# Dealing with microplastics pollution in sediments – technologies for prevention and remediation

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**Introduction:** Microplastics are found in almost every marine ecosystem of the world. They are highly persistent in the marine environment and are accumulating at increasing rates. Due to their small size, distinct shapes and diverse colours, microplastics are easily mistaken with food and ingested by several marine species, leading to adverse effects. Research shows that most of the plastic waste going to the sea ends up in the sediments (94 %) and only 1 % is floating. The remaining 5 % of the plastic waste ends up on the shores. A project initiated by the Nordic Council of Ministers has studied how microplastics can be prevented from entering the sea and the sediments or how sediments already contaminated with microplastics can be remediated.

**Methods:** The obvious ways to prevent microplastics from ending up in the sea is that we use less plastics and that we recycle the plastics. If the microplastics end up in the sea there are several methods to reduce the impact and the spreading.

- By choosing plastics that are heavier than water they will sink when they enter the sea and reduce the spreading and be easier to remediate.
- If rock that contains microplastics (for example from blasting) is placed in the sea the amount that is spread is significantly lower when the rock is tipped from trucks in shallow water than it is when the rock is placed in deeper water by split barges.
- Physical barriers as for example silt curtains can be established in the sea to stop the microplastics from spreading.
- Sediments contaminated with microplastics can be capped or removed from the seabed.

**Results:** The project has concluded with that it is possible with relatively simple measures to prevent microplastics from entering the sea. Remediation is also possible to a certain degree.
The main measures can be divided into:

- Avoidance – minimize or eliminate the use of plastics
- Substitution – substitute plastic fully or partially with other materials
- Impact reduction – to reduce the impact of plastics by controlling where the plastic is going and avoiding the plastic from spreading

**Discussion:** Microplastics pollution of sediments is a major contamination problem. The project sponsored by the Nordic Council of Ministers with focus on plastics in the sea from blasted rock has contributed to further knowledge on prevention and remediation of microplastics contamination.

**References:** [1] Plastics in the sea from blasted rock - prevention and measures. TemaNord report 2020:520. https://www.norden.org/no/node/47066