

A

Accuracy

Accuracy of an analytical measurement is how closely the result corresponds to the true value. This normally requires the use of standards when carefully calibrating the analytical methods.

Activated carbon

Typically, a wood, coal, or coconut-based material that has been “activated” to modify pore space and geometry to allow for strong adsorption of hydrophobic organic contaminants commonly associated with sediments (e.g., PCBs). Available in either granular (GAC) or powder (PAC) forms, which provide differing adsorption capacity (equilibrium) and kinetics (speed of adsorption) as they relate to use as a capping amendment.

Adsorption

Adsorption is the adhesion of molecules of gas, liquid, or dissolved solids to a surface. The term also refers to a method of treating wastes in which activated carbon is used to remove organic compounds from wastewater. Additionally, adsorption is defined as the process by which nutrients such as inorganic phosphorous adhere to particles via a loose chemical bond with the surface of clay particles.

Noncovalent bonding of a chemical to a solid surface.

Advection

Bulk transport of the mass of discrete chemical or biological constituents by fluid flow within a receiving water. Advection describes the mass transport due to the velocity, or flow, of the water body. It is also defined as the process of transfer of fluids (vapors or liquid) through a geologic formation in response to a pressure gradient that may be caused by changes in barometric pressure, water table levels, wind fluctuations, or infiltration.

Amendment

Reactive or sorptive material added to cap materials to sequester contaminants and limit contaminant flux through the cap.

Anthropogenic activity

Activity resulting from human activities.

Apatite

Name given to a group of phosphate minerals, usually referring to hydroxylapatite distributed widely in igneous, metamorphic, and sedimentary rocks, often in the form of cryptocrystalline fragments. Hydroxylapatite is used in chromatographic techniques to purify proteins and other chemicals.

B

Background (reference conditions)

When used in sediment characterization studies, refers to both the concentrations of contaminants of potential concern that are not a result of the activities at the site undergoing assessment and the locations of the background areas (MacDonald and Ingersoll 2002). Therefore, two types of background are recognized by USEPA and many states: naturally occurring background and anthropogenic background. Users should verify whether their state and USEPA region have different definitions and requirements for assessing background conditions as part of environmental site assessments.

Bathymetry

The measurement of or the information from water depth at various places in a body of water.

Benthic habitat

The benthic habitat is the ecological region at the lowest level of a body of water such as an ocean or a lake. It includes the sediment surface and some subsurface layers.

Bioaccumulation

The accumulation of substances, such as pesticides, or other organic chemicals in an organism. Bioaccumulation occurs when an organism absorbs a toxic substance at a rate greater than that at which the substance is lost. Thus, the longer the biological half-life of the substance the greater the risk of chronic poisoning, even if environmental levels of the toxin are not very high.

Bioavailability

The relationship between external (or applied) dose and internal (or resulting) dose of the chemical(s) being considered for an effect (National Research National Research Council 2003).

The fraction of an ingested dose that crosses the gastrointestinal epithelium and becomes available for distribution to internal target tissues and organs (USEPA 2007).

Bioavailability processes

Individual physical, chemical, and biological interactions that determine the exposure of plants and animals to chemicals associated with soils and sediments (National Research National Research Council 2003).

Biodegradation

A process by which microorganisms transform or alter (through metabolic or enzymatic action) the structure of chemicals introduced into the environment (USEPA 2011a).

The breakdown of chemicals by microorganisms.

Biologically active zone

The upper layer of sediments in which both plants and benthic organisms are active. The BAZ is typically 5 to 10 cm in depth but can extend deeper, particularly in marine environments.

Bioturbation

The displacement and mixing of sediment particles and solutes by fauna (animals) or flora (plants).

