

## Glossary of Environmental Terms

**Acceptable Risk Level:** The level of contamination at a site below which no significant harm will occur to people, plants or animals. Acceptable risk levels are used to determine how much cleanup must occur at a site.

**Air Sparging:** A treatment technology where air is pumped into the ground to aid in the removal of volatile substances.

**Air Stripping:** A treatment technology where contaminated water is run over packing material or trays inside an enclosed chamber to increase the surface area of the water and aid in the removal of volatile substances. The volatiles evaporate from the water and are collected in air filters or released to the atmosphere.

**Ambient air:** Refers to the surrounding air. Generally, ambient air refers to air outside and surrounding an air pollution source location. Often used interchangeably with "outdoor air."

**Aquifer:** A water-bearing layer of rock or sediment that is capable of yielding useable amounts of water. Drinking water and irrigation wells draw water from underlying aquifers.

**Baseline Risk Assessment:** A Risk Assessment conducted before cleanup occurs. Sites that don't present an unacceptable risk may not need to be cleaned up. See also Risk Assessment.

**Bioremediation:** The use of microscopic organisms to remove contamination from a site. Generally involves adding nutrients or otherwise altering site conditions to speed up the natural process of biodegradation.

**BTEX:** An acronym for **B**enzene, **T**oluene, **E**thylbenzene and **X**ylenes, a group of toxic chemicals that are found in gasoline and other petroleum products.

**Carcinogenic:** Capable of causing cancer.

**Cleanup process:** A comprehensive program for the cleanup (remediation) of a contaminated site. It involves investigation, analysis, and development of a cleanup plan and implementation of that plan.

**Conceptual Site Model:** A summary of conditions at a site that identifies the type and location of all potential sources of contamination and how and where people, plants or animals may be exposed to the contamination.

**Confirmation Sampling:** Air, soil, groundwater, surface water, or sediment samples taken after a cleanup to confirm that the cleanup was effective in removing hazardous substances. Also refers to sampling conducted to update old sampling data.

**Contaminants of Concern:** Specific chemicals (usually the most hazardous ones) at a site that are chosen to be evaluated through a Risk Assessment. Some categories of chemicals, such as "PAHs" or "VOCs", have dozens of individual constituents. Instead of evaluating each one, a few are chosen to represent the hazards posed by the whole group.

**Contamination:** The presence of one or more hazardous substances in the air, soil, groundwater, surface water, or sediments at a site in concentrations greater than background levels.

**Downgradient:** The direction toward which groundwater flows.

**EPA (U.S. EPA):** United States Environmental Protection Agency

**Exposure:** Coming into contact with a hazardous substance through inhalation, ingestion, or direct contact with the skin. The exposure may be acute (short-term) or chronic (long-term).

**Exposure pathways:** Existing or hypothetical routes by which chemicals in soil, water or other media can come in contact with humans, animals or plants.

**Extraction Well:** A well through which contaminated groundwater is extracted, or pumped from the ground. Extraction wells are used to bring contaminated groundwater to the surface so the contaminants can be removed.

**Feasibility Study (FS):** An evaluation of the alternatives for remediating any identified soil or groundwater contamination.

**Groundwater:** Water that fills spaces between soil and rock particles underground. Groundwater often serves as a primary source of drinking water.

**Hazardous waste:** Waste substances that can pose a substantial or potential hazard to human health or the environment when improperly managed. To be a hazardous waste the compound must possess at least one of these four characteristics: ignitability, corrosivity, reactivity or toxicity; or appears on special U.S. EPA lists.

**Hot Spot:** An area of contamination where the hazardous substances are particularly concentrated or mobile and exceed acceptable risk levels. There is a preference for treating hot spots (removing or eliminating the contamination) as opposed to containing or isolating the contamination with institutional or engineering controls.

**Hydrocarbons:** A large group of chemicals containing carbon and hydrogen atoms. Hydrocarbons are generally associated with petroleum products (heating oil, gasoline, kerosene, asphalt, etc.).

**Hydrogeology:** The study of the occurrence, movement and quality of water beneath the earth's surface.

**Interim Measures:** Cleanup actions taken to protect public health and the environment while long-term solutions are being developed. Also called Interim Remedial Measures (IRM).

**Maximum contaminant level (MCL):** A contaminant level for drinking water, established by the California Department of Health Services, Division of Drinking Water and Environmental Management, or by the U.S. Environmental Protection Agency. These levels are legally-enforceable standards based on health risk (primary standards) or non-health concerns such as odor or taste (secondary standards).

**Micrograms per liter (ug/L):** A measuring unit for constituents in water. Constituents in water are often measured in very small units. One microgram per liter equals one part per

billion.

**Milligrams per liter (mg/L):** A measuring unit for constituents in water. Constituents in water are often measured in very small units. One milligram per liter equals one part per million.

**Micrograms per cubic meter (ug/m<sup>3</sup>):** A measurement unit for constituents in air. Constituents in air are often measured in very small units.

**Migration:** The movement of chemical contaminants through soils, groundwater or air.

**Mitigation:** Actions taken to improve site conditions by limiting, reducing or controlling hazards and contamination sources.

**Monitored Natural Attenuation:** See Natural Attenuation

**Monitoring wells:** Specially constructed wells used exclusively for obtaining samples for testing water quality and for monitoring water levels. Monitoring wells are not used for drinking water or for industrial uses.

**MTBE:** **M**ethyl **T**ertiary **B**utyl **E**ther. A gasoline additive, intended to reduce air pollution, which has sometimes contaminated groundwater through releases from leaking underground fuel storage tanks.

