

# **Dhirajlal Gandhi College of Technology**

## **Facilities in the Institution for the management of degradable and non-degradable waste**

At Dhirajlal Gandhi College of Technology, activities pertaining to keep the environment green and pollution free are encouraged and best efforts to manage waste from its origin to its final disposal are done. This includes the collection, transport, treatment and disposal of waste. It is worth mentioning that it is mandatory for students of all branches to undergo a course named Environmental Science through which awareness about the environment and related issues with solution strategies is imparted. Many awareness environment awareness programs are also organized.

### **Solid Waste Management**

1. Separate Dustbins for recyclable and non-recyclable wastes are available in common places.
2. Paperless communication (e-mail / WhatsApp communication) is a regular practice.
3. Usage of one-sided paper is encouraged.
4. Metal and other scraps are given to agents for further processing.

### **Liquid Waste Management**

1. Sewage Treatment Plant (STP) is installed and the treated water from STP is used to water the garden and flush out in toilets.
2. Rain Water Harvesting system is in place
3. Wastewater from the STP plant is also used for watering the plants

### **E-Waste Management**

1. Used batteries and electronics wastes are disposed of through outside agencies.
2. Outdated computers with minimum configurations not suitable for the revised regulations of the University are given to the needy school students for their usage or sold as scrap to authorized buyers.
3. The institution is started in the year 2011 and the computers, etc., are still under guarantee period and as such there is no manage hazardous waste.

## **SEWAGE TREATMENT PLANT (STP)**

The activated sludge process provides an excellent method of treating either raw sewage or more generally the settled sewage. The sewage effluent from primary sedimentation tank, which is thus normally utilized in this process, is mixed with 20 to 30 percent of own volume of activated sludge which contains a large concentration of highly active aerobic micro organisms. The mixture enters an aeration tank, where the micro organisms are mixed together with large quantity of air for about 4 to 8 hours. Under these conditions, the micro organisms will oxidize the organic matter, and colloidal matter tends to coagulate and form a precipitate, which settles down readily in the secondary settling tank.

The settled sludge is recycled to the head of aeration tank, and be mixed with sewage being treated. New activated sludge is continuously being produced by this process and a portion of it being utilized and sent back to the aeration tank, whereas the excess portion is disposed of properly along with the sludge collected during primary treatment after digestion.

The effluent obtained from a properly operated activated sludge plant, usually having a lower BOD than that of a trickling filter plant. BOD is removal up to 80-95% , and bacteria removal up to 90-95% .Moreover, land area required is less. However, in this process it is necessary to ensure that the supply of oxygen is present, continuous mixing of sewage and the activated sludge and that the ratio of volume of activated sludge added to the volume of sewage is being constant.

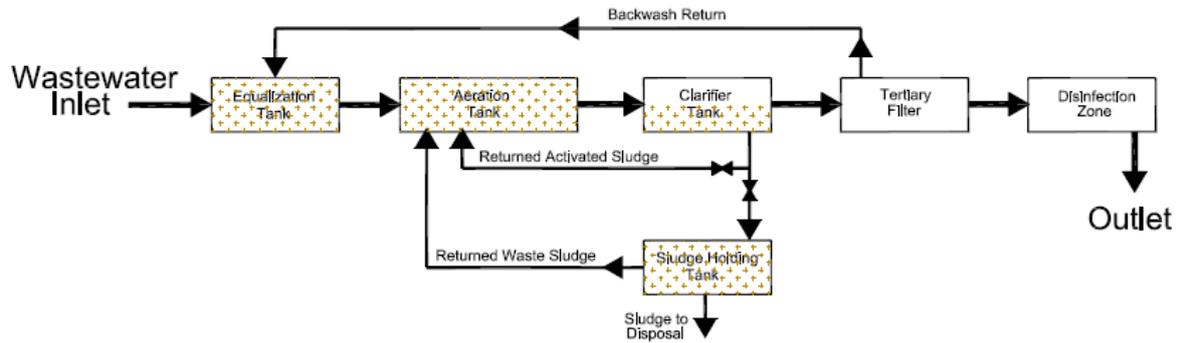
Moreover, there is a problem of obtaining activated sludge at the start of new plant. Hence, when a new plant is put in to operation a period of about 4 weeks must required to form sludge during this period all the sludge from the sedimentation tank will be returned through the aeration tank.

## **VARIOUS OPERATIONS AND UNITS OF TREATMENT**

The Following flow diagram show that the removal of girt and solids by screening in grit chamber and primary sedimentation tanks is generally considered after aeration. The pre- removal of these settle able solids is helpful in preventing deposits on aeration devices, and thereby not reducing their efficiencies. Moreover, if not pre-removal may settle down in the aeration tank, and by decomposition interface with the treatment process. Accordingly, girt removal, and primary sedimentation are considered necessary for a activated sludge process.

Sine in this process, it is necessary to keep the sewage as fresh as possible and the sedimentation tank is must required for treatment process. During this period, of primary detention may vary with the size of plant and the characteristics of sewage, but tank size will provide an overflow rate of about 40,000 liters per sq-m of plan area per day. For a depth of about 2.4m the detention time will be about 1.4 hours.

## Treatment Process Flow Chart



### CONCLUSION

By this STP method, harmful contaminant in water is removed and this water can be used for toilet flushing and gardening purpose. This STP method can be adopted in area where there is water scarcity in places and where the groundwater level is low.