

Microplastic Mitigation Measure: State of the Art

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Microplastic pollution is an increasing environmental problem and include the pollution of land, air and water. In particular, microplastics (<5-1mm) and nanoplastics (<1mm) containing organic polymers and biopolymers, in marine effluents are a major concern for their power of pervasive and potentially harmful pollutants in all forms of human life [1]. The application of advanced technologies for wastewater treatment is necessary to separate the microplastics (MPs) and to better determine the efficiency likely long-term implications. An innovative solution can be represented by the membrane technology in the tertiary treatment of effluents that is suitable to remove low-density settling particles. The membrane technology is considered from European Commission among the Best Available Technologies [2]; the sustainability of the separation process in microplastics treatment is given of common integrated systems such as microfiltration (MF), ultrafiltration (UF), Membrane Bio-Reactor (MBR) and reverse osmosis (RO). In particular, MBR appears to be the most promising process with MPs removal up to 99.9%, having the possibility of decreasing the number of process stages in the WWTPs, and combining the possibility of degradation the MPs by using bacteria or enzyme, too.

References

- [1] T. Poerio et al., Membrane Processes for Microplastic Removal, *Molecules*, 24, 2019, 4148.
- [2] A. Figoli, A. Criscuoli, Sustainable Membrane Technology for Water and Wastewater Treatment, ISBN 978-981-10-5623-9, Springer, 2017, Singapore.