



Glossary of Environmental Terms

Accelerated depreciation	In pollution abatement, an arrangement whereby, as an incentive to industry to install pollution abatement equipment, a company is allowed to deduct from its taxable income the entire cost of such equipment over a shorter period of time (perhaps only one to three years) than in the case of other types of capital investment.
Acclimation	The process of adjusting to a change in an environment.
Adaptation	A change in the structure, form, or habit of an organism resulting from a change in its environment.
Adsorption	A taking up of gases or liquids by the surfaces of solids or liquids with which they are in contact.
Aerobic	Living or taking place only in the presence of molecular oxygen.
Aerobic organism	An organism that thrives in the presence of oxygen.
Affluent	Tributary.
Alga	Simple plants, many microscopic, containing chlorophyll. Most algae are aquatic and may produce a nuisance when conditions are suitable for prolific growth.
Alkyl benzene sulfonate (ABS)	A chemical surface-active agent used in synthetic detergents that causes foaming; its compounds do not readily decompose biologically through bacterial action.
Alum	A chemical substance (usually potassium aluminum sulfate), gelatinous when wet, used in water-treatment plants for settling out small particles of foreign matter.
Anadromous fish	Fish that go up-river to spawn (for example, salmon, shad).
Anaerobic	Living or taking place in the absence of molecular oxygen.
Anaerobic contact process	A waste-treatment process similar to the activated sludge process; it is largely one of contact in the absence of free

oxygen between living organisms and sludge, in which the organisms digest the organic matter in the sludge.

Antagonism, pollution	The combined effect of two or more toxic substances acting together that is less adverse than their sum would be if each were acting separately or independently. (<i>Compare</i> synergism, pollution.)
Aquifer	A porous layer of rock that carries a usable supply of water. Gravel, sand, sandstone, and limestone are the best water carriers; clay, shale, and crystalline rocks are poor water carriers.
Assimilation	The transformation of absorbed nutrients into body substances.
Autotrophic organism	An organism capable of constructing organic matter from inorganic substances.
Base Flow	The part of stream flow contributed by ground water which seeps into the surface streams
Baselevel	The lowest level to which a stream can wear its bed. Permanent baselevel is the level of the sea
Benthic	Relating to the bottom underlying a body of water (for example, mud-dwelling mollusks are benthic organisms).
Benthic region	The bottom of a body of water. This region supports the benthos, a type of life that not only lives upon but contributes to the character of the bottom.
Bioassay	A determination of the concentration of a given material by comparison with a standard preparation; or the determination of the quantity necessary to affect a test animal under stated laboratory conditions.
Biodegradable detergent	<i>See</i> detergent, biodegradable.
Biota	Living things; the plant and animal life of a region.
Bloom	The excessive growth of algae in a body of water due to an oversupply of dissolved nutrients; it may impart a disagreeable odor to the water, cause fish to die, and impair the use of the water for drinking or recreation. (<i>See</i> eutrophication.)
BOD	<i>See</i> oxygen demand, biochemical.

Cesspool	An underground structure designed to hold sewage from a residence; the waste is permitted to percolate from the cesspool into the surrounding soil.
Chlorine-contact chamber	In a waste-treatment plant, a chamber in which effluent is disinfected with chlorine before it is discharged to the receiving waters.
COD	<i>See</i> oxygen demand, chemical.
Coliform (coliform bacterium)	Any of a number of organisms common to the intestinal tract of man and animals, whose presence in waste water is an indicator of pollution.
Coliform index (coli index)	An index of the purity of water based on a count of its coliform bacteria.
Comminutor	In a waste-treatment plant, a device that grinds solids to make them easier to treat.
Cone of depression	The area around a well from which water is pumped, where the water table has been lowered by the pumping.
Connate water	Water imprisoned in sedimentary rocks at the time of their formation and held there; sometimes called fossil water.
Comsumers	Organisms that consume solid particles of organic food material. Protozoa are consumers.
Consumptive use (of water)	Water use resulting in a large proportion of loss to the atmosphere by evapotranspiration (as in irrigation), or by combination with a manufactured product.
Critical streamflow	The amount of water available for the generation of water power during the most adverse streamflow period.
Dermatitis	Any inflammation of the skin. One type may be caused by the penetration beneath the skin of a cercaria found in water; this form of dermatitis is commonly called "swimmers' itch."
Detergent, biodegradable	One that decomposes quickly as a result of the action of organisms, eliminating foam in waste water. Biodegradable is defined as having a 90 per cent surfactant reduction or as having surfactant concentration no higher than 0.5 mg/l.

