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Absorption: The penetration of substances into the bulk of a solid or liquid.

Accelerated cleanup: An action taken at a site ahead of the ER Project prioritized, planned schedule. Accelerated actions may include removal, protection, hardening, installation of best management practices, or collection of characterization data. Accelerated actions may or may not be a final remedy for the site.

Active site: An area that is currently used as a landfill or other waste disposal area.

Administrative Authority: The federal or state agency that reviews and approves the corrective action process for each PRS at the Laboratory. The New Mexico Environment Department (NMED) is the administrative authority for PRSs that are contaminated by hazardous chemicals and therefore are listed on the Laboratory's RCRA Hazardous Waste Facility permit. The Department of Energy (DOE) provides oversight for PRSs with radiological contamination.

Adsorption: The surface retention of solid, liquid, or gas molecules, atoms, or ions by a solid or liquid.

Aggregate: Physical delineation within a watershed that is used for grouping contaminated sites for the purposes of planning and implementing the Laboratory's ER Project corrective action process in a more efficient and systems-oriented manner.

Alpha radiation: Radiation composed of alpha particles emitted during the radioactive decay of certain nuclides. The least penetrating of the three common types of radiation (alpha, beta, and gamma), alpha radiation can be blocked easily (for example by a sheet of paper or the outer layer of skin).

General
 (LANL ER Project Web Page Glossary)





Area of concern (AOC): An area at the Laboratory known, or suspected, to be contaminated with radionuclides but not contaminated by hazardous chemicals or hazardous waste.

Background level: The naturally occurring levels of an inorganic chemical or naturally occurring radionuclides in soil, sediment, and tuff.

Barium (Ba): <http://pearl1.lanl.gov/periodic/>

Barrier: Any material or structure that prevents or substantially delays movement of solid-, liquid-, or gaseous-phase chemicals in environmental media.

Best management practice (BMP): For facilities that manufacture, use, store, or discharge toxic or hazardous pollutants as defined by the 1977 Clean Water Act, a required program to control the potential spill or release of those materials to surface waters.

Beta radiation: Radioactive transformation of a nuclide in which the nucleus emits a beta particle (electron or positron). Beta radiation can be blocked by an inch of wood or by a thin sheet of aluminum.

Cesium-137 (Cs-137): <http://pearl1.lanl.gov/periodic/>

Characterization, characterization process: See **site characterization**

Chemical: Any naturally occurring or man-made substance characterized by a definite molecular composition, including molecules that contain radionuclides.



Chemical of concern: Chemical identified as a potential risk during a site-specific, human-health, or ecological risk assessment.

Chemical of potential concern (COPC): Chemical, detected at a site, that has the potential to adversely affect human and/or ecological receptors due to its concentration, distribution, and mechanism of toxicity. A COPC remains a concern until exposure pathways and receptors are evaluated in a site-specific risk assessment.

Chemical of potential ecological concern (COPEC): A chemical, detected at a site, that has the potential to adversely affect ecological receptors due to its concentration, distribution, and mechanism of toxicity.

Cleanup: Any action that physically removes or treats a hazardous substance that threatens or potentially threatens human health and welfare and the environment. Cleanup actions may include covering and containing a source of contamination to prevent its spread, placing controls on future land use, and excavating and/or treating the contamination source.

Cleanup levels: Media-specific contaminant concentration levels that must be met by a

selected corrective action. Cleanup levels are established by using criteria such as protection of human health and the environment; compliance with regulatory requirements; reduction of toxicity, mobility, or volume through treatment; long- and short-term effectiveness; implementability; cost; and public acceptance.

Constituent: Any compound or element present in environmental media, including both naturally occurring and man-made elements.



Contaminant: Any chemical (including radionuclides) present in environmental media or on structural debris at a concentration that may present a risk to human health or the environment.

Contamination: Substances introduced into the environment as a result of people's activities, regardless of whether the concentration is a threat to health (see pollution).

Controlled area or property: Laboratory area to which access is controlled to protect individuals from exposure to radiation and/or hazardous materials.

Corrective action: An action taken to rectify conditions adverse to human health or the environment. Corrective actions are considered complete at a site when

- The ER Project has demonstrated and documented that the site either poses no risk to humans and ecological receptors or that the risk is acceptable, or that a final remedy has been evaluated, selected, and implemented to reduce or eliminate risk, and
- The administrative authority has concurred.

