Glossary of Wastewater Terms For Level 1 & 2

Activated Sludge

Sludge that has undergone flocculation forming a bacterial culture typically carried out in tanks. Can be extended with aeration.

Advanced Primary Treatment

The use of special additives to raw wastewater to cause flocculation or clumping to help settling before the primary treatment such as screening.

Aerobic Wastewater Treatment

Oxygen dependent wastewater treatment requiring the presence of oxygen for aerobic bacterial breakdown of waste.

Anaerobic Wastewater Treatment

Wastewater treatment in the absence of oxygen, anaerobic bacteria breakdown waste. Produces H_2S (rotten egg smell) and Methane.

Bacteria

Single cell microscopic living organisms lacking chlorophyll, which digest many organic and inorganic substances. An essential part of the ecosystem including within human beings.

BOD - Biochemical Oxygen Demand

Since oxygen is required in the breakdown or decomposition process of wastewater, its "demand" or BOD, is a measure of the concentration of organics in the wastewater.

Clarifier

A piece of wastewater treatment equipment used to "clarify" the wastewater, usually some sort of holding tank that allows settling. Used when solids have a specific gravity greater than 1.

COD - Chemical Oxygen Demand

The amount of chemical oxidant required to breakdown the wastes, also an indicator of the concentration of organics.

Cold Climate Limitations

The limitations of various wastewater treatment options caused by severe cold and its incidents such as ice, snow, very low temperatures and so on.

Combined Sewer

Combining the municipal sewer systems with storm drainage. Risks overpowering the system in large rain events. The benefit is that pollutants from storm drainage get treated,

Combined Sewer Overflow (CSO)

When a combined sewer system is overpowered by storm drainage and overflows.

Detention Time - Retention Time, Residence Time

How long on average wastewater undergoes the wastewater treatment process. Time vary greatly across various types of wastewater treatment, from minutes to weeks.

Dewatered Sludge

The sludge after it's been dewatered, also know as sludge cake or biosolids.

Dewatering

Removing water from sludge or other solids.

Digestion

The breaking down of sludge and other waste biologically by microorganisms. Results in byproducts such as methane gas, carbon dioxide, sludge solids and water. Aerobic digestion requires oxygen, anaerobic digestion the absence of oxygen.

Denitrification

Biologically removing nitrate converting it to nitrogen gas.

Comminutors

Mechanical grinder for solids

Disinfection

The use of chemicals to kill any disease causing organisms in the polished wastewater. UV light can also be used.

Dissolved Oxygen (DO)

The amount of oxygen dissolved in the water. Measured in milligrams per liter.

Ecological Engineering

Systems designs that are considered to be "sustainable", that is with the aim of having little to no impact on earth's ecology. See Industrial Ecology.

Effluent

The final output flow of a wastewater treatment plant.

Extended Aeration

An aeration system that adds aerobic sludge digestion to the activated sludge process.

Facultative Ponds

Wastewater ponds with some form of aeration for oxygen replenishment. Can also use algae and other plants for oxygen replenishment.

Floc

Particulate and or bacterial clumps forming wooly looking clusters in wastewater. In biological processes such as extended aeration or activated sludge and others the floc contains aerobic or anaerobic

Flocculation

The process whereby a chemical or other substance is added to wastewater to trap or attract the particulate suspended solids into clusters or clumps of floc or flocculent, wooly looking masses.

Flocculent

The "floc" or wooly mass of clusters that is formed in flocculation. Many times used interchangeably with "flocculant" however truly refers to the floc mass and not the catalyst flocculating agent.

FOGS

Fats, oils, Grease, Soaps etc. in wastewater.

Grit Chamber

Usually in municipal wastewater treatment, a chamber or tank in which primary influent is slowed down so heavy typically inorganic solids can drop out, such as metals and plastics.

Headworks

The beginning of the treatment plant where the influent begins treatment.

Industrial Wastewater Treatment

Wastewater treatment for industries such as manufacturing, food processing, corrugators, printing and so on. Paper and pulp mills' treatment of wastewater is an example of industrial wastewater treatment. Municipal wastewater treatment would be an example not considered to

be industrial. (IPP Industrial Pretreatment Program enforces producers meet municipal limits for wastewater)

Influent

The untreated wastewater or raw sewage coming into a wastewater treatment plant.