Breakthrough

The word "breakthrough" has been used inconsistently in cap design. In some cases, the word breakthrough is used to describe the point in time when concentrations of any COC at the top of the cap are detectable. More commonly, the word breakthrough is used to describe the time when the concentrations of COCs at the design evaluation depth exceed performance target concentrations. To avoid ambiguity, the design criteria should be described explicitly (i.e., a specific COC concentration [e.g., performance target] or flux measured at a defined depth [e.g., design evaluation depth or point of compliance] at a specific future point in time [e.g., 100 years]).

C

Capping

Technology that covers contaminated sediment with material to isolate the contaminants from the surrounding environment.

Chemical isolation

Technology that inhibits the migration of contaminants from underlying sediments to surface water through contaminant sequestration or degradation or through physical isolation of the contaminated sediment.

Community engagement

The process of communicating with local residents and other stakeholders to provide information throughout the investigation and cleanup of a contaminated site, provide opportunities for offering input about site investigation and cleanup plans, and facilitate the resolution of community issues related to a contaminated site.

Compliance monitoring

The collection of data that, when analyzed, can allow for the evaluation of the contaminated media against standards such as soil or water quality regulatory standards, risk-based standards, or RAOs.

Comprehensive Environmental Response, Compensation, and Liability Act

Passed in 1980, commonly known as Superfund, this act covers the cleanup of hazardous substance spills from vessels and active or inactive facilities. Establishes a Hazardous Substances Response Trust Fund, financed by a tax on the sale of hazardous chemicals, to be used for removal and cleanup of hazardous waste releases. Cleanup costs must be shared by the affected state. Within certain limits and subject to a few defenses, anyone associated with the release is strictly liable to reimburse the fund for cleanup costs, including damage to natural resources.

Conceptual site model (CSM)

A representation of an environmental system and the biological, physical, and chemical processes that determine the transport and fate of contaminants through environmental media to environmental receptors and their most likely exposure modes. The CSM is the primary planning and decision-making tool used to identify the key issues and the data necessary to transition a project from characterization through post-remedy.

The CSM documents current site conditions and serves to conceptualize the relationship between chemicals in environmental media, sources, and receptors through consideration of potential or actual migration and exposure pathways (ITRC 2012).

Constructed wetland

An artificially constructed treatment system using saturated soils or sediment beneath standing water to remove contamination. Constructed wetlands frequently treat wastewater of some type and contain wetland plants.

Contaminant flux

The ebb and flow of contaminants from and through an ecosystem.

Contaminants of concern (COCs)

Materials, structures, or contaminants in an ecosystem that may have an effect on that ecosystem or other environments. These may consist of chemicals, biota, natural features, or any other thing that could affect the area of concern.

Contaminants of potential concern (COPC)

In a risk assessment, a substance detected at a hazardous waste site that has the potential to affect receptors adversely due to its concentration, distribution, and mode of toxicity (USEPA 1997). COPCs are generally categorized operationally, based on how they are measured in the analytical laboratory. Inorganic COPCs generally address metals, elements, and unique inorganic compounds such as perchlorate. Organic COPCs include VOCs (such as acetone, benzene, and trichloroethylene), semivolatile organic compounds (such as chlorophenols, chlorobenzenes, and phthalate esters), pesticides (such as atrazine, DDT, and toxaphene), PCBs, and polychlorinated dibenzodioxin and dibenzofurans.

Contaminated sediment remedial alternatives

Combinations of technologies used in sequence or in parallel to remediate a contaminated site.

Criterion

General term used in this document to identify a concentration that is relevant to a project; used instead of designations such as cleanup standard or cleanup level.

D

Darcy's law

An equation that relates flow through a porous material to the driving force and the permeability of that material.

Data quality objective (DQO)

The qualitative and quantitative statements derived for the DQO process that clarify the study's technical and quality objectives, define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity (USEPA 2002a).

Data quality objective (DQO) process

A systematic planning tool (based on the scientific method) that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use. DQOs are the qualitative and quantitative outputs from the DQO process (USEPA 2002a).

Degradation (chemical)

(1) Changes brought about to an environment, ecosystem, or physical structure due to interaction with a chemical or chemicals or (2) change in the composition and structure of a chemical due to influences from its environment.

