

Plankton: a biological tool to monitor marine pollution

Tiny organisms can serve as an early warning system for ocean health

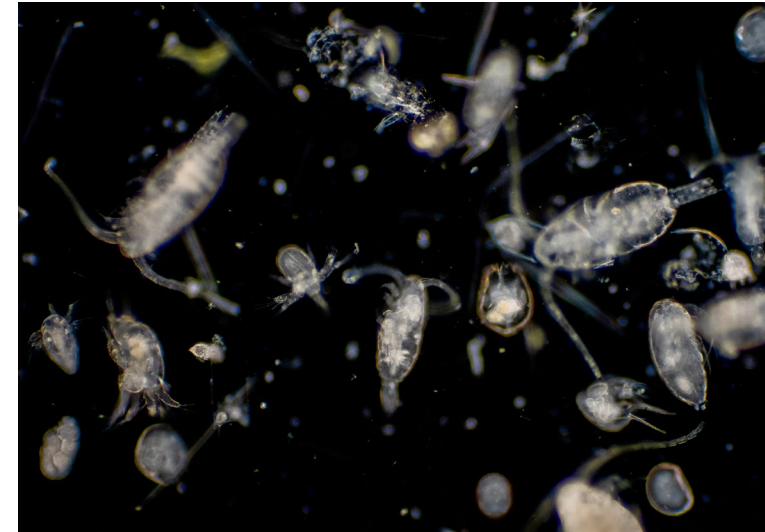
Marine pollution is caused by human impact from agricultural pesticide application, release of industrial by-products, manufacturing of pharmaceutical and personal-care products, as well as shipping discharges. It is highly toxic to aquatic organisms and has a huge impact on ecosystems, the seafood chain, and human health. **Plankton – tiny organisms carried by tides and currents – are the very first species to absorb pollutants in marine organisms. Thus, they can act as bioindicators, providing an early warning system that can tell us when specific pollutants are starting to damage marine ecosystems.** However, we do not yet know which plankton species absorb which specific pollutants and how, and what effect it has on the plankton communities themselves. This new information will help us to better preserve the integrity of the marine ecosystem and to safeguard the marine food chain to improve human health.

The power of EMBL's cutting-edge technology and scientific expertise

Historically, plankton has been studied using biological methods, whereas environmental pollution research has used tools for analytical chemistry. This project will bridge this divide and represents a new approach to integrating molecular biology and environmental research techniques. The aims of this project are to:

- develop a multiplexed protocol for the parallel detection of 200 emerging organic contaminants in sea water
- establish a methodology to quantify pollutant bioaccumulation in plankton communities
- quantify the impact of emerging organic contaminants on plankton communities

By combining high-throughput sequencing and high-resolution mass spectrometry, EMBL scientists can be deployed to develop plankton-based indicators which can be used to monitor marine pollution and the health of marine ecosystems.



Plankton – tiny organisms that absorb pollutants in the ocean – can help act as an early warning system, telling us which pollutants are starting to damage marine ecosystems.

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