



**PDHonline Course C185 (2 PDH)**

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# **Chemical Treatment of Liquid Waste Streams**

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**PDH Online | PDH Center**

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C-3. Treatment Technology Terms.

Aerobic--Biological processes which require molecular oxygen.

Alcohols--A class of organic compounds characterized by a hydroxyl group. Methanol, ethanol, and propanol are examples of alcohols.

Aliphatics--A class of organic compounds characterized by a chain arrangement of carbon atoms.

Amines--A class of organic compounds characterized by ammonia with one or more hydrogens replaced by an alkyl group.

Ammonia--A colorless gas composed of nitrogen and hydrogen atoms which is extremely soluble in water.

Anaerobic--Refers to biological processes which require the absence of molecular oxygen.

Aromatics--A class of organic compounds characterized by one or more cyclic rings which contain double bonds. Benzene is a prominent member of this class.

Asphalticbitumen--Black or dark-colored cement-like substance composed mainly of high molecular weight hydrocarbons.

BOD (Biochemical Oxygen Demand)--A measure of the relative oxygen requirements of wastewaters, effluents, and polluted waters. BOD values cannot be compared unless the results have been obtained under identical test conditions. The test is of limited value in measuring the actual oxygen demand of surface waters.

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COD (Chemical Oxygen Demand)--A measure of the oxygen equivalent of that portion of the organic matter in a sample that is susceptible to oxidation by a strong chemical oxidant.

Colloidal particles--Particles that are so small that the surface activity has an appreciable influence on the properties of the particle.

Cyanide--A class of compounds characterized by the presence of a cyanide group which consists of a carbon atom triply bonded to a nitrogen atom.

DDD--Dichlorodiphenyldichloroethane.

DDT--Dichlorodiphenyltrichloroethane.

DNT, 2,4--Dinitroaniline.

Detention time--The time period that a waste stream is retained in contact with a treatment process; also referred to as retention time.

EDTA--Ethylenediamine tetraacetic acid.

Effluent--A waste product discharged from a process.

Elutriate--Liquid phase of a wash which is recovered by filtering or decanting.

Ethers--A class of organic compounds characterized by an oxygen molecule singly bonded to two organic groups of atom; i.e., R-O-R where R represents an organic group.

Flocculation--The coalescence of a finely divided precipitate.

Halocarbons--A class of organic compounds which contain carbon, one or more halogens, and sometimes hydrogen.

Influent--A process stream entering the treatment system.

Immiscible--Liquids which cannot be mixed or blended to form a uniform solution (e.g., oil and water).

Insolation--Average solar flux reaching the earth's surface, in watts per square meter.

Leachate--Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous wastes.

Leachate plume--The volume which encompasses the spread of leachate from its source.

Metals--Elements which form positive ions when their salts are dissolved in water.

MLVSS (Mixed Liquor Volatile Suspended Solids)--Concentration of volatile suspended solids in a wastewater and microorganisms mixture of an activated sludge treatment process. Volatile suspended solids are the fraction of total suspended solids which are combustible at 550 °C. Volatile suspended solids levels are a rough approximation of the organic portion of the total suspended solids.

Nitrification--Oxidation of nitrogen to nitrates; typically in biological waste treatment, nitrogen present in ammonia is oxidized to form nitrate ions.

129 Priority Pollutants--List of toxic pollutants for which the Environmental Protection Agency is required to publish effluent standards under Section 307 of the Clean Water Act of 1977.

Organics--Compounds containing carbon.

PCBs (Polychlorinated biphenyls)--A group of toxic chlorinated hydrocarbons most commonly used as heat transfer fluids. PCBs are persistent in the environment and are a suspected carcinogen.

Pesticide--A broad term that includes all chemical agents used to kill animal and vegetable life which interfere with agricultural productivity regardless of their mode of action. DDT, chlordane, aldrin, and dieldrin are examples of pesticides.

Phenols--A class of organic compounds characterized by one or more hydroxy groups bonded to a benzene ring.

Phthalates--A class of organic compounds characterized by adjacent ester groups attached to a benzene ring. Examples of phthalates are Di-N-Butylphthalate, Diethylphthalate, and Phthalimide.

Polynuclear aromatics--A class of organic compounds characterized by three or more aromatic rings.

Posttreatment--Processing of waste streams to remove secondary pollutants which have been subject to a treatment process designed to remove the object pollutants; e.g., denitrification of a wastewater stream after biological treatment to lower BOD.

Pretreatment-- Processing of waste streams prior to a treatment process designed to remove the object pollutants; e.g., equalization and/or pH adjustment prior to biological treatment to reduce a wastewater BOD.

RDX--1,3,5-trinitro-1,3,5-triazacyclohexane.

Reagent--Any substance used in a reaction for the purpose of detecting, measuring, examining, or analyzing other substances.

Sludge--Any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment

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plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

TDS (total dissolved solids)--Solids capable of passing through a standard glass fiber filter and dried to constant weight at 180 °C. Also referred to as filterable solids.

TKN (total Kjeldahl nitrogen)--The sum of free ammonia and organic nitrogen compounds which are converted to ammonia by digestion.

TNT--2,4,6--trinitro-toulene.

Treatment--Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

TSS (total suspended solids)--Solids that either float on the surface of or are suspended in water, wastewater, or other liquids, and which are largely removable by laboratory filtering and referred to as nonfilterable residue.

Zeolites--Hydrated silicates of aluminum and sodium and/or calcium which are used as ion exchange resins.

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