

Impact of Microplastic Contaminants on Marine Environment and its Life

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Abstract

Microplastics are the smallest plastic materials formed by the disintegration of larger plastics. Some microplastics are made directly and used as raw materials for cosmetics. Currently, these contaminants are found almost in the entire marine environment. The complexity in the chemical composition of the plastic reduces its biodegradability and the negligence in disposal makes way for them to enter and accumulate in the aquatic environment. Presently, this is a growing scientific concern since these tiny particles are easily accessible to a wide variety of aquatic biota owing to their small size and are eventually transferred via the marine food web. As a result, toxic contents accumulate in marine organisms and cause toxicity to tissues. In addition, these microplastic particles also act as a carrier for other toxic pollutants. Because, it will absorb the other toxic contaminants such as heavy metals, pesticides and hydrocarbons and boost the toxicity. The chronic biological effects on marine organisms are due to the accumulation of microplastics and its chemical components in their cells and tissues. Thus, it is necessary to recognize the possible impact of microplastics on the marine ecosystem. It will help to find out the preventive measures. But, the toxicity study on microplastics on marine environment and the biological organisms is very limited. Since, it is the need of the hour



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to find out possible impact of microplastic on marine environment and its organisms. There is an urgent need to control the overuse of plastic and related materials and to enforce certain laws and policies to manage plastic waste. This study depicts the sources, fate and impact of seafood, especially on the food chain, and discusses some of the environmentally mitigation measures to control the impact of microplastic toxicity on the marine ecosystem.

Keywords: Surface water; sediments; marine organisms; Toxicity

Biography

Dr. A. Sundaramanickam is an Associate professor at the Centre of Advanced Study in Marine Biology, Faculty of Marine Sciences, Annamalai University, India where he has been a faculty member since 2005. Specifically, his research focuses on the following areas: (1) Marine pollution and Bioremediation 2) Microplastics Pollution and its impact (3) Waste water treatment (4) Water quality management and (5) Biopolymer production. He has operated the Seawater Quality Monitoring project funded by Ministry of Earth Sciences, Government of India, as Principal Investigator. He has published several book chapters and more than 65 papers in scientific journals such as Environmental Pollution, Marine Pollution Bulletin, Environmental Management, Environmental Science and Pollution Research, Critical Reviews in Environmental Science and Technology, Enzymes and Microbial Technology, Journal of the Mechanical Behavior of Biomedical Materials etc. Dr. A. Sundaramanickam also reviewed numerous manuscripts for more than 25 journals. Currently he serves academic editor for PLoSOne. He has also reviewed research proposal for many financial agencies and also, he has served as a technical committee members and chaired session in National and International conferences. He has received several research awards for his accomplishments.