

World's freshwater bodies choked with phosphorus

Eutrophication at the Vaigai river in Madurai. | Photo Credit: [S.James](#)

Phosphorus levels in our freshwater bodies are escalating and this could pose a serious threat to the ecosystem, warns a new report in *Water Resources Research*.

The study points out that globally, due to human activities, about 1.5 teragrams of phosphorus (one teragram is equal to one billion kilograms) were dumped in a year into the freshwater systems.

Calculating the total global anthropogenic (caused by human activity) phosphorus pollution, China contributed the most with 30%, followed by India (8%), the USA (7%) and Spain and Brazil (6% each).

The researchers analysed the pollution from point sources first. i.e., the pollution from a single identifiable source like sewage pipes.

Breaking it down by country, the largest contributor was China, followed by USA and then India. 0.97 teragrams of phosphorus was dumped every year from point sources.

Non-point sources of pollution like erosion, run-off and leaching contributed to the other half of the pollution. The domestic sector was the largest contributor of phosphorus accounting for 54%, followed by agriculture (38%) and industry (8%).

The report points out that the phosphorus load from agricultural fields increased by 27% over the study period (2002 to 2010). They write that the increase is due to the extensive use of mineral fertilizers and manure. Cereal-crop cultivation fields contributed to the highest phosphorus run-off.

Grey-water footprint is the amount of freshwater required to dilute the pollutants. It can also indicate whether the water body can handle the pollution or get affected by it.

“In many areas of the world either there’s not enough water to assimilate the phosphorus or the pollution load is so huge that the water system can’t assimilate everything,” said Mesfin Mekonnen, author of the study from the University of Nebraska, in a release. “Eutrophication [sudden increase in nutrients in a water body leading to outburst in algae, floating plants, microbes etc] due to phosphorus pollution causes algal blooms, which can lead to the mortality of fish and plants due to lack of oxygen and light. It also reduces the use of the water for human purposes.”

The global grey-water footprint increased by about 15% within the study period.

The researchers assessed the phosphorus-related water pollution levels in 20 river basins across the globe. The Huang He river basin of China ranked first, followed by the Indus river basin. The Ganges basin ranked fourth in the list of polluted river basins.

“The results of this study may stimulate national governments to formulate grey-water footprint reduction targets [and also work towards] reducing the application of phosphorus in agriculture,” says the report.

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