

Conventional Sewage Treatment Plant



Conventional sewage treatment plant involves three stages, called primary, secondary and tertiary treatment.

First, with conventional sewage treatment plant the solids are separated from the wastewater stream. Then dissolved biological matter is progressively converted into a solid mass by using indigenous, water-borne micro-organisms. Finally, the biological solids are neutralized then disposed of or re-used, and the treated water may be disinfected chemically or physically (for example by lagoons and microfiltration).

The final effluent can be discharged into a stream, river, bay, lagoon or wetland, or it can be used for the irrigation of a golf course, green way or park. If it is sufficiently clean, it can also be used for groundwater recharge or agricultural purposes.

Pre-treatment

Pre-treatment conventional sewage treatment plant removes the materials that can be easily collected from the raw wastewater and disposed of. The typical materials that are removed during pre treatment include fats, oils, and greases (also referred to as FOG), sand, gravels and rocks (also referred to as grit), larger settle able solids and floating materials (such as rags and flushed feminine hygiene products).

Pre treatment also typically includes a sand or grit channel or chamber where the velocity of the incoming wastewater is carefully controlled to allow sand grit and stones to settle, while keeping the majority of the suspended organic material in the water column. Sand, grit, and stones need to be removed early in the process to avoid damage to pumps and other equipment in the remaining treatment stages.

Preliminary treatment processes include coarse screening, medium screening, shredding of solids, flow measuring, pumping, grit removal, and pre-aeration. Chlorination of raw wastewater sometimes is used for odor control and to improve settling characteristics of the solids.

Primary treatment Sedimentation

In the primary sedimentation stage [conventional sewage treatment plant](#), sewage flows through large tanks, commonly called "primary clarifiers" or "primary sedimentation tanks". The tanks are large enough that sludge can settle and floating material such as grease and oils can rise to the surface and be skimmed off. The main purpose of the primary sedimentation stage is to produce both a generally homogeneous liquid capable of being treated biologically and a sludge that can be separately treated or processed. Primary settling tanks are usually equipped with mechanically driven scrapers that continually drive the collected sludge towards a hopper in the base of the tank from where it can be pumped to further sludge treatment stages.

Secondary treatment

Secondary treatment of [conventional sewage treatment plant](#) is designed to substantially degrade the biological content of the sewage such as are derived from human waste, food waste, soaps and detergent. The majority of municipal plants treat the settled sewage liquor using aerobic biological processes. For this to be effective, the biota require both oxygen and a substrate on which to live. There are a number of ways in which this is done. In all these methods, the bacteria and protozoa consume biodegradable soluble organic contaminants (e.g. sugars, fats, organic short-chain carbon molecules, etc.) and bind much of the less soluble fractions into floc. Secondary treatment system commonly employs an Aeration Tank wherein microorganism culture completely degrades organic as well as inorganic impurities in the presence of either Surface Aerators or Diffused Aeration system.

Secondary sedimentation

The final step in the secondary treatment [conventional sewage treatment plant](#) stage is to settle out the biological floc or filter material and produce sewage water containing very low levels of organic material and suspended matter.

Tertiary treatment

The purpose of tertiary treatment of [conventional sewage treatment plant](#) is to provide a final treatment stage to raise the effluent quality before it is discharged to the receiving environment (sea, river, lake, ground, etc.). More than one tertiary treatment process may be used at any treatment plant. If disinfection is practiced, it is always the final process. It is also called "effluent polishing".