

Risk assessment of microplastics in the ocean

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The presence of microplastics in the marine environment has been an issue of concern for over a decade now, but their environmental risk in the ocean have, to date, not been addressed and quantified. The environmental risk assessment of microplastics presented here quantifies, based on a regulatory framework for assessing environmental risks of pollutants (i.e. REACH), safe concentrations for the marine pelagic and marine benthic compartment. Above these safe concentrations adverse biological effects are likely to occur. At most locations, the *in situ* concentrations in the upper pelagic compartment remain below the safe concentration (6650 particles m⁻³). However, local exceedances of this threshold are already taking place in sites that are heavily polluted with buoyant microplastics. In addition to the pelagic phase, also inshore, harbour and beach sediments are of concern. As human populations continue to grow, and if our dependence on plastic does not change under a business as usual approach, we may expect a steady and substantial increase in microplastic concentrations in both the pelagic and benthic marine environment. Adverse effects of microplastics are to be expected on highly polluted beaches and in coastal ecosystems as of the second half of this century if plastics emissions are not reduced.

Infographic: <http://www.vliz.be/imisdocs/publications/319070.pdf>

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