EFFLUENT TREATMENT – PART III

REF: TT/ APRIL 2021/ WK 2

Effluent Treatment Plant (ETP)

Effluent Treatment Plant or ETP is the treatment system which is designed to treat effluent or wastewater generated from industries. Since textile industry generates large amount of wastewater during various processes and discharging of these untreated wastewaters is very harmful to the environment; it is necessary for these industries to set up wastewater treatment plant or ETP Plant. Thus, an effluent treatment plant plays an important role in textile industry by protecting environment from the harmful effect of wastewater.

The various components of the ETP depends on the type of effluent is to be processed. There are different types of ETPs available depending on the quality and quantity of the effluent. When wastewater passes through the ETP, pollutants are removed and the quality of the water is improved to an acceptance level and allows for final discharge to the environment without any risk.

Effluent treatment plant consists of four levels of treatment as below:

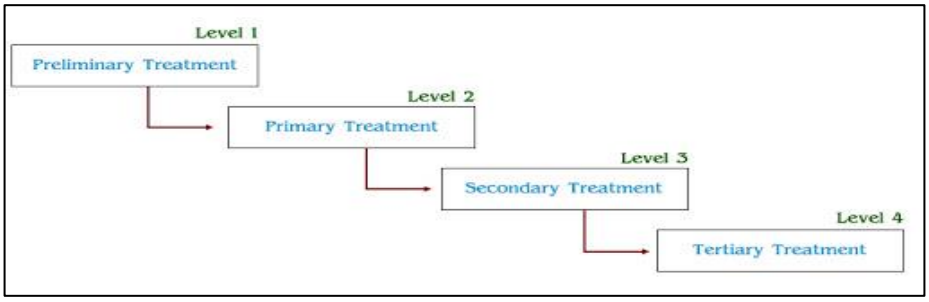

Fig 1.1 Levels of treatments in Effluent Treatment Plant (ETP)

Ref: neoakruthi.com

1. Preliminary Treatment – This level involves physical mechanism to treat wastewater. It involves screening which removes large solids, gritty materials etc. that may cause damage to equipment of the plant.

2. Primary Treatment – This level involves physical and chemical mechanisms for treatment of wastewater. In this step, remaining suspended solids are removed as much as possible. Wastewater enters into primary tank and stays there for long time and as a result heavier particle settle to the bottom and lighter particles float on the surface. In this treatment settled and floatable materials are eliminated by different processes and then it is passed to secondary treatment.

3. Secondary Treatment - Wastewater that enters into secondary tank is free from physical particles and it involves biological mechanism. The main purpose of secondary treatment is to provide BOD removal beyond. In secondary treatment, the dissolved organic compounds and color present in waste water is also removed or reduced. Most of the ETPs use biological treatment which involves aerated lagoons, activated sludge process, trickling filter and oxidation pond for the removal of BOD but activated sludge process is the widely used biological oxidation method for the treatment of wastewater.

4. Tertiary Treatment – This level involves physical, chemical and biological mechanism to remove residual suspended solids, dissolved solids and etc.; that are not removed in the earlier treatment levels. Depending on the wastewater condition, several disinfectants like chlorine, ozone, UV light are used. Wastewater after this treatment is finally fit for disposal or for further use.

Treatment	Operations
Primary	Screening
	Sedimentation
	Equalization
	Neutralisation
	Mechanical flocculation & Chemical coagulation
Secondary	Aerated lagoon
	Trickling filtration
	Activated sludge process
	Oxidation ditch & pond
	Anaerobic digestion
Tertiary	Oxidation technique
	Electrolytic precipitation & Foam fractionation
	Membrane technologies
	Electrochemical processes
	Ion exchange method
	Photo catalytic degradation
	Adsorption (Activated Carbon etc.)
	Thermal evaporation

Fig 1.2 Processes involved in different levels of treatments

Ref: fiber2fashion.com

References:

1. http://textilefashionstudy.com/
2. http://neoakruthi.com/
3. https://www.sciencedirect.com/
4. https://www.ijert.org/
5. https://www.fibre2fashion.com/

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Last week`s Answers: 1) TREATMENT 2) BIOLOGICAL 3) FUNGI 4) SLUDGE

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