Sewage Treatment Process

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Sewage treatment refers to the removal of contaminants from human waste and household waste water. The process involves a combination of physical, chemical and biological processes to make the human waste as environmental friendly as possible. For this to happen there has to be a proper sewer system that directs the effluents from domestic , commercial and industrial sources in to the sewage treatment plant without exposing people, animals or the environment to any risk. The first stage of sewage treatment is the separation of solid waste from the liquid waste to enhance the subsequent chemical and biological treatment processes.

Sewage treatment can be carried out next to where it is generated for example in septic tanks aerobic or anaerobic treatment systems or it is transported through pipes in to a central sewage treatment point. In most countries sewage treatment infrastructure is owned and operated by municipal councils.

There are three phases involved in the sewage treatment; the primary phase is the separation of solid from liquids. This is done by passing the sewage effluents in to a basin where the solid waste is allowed to settle. In large scale sewage treatment plants, solid waste is found in large quantities and requires an automated and mechanized system to filter and sort the waste. The solid waste is later incinerated or disposed off in a landfill. This process is called screening and helps prevent the clogging of the sewage treatment plant and also improve efficiency.

In the second phase, the dissolved and suspended matter is subjected to micro organisms primarily bacteria. Bacteria feed on sugar and fats which are plenty in human waste therefore thrive well in such environment. This is done by creating a conducive environment for the micro organisms to multiply and feed on the organic matter, the end result are inorganic matter that are less harmful to the environment mainly water, carbon dioxide and ammonia. In large sewage treatment plants aerobic biological process is used where the sewage effluent is supplied with oxygen to enhance the growth of the micro organisms. Alternatively the liquid sewage matter may be subjected to anaerobic process where the bacterial process is denied oxygen at temperatures of 55 degrees centigrade. This process is commonly used in septic tanks. Though expensive due to heating of the sludge, anaerobic process has the benefit of biogas production which may be used for cooking.

The third phase known as tertiary phase involves releasing the treated water in to the ecosystem for irrigation or back in to the streams or oceans. This phase has several processes that are aimed at ensuring that the effluent quality is safe enough to be released back into the environment. These processes are filtration, lagooning and nutrient removal. Filtration uses sand to remove residual toxins. The effluents are then passed in to man made ponds known as lagoons to remove fine particles. Since waste water from sewage contains high levels of nitrogen and phosphorous releasing it into the environment leads to the growth of algae in large quantities. Algae uses up a lot of oxygen when decomposing and may cause deoxygenation of water killing marine life. It is important to subject the waste water to further process of nutrients removal.

Sewerage treatment plants require massive capital investments and perhaps this explains why waste water in most developing countries is discharged without treatment. However considering the impact of untreated water on the environment, any environment conscious government is duty bound to invest in these process.

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