Corrective action process: One or more of a series of activities (initial site assessment, site characterization, interim actions, evaluation of remedial alternatives, and implementation of selected remedy); also refers to RCRA facility assessments, RFIs, corrective measures studies, and corrective measures implementations.

Corrective measures study (CMS): A study to assess risks (from a release) to human health, the environment, costs, and other factors (such as disposal methods) in a given area. If a RCRA facility investigation indicates further action is required, a CMS is performed to identify and evaluate cleanup alternatives.



Corrective measures implementation (CMI): The third step of the RCRA correction-action process. It includes design, construction, maintenance, and monitoring of the chosen remedy.

Cumulative risk: Risk that integrates multiple sources, effects, pathways, and contaminants through common human and ecological receptors, points of compliance, and/or times of compliance.

Detection limit: Minimum concentration that can be determined by a single measurement by an instrument; implies a specified statistical confidence that the analytical concentration

is greater than zero.

Discharge (as defined under RCRA, 40 CFR 260.10): Accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal: Discharging, depositing, injecting, dumping, spilling, leaking, or placing any solid waste or hazardous waste into or on any land or water so that such solid or hazardous waste, or any constituent thereof, may enter the environment, be emitted into the air, or discharged into any waters, including groundwaters.

Effluent: Liquid discharged as a waste, such as contaminated water from a factory or the outflow from a sewage works; water discharged from a storm sewer or from land after irrigation.

Environmental surveillance: Collection and analysis of samples of air, water, soil, foodstuffs, biota, and other media to determine the environmental quality of an industry or community. Environmental surveillance commonly is performed at sites that contain nuclear facilities.



Erosion: Wearing away the land surface by natural agents such as moving water, wind, organisms, and gravity that involved the transport of rock debris.

Exposure pathway: An exposure pathway outlines the route a contaminant may follow to reach humans. Contaminants may enter the local environment by air or water and pass through soil, plants, livestock, or wildlife, ultimately reaching humans through inhalation (breathing), ingestion (eating and drinking) or adsorption through skin or wounds.

Gamma radiation: A form of electromagnetic, high-energy radiation emitted from a nucleus. Gamma rays are essentially the same as e-rays and require heavy shielding, such as concrete or steel, to be blocked.

Groundwater: Water found beneath the surface of the ground. Groundwater usually refers to a zone of complete water saturation containing no air.

Hazardous waste (as defined by RCRA 40 CFR261.3): Any solid waste is generally a hazardous waste if it

- Is not excluded from regulation as a hazardous waste;
- Is listed in the regulations as a hazardous waste;
- Exhibits any of the defined characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity); or
- Is a mixture of solid waste and hazardous waste.

Although the legal definition of hazardous waste is complex, the term generally refers to any waste that the EPA believes could pose a threat to human health and the environment if managed improperly.

Hazardous and Solid Waste Amendments (HSWA) Module: Module VIII of the Laboratory's RCRA Hazardous Waste Facility Permit. The permit allows the Laboratory to operate as a treatment, storage, and disposal facility. Module VIII regulates the cleanup of inactive sites and the activities of the ER Project for those PRSs listed on the permit.

High-explosives (HE): The three most common high explosive substances found at the Laboratory are RDX (Royal Demolition eXplosive), TNT (2,4,6-nitrotoluene), and HMX (High Melting eXplosive). These highly explosive materials do not occur naturally in the environment and are all used in making military shells, bombs, and grenades. Exposures to these materials are rare because they are generally used in controlled areas. People can be exposed to these chemicals by breathing dust contaminated with the materials, getting it on their skin, or drinking contaminated water.

- RDX can cause seizures, nausea, and vomiting. It may be a human carcinogen.
- TNT may cause anemia and abnormal liver function, spleen enlargement, and harmful effects on the immune system. It is a possible human carcinogen.
- HMX has no known harmful health effects. The EPA has not determined whether it is a human carcinogen.

Inactive site: Waste disposal sites that are no longer being operated.

Inorganic chemical: Compounds of elements other than carbon such as hexavalent chromium (the form of chromium in a valence state of +6).

Interim measures: Those activities used to control or lessen ongoing risks to human health or the environment in advance of a final cleanup solution. The actions used to achieve the goal of stabilization at contaminated sites that present serious and immediate health hazards.

In situ stabilization: A cleanup strategy that leaves the contaminants in place but unable to migrate or be released into the environment.

Institutional controls: Controls prohibiting or limiting access to contaminated media; may consist of deed restrictions, use restrictions, permitting requirements, etc.