Density

Describes the mass per unit volume and is sometimes expressed as specific gravity, which is the density relative to water.

Deposition rate

The amount of material deposited per unit time or volume flow.

Design evaluation depth

The depth(s) within the cap where the predicted long-term concentrations are compared to the chemical isolation performance target concentrations.

Design life

The minimum period of time over which the cap is designed to meet the design criteria for all COCs and RAOs.

Desorption

The process in which atomic or molecular species leave the surface of a solid and escape into the surroundings.

Diffusion

Movement of vapors away from areas of higher concentration.

The process of net transport of solute molecules from a region of high concentration to a region of low concentration caused by their molecular motion in the absence of turbulent mixing.

Diffusive flux

A law describing the diffusion that occurs when solutions of different concentrations come into contact with molecules moving from regions of higher concentration to regions of lower concentration. Fick's law states that the rate of diffusion dn/dt , called the "diffusive flux" and denoted J , across an area A is given by $dn/dt = J = -DA\partial c/\partial x$, where D is a constant called the "diffusion constant," $\partial c/\partial x$ is the concentration gradient of the solute, and dn/dt is the amount of solute crossing the area A per unit time. D is constant for a specific solute and solvent at a specific temperature. Fick's law was formulated by the German physiologist Adolf Eugen Fick (1829-1901) in 1855.

Dilution

A reduction in solute concentration caused by mixing with water at a lower solute concentration.

Direct sources

Direct sources include effluent outfalls from factories, refineries, waste treatment plants, and similar facilities that emit fluids of varying quality directly into urban water supplies.

Dispersion

(1) Pollutant or concentration mixing due to turbulent physical processes or (2) a distribution of finely divided particles in a medium.

Dissolved concentration

In water, the concentration of COPC in filtered water, traditionally defined as water that will pass through a 0.45 µm filter.

Dissolved organic carbon (DOC)

The weight of organic carbon in solution in a stated volume of water. The amount of DOC is usually determined by filtering water through a filter with a pore diameter of 0.45 µm, acidifying to drive off inorganic carbon, and then measuring the carbon dioxide that results when the carbon remaining in solution is oxidized.

Divalent

Having two available outer shell electrons, generally resulting in a +2 or -2 charge

E

Ebullition

The process by which biogenic gases produced from biodegradation of organic matter by microorganisms in the sediment migrate under certain conditions to the sediment surface, overlying water column, and to the air-water interface.

Effectiveness monitoring

Monitoring approaches used to evaluate attainment of RAOs, which can include a variety of media.

Enhanced monitored natural recovery

Used to reduce the concentration of chemicals in the BAZ of sediment in a manner that would enhance the potential for ecologically balanced recolonization, while not causing widespread disturbance to the existing habitat. Enhanced monitored natural recovery technology relies on a combination of enhanced natural recovery via placement of a thin (15-30 cm) layer of clean sediment over contaminated sediment and an effective characterization and monitoring program to project and verify recovery.

Environmental medium

Soil, surface water, groundwater, indoor air, outdoor air, sediment, and other parts of the environment that may be impacted by the release of a chemical.

Exposure

Contact of a receptor with a chemical. Exposure is quantified as the amount of the chemical available at the exchange boundaries of the organism (for example, skin, lungs, gut) and available for absorption (USEPA 1989).

Exposure area

A geographic area over which a receptor is reasonably assumed to move at random and equally likely to come into contact with an environmental medium (for example, soil) both spatially and temporally. An exposure area is further defined on the basis of observed or assumed patterns of receptor behavior, historic activity, and the nature and extent of chemicals in environmental media (USEPA 1989). An exposure area may also be called an exposure unit.

Exposure assessment

The determination or estimation (qualitative or quantitative) of the magnitude, frequency, duration, and route of exposure (USEPA 1989).

Exposure factor

Factors related to human behavior and characteristics that define the time, frequency, and duration of exposure and help determine an individual's exposure to a chemical (USEPA 2011a).

