agreements, and Federal Facilities Compliance Agreements.

**Compliance Order and Consent Agreement**—*See* Compliance Agreements.

**Corrective Action Order**—Actions under RCRA that require a permitted facility to correct the release(s) of hazardous waste or constituents from a hazardous waste management unit. A Corrective Action Order can suspend or revoke the authority to operate a treatment, storage, or disposal facility, or seek appropriate relief (including an injunction) from a U.S. district court.

**Corrective Measures Study**—Study conducted to identify, evaluate, and recommend measures required to

- correct the release(s) identified in the RCRA Facility Investigation phase.
- Curie**—The amount of radiation emitted from 1 gram of Radium, equal to 37 billion decays per second. Curie (abbreviated as Ci) is used to measure the amount of material present, and does not express the quantity of radiation given off, nor the biological hazards involved, and is of limited use in measuring biological effects. A replacement measure in more common use in science today is the becquerel (Bq).  $1 \text{ Bq} = 2.7 \times 10^{-11} \text{ Ci}$ .
- Decommissioning**—Process of removing a facility from operation.
- Decontamination**—Removal of unwanted radioactive material from plants, soil, or equipment by chemical or mechanical processes or other techniques.
- Deep Geologic Repository**—Subterranean mined facility for the disposal of radioactive waste that employs natural geologic barriers to contain the waste over geological time scales.
- DOE Orders**—Internal DOE agency requirements establishing policy and procedures for compliance with applicable laws and regulations.
- Environmental Characterization**—*See Site Characterization.*
- Environmental Impact Statements**—A study prepared in accordance with the National Environmental Policy Act which evaluates and compares the environmental consequences of a proposed major action, such as the construction of a new facility, and other alternatives to that action. The conclusion of an environmental impact statement is usually a record of decision to select the preferred alternative.
- Environmental Restoration**—Cleaning up and restoring of sites contaminated with hazardous substances.
- Epidemiology**—Study of the distribution and determinants of diseases and injuries in human populations.
- Feasibility Study**—A phase of the CERCLA remedial process designed to develop, screen, and evaluate remedial action alternatives to correct or prevent the migration of contaminants from a site. Often, the Feasibility Study is conducted concurrently with the Remedial Investigation.
- Federal Facility Agreement**—*See Compliance Agreements.*
- Five-Year Plan**—U.S. Department of Energy, Environmental Restoration and Waste Management Five-Year Plan. DOE's yearly budget planning process and action plans for its activities in waste management and environmental restoration.
- French Drain**—A system of trenches excavated to a depth below the water table with the possible placement of a collection pipe in the bottom of the trench. Drains are generally used either to lower the water table beneath a contamination source or to collect groundwater from an up gradient source in order to prevent leachate from reaching uncontaminated wells or surface water.
- Groundwater**—Water occurring beneath the earth's surface that supplies wells and springs.
- Hazardous Waste**—As defined in the Resource Conservation and Recovery Act, a solid waste, or combination of solid wastes, that because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating reversible illness or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Hazardous wastes may be listed or characteristic.
- Hazard Ranking System**—A computer model designed to aid EPA in determining a waste site's eligibility for placement on the National Priorities List. It includes an evaluation of the dangers determined at a particular site. The current system is undergoing revisions to incorporate further refinements.
- High-Level Waste**—The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.
- Interagency Agreement (IAG)**—Document in which two or more government agencies agree to cooperate.
- Interim Status**—Temporary permit condition that allows hazardous waste management facilities seeking a RCRA permit to continue operating until a final decision is made by EPA or the State to approve or deny the facility permit request.
- Land Disposal Restrictions (LDRs)**—Provisions of Hazardous and Solid Waste Amendments that require treatment of hazardous waste before disposal.
- Low-Level Waste**—Radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or byproduct material.
- Memorandum of Understanding**—Document stating the terms of agreement between two agencies.
- Mixed Waste**—Waste containing both radioactive and hazardous components, as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.
- Most Exposed Individual**—An exposure component sometimes used in risk assessment calculation to identify individuals at greatest risk from a given hazard.
- Multiattribute Utility Analysis**—A mathematical algorithm designed to aid in the selection of choices with multiple and sometimes conflicting objectives. Through the assignment of different values to the

objectives, the algorithm selects the choice that can satisfy the most objectives at the same time. It is the basis of DOE's priority system.

**National Capacity Variance**—EPA determination that extends the effective date of certain Land Disposal Restrictions and allows continued land disposal of wastes known to contain constituents that: 1) exhibit RCRA defined hazardous characteristics, or 2) are prohibited from land disposal. Granting of a National Capacity Variance is primarily triggered by the unavailability of either treatment capacity or treatment technology to render such waste nonhazardous.

**National Priorities List**—Listing of the nation's worst hazardous waste sites requiring cleanup, as established by CERCLA.

**No-Migration Variance Petition**—Petition filed by a hazardous waste management facility to be exempted from Land Disposal Restrictions established under RCRA. In general, the facility operator must successfully demonstrate that hazardous waste will not migrate from the proposed disposal area as long as such waste is considered hazardous under RCRA. Prior to final EPA approval, no-migration petitions must be subjected to public comment.