Influent Screens

Screens used to remove large inorganic solids from the waste stream. (Bar rack - 3- 4") (Bar Screen – 3/8"-2")

MGD

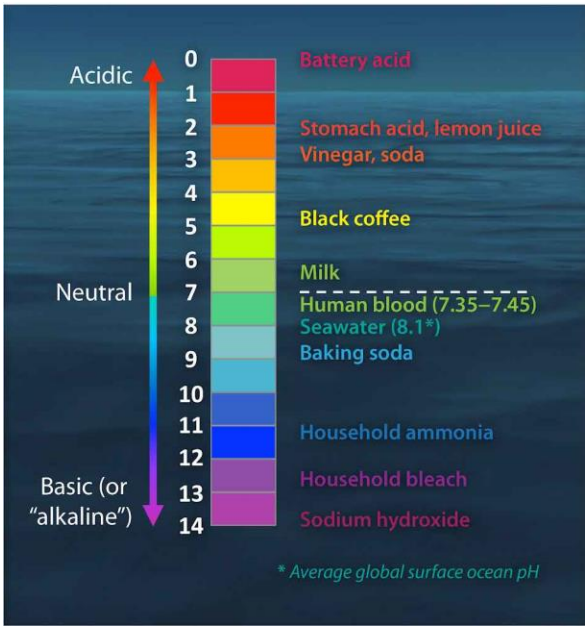
Million Gallons per Day - 694.4 gallons per minute. (1440 Min in Day)

N: Nitrogen

The measure of nitrogen usually as ammonia and nitrate present in various wastewaters.

pH

A measure of acidity or alkalinity of water, or any given substance. The scale is 1 to 14 with 7being neutral. Over 7 is alkaline or caustic, under 7 is acid or base.



P: Phosphorus

Is a mineral that naturally occurs in many foods contaminant on some permits requiring removal

Primary Wastewater Treatment

The first process usually associated with municipal wastewater treatment to remove the large inorganic solids and settle out sand and grit.

Reclaimed Water

Reusable wastewater from wastewater treatment such as tertiary treatment of wastewater in biological and other systems.

Sanitary Wastewater (domestic)

Wastewater from human domestic water use.

Scum

Usually fatty material in wastewater that floats.

Secondary Wastewater Treatment

Second biological process of digestion with bacteria.

Sludge

The solid waste material which settles out in the wastewater treatment process, sometimes biosolids. Can be dewatered and reused or disposed.

Sludge Dewatering

Removing the remaining water from sludge for reuse and to lighten the sludge for reuse or disposal.

Storm Water Run-Off (SRO)

The pulse of surface water following a rainstorm. The water carries sediment, gas, oil, animal feces, glass and other waste from the watershed to receiving waters creating a difficult urban/suburban wastewater problem. (Infiltration is SRO in sewage lines)

TDS - Total Dissolved Solids

Total Dissolved Solids (TDS) is the combined total of all dissolved solids in wastewater, both organic and inorganic and very fine, such as colloidal minerals. Generally particles must be smaller than two micrometers to be considered a dissolved solid. For example, salt dissolved in water is a dissolved solid. Therefore TDS will "survive" screening or other coarse filtration.

Tertiary Wastewater Treatment (Advanced)

Biological or chemical polishing of wastewater to remove organics, solids and nutrients. Tertiary wastewater effluent limits are generally 10 mg/1 BOD5 and 10 mg/1 TSS. The use of filtration to remove microscopic particles from wastewater that has already been treated to a Secondary Level. Anthracite coal is the filter medium used by the MWWD.

TSS - Total Suspended Solids

As the name implies, the total solid particles that are suspended (as opposed to dissolved) in the wastewater. TSS must be filtered out, flocculated, digested and so on for removal in the treatment of wastewater. Though not necessarily pollutants TSS is considered to be a measure of pollutants in water by the EPA in the US.

Turbidity

A measure of how clear water is in Nephelometric Turbidity Unit (NTU), invisible to the average naked eye until readings in excess of 100 are reached, typically determined by shining light through a sample placed in a turbidimeter.

Ultraviolet Disinfection (UV)

The use of ultraviolet light to kills bacteria and other microorganisms in water and wastewater. Typically a final treatment step.