Exposure medium

Environmental medium containing concentrations of a chemical that may be contacted by a receptor.

Exposure pathway

The channel or path followed by pollutants from their source via air, soil, water, and food to humans, animals, and the environment.

The course a chemical takes from a source to a receptor. An exposure pathway describes a unique mechanism by which an individual or population is exposed to chemicals at or originating from a site. Each exposure pathway includes a source or release from a source, an exposure point, and an exposure route. If the exposure point differs from the source, a transport or exposure medium (for example, air) or media (in cases of intermedia transfer) is also included (USEPA 1989).

Exposure point

A location of potential contact between a receptor and a chemical (USEPA 1989).

Exposure point concentration

The value, based on either a statistical derivation of measured data or modeled data, that represents an estimate of the chemical or radionuclide concentration available from a particular medium or route of exposure.

Exposure route

The way a chemical comes in contact with an organism (for example, by ingestion, inhalation, or dermal contact) (USEPA 1989).

Exposure scenario

A set of facts, data, assumptions, and professional judgment about how an exposure occurs or does not occur. An exposure scenario addresses the (1) chemicals in environmental media and their sources, (2) exposed populations (or receptors), (3) migration of chemicals in environmental media from sources to receptors, and (4) routes of exposure (ingestion, dermal contact, inhalation).

Exposure unit (or exposure area)

For purposes of risk assessment, a defined area throughout which a potential receptor may be exposed to a contaminant. The receptor is assumed to move randomly across the area and to be exposed equally to all parts of the area. The assumption of equal exposure to any and all parts of the exposure area is a reasonable approach (USEPA 1992) that allows a spatially averaged soil concentration to be used to estimate the true average concentration contacted over time.

F

Flux

Flow per unit area.

Rate of flow of fluid, particles, or energy through a given surface.

The mass (mass flux) or volume (flux) moving through an area per time.

Freely dissolved

The concentration of the chemical that is freely dissolved in water, excluding the portion sorbed onto particulate and DOC (kilograms of chemical per liter of water). Freely dissolved concentrations can be estimated with an empirical equation with knowledge of the K_{POC} and K_{DOC} and can be measured with passive samplers.

G

Geochemical factors

Geologic/chemical parameters such as oxidation/reduction potential, nitrate, and sulfate that may influence the distribution, concentration, or persistence of contaminants in the subsurface.

Geochemistry

(1) Science that deals with the chemical composition of and chemical changes in the solid matter of the earth or a celestial body (like the moon) or (2) the related chemical and geological properties of a substance.

Geomembrane

A kind of geosynthetic material made up of an impermeable membrane. Uses include solid waste containment (such as landfill liners), mining, and water containment applications.

H

Hot spot

Generally described as an area of elevated contamination (ITRC 2008). A hot spot is not typically identified visually (i.e., stained soil, free product) but is primarily identified by soil sampling results. The specific area and magnitude of contamination constituting a hot spot should be agreed on during systematic project planning.

Hot spots are considered to be soil volumes with relatively high concentrations that could be present at a site but whose locations and dimensions cannot be anticipated prior to sampling (ITRC 2012).

Hydraulic conductivity

The capability of a geologic medium to transmit water. A medium has a hydraulic conductivity of unit length per unit time if it will transmit in unit time a unit volume of groundwater at the prevailing viscosity through a cross section of unit area (measured at right angles to the direction of flow).

Hydrodynamics

The branch of science that deals with the dynamics of fluids, especially those that are incompressible, in motion.

Hydrodynamics data

Information on the flow rates and volumes of a system, including other data pertinent to the hydraulic function of a waterway.

Hyporheic zone

The hyporheic zone is an active ecotone between the surface stream and groundwater. Exchanges of water, nutrients, and organic matter occur in response to variations in discharge and bed topography and porosity. Upwelling subsurface water supplies stream organisms with nutrients while downwelling stream water provides dissolved oxygen and organic matter to microbes and invertebrates in the hyporheic zone. Dynamic gradients exist at all scales and vary temporally. At the microscale, gradients in redox potential control chemical and microbially mediated nutrient transformations occurring on particle surfaces.

