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Microplastics in drinking water and agricultural Soils: Assessing contamination sources, risks, and mitigation strategies

Abstract:

Microplastics, defined as plastic particles smaller than 5 millimeters, originate from the degradation of larger plastics or are intentionally produced for industrial uses. Their widespread presence in aquatic and terrestrial environments raises significant ecological and health concerns, with detection in oceans, rivers, soils, and even drinking water and food supplies. Microplastics pose risks to marine and terrestrial ecosystems, potentially causing harm to aquatic life and disrupting soil health, which can lead to reduced agricultural productivity. Additionally, their ability to absorb harmful chemicals raises serious concerns about human health risks through contaminated water and food consumption. Detection and monitoring of microplastics face challenges due to the lack of standardized methods and variability in sample preparation, complicating accurate assessments. Advanced techniques, such as microscopy and spectroscopy, are employed, but inconsistencies in detection limits and interference from organic materials persist. Mitigation strategies include advanced water treatment technologies, sustainable agricultural practices, and robust policy measures aimed at reducing plastic use. Educating the public and raising awareness are crucial for fostering responsible practices and promoting alternatives to plastics. In conclusion, addressing the pervasive threat of microplastics requires a multifaceted approach that integrates research, policy frameworks, and community engagement. By prioritizing these efforts, we can effectively mitigate the impact of microplastics in our ecosystems, ultimately protecting both environmental and public health.

Biography

Sivamani Selvaraju has completed his PhD in Chemical Engineering from Anna University, Chennai, India. He is one of the top researchers in the University of Technology and Applied Sciences, a premier public University in Oman. He has published more than 150 papers in reputed journals and has been serving as a reviewer in many journals of repute.