Long-term surveillance and monitoring: Collecting periodic measurements over time to assess status and trends.

Long-term maintenance: Maintaining the conditions and assumptions under which risk-based decisions were made.

Material disposal area (MDA): An area used any time between the beginning of Laboratory operations in the early 1940s and the present for disposing of chemically and/or radioactively contaminated materials.

Media/medium (environmental): Any material capable of absorbing or transporting constituents including tuffs, soils and sediments derived from these tuffs, surface water,

groundwater, air, structural surfaces, and debris.

Nature and extent of contamination: The "nature" of contamination is the chemicals (naturally occurring or man-made) present in or that have been released to the environment and are determined by detection of a chemical in one or more environmental samples. In the case of naturally occurring or widespread man-made chemicals, detection is determined by comparison to background levels. The "extent" of contamination means how much of a given chemical is present in the environment and is determined by comparison to site baseline values, if applicable, and/or analysis of trends in the data.



No further action (NFA): A decision that no further investigation or remediation is warranted for a PRS, based on risk levels for residential use, recreational use, or industrial use. NFA recommendations are based on one or more of the following criteria:

- The site does not exist, is a duplicate of another site, cannot be located, or is located within another site and has been or will be investigated as part of that site
- The site was never used for the management (i.e., generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.
- The site is not known to have released nor is it suspected of releasing or having released RCRA solid or hazardous wastes and/or constituents to the environment.
- The site is regulated under another state and/or federal authority. If the site is known to have released or is suspected of releasing or having released RCRA solid or hazardous wastes and/or constituents to the environment, it has been or will be investigated and/or cleaned up in accordance with applicable state and/or federal regulations.
- The site was characterized or cleaned up in accordance with current applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk, assuming current and projected future land use.

Notice of deficiency (NOD): A notice issued to DOE and the Laboratory by the administrative authority which states that some aspect(s) of a plan, report, or application does not meet their requirements or that requires clarification or correction.

Organic chemical: Compound of elements that contains carbon such as carbon dioxide.

Outfall: The vent or end of a drain, pipe, sewer, ditch, or other conduit that carries wastewater, sewage, storm runoff, or other effluent into a stream.



Permit modification: A request by either the permittee or the administrative authority to change a condition of the Laboratory's RCRA Hazardous Waste Facility permit.

Plutonium (Pu): <http://pearl1.lanl.gov/periodic/>

Pollutant: Any substance, produced and released into the environment as a result of human activity, that has damaging effects on humans or ecological receptors.

Polychlorinated biphenyls (PCB): PCBs are either oily liquids or solids and are colorless to light yellow in color. They have no known smell or taste. There are no known natural sources of PCB. These mixtures of individual chemicals are no longer produced in the US but are still found in the environment. They are chemically, electrically, and thermally stable and are found in old fluorescent lighting fixtures, electrical appliances containing PCB capacitors, old microscope oil, and hydraulic fluids. People exposed to PCB in the air for a long time have experienced irritation of the nose, lungs, and skin. It is not known if PCBs cause birth defects or reproductive problems in people. The US Department of Health and Human Services has determined that PCB may reasonably be anticipated to be carcinogens.

Potential release site (PRS): A site suspected of releasing or having the potential to release contaminants into the environment. PRS is a generic term that includes solid waste management areas, hazardous waste sites listed in Module VIII of the Laboratory's Hazardous Waste Facility Permit, and areas of concern (sites that have been identified as potentially contaminated by radioactivity).

Preliminary remediation goal (PRG): Acceptable exposure levels, protective of human health and the environment that are used as a risk-based tool for evaluating remedial alternatives.



Preliminary risk assessment: A risk assessment conducted using conservative assumptions and scenarios and assuming no mitigating or corrective measures beyond those already in place.

Radiation: Energy emitted in the form of rays or particles that are thrown off by disintegrating atoms. The rays or particles emitted may consist of neutrons, positrons, alpha particles, beta particles, or gamma radiation.

Radionuclide: A nuclide (species of atom) capable of spontaneous transformation into other nuclides through changes in its nuclear configuration or energy level. This transformation is accompanied by the emission of photons or particles.

Receptor: A person, plant, animal, or geographical location that is exposed to a chemical or physical agent released to the environment by human activities.

Release: Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles that contain any hazardous substance, pollutant or contaminant).