Dew point	The temperature at which the atmosphere, being cooled, becomes saturated with water vapor; by condensation the water vapor is deposited as drops of dew.
Digester	In a waste-treatment plant, a closed tank that decreases the volume of solids and stabilizes raw sludge by bacterial action into a material that can be disposed of.
Dilution ratio (dilution factor)	The ratio of the water of a stream to the incoming waste; the capacity of a stream to assimilate waste is partially dependent upon the dilution ratio; in a waste-treatment plant design, the dilution ratio is the ratio of the maximum waste flow actually treated to the dry weather flow of the plant.
Dissolved Oxygen (DO)	The oxygen freely available in water. In unpolluted water, oxygen is usually present in amounts of 10 ppm or less. Adequate dissolved oxygen is necessary for the life of fish and other aquatic organisms. About 3-5 ppm is the lowest limit for support of fish life over a long period of time.
Dissolved solids (DS)	The total amount of dissolved material, organic and inorganic, contained in water or wastes. Excessive dissolved solids can make water unsuitable for industrial uses, unpalatable for drinking, and even cathartic. Potable water supplies may have dissolved solid content from 20 to 1000 mg/l, but sources which have more than 500 mg/l are not recommended by the U.S. Public Health Service.
Doctrine of appropriation (priority of rights)	The doctrine that whoever puts water to a beneficial use may continue to take it so long as the use does not conflict with use by someone with an earlier claim to the same source: "First in time, first in right." In the seventeen western states, this doctrine applies either exclusively or as a hybrid appropriation-riparian right doctrine.
Drawdown	The lowering of the water level in a well and in the adjacent water table as a result of withdrawal by pumping; a drop in the water level of a reservoir.
Dystrophic lakes	Brown-water lakes with a very low lime content and a very high humus content. These lakes often lack nutrients.
Ecology	The science of the interrelations between living organisms and their environment.
Effluent	A substance that flows out; an outflowing branch of a stream or lake; the liquid that flows out of a waste-treatment plant.

Effluent charge	A water fee set to compensate downstream water users for all damages caused by an upstream user's polluting discharge.
Enteric virus	Any virus known to be excreted in quantity in feces; infectious hepatitis virus is such a virus.
Environment	The sum of all external influences and conditions affecting the life and the development of an organism.
Epilimnion	That region of a body of water that extends from the surface to the thermocline and does not have a permanent temperature stratification.
Erosion	The wearing away of land surface by various natural agencies; the most important being water, in the form of seas, rivers, rain, glacial ice, hoarfrost, and melting snow.
Estuary	The mouth of a river, where tidal effects are evident and where fresh water and sea water mix.
Euphotic zone	The lighted region that extends vertically from the water surface to the level at which photosynthesis fails to occur because of ineffective light penetration.
Eutrophic	(Of a lake) rich in dissolved nutrients, but frequently shallow and with seasonal oxygen deficiency below a certain level.
Eutrophication	The normally slow aging process by which a lake evolves into marsh and ultimately becomes completely filled with detritus and disappears. In the course of this process, the lake becomes overly rich in dissolved nutrients (for example, nitrogen and phosphorus), so that an excessive development of algae results. First the water becomes murky, then noxious odors and unsightly scums appear. In the lower layers, dissolved oxygen levels become depressed, and bottom-dwelling fauna change from clean-water forms to pollution-tolerant forms.
Evapotranspiration	Water loss through evaporation (from soil and surface water bodies) and transpiration (from plants).
Facultative aerobe	An organism that although fundamentally an anaerobe can grow in the presence of free oxygen.
Facultative anaerobe	An organism that although fundamentally an aerobe can grow in the absence of free oxygen.

Fall overturn	A physical phenomenon that may take place in a body of water during the early autumn. The sequence of events leading to fall overturn include: (1) cooling of surface waters, (2) density change in surface waters producing convection currents from top to bottom, (3) circulation of the total water volume by wind action, and (4) vertical temperature equality, 4C. The overturn results in a uniformity of the physical and chemical properties of the water.
Fault	A fracture in the earth's crust along which movement has taken place and where the rock strata on the two sides therefore do not match.
Fauna	The entire animal life of a region.
Fish kill	The destruction of fish in a water body—in winter, due to prolonged ice and snow cover or freezing of the water; in summer, due to oxygen deficiency resulting from excessive organic matter; in any season, due to toxic pollutants or disease.
Flora	The entire plant life of a region.
Funnel access	A small parcel of riparian land deeded collectively to a group of land owners who have no frontage bordering the water, so as to give them legal access to the water.
Herbicide	Substances or a mixture of substances intended to control or destroy any vegetation.
Heterotrophic organism	Organisms that are dependent on organic matter for food.
Hydrologic cycle	The continual exchange of moisture between the earth and the atmosphere, consisting of evaporation, condensation, precipitation (rain or snow), stream runoff, absorption into the soil, evaporation, condensation, precipitation, etc.
Hydrology	The science of the behavior of water in the atmosphere, on the earth's surface, and underground.
Hydrophytes	Plants that grow only in water or very wet earth.
Hypolimnion	The region of a body of water that extends from the thermocline to the bottom of the lake and is removed from surface influence.

