



Toxics Link
for a toxics-free world

Press Release

Ganga waters polluted with plastics and microplastics, study finds

New Delhi, July 22, 2021: A new study titled, ‘**Quantitative analysis of Microplastics along River Ganga**’ released by Delhi-based NGO Toxics Link today finds that the river is heavily polluted with microplastics. The findings reveal the presence of microplastics in all samples collected from the river at Haridwar, Kanpur and Varanasi. The river waters were found to be polluted with multiple kinds of plastic, the highest concentration being found at Varanasi, comprising of single-use and secondary plastic products. Microplastics are defined as plastics less than 5 mm in length and recognized as a major source of marine pollution of significant concern, due to their persistence, ubiquity and toxic potential. Untreated sewage from many cities along the river’s course, industrial waste and religious offerings wrapped in non-degradable plastics add large amounts of pollutants to the river as it flows through many cities that are densely populated. The plastic products and waste materials released or dumped in the river break down and are eventually reduced to Micro particles and the river finally transports significantly large quantities downstream into the ocean which is the ultimate sink of all plastics being used by humans. “Essentially all along microplastics are flowing into the river system. It does reflect or suggest a direct linkage between the poor state of both solid and liquid waste management; hence it is critically important to initiate steps to remediate it, said Priti Mahesh, Chief Coordinator at Toxics Link.

The river water testing was carried out in collaboration with the National Institute of Oceanography in Goa and a set of five water samples were collected from the river at Haridwar, Kanpur and Varanasi. The samples were tested through FTIR to identify the exact type or resin core and the results show presence of significantly high (40) different kinds of polymers as microplastics in Ganga waters. Resins like EVOH, Polyacetylene, PIP, PVC and PVAL were predominant in all three locations. The shapes and nature of the observed resins ranged from fibers to fragments, films and beads. Fragments were the predominant shape in all locations followed by film and fiber. Among the three cities, Varanasi showed the maximum load of microplastics in the Ganga waters as compared to the other two cities. The results indicate greater microplastic pollution in the downstream river, from Haridwar to Varanasi. Microbeads were observed in Varanasi and Kanpur, while no beads were found in Haridwar. “Haridwar resulted in the lowest number of MPs/m³ (1.30±0.518) as compared to other two locations Varanasi and Kanpur. The most frequent size range observed in all the samples was <300µm,” shared Dr Mahua Saha, the lead researcher from NIO.

Microplastic pollution in the Ganga can have many ramifications, as its water is used for various purposes which can lead to severe impacts on the environment as well as human health. The river is the major source of drinking water for cities situated along its banks and microplastics pollution is a cause of concern. Though, currently there is inadequate information on health impacts it is important to know and be mindful of the fact that plastics are laced with multiple types of additives and chemicals that are known toxins which could be leaching into the water. There are reports that also suggest that MPs can pass through the filtration systems and finally land up in our body. Discarded plastic waste contributes to marine pollution with devastating consequences for marine life and the habitats they depend



on and affects the food web due to uptake of MPs by marine organisms. More than 663 species are affected adversely due to marine debris and 11% of them are said to be related to microplastic ingestion alone. These microplastics being drained from the river system into oceans can cause serious imbalance in the marine-ecosystem and food web.

Though Plastic waste management Rules have been in force in the country their implementation remains poor. Improving implementation of the Plastic Rules, along with enforcing a stricter ban on single-use plastics is a critical need. Also, there is requirement for more data and research on microplastics and their impacts on our river systems. “We need to address the threat of plastic on aquatic life more realistically and with a futuristic eye. Various stakeholders, including the industry, government, civil society organisations, need to join hands for improving plastic waste management and the subsequent reduction in microplastic pollution”, stated Satish Sinha, Associate Director at Toxics Link.

Key Findings:

- **The Ganga was found to be polluted with plastic waste mainly single-use and secondary plastic products**
- **The number of MPs detected in the surface water of river Ganga in Varanasi was (2.42±0.405 MPs/m³)**
- **The number of MPs detected in surface water of river Ganga in Kanpur was (2.16±0.500 MPs/m³)**
- **Haridwar resulted in the lowest number of MPs/m³ (1.30±0.518) as compared to other two locations Varanasi and Kanpur**
- **Fragments were the predominant shape in all locations followed by film and fiber. Slight difference was observed in Kanpur as fibers were more abundant than films**
- **The most frequent size range observed in all the samples was <300µm**
- **Black and brown colored particles were found to be more in number followed by colored particles in all the three locations. Dominance of black colored particles suggests its origin from abrasion of tires**
- **Several types of rubbers (butadiene, polyisoprene, natural rubber) were abundantly found in the river**
- **40 different types of polymers were found during analysis. EVOH, Polyacetylene, PIP, PVC and PVAL were predominantly found in all the three locations**

For Report: <http://toxicslink.org/docs/Quantitative%20analysis%20of%20Microplastics%20along%20River%20Ganga.pdf>

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