**Nuclear Weapons Complex**—Major facilities involved in the production and testing of nuclear weapons, operating under Department of Energy Defense Programs.

**Operable Unit**—Discrete area consisting of one to many release sites grouped together for purposes of assessment and cleanup. The primary criteria for placement of release sites into an operable unit include geographic proximity, similarity of waste characteristics and site type, and the possibilities for economy of scale.

**Polychlorinated Biphenyls**—A group of commercially produced organic compounds used since the 1940s in industrial applications, most notably as the dielectric material for large transformers and capacitors. Their toxicity has been documented in laboratory animals as well as humans, and they have been listed as hazardous wastes by the EPA.

**Preliminary Assessment**—Phase of CERCLA process used to determine whether a site has contaminated, or has the potential to contaminate the environment.

**Pump and Treat**—Groundwater remediation technique involving the extraction of contaminated groundwater from the subsurface to remove contaminants and subsequent return of the treated water to its source.

**Quantitative Risk Assessment**—A methodology to evaluate the extent of human exposure to environmental contaminants with potential health effects, in the face of incomplete knowledge of the molecular mechanisms that lead to disease. Quantitative risk assessments quantify the hazards associated with a particular pollutant under specific conditions of expo-

sure, the result is a calculation that relates a contaminant's known chemical characteristics, toxicological behavior, and conditions of exposure to the probable incidence of the adverse effect under consideration in a given population.

**RCRA Facility Investigation (RFI)**—Process of determining the extent of hazardous waste contamination.

**Radioactive Waste—Solid, liquid, or gaseous material** resulting from weapons production that contains radionuclides in excess of threshold quantities.

**Radionuclide**—Certain natural and manmade atomic species with unstable nuclei that can undergo spontaneous breakup or decay, and in the process, emit Alpha (helium nuclei), Beta (fast electron streams) particles, and Gamma rays (short X-rays), collectively known as radiation.

**Record of Decision (ROD)**—Document under CERCLA used to select the remedial action to be implemented at a site after the Feasibility Study is completed.

**Remedial Action**—Phase of the remedial process designed to implement the Remedial Action Plan as required by CERCLA and EPA-developed Superfund guidance.

**Remedial Investigation (RI)**—Process under CERCLA for determining the extent of hazardous substance contamination and conducting treatability investigations. This provides site-specific information for the Feasibility Study.

**Remediation**—Process of applying a chosen technique or process to correct an environmental problem.

**Site Characterization—Technical** process used to evaluate the nature and extent of environmental contamination, which is necessary for designing of remediation measures and monitoring their effectiveness.

**Site Inspection**—Inspection conducted after the Preliminary Assessment to evaluate the extent of contaminants release at a site and the level of risk to human health or the environment posed by that release to determine whether it meets the criteria for CERCLA remedial action.

**Soil Stabilization—Techniques** to prevent soil from moving or eroding. Measures primarily include using surface water controls such as changing the contour of the land to alter runoff or run on characteristics of the site; providing a cover barrier to infiltration by reducing the permeability of the land surface through surface sealing or capping; and vegetating the site to hold soil in place, increase evaporation, and decrease infiltration.

**Stakeholders' Forum**—DOE meeting to review and discuss its "Predecisional Draft" of the 1990 Five-Year Plan for cleanup at the Weapons Complex. Invited participants in the 2-day forum were mainly from affected States, Indian Nations, Government

agencies, and environmental, labor, and industry groups.

**Superfund**—Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

**Tiger Team**—Teams created by Secretarial initiative consisting of DOE and contractor specialists and Occupational Safety and Health Administration compliance officers to evaluate Environmental Safety and Health programs at the Weapons Complex for compliance with DOE Orders, and existing laws and regulations.

**Transuranic Waste**—Waste that is contaminated with alpha-emitting transuranium nuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram of waste.

**Tri-Cities Region**—Area including Richland, Pasco, and Kennewick, WA, situated close to the Hanford Reservation.

**Tri-Party Agreement**—An Interagency Agreement among EPA, DOE and the State.

**Vitrification**—Process of immobilizing waste by producing a glasslike solid in which radioactive materials are permanently embedded.

**Volatile Organic Compounds**—A group of commercially produced carbon compounds that have the ability to evaporate rapidly at ambient temperatures. They are commonly used as industrial solvents in enormous quantities throughout the Weapons Complex in chemical separation processes and degreasing operations. Eight have been listed for regulation by the EPA, including trichloroethylene, tetrachloroethylene (known animal carcinogens), vinyl chloride, and benzene (known human carcinogens).

**Waste Management**—All activities associated with the disposition of waste products after they have been generated, as well as actions to minimize the production of wastes. DOE has defined waste management to include waste storage, treatment, and disposal (but not transportation), and the term is used interchangeably with “waste operations” in DOE’s planning documents.

**Waste Minimization**—Reduction, to the extent possible, of the volume and/or toxicity of hazardous or radioactive waste prior to its treatment, storage, or disposal.

**Weapons Complex**—*See* Nuclear Weapons Complex.