Centralised Treatment

Description

Centralised sewage treatment is nowadays the most common means of handling domestic wastes in urban areas.

The wastewaters from a toilet, shower, bath, laundry and kitchen, flow down a sewer pipe to a common sewer which runs down to bigger and bigger pipes and ultimately to a pumping station.

From there, it is pumped up to a trunk sewer which carries the wastewater (the sewage) to a sewage treatment plant (STP). If the STP is a long way away, there may need to be several pumping stations to help it along.

When the wastewater arrives at the sewage treatment plant, it is passed into a sedimentation tank where solid particles are encouraged to settle to the bottom. This is known as "primary treatment".

Some chemical and biological pollutants which adhere to the solid particles are also removed, but there are still pollutants and disease organisms in the wastewater.

3 Stages of Treatment

To take the chemical and biological pollutants out, the sewage is normally passed through equipment which aerates it, in order to help provide an environment which produces lots of aerobic bacteria.

The sewage is normally aerated by equipment such as trickling filters, activated sludge beds or Pasveer channels. This is called "secondary treatment".

After secondary treatment, the effluent can be given tertiary treatment. This can entail exposing the effluent to natural biological processes by storing it in lagoons or wetlands for many days before releasing it into the environment, normally a natural watercourse.

What is the Best & Safest Method?

Until recently, most regulatory authorities assumed that centralised sewerage was the best and safest means for treating wastewater.

In too many unsewered areas, people had seen septic systems which were not working properly, and which were polluting the environment and creating unsafe areas in backyards, streets and waterways.

People saw that with centralised sewerage, the wastewaters were taken away and treated by a responsible public authority - in Sydney, the Water Board, the forerunner of Sydney Water.

But in the early 1970s, people started to realise that centralised sewerage was also polluting the environment and creating areas which were unsafe for people.

In the case of Sydney unfortunately, it was found that to bring the sewerage system up to the standard of best international practice would be very costly. Even today, after billions of dollars of expenditure, much remains to be done.

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The Cost of Sewage

Communities pay the costs of building, operating and maintaining pumps, pipes, reservoirs and centralised sewage treatment facilities. Even with the high costs, centralised sewage treatment does not make our waste environmentally safe.

On-site septic systems also have their problems, with seepage allowing the release of viruses and bacteria.

One of the main causes of pollution of our water supply is sewage. The average family flushes around 40,000 litres of water every year. Combined with human waste, it represents about 8 tonnes of polluted water per person each year.

Advantages of Centralised Treatment	Disadvantages of Centralised Treatment
Sewage health hazards are removed from concentrated centres of population.	Sewage always contains disease organisms because there will always be some people in the community who will be ill. Centralised sewage treatment concentrates these organisms.
A centralised sewerage treatment uses comparatively little space to treat the wastewater. This makes them suitable for handling wastewater from high-density urban areas where there is not much land to treat it on site.	Because it is a convenient method of disposal, heavy metals are often discharged by industry into sewers. These pollutants may not always be removed by the STP.
The system is convenient for the householder and amenable to central oversight and control. The individual home-owner is generally not involved in installing, maintaining and operating this system, and these costs are met through rates paid to the service provider.	Large volumes of water are required as a transport medium for relatively small volumes of human waste.
Frequently, the government subsidises or provides this service, creating an impression of low cost to the user.	To cope with stormwater, the pipes and pumps need to be three or more times larger than what is needed to handle the sewage alone.
	The amount of energy required to transport the wastewater from the houses to the STP, and to treat it there is very high.
	The energy and resources to install the hundreds of kilometres of sewers, the pumping stations and STPs are very high and need to be subsidised to be comparable in cost to on-site systems.
	The sewerage system has to be designed for population growth. If this is not estimated properly, the system may not cope with demand.
	This system is convenient, anonymous and subsidised. It means that awareness of water conservation or pollution control by households and industry is quite weak.

After risk and uncertainty are considered, the advantages of centralised sewerage are frequently outweighed by the disadvantages.