

Thermal Pollution

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Thermal pollution basically refers to the increase in temperature of water present in natural streams or lakes due to addition of heated water discharged from certain industries, such as nuclear power plants, thermal power plants steel plants, oil refineries, paper mills, etc. directly into the streams or lakes. This hot water discharged into the water bodies actually result from their cooling processes.

The streams or lakes serve as the breeding place for a host of aquatic organisms and plants. With substantial rise in temperature of the water in the streams and lakes as a consequence of this thermal pollution, the heat intolerant species (both the aquatic organisms and plants) are killed, thereby resulting in the flourishing of mostly the heat tolerant species which are undesirable to us.

The hot water discharged into the water bodies result in drastic alteration of the aquatic ecosystem by adversely affecting the entire aquatic food chain. Moreover the warming of water also results in an increase in the Biochemical Oxygen Demand (BOD) value with corresponding decrease in the Dissolved Oxygen (DO) value. With corresponding increase in the BOD value the aquatic organisms become also susceptible to parasites, toxins and pathogens. It also results in an increase in the corresponding metabolic rate of the aquatic organisms, thereby resulting in corresponding oxygen requirement. It has been observed that certain aquatic organisms are totally eliminated from the aquatic community if the temperature of the water body rises by 10°C . Heated water also retards the hatching of trout eggs and also adversely affect the movement of migratory fish and spawning process.

A phenomenon is commonly associated with the concept of thermal pollution. It is known as thermal shock. This actually refers to sudden large scale death of aquatic life due to sudden sharp rise in the temperature gradient of the water.

The most common form of controlling thermal pollution is by constructing a cooling pond where the hot water discharged from the industries can be collected and subsequently cooled before it is being discharged into the water bodies. Cooling towers to dissipate the heat energy before discharging the heated waste water into the water bodies can be also used to control thermal pollution.