

# Strengthening of Existing Water Treatment Procedures to Respond to the Presence of Microplastics in the Drinking Water

Saurabh RamBihariLal Shrivastava, Prateek Saurabh Shrivastava<sup>1</sup>

Vice-Principal Curriculum, Member of the Medical Education Unit and Institute Research Council, Department of Community Medicine, Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth – Deemed to be University, <sup>1</sup>Department of Community Medicine, Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth – Deemed to be University, Ammapettai, Nellikuppam, Chengalpattu, Kancheepuram, Tamil Nadu, India

## Abstract

Sustaining optimal health and well-being requires the contribution of multiple sectors and the role of environment sector is indispensable to the attainment of the same. Different types of hazards have been attributed to microplastics, based on the extent and route of exposure. There is an indispensable need to optimize the existing waste-water and drinking-water treatment systems, as this can significantly minimize the concentration of these harmful substances. In conclusion, humans have been exposed to microplastics through a wide range of sources. Acknowledging the fact that plastics in themselves are potential threats for climate deterioration and health hazards, it is high time that adequate focus should be given towards their reduction in production and optimal treatment to eventually minimize the health risks.

**Keywords:** Drinking water, health, microplastics

## INTRODUCTION

Sustaining optimal health and wellbeing requires the contribution of multiple sectors, and the role of environment sector is indispensable to the attainment of the same.<sup>[1]</sup> Even though a large number of environment pollutants have been identified and explored, the role of microplastics (plastics with length <5 mm) has not been yet studied in detail.<sup>[2,3]</sup> It is worth noting that these substances are universal and present in abundance in the water (viz. sea, fresh, waste, and drinking water), air, and food substances.<sup>[2]</sup> The estimates about the presence of microplastics in the drinking water are minimal at present and have not been precisely estimated, but the bottom line is that we have to act together to stop the rise in plastic pollution across the globe.<sup>[3]</sup>

### Potential toxicity of microplastics

Different types of hazards have been attributed to these pollutants, based on the extent to which a person has been exposed and the route of exposure.<sup>[2,3]</sup> Apart from physical and chemical hazards, the adverse effect of biofilms (produced by microorganisms) combining with microplastics in drinking water is also worth understanding.<sup>[3,4]</sup> Even though the present concentration of these substances in drinking water

is not alarming, specific measures have to be taken to reduce their production and inactivate the pathogens through proper disinfection.<sup>[2]</sup> This is derived from the fact that regardless of the potential health risks attributed to microplastics in drinking water, the concerned stakeholders should take appropriate measures to benefit the environment as a whole.<sup>[2,4]</sup>

### Need to strengthen existing strategies

Moreover, there is an indispensable need to optimize the existing wastewater and drinking water treatment systems, as this can significantly minimize the concentration of these harmful substances.<sup>[5]</sup> In fact, the available estimates suggest that treatment of wastewater can remove in excess of 90% of microplastics.<sup>[2]</sup> Nevertheless, the remaining 10% of the microplastics cannot be removed by the conventional treatment alone and will essentially require the adoption of advanced treatment modalities, including nanofiltration.<sup>[2,5]</sup>

**Address for correspondence:** Dr. Saurabh RamBihariLal Shrivastava, Professor, Department of Community Medicine, Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth (SBV) – Deemed to be University, Tiruppur - Guduvancherry Main Road, Ammapettai, Nellikuppam, Chengalpattu, Kancheepuram, Tamil Nadu - 603108, India.  
E-mail: drshrishri2008@gmail.com

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Apart from this, water suppliers should implement measures to ensure the removal of microorganisms and chemicals in drinking water and even optimize the water treatment process.<sup>[2,3]</sup>

### Proposed recommendations

The recent recommendations given by the international stakeholders do not envisage for the daily monitoring of these plastics, as no direct human health concern has been identified.<sup>[2]</sup> Nevertheless, strengthening of the proven measures, including reducing the use of plastics through bans, decreasing littering, and improvising recycling programs, has to be given due attention.<sup>[1,2]</sup> Further, it is high time to undertake extensive research to identify the sources of microplastics, attributed short and long term health effects, and assess the effectiveness of various treatment procedures.<sup>[2,5]</sup>

### CONCLUSION

In conclusion, humans have been exposed to microplastics through a wide range of sources. Acknowledging the fact that plastics in themselves are potential threats for climate deterioration and health hazards, it is the need of the hour to

give adequate focus toward their reduction in production and optimal treatment to eventually minimize the health risks.

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### Conflicts of interest

There are no conflicts of interest.

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