

Liquid Waste Management in Cluster Development

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Abstract : There is a gradual depletion of the water table in the earth's crust, and it is required to converse and reduce the scarcity of water. This is only done by rainwater harvesting, recycling of water and by judiciously consumption/utilization of water and adopting unique treatment measures. Domestic waste is generated in residential areas, commercial settings, and institutions. Waste, in general, is unwanted, undesirable, and nevertheless an inevitable and inherent product of social, economic, and cultural life. In a cluster, a need-based system is formed where the project is designed for systematic analysis, collection of sewage from the cluster, treating it and then recycling it for multifarious work. The liquid waste may consist of Sanitary sewage/ Domestic waste, Industrial waste, Storm waste, or Mixed Waste. The sewage contains both suspended and dissolved particles, and the total amount of organic material is related to the strength of the sewage. The untreated domestic sanitary sewage has a BOD (Biochemical Oxygen Demand) of 200 mg/l. TSS (Total Suspended Solids) about 240 mg/l. Industrial Waste may have BOD and TSS values much higher than those of sanitary sewage. Another type of impurities of wastewater is plant nutrients, especially when there are compounds of nitrogen N phosphorus P in the sewage; raw sanitary contains approx. 35 mg/l Nitrogen and 10 mg/l of Phosphorus. Finally, the pathogen in the waste is expected to be proportional to the concentration of faecal coliform bacteria. The coliform concentration in raw sanitary sewage is roughly 1 billion per liter. The system of sewage disposal technique has been universally applied to all conditions, which are the nature of soil formation, Availability of land, Quantity of Sewage to be disposed of, The degree of treatment and the relative cost of disposal technique. The adopted Thappar Model (India) has the following designed parameters consisting of a Screen Chamber, a Digestion Tank, a Skimming Tank, a Stabilization Tank, an Oxidation Pond and a Water Storage Pond. The screening Chamber is used to remove plastic and other solids, The Digestion Tank is designed as an anaerobic tank having a retention period of 8 hours, The Skimming Tank has an outlet that is kept 1 meter below the surface anaerobic condition at the bottom and also help in organic solid remover, Stabilization Tank is designed as primary settling tank, Oxidation Pond is a facultative pond having a depth of 1.5 meter, Storage Pond is designed as per the requirement. The cost of the Thappar model is Rs. 185 Lakh per 3,000 to 4,000 population, and the Area required is 1.5 Acre. The complete structure will lining as per the requirement. The annual maintenance will be Rs. 5 lakh per year. The project is useful for water conservation, silage water for irrigation, decrease of BOD and there will be no longer damage to community assets and economic loss to the farmer community by inundation. There will be a healthy and clean environment in the community.

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