How Is Sewage Treated?

Editor's Note: In this era of development and expansion of sewer treatment plants, the following article on how sewage is treated is timely.

It is a condensation of an article in the Washington Post, based on information from the U.S. Environmental Protection Agency and Washington Suburban Sanitary Commission.

Sewage treatment plants transform raw wastewater from a noxious mixture of solids and liquids into an effluent, or liquid discharge, that can be assimilated by the receiving stream or river.

Large objects that find their way into all sewage systems-boots, old tires etc.- are screened out. The sewage is sent to grit-removal chambers, where sand and other coarse inorganic particles settle out. The sewage is then ready for primary sedimentation where larger organic solids settle out, leaving the first accumulation of sludge.

Secondary Treatment

The liquid is carried to retention tanks and aerated, or mixed with air through the use of blowers. Aeration provides the oxygen for serobic bacteria, helpful organisms that feed on the solids remaining in the sewage. This process forms activated sludge containing a high concentration of aerobic bacteria.

Some of the activated sludge is recirculated through new liquid entering the treatment system to provide for continuing biological action; the rest is sent to sludge disposal units. As this process continues, the level of suspended solids and biochemical oxygen demand- the organic substances that deprive water of oxygen-are reduced.

This generally is followed by final settling or sedimentation, which produces still more sludge.

If secondary treatment is the higest level purification provided by a plant, the remaining liquid is disinfected, usually with chlorine, then sent to a stream. Secondary effluent is reasonably clear, but still contains oxygen-demanding substances, phosphorous and nitrogen and probably contains viruses. If properly disinfected, odor problems should be minor.

Advanced Treatment

Various methods of advanced treatment are (possible)... Generally speaking, the liquid sewage, before disinfection, is subject to further treatment and various chemicals are added to precipitate out additional solids, organics and phosphorous. The amount of removal is directly proportional to the amount of chemical used, and tremendous quantities of sludge can be produced at this point.

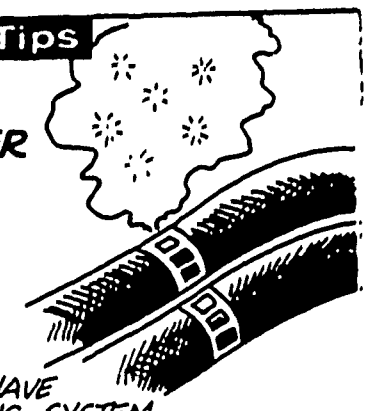
Nitrogen also is removed in advanced systems, and at least three different methods (can be used)...

Effluent from an advanced wastewater treatment system should be sparkling clear and look like drinking water. Practically all oxygen - demanding material, phosphorous and much of the nitrogen has been controlled. It is not regarded as drinkable, although direct re-use is under study.

Sludge removed from the sewage during the various phases of treatment is thickened by one of two processed, then incinerated or disposed of by any of several land-application methods.

Sewage treatment plants that depend on biological action (bacteria) for their purifiers can adversely be affected by toxic materials, which can kill the helpful bacteria. In regional treatment plants, where there are many treatment tanks, it would be unlikely that all could be knocked out at once.

Auto Service Tips



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