Influent water	Water contributing to the zone of saturation and thereby sustaining or raising the water table.
Insecticide	Substances, or a mixture of substances, intended to prevent, destroy, or repel insects.
Investment tax credit	In pollution abatement, reduction in a company's tax by a given per cent of the sum invested in pollution abatement equipment and facilities.
Lacustrine	Relating to a lake.
Life cycle	The series of stages in the form and mode of life of an organism; i.e., the stages between successive recurrences of a certain primary stage such as the spore, fertilized egg, seed, or resting cell.
Limnology	The study of the physical, chemical, meteorological, and biological conditions in fresh waters (especially ponds and lakes).
Linear alkylate sulfonate (LAS)	A surface-active compound in synthetic detergents that decomposes readily by bacterial action where oxygen is present.
Littoral	The shallow waters that extend along the edge of a lake or sea.
Multiple use	The management of land and water resources taking into account the many human demands on them with a view to all necessary and desirable uses; these demands change in nature and number through time.
Multiple-purpose development	In water projects, development that takes into account the use and control of water in all possible aspects: irrigation, power, flood control, domestic and industrial water supply, pollution control, navigation, recreation, fish and wildlife. The first multiple-purpose project authorized and designed as such was the Boulder Canyon Project (Hoover Dam), 1928.
Natural resource	A resource such as air, climate, fish, minerals, scenic beauty, soil, sunshine, vegetation, water, wildlife. Some natural resources have a market value (for example, timber), others have a "noneconomic" value (for example, scenic beauty).
Neuston	The community of minute organisms living in the surface film of water.

Oligotrophic	(Of a lake) weak in production of plant life and typically very clean and clear; in the past the Great Lakes have been oligotrophic.
Oligotrophic waters	Waters with a small supply of nutrients; thus, they support little organic production.
Oxygen demand, chemical (COD)	The amount of oxygen required to oxidize completely the inorganic oxidizable compounds present.
Pathogenic	Causing or capable of causing disease.
Periphyton	Organisms (including both plants and animals) that commonly grow on submerged surfaces such as stones, wood, aquatic plants, or other objects, forming more or less continuous slimy or woolly felted coatings on these objects.
Photic zone	The upper zone of a body of water in which sufficient light is available for photosynthesis. (Compare profundal zone.)
Photosynthesis	The process by which simple sugars and starches are produced from carbon dioxide and water by living plant cells, with the aid of chlorophyll and in the presence of light.
Phreatophyte	A plant deriving its water from subsurface sources; commonly used to describe nonbeneficial, waterloving vegetation.
Plankton	The floating or weakly swimming plant and animal life of a body of water, consisting mostly of minute forms but including also some larger forms (such as jellyfish) with weak powers of locomotion.
Population equivalent (PE)	An expression of the relative strength of a waste (usually industrial) in terms of its equivalent in domestic waste, expressed as the population that would produce the equivalent domestic waste. A population equivalent of 160 million persons means the pollutorial effect equivalent to raw sewage from 160 million persons; 0.17 pounds BOD (the oxygen demand of untreated wastes from one person) = 1 PE.
Primary wastewater treatment	See wastewater treatment, primary.
Profundal zone	The deep region of a water body that lies below the light-controlled limit of plant growth. (Compare photic zone.)
Receiving waters	The bodies of water that receive effluent waste water from treatment plants.

Recharge area	An area in which an aquifer receives water by force of gravity, usually where a permeable layer lies close to the surface.
Red tide	A visible red-to-orange coloration of an area of the sea caused by the presence of a bloom of certain “armored” flagellates.
Reducers	Organisms that digest food outside the cell wall by means of enzymes secreted for this purpose. Soluble food is then absorbed into the cell and reduced to a mineral condition. Examples are fungi, bacteria, protozoa, and nonpigmented algae.
Regimen, stream	Fluctuations (usually seasonal) through a norm of the flood-water and low-water states of a stream, with the delicate channel adjustments that accompany these systematic changes.
Reservoir sediment storage	The natural accumulation of sediment in a reservoir that must be taken into account when calculating reservoir capacity.
Return flow (irrigation)	That part of irrigation water that is not consumed by evapotranspiration and returns to its source or runs off into another body of water.
“Reverse incentive”	In effect, a penalty connected with water use, such as a user charge (based on the amount of water withdrawn from the municipal supply) or an effluent charge (based on the quantity and quality of wastes discharged into a watercourse) to cover damages caused by a user’s pollutants.
Riparian right	The right of an owner of land bordering on a stream or lake to have access to and use of the shore and water. The use of water is restricted to riparian landowners, and the right is automatic, not created by use nor forfeited through disuse. A riparian water right is not proprietary as is a right to land, but usufructuary—riparian owners enjoy the privilege of using the water without owning it.
Scavenger	An organism that feeds upon decomposing organic matter.
Secchi disc	A device used to measure visibility depths in water. The upper surface of a circular metal plate, 20 centimeters in diameter, is divided into four quadrants and so painted that two quadrants directly opposite each other are black and the intervening ones white. When suspended to various depths of water by means of a graduated line, its point of disappearance indicates the limit of visibility.