I

In situ treatment

In situ sediment treatment involves applying or mixing of an amendment into sediments. Mixing may be achieved either passively, through natural biological processes such as bioturbation, or actively through mechanical means (using augers, for instance).

Infauna

Benthic invertebrates that live almost exclusively in or below the sediment-water interface. These are generally tube- or burrow-dwelling organisms that feed at either the sediment-water interface or burrow and ingest sediments or sediment-dwelling organisms.

Isotope

Two atoms with the same number of protons but a different number of neutrons.

K

Kinetics

The study of rates of reaction.

L

Lentic

A still water environment.

Light nonaqueous-phase liquid (LNAPL)

A liquid that is not soluble and has a lower density than water.

Lines of evidence

Pieces of evidence are organized to show relationships among multiple hypotheses or complex interactions among agents, events, or processes. A weight-of-evidence approach includes the assignment of a numeric weight to each line of evidence.

Loading

Mass of something per time entering a volume (volumetric loading rate) or flowing into an area (areal loading rate).

Lotic

A fast-moving water environment.

M

Mass balance

An accounting for the mass entering, leaving, accumulating, and reacting in a system, often in the form of an equation such as "In - Out + Generation - Consumption = Accumulation."

Quantitative estimation of the mass loading to the dissolved plume from various sources, as well as the mass transport, phase transfer, degradation, and attenuation capacity for the dissolved plume.

Mass discharge

Mass discharge (Md) is a contaminant load past a transect (mass per time). It can also be referred to as cumulative mass flux, mass discharge, or mass flux.

Mass flux

Mass flux (J) is a contaminant load (mass) per time per unit area. It is a general term for performing mass flux- or mass discharge-type calculations.

Mass loading

Contaminant released to the environment (in this case, the aquifer or unsaturated zone) from the source material.

Mass transfer

The irreversible transport of solute mass from the nonaqueous phase (that is, DNAPL) into the aqueous phase, the rate of which is proportional to the difference in concentration.

Microbial community

The microorganisms present in a particular sample.

Microbial community composition

Description of the types or identities of microorganisms present in a sample.

Monitored natural recovery

A remedy for contaminated sediment that typically uses ongoing, naturally occurring processes to contain, destroy, or reduce the bioavailability or toxicity of contaminants in sediments. These processes may include physical, biological, and chemical mechanisms that act together to reduce the risk posed by the contaminants.

Monte Carlo simulation

A technique for characterizing the uncertainty and variability in exposure estimates by repeatedly sampling the probability distributions of the exposure equation inputs and using these inputs to calculate a range of exposure values (USEPA 2001).

O

Octanol-water partition coefficient (K_{ow})

The ratio of a chemical concentration in 1-octanol (C_o) and water (C_w) in an octanol-water system that has reached a chemical equilibrium: $K_{ow} = C_o/C_w$. Unitless.

Organic carbon partition coefficient

The theoretical ratio of the mass absorbed to soil particles versus dissolved in porewater.

Organic matter

Strictly defined, compounds in which carbon is bonded to hydrogen. Generally describes decomposed biological residues and other organic compounds synthesized by organisms.

Organophilic clay

Clay minerals whose surfaces have been ion exchanged with a chemical to make them oil-sorbent. Bentonite and hectorite (plate-like clays) and attapulgite and sepiolite (rod-shaped clays) are treated with oil-wetting agents during manufacturing. Quaternary fatty-acid amine is applied to the clay. Amine may be applied to dry clay during grinding, or it can be applied to clay dispersed in water.