Remediation: The process of reducing the concentration of a contaminant (or contaminants) in air, water, or soil media to a level that poses an acceptable risk to human health; the act of restoring a contaminated area to a usable condition based on specified standards. Also see **Cleanup**.

Remedy or remedial action: Those actions consistent with permanent remedy instead of or in addition to removal actions in the event of a release or threatened release of a hazardous

substance into the environment. Those actions used to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare of the environment.



Remove or removal: The cleanup or removal of released hazardous substances from the environment.

Resource Conservation and Recovery Act (RCRA): The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (40 CFR 60.2). In RCRA, Congress established initial directives and guidelines for EPA to regulate hazardous wastes from generation to ultimate disposal.

RCRA Hazardous Waste Facility Permit: EPA or an authorized state issues RCRA permits to regulate the storage, treatment, and disposal of hazardous waste and the hazardous component of radioactive mixed waste. See also **HSWA Module**.

Risk: A measure of a negative or undesirable impact associated with an event.

Risk assessment: A site-specific analysis of the potential adverse effects of hazardous materials that are released from a site in the absence of any control or mitigation actions. Also called a baseline risk assessment.

Runoff: The portion of the precipitation on a drainage area that is discharged from the area either by sheet flow or adjacent stream channels.

Run-on: Surface water flowing onto an area as a result of runoff occurring higher up on the slope.

Scouring: The erosive force of moving water by removing debris.

Screening assessment: A process designed to determine whether contamination detected in a particular medium at a site may present a potentially unacceptable human-health and/or ecological risk. The assessment uses screening levels that are either human-health or ecologically based concentrations derived by using chemical-specific toxicity information and standardized exposure assumptions below which no additional actions are generally warranted.



Sediment: (1) A mass of fragmented inorganic solid that comes from the weathering of rock and is carried or dropped by air, water, gravity, or ice; or a mass that is accumulated by any other natural agent and that forms in layers on the earth's surface such as sand, gravel, silt, mud, fill, or loess. (2) A solid material that is not in solution and either is distributed through the liquid or has settled out of the liquid.

Site characterization: The process of defining the pathways and methods of migration of the hazardous waste or constituents, including the media affected, the extent, direction and speed of the contaminants, complicating factors influencing movement and concentration

profiles.

Site conceptual model: A qualitative or quantitative description of sources of contamination, environmental transport pathways for contamination, and biota that may be impacted by contamination (called receptors) and whose relationships describe qualitatively or quantitatively the release of contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of contaminant by the receptors. A site conceptual model is a three-dimensional picture of site conditions that conveys what is known or suspected about the sources, releases and release mechanisms; contaminant toxicity, mobility, and persistence; exposure pathways and potential receptors; and risks.

Soil erosion: The removal and thinning of the soil layer due to climatic and physical process such as high rainfall that is greatly accelerated by certain activities such as deforestation as after a fire.

Solid waste: Any garbage; refuse; sludge from a waste treatment plant, water-supply treatment plants, or air-pollution-control facility; and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities.



Solid waste management unit (SWMU): Any identifiable site at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically stored, such as waste tanks, septic tanks, firing sites, burn pits, sumps, landfills (material disposal areas), wastewater outfall areas, canyons around the Laboratory, and contaminated areas resulting from leaking product storage tanks (including petroleum).

Stakeholder: Any party or agency, whether inside or outside the Laboratory, interested in or affected by ER Project issues and activities.

Strontium-90 (Sr-90): <http://pearl1.lanl.gov/periodic/>

Surface water: No perennial surface water flows extend completely across the Laboratory in any canyon. Periodic natural surface runoff occurs in two modes:

1. Spring snowmelt runoff that occurs over days to weeks at a low discharge rate and sediment load, and
2. Summer runoff from thunderstorms that occurs over hours at a high discharge rate and sediment load.

The surface water within the Laboratory is not a source of municipal, industrial, or irrigation water, though wildlife does use the waters.

Technical Area (TA): Laboratory-established administrative units for its operations. There are currently 49 active TAs spread over 43 square miles.



Topography: The physical features of a place or region.

Tritium (H³): <http://pearl1.lanl.gov/periodic/>

Tuff: A compacted deposit of volcanic ash and dust that contains rock and mineral fragments accumulated during an eruption.

Uranium (U): <http://pearl1.lanl.gov/periodic/>

Watershed: The region drained by, or contributing waters to, a stream, lake, or other body of water and separated from adjacent drainage areas by divides such as a ridge or summit of high ground.



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