



Eutrophication and its Impact

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INTRODUCTION: Eutrophication is termed as gradual increase of phosphorous, nitrogen and other organic substances in the aquatic ecosystem like a lake. Eutrophication usually increases the fertility of this ecosystem which results in sudden algal bloom in the ecosystem. This material enters the ecosystem either from agricultural runoff and dead remains of living organisms. As the water source become nutrient rich the concentration of algae and microorganisms develop on the surface of the water body. It may sound positive as algae develop at faster rate but in fact it chokes the life of other living organisms present in the water body. The developed algae cover the surface preventing sunlight and oxygen supply to the life underwater. Eutrophic waters are murkier and contain less life than a non-eutrophic water body. Another kind of eutrophication which includes human intervention is known as cultural eutrophication in which the process of contamination increases by the introduction of sewage, detergents and mainly fertilizers. This kind of eutrophication has adverse consequences on freshwater resources, fisheries and other recreational places of waterbodies. Eutrophication is not limited to stagnant water bodies only but has equal contribution to the coastal waterbodies too, but unlike stagnant water sources eutrophication in marine waters is dominated by excess nitrogen content, thus knowing nitrogen content is an important factor in saltwater body. Eutrophication in marine waters can lead to hypoxia/anoxia which kills fish which play an important role in the ecosystem. Terrestrial ecosystems have similar impacts from ecosystem. Other impact of eutrophication leads to competitive release which attracts invasive species from other ecosystem subduing the natural species of that ecosystem leading to their extinction. Eutrophication not only causes problem to the ecosystem but to humans as well for which a prevention and reversal system is needed.

Measures to prevent eutrophication include minimizing point source pollution from the sewage under this measure rivers and lakes are targeted which act as dumping places for industrial and municipal discharges. Raw sewage being the point source pollutant must be treated in a proper manner. Upgrading of sewage treatment plants and passing the raw sewage through secondary treatment plant might be promising in mitigating the problem to some extent. However it is impossible to completely eliminate the nutrient rich source and could be controlled with the support of stringent law regulations. Controlling of agricultural wastes could be simultaneously adhered with certain simple precautions like using right quantity fertilizers at the appropriate time of the year with correct application method. Covering the ground with crops throughout the year prevents erosion. Planting plant buffers in the agricultural field and practicing conservation tillage which reduces the number of times the ground is tilled which enhances the chance for the nutrients to be absorbed into the ground. Geo-engineering is another form of artificial manipulation as a process of biogeochemical techniques. It is practiced mainly in ecosystems where the phosphorous content is high thus phosphate sorbent materials like alum and aluminum sulphate are used which considerably reduce the phosphorous content in the water body which reduces the advance of algal growth in the water body. Geo-engineering thus helps in the control of algal bloom.

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CONFLICT OF INTEREST

The author states there is no conflict of interest.