Oxidation-reduction potential

The redox potential is the tendency of a compound to gain an electron. This is most often measured as the voltage required to prevent electrons from transferring between the measured sample and a standard reference electrode. Oxidation-reduction potential differs from simple reduction potential (Eh) in that a variety of standard references may be used (often silver/silver chloride), and the resulting value can be adjusted to Eh by correcting for the electrode difference (e.g., 0 millivolt [mV] measured with a saturated KCl Ag/AgCl reference electrode is an Eh of 197 mV).

P

Parameters

Intrinsic characteristics of a buried metal object, including size, shape, symmetry, aspect ratio, wall thickness, and material composition.

Performance monitoring

Monitoring approaches to confirm that a remedial action is performing as the design intended. Cap performance monitoring approaches include those that confirm the long-term physical integrity and stability of the cap and confirm the long-term chemical isolation performance.

Performance targets

Numerical criteria (e.g., porewater concentration) applied to a specific depth position within the cap profile that correspond with the desired chemical isolation performance of the cap.

Permeability

(1) Characteristic of a material or membrane that allows liquids or gases to pass through it or (2) the rate of flow of a liquid or gas through a porous material.

pH

A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale commonly in use ranges from 0 to 14.

Point of compliance

The depth(s) over which the RAOs apply. Multiple points of compliance may apply to each RAO.

Porewater

Water located in the interstitial compartments (between solid-phase particles) of bulk sediment.

Porewater expression

A technique used to determine porewater ionic content.

Precipitation

(1) The formation of a solid in a solution or inside another solid during a chemical reaction or by diffusion in a solid or (2) rain, sleet, hail, snow, and other forms of water falling from the sky.

Preferential pathway

A high-permeability conduit for vapor migration such as utility penetrations, lines, or drains; building sumps or drainage pits; elevator shafts; fractures in bedrock; or gravel channels.

Project risk

Project risks include any uncertain events or conditions that have the potential to adversely affect a project's objectives, scope, time, cost, or targeted primary outcomes or to result in unintentional adverse outcomes.

R

Raoult's law

The principle that the vapor pressure of an ideal solution directly depends on the vapor pressure of each chemical component and mole fraction of each component in the solution.

Receptor

An individual (for example, residential adult, residential child, worker, trespasser, or recreator) who has the potential to be exposed to a chemical in environmental media.

A plant, animal, or human that is typically the focus of a risk assessment following the direct or indirect exposure to a potentially toxic substance.

Redox conditions

Description of the oxidation/reduction potential of the subsurface (e.g., aerobic, anoxic, anaerobic, sulfate reducing, or methanogenic conditions).

Reduced

In chemistry, having gained electrons. Often, gaining electrons is accompanied by gaining protons (hydrogen). As an

example, when O_2 reacts with H_2 , the oxygen is reduced, forming H_2O .

Remedial action objective (RAO)

Specific goals for protecting human health and the environment. RAOs are developed by evaluating applicable or relevant and appropriate requirements that are protective of human health and the environment and the results of the remedial investigations, including the human and ecological risk assessments.

RAOs are also cleanup goals for a selected remedial action. Preliminary RAOs are often developed during the preliminary assessment / site investigation phase of a cleanup response and are refined into definitive RAOs during the course of the remedial investigation / feasibility study process. Final RAOs are documented in the record of decision or decision document. Remediation efforts are considered complete upon attainment of the RAOs.

Remediation

The act or process of abating, cleaning up, containing, or removing a substance (usually hazardous or infectious) from an environment.

Responsible party

The entity that is required to ensure that the selected remedy is properly applied and maintained. Typically, the entity that has primary financial responsibility for the remediation.

Resuspension

Typically refers to the mixing of sediment and/or underlying contaminants within the overlying water column. Can result from dredging activity or from natural erosive forces acting on capping material or natural sediment.

Risk assessment

An organized process used to describe and estimate the likelihood of adverse health outcomes from environmental exposures to chemicals. The four steps are hazard identification, dose-response assessment, exposure assessment, and risk characterization (Presidential/Congressional Commission 1997a).

