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Taking care of the oceans

The contamination of water and the sea is one of the greatest environmental challenges of our time. The health of the sea is an indication of how we humans treat planet Earth. NGL contributes to cleaner seas, and participates in a number of research programmes and international initiatives that aim to prevent pollution and give us cleaner seas.

Smart emissions monitoring

The risk of emissions and leakage is one of the major challenges for offshore oil and gas production. With conventional technology, leakages are not discovered early enough and it is not possible to follow the environmental effects of emissions on a continuous basis.

Kjeller Innovasjon and NGI are collaborating on new technology to address these challenges. A new method enables the online measurement and monitoring of hydrocarbons (PAH components) in water. This solution can help prevent disasters with major economic and environmental impacts.

"Pollution rapidly dilutes in the sea, meaning that what we can measure soon 'disappears'. In order to monitor hydrocarbon emissions over time, high-precision, low-concentration technology is required. Our new PAH sensor simply facilitates the online measurement and monitoring of hydrocarbons in water," says Espen Eek, project manager and technical lead within Environmental Technology at NGI.

Microplastic as a macro problem

There has been a lot in the news about large quantities of plastic ending up in the sea, and microplastics becoming a part of the diet of fish, shellfish and birds. Public action has drawn a lot of attention to the environmental dangers of microplastics, with large-scale initiatives and restrictions on the use of plastic as a result.

Microplastics are made up of particles so small that they cannot be seen by the naked eye. Sunshine, bacteria, waves, and other conditions affect and change plastic fragments over time. Together, these weathering processes make the microplastic particles even smaller and they partially transform into chemical fragments.

A group of European scientists is working on a large international project intended to produce new knowledge about the mechanisms behind the microplastics invasion of the sea.

"Weathering leads to changes in the way that microplastics break up on the surface, in the depths and on the seabed. In this way, they also enter the food chain. Microplastics can get stuck in gills, the stomach and the digestive system, making it difficult for fish to breathe and eat," says Hans Peter Arp, senior specialist in environmental technology at NGI.

Together with colleagues from Norway, Sweden, Germany and Belgium, Hans Peter Arp is conducting a series of experiments and laboratory tests to understand how microplastics are spreading and affecting the seas of the world. The WEATHER-MIC research project is being coordinated by Hans

Peter Arp and NGI. It is part of the international Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans).

The Norwegian Geotechnical Institute (NGI) is a leading international centre for research and consulting within the geosciences. NGI develops optimum solutions for society, and offers expertise on the behaviour of soil, rock and snow and their interaction with the natural and built environment.

NGI works within the markets Offshore energy; Building, construction and transportation; Natural hazards, and Environmental Engineering.

NGI is a private foundation with office and laboratory in Oslo, branch office in