Secondary wastewater treatment	See wastewater treatment, secondary.
Septic tank	A tank in which the organic solid matter of continuously flowing wastewater is deposited and retained until it has been disintegrated by anaerobic bacteria.
Sewer, outfall	A sewer that carries wastewater to a point of final discharge.
Sludge, activated	In waste treatment, sludge containing living organisms that multiply and in doing so reduce impurities in the wastewater, thereby making good a deficiency of oxygen and removing odor and taste caused by destroyed bacteria.
Social costs and benefits	Considerations of long-range societal values at the regional or national level which might not be taken into account in the profit and loss statement of an individual farmer, forest operator, industrialist, or other private citizen.
Solute	A dissolved substance, especially the smaller component of a solution.
Solvent	A substance capable of or used in dissolving one or more other substances; the liquid component of a solution, present in greater amount than the solute.
Specific conductance (of water)	Measure of a water's capacity to convey an electric current. This property is related to the total concentration of the ionized substances in the water and the temperature of the water. Most inorganic acids, which dissociate readily in aqueous solution, will conduct an electric current well, while organic compounds (such as sucrose and benzene), which do not dissociate in aqueous solution, will conduct a current poorly if at all.
Spring overturn	A physical phenomenon that may take place in a body of water during the early spring. The sequence of events leading to spring overturn include: (1) melting of ice cover, (2) warming of surface waters, (3) density change in surface waters producing convection currents from top to bottom, (4) circulation of the total water volume by wind action, and (5) vertical temperature equality, 4C. The overturn results in a uniformity of the physical and chemical properties of the water.
Surfactant (surface-active agent)	A substance useful for its cleansing, wetting, dispersing, or similar powers. Synthetic detergents contain surfactants.

Suspended solids (SS)	Solids suspended in waste water. The amount of suspended solids is a measure of the strength of sewage.
Swimmers' itch	A rash produced on bathers by a parasitic flatworm in the cercarial stage of its life cycle. The organism is killed by the human body as soon as it penetrates the skin; however, the rash may persist for a period of about 2 weeks.
Symbiosis	Two organisms of different species living together, one or both of which may benefit and neither is harmed.
Synergism, pollution	The combined effect of two or more toxic substances acting together that is more adverse than their sum would be if each were acting separately or independently. (Compare antagonism, pollution.)
Tertiary treatment	See wastewater treatment, tertiary.
Thermocline	That layer in a body of water where the temperature difference is greatest per unit depth. It is the layer in which the drop in temperature equals or exceeds 1 C (1.8 F) per meter (39.37 inches).
Turbidity	An empirical measure of the optical property of the particles of mud, clay, silt, finely divided organic matter, or microscopic organisms suspended in water that interfere with light transmission, causing the light to be scattered and absorbed rather than transmitted through the water in straight lines.
Wastewater treatment, conventional	Wastewater treatment including screening, sedimentation, coagulation, rapid sand filtration, and disinfection with chlorine.
Wastewater treatment, primary	The first major (sometimes the only) treatment in a wastewater treatment plant. It screens out some sticks, rags, and other solids, and floats and settles out others in settling basins. At best, primary treatment removes about 35 per cent of the organic waste. A primary wastewater treatment plant may consist of the following units: bar screens or mechanical screens; grit removal chambers; flowmeters, comminutors or barminutors; clarifiers or sedimentation tanks, digesters or sludge digestion tanks; sludge drying beds; chlorinators or chlorine contact chambers.
Wastewater treatment, secondary	Wastewater treatment using biological methods (bacterial action) in addition to primary treatment by screening,

sedimentation, and flotation. In secondary treatment bacteria are used to destroy organic wastes as the water trickles over coarse stones. The process removes up to 90 per cent of the dissolved pollutants, but leaves many other pollutants untouched. A secondary waste-treatment plant may consist of the following units, in addition to those of the primary treatment plant: trickling filter, aeration or activated sludge, secondary clarifier, secondary settling tank, final settling tank, and final settling basin.

Wastewater treatment, tertiary

Wastewater treatment beyond primary and secondary treatment, which may consist of extensions or modifications of secondary treatment, additional forms of chemical treatment, electrochemical processing, carbon filtration, and other more complex procedures.