Risk characterization

The risk characterization integrates information from the preceding components of the risk assessment and synthesizes an overall conclusion about risk that is complete, informative, and useful for decision-makers (USEPA 2000).

S

Sample interval

The sampling distance or frequency at which data are collected. A sampling interval can be regular (for example, equal-spaced sampling grid or time intervals) or irregular (for example, nested sampling intervals or time steps).

Saturation

Represents the proportion of the subsurface pore space that is occupied by a fluid (either DNAPL, air, or water), ranging from 0 to 1.0. When multiple fluids are present, the sum of all fluid saturations equals 1.0. DNAPL saturation very rarely approaches 1.0, because the NAPL typically shares pore spaces with water or air, and most porous media are water wetting.

Screening

The comparison (by ratio, usually the environmental medium concentration divided by a benchmark, standard, criterion, or similar value) of site conditions to a screening value. Often this is synonymous with "compare to a list that is readily available."

Sedimentation

The process of depositing entrained particles from water.

Seepage velocity

The rate of movement of fluid particles through porous media along a line from one point to another.

Sensitivity

Sensitivity is the smallest amount of a substance in a sample that can accurately be measured by an assay.

Sequestration

The act of segregation. In environmental terms this usually refers to separation of materials by use of various technologies. Carbon sequestration refers to the capture and removal of CO₂ from the atmosphere through biological or physical processes.

Sorption

The uptake of a solute by a solid. The process in which one substance takes up or holds another; also called adsorption or absorption.

Source control

Those efforts that are taken to eliminate or reduce, to the extent practicable, the release of COCs from direct and indirect ongoing sources to the aquatic system being evaluated.

Stakeholder

Affected tribes, community members, members of environmental and community advocacy groups, and local governments.

A stakeholder is anyone who has a stake in the development, outcome, or decisions made as a result of a risk assessment. A stakeholder can be a person, a group, or an organization that is affected, potentially affected, or has any interest in the project or in the project's outcome, either directly or indirectly (Presidential/Congressional Commission 1997a, 1997b; National Research National Research Council 2009; National Research National Research Council 1996).

T

Total dissolved solids

The weight of matter, including both organic and inorganic matter, dissolved in a stated volume of water. Often used as a surrogate for the concentration of salts in solution. The mass of dissolved solids is usually determined by filtering water through a glass or filter with a pore diameter of 0.45 µm, weighing the filtrate residue remaining after the evaporation of the water, and drying to constant weight.

Total suspended solids

The mass of material that can be sedimented out of a stated volume of water. The mass of suspended solids is usually determined by filtering water through a pre-weighed filter with a pore diameter of 0.45 µm, drying the filter to constant weight, and determining the mass gained.

Toxicity assessment

The combination of the hazard identification and the dose-response assessment.

U

Uncertainty

The lack of perfect knowledge of values or parameters used in a risk assessment. Uncertainty may be reduced by collection of additional data.

V

Validation

A geospatial model assessment method that is implemented by dividing the observed data set randomly into two data sets and then using each set to calculate predicted values for the other set.

W

Water column

(1) The basic habitat and the medium through which all other fish habitats are connected. (2) a conceptual column of water from surface to bottom sediments. This concept is used chiefly for environmental studies evaluating the stratification or mixing (such as by wind-induced currents) of the thermally or chemically stratified layers in a lake, stream, or ocean. Some of the common parameters analyzed in the water column are pH, turbidity, temperature, salinity, total dissolved solids, various pesticides, pathogens, and a wide variety of chemicals and biota. Understanding water columns is important because many aquatic phenomena are explained by the incomplete vertical mixing of chemical, physical, or biological parameters. For example, when studying the metabolism of benthic organisms, it is the specific bottom-layer concentration of available chemicals in the water column that is meaningful, rather than the average value of those chemicals throughout the water column.

Water-column transport

Movement within a water column due to changes in certain parameters (see water column).

Z

Zeolites

Microporous aluminosilicate minerals commonly used as commercial adsorbents.