

Self Purification Process:

When sewage is discharged into a natural body of water, the receiving water gets polluted due to waste products, present in sewage effluents. But the conditions do not remain so for ever, because the natural process of purification such as dilution, sedimentation, oxidation-reduction in sunlight, etc, go on acting upon the pollution elements, and bring back the water in to its original condition. The automatic purification of polluted water, in due course is called the self purification phenomenon. However if the self purification is not achieved successfully due to either too much of pollution discharge in to it or due to other causes, the river water itself will get polluted, which in turn, may also pollute the sea where the river outfalls.

Factors influencing self purification process:

1. Temperature
2. Turbulence
3. Hydrography such as the velocity and surface expanse of the river stream.
4. Rate of reaeration etc.

Temperature:

Besides affecting the dilution and sedimentation rates, the temperature also affects the rate of biological and chemical activities, which are enhanced at high temperatures and depressed at lower temperatures. The dissolved oxygen content of water, which is very essential for maintaining aquatic life and anaerobic conditions (so as to avoid the anaerobic decomposition and subsequent nuisance caused by the eruption of foul odors) is also influenced by temperature. At higher temperature the capacity to maintain the D.O concentration is low.

Turbulence:

while the rate of biological and chemical activities are high, causing thereby rapid depletion of D.O this is likely to lead to anaerobic conditions, when the pollution due to putrescible organic matter is heavy. The turbulence in the body of water helps in breaking the surface of the stream of lakes, and helps in rapid re-aeration from the atmosphere. Thus it helps in maintaining aerobic conditions in the river stream, and in keeping it clean. Too much of turbulence, however is not desirable, because it cannot be at the bottom sediment increases the turbidity and retards algae growth, which is useful in reaeration process. Wind and under current in lakes and oceans cause turbulences which affect their self-purification.

The hydrography:

Affects the velocity and surface expanse of the river stream, High velocities cause turbulence and rapid reaeration, while large surface expanse(for the same cubic contents) will also have the same effects.

Dissolved oxygen:

The large amount of dissolved oxygen present in water, the better and earlier the self purification will occur. The amount and type of organic matter and biological growth present in water will also affect the rate of purification. Algae which absorbs carbon dioxide and gives out oxygen, is thus very helpful in the self purification process.

The rate of Reaeration:

The rate at which the D.O deficiency is replenished, will considerably govern the self purification process. The greater is the rate, the quicker will be self-purification, and there will be no chances of development of anaerobic conditions.