**Natural Attenuation:** The natural breakdown of hazardous substances in the environment. Once released into the environment, many hazardous substances will slowly degrade or be broken down into non-hazardous substances. Natural attenuation may be allowed in lieu of cleanup if there is little chance that the contamination will pose a threat to people, plants or animals.

**Parts per million (ppm):** A measuring unit for the concentration of one material in another. When looking at contamination of water and soil, the substances are often measured in parts per million. One part per million is equal to one gram of substance in one million grams of material.

**Parts per billion (ppb):** A measuring unit for the concentration of one material in another. When looking at contamination of water and soil, the substances are often measured in parts per billion. One part per billion is equal to one gram of substance in one billion grams of material. Most drinking water standards are measured in ppb concentrations.

**Perchloroethylene or Tetrachloroethylene (PCE):** Volatile organic compound that is commonly used as an industrial degreasing solvent and a dry cleaning solvent.

**Permeable Reactive Barrier:** A treatment technology used to clean up contaminated groundwater. A trench is dug down into the groundwater and filled with a reactive material. When contaminated groundwater flows through the barrier, the contamination is removed by chemically reacting with the barrier material.

**Plume:** A body of contaminated groundwater flowing from a specific source. The movement of the groundwater is influenced by such factors as local groundwater flow patterns, the character of the aquifer in which the groundwater is contained, and the density of contaminants. A plume may also be a cloud of smoke or vapor. It defines the area where there could be exposure.

**Public participation plan:** A document approved by the Water Board that is designed to determine a community's informational needs and to provide a program for public involvement during facility permitting, site investigation and cleanup, or other similar activities.

**Pump and Treat:** A generic cleanup technology where contaminated groundwater is pumped from the ground and run through a treatment system before being discharged.

**Remedial Action (RA):** Generally, any action taken to clean up a site. Specifically refers to cleanup actions taken after a Remedial Action Plan has been approved.

**Remedial Design (RD):** The process of designing, building, and/or installing the cleanup remedy selected in the Remedial Action Plan.

**Remedial Investigation (RI):** A series of investigations and studies to identify the types and extent of chemicals of concern at the site and to determine cleanup criteria (Remedial Investigation).

**Remediation:** Cleanup of soil and/or groundwater to levels determined to be health-protective for their intended use.

**Responsible Party (RP):** A person or company who is legally responsible for contamination at a site. The party is responsible for paying for the investigation and cleanup of the site. A group of RPs may be responsible for a site.

**Risk assessment:** A risk assessment looks at the chemicals detected at a site, the frequency and concentration of detected chemicals, the toxicity of the chemicals and how people can be exposed, and for how long. Routes of exposure to people are generally through ingestion (such as eating) contact with the skin, or inhalation. The most significant potential routes of exposure are through ingestion and contact with the skin. The health risk assessment cannot predict health effects; it only describes the increased possibility of adverse health effects, based on the best scientific information available.

**Site:** An area contaminated or potentially contaminated by hazardous substances that is the subject of an investigation or cleanup. For Water Board lead sites, the Site is generally the fence line of the property where the release occurred. A plume that extends beyond the site property is considered to be "off site."

**Soil gas:** Soil gas (or soil vapor) is air existing in void spaces in the soil between the groundwater table and the ground surface. These gases may include vapor of hazardous chemicals as well as air and water vapor.

**Soil Vapor Extraction (SVE):** A treatment technology that removes vapors from air spaces in soil by setting up a pressure gradient or vacuum. Often used in conjunction with air sparging (the injection of air into the ground).

**Solvent:** A liquid capable of dissolving another substance to form a solution. Water is sometimes called "the universal solvent" because it dissolves so many things, although often to only a very small extent. Some solvents are hazardous substances, including perchloroethylene (PCE or "perc"), trichloroethylene (TCE) and methylene chloride, among others. Organic solvents are used in paints, varnishes, lacquers, industrial cleaners and printing inks, for example. The use of such solvents in coatings and cleaners has declined over the last several years, because the most common ones are toxic, contribute to air

pollution and may be fire hazards. Many organic solvents are also volatile organic compounds.

**Toxicology:** The study of the effects of hazardous substances on living organisms. Toxicologists participate in conducting and reviewing various types of Risk Assessments.

**TPH: Total Petroleum Hydrocarbons.** A measurement of the total amount of hydrocarbons in a sample. Generally used when sampling petroleum products (such as heating oil, gasoline, kerosene, asphalt, etc.).

**Treatment:** Any physical, chemical or biological process that makes a hazardous substance less hazardous.

**Trichloroethane:** An organic solvent (1,1,1-TCA; methylchloroform) used as a cleaning agent for metals and plastics.

**Trichloroethylene (TCE):** An organic solvent that is often used as an industrial degreasing solvent.

**Upgradient:** The direction from which water flows in an aquifer.

**Vadose Zone:** The unsaturated zone that occurs above the water table where the soil pores are only partially filled with water (the moisture content is less than the porosity). This zone is limited above by the land surface and below by the surface of the saturated zone, that is, the water table.

**Vapor:** The gaseous phase of a substance that is normally liquid or solid. Some liquid hazardous substances can vaporize while in the soil or groundwater, filling air spaces in the soil or intruding into overlying buildings.

**Volatile:** Describes a substance that readily evaporates and becomes vapor at normal temperatures and pressures.

**Volatile organic compounds (VOCs):** Organic liquids, including many common solvents, that readily evaporate at temperatures normally found at ground surface and at shallow depths.

**Water table:** In a shallow aquifer, a water table is the depth at which free water is first encountered in the subsurface.

**Work plan:** The site work plan describes the technical activities to be conducted during the various phases of an investigation and remediation project.