

SECTION IX

GLOSSARY

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Acid	A substance that will ionize in water to produce positively charged hydrogen ions( $H^+$ ).
Acidity, Alkalinity, pH	Acidity is the measure of the total amount of acid substances ( $H^+$ ) present. Alkalinity is the measure of the total amount of alkaline substances ( $OH^-$ ) present. The activity of an acid or an alkali is measured by the pH value.
Aeration	The bringing about of intimate contact between air and a liquid by forcing air into the liquid and permitting natural escape.
Alkalinity	Term used to represent the content of carbonates, bicarbonates, hydroxides, and occasionally borates, silicates and phosphates in water. It is expressed in milligrams per liter of calcium carbonate.
Alkalis	Compounds which ionize in water to furnish hydroxyl ions ( $OH^-$ ).
Anion	A negatively charged ion in an electrolyte solution.
Buechner Funnel	A laboratory device used for filtering with filter papers, cloths or other media.
Cake	The product discharged from a sludge dewatering device.
Cation	The ion in an electrolyte which carries the positive charge and which migrates toward the cathode under the influence of a potential difference.
Centrate	The effluent, or liquid portion of a sludge, removed by or discharged from a centrifuge.
Centrifuge	A mechanical device utilizing centrifugal force to separate solids from liquids or for separating liquid emulsions.
Clarifier	A tank or basin, in which liquid containing settleable solids is retained for a sufficient time and in which the velocity of flow is sufficiently low to remove by gravity a part of the suspended matter. Also termed Settling Tank.

Coagulation	The agglomeration of colloidal or finely divided suspended matter by the addition to the liquid of an appropriate chemical to cause this reaction.
Colloids	Finely divided solids which will not settle but may be removed by coagulation.
Compressibility Factor	An empirically divided factor relating specific resistance of sludge cake to filtering pressure (dimension less).
Concentrate	To increase the proportion of solids in a sludge.
Conditioning	A pretreatment of sludge to facilitate water removal.
Copperas	A common name for ferrous sulfate.
Cubic Foot per Second	A unit of discharge for measurement of flowing liquid, equal to a flow of one cubic foot per second past a given section.
Dehydrating	Removal of moisture by drying, usually at elevated temperatures.
Detention Time	The theoretical time equals the volume of vessel divided by the flow per unit of time.
Dewatering	Any process of water removal or concentration of a sludge slurry.
Diffuser	A porous plate or tube through which air is forced and divided into minute bubbles for dispersing in liquids.
Dosage	Dry weight of a substance added to a larger unit of volume material.
Efficiency	The ratio of the actual performance of a device to the theoretically perfect performance usually expressed as a percentage.
Effluent	A substance that moves out of a containing space.
Elutriation	A process of sludge conditioning whereby the sludge is washed to reduce the sludge alkalinity and fine particles, thus decreasing the amount of required coagulant in further treatment steps.

Feed Solids	Dry weight of suspended solids in the influent to a sludge treatment or dewatering device.
Filter	A device for removing solids from a liquid by some type of strainer.
Filter Aid	Materials added to sludge to increase the rate of dewatering.
Filter Blinding	Clogging of filter media by sludge particles, coagulants or other materials.
Filtrate	The liquid derived from a filtering process.
Floc	Small gelatinous masses formed in a liquid by the addition of coagulants thereto.
Flocculator	An apparatus for the formation of floc.
Floccule	A small loosely aggregated mass of material precipitated from or suspended in a liquid.
Freeboard	The vertical distance between the normal maximum level of the surface of the liquid in a conduit, reservoir, tank, etc. and the top of the sides of the open conduit, reservoir, tank, etc. which is provided so that movements of the liquid will not overtop the confining structure.
Gauge	A device for measuring any physical magnitude.
Head	Energy per unit weight of liquid at a specified point, usually expressed in feet. FRICTION - Head lost as a result of disturbances between moving liquid and its conduit. STATIC - The vertical distance between the free level of the source of supply and the point of free discharge. TOTAL DYNAMIC - The sum of friction and static heads.
Imhoff Cone	A conically shaped graduated vessel used to measure the approximate volume of settleable solids in liquids.
Impeller	The rotating part of a pump containing the curved vanes.
Influent	A substance that moves into a containing space.
Ions	A dissociated charged atom or group of atoms, the migration of which affects the transport of electricity through an electrolyte.

Liquor	Any liquid. The term commonly used to designate liquid phase when other phases are present.
Loading	The time rate at which material is applied to a treatment device involving length, area or volume.
Matter	
INORGANIC:	Chemical substances of mineral origin.
ORGANIC	Chemical substances of animal, vegetable or industrial origin.
SUSPENDED:	Solids in suspension that can be removed by filtering.
SETTLABLE:	Solids which will subside in quiescent liquids in a reasonable period. (Usually one hour).
DISSOLVED:	Solids which are present in solution.
Moisture, Percentage	The water content of sludge expressed as the ratio of the loss in, weight after drying at 103°C, to the original weight of the sample, multiplied by one hundred.
Nonionic	Refers to an uncharged or electrically neutral particle.
Oxidation	The addition of oxygen, removal of hydrogen or the increase in the valence of an element.
Oxygen, Dissolved	The oxygen dissolved in a liquid, designated as D.O., usually expressed in mg/l or ppm.
Parts per Million	This is a weight ratio. This is equivalent milligrams per liter when the liquid has a specific gravity equal to water (or nearly so).
Per Cent	The term used for numerator of a fraction whose denominator. is always 100.
Percent of Dry Solids	The weight of dry sludge divided by the weight of wet sludge all times one hundred.
pH	A measurement of the hydrogen ion concentration in a liquid listed as the reciprocal of the base-10 logarithm.
Pollution	The addition of harmful or objectionable matter to water or air.
Polyelectrolytes	Long chained, high molecular weight, synthetic water soluble, organic coagulants; also referred to as polymers.

Polymers	See Polyelectrolytes
Precipitation	Settling of materials within fluids usually induced by the addition of chemicals.
Pre-treatment	As applied to sludge dewatering, pretreatment means conditioning or treatment previous to concentration to make the sludge more amenable to the desired process.
Process	A sequence of operations.
Quicklime	A calcined material, the major part of which is calcium oxide capable of slaking with water.
Ratio	The indicated division of two pure numbers. As such it indicates the relative magnitude of two quantities.
Reducing Agent	A material which can change a molecule from a higher to a lower oxidation state. Electrons are added to the molecule as it is being reduced.
Screen	A device with openings, generally of uniform size, used to retain or remove suspended or floating solids in flowing liquids.
Sedimentation	The process of subsidence and deposition of suspended matter, carried by a liquid, by gravity
Sludge	The accumulated settled solids deposited by a liquid containing more or less water to form a semi-liquid mass.
Slurry	The thickened state of a fluid such that it can be transported by pumping.
Solids	Material in the solid state.
DISSOLVED	Solids which are present in solution.
SETTLEABLE	Solids which will subside in quiescent water or liquid in a reasonable period. (usually one hour).
SUSPENDED	The quantity of material deposited when a quantity of liquid is filtered through an asbestos mat in a Gooch crucible.
TOTAL	The sum of all solids present in liquid.
VOLATILE	The quantity of solids lost on ignition of the total solids.
Specific Gravity	This is the ratio of the density of a substance to the density of an equal volume of water at a specified temperature. There is no unit. Density equals weight of unit volume.

Standard Methods	Methods of analysis of water, sewage and sludge approved by a Joint Committee of the American Public Health Association, American Water Works Association and Federation of Sewage Works Associations.
Surface Settling Rate	The result of a liquid loading to a vessel divided by the surface area of the vessel in a unit of time.
Syneresis	The separation of a liquid from a gel, with the destruction of the gel structure.
Tank	A circular or rectangular vessel used for holding liquids and fluids for some designated purpose.
Thickener	A type of sedimentation tank in which sludge is permitted to settle, usually equipped with scrapers to move the settled sludge to a sump from which it is removed by gravity or by pumping.
Treatment	Any definite process for modifying the state of matter.
Vacuum Filter	A filter consisting of a cylindrical drum, mounted on a horizontal axis, covered with a filter media, and revolving with a partial submergence in liquid. A vacuum is maintained under the filter media for the larger part of a revolution to extract moisture.
Viscosity	The cohesive force existing between particles of a fluid which causes the fluid to offer resistance to a relative sliding motion between particles.
Water, Potable	Water which does not contain objectionable pollution, contamination, minerals or infection and is considered satisfactory for domestic consumption.
Weir	A dam with an edge or notch used for even distribution of flows or measuring flows.
Zeta Potential	An electrical charge of the boundary between particles and the suspending medium that is related to repelling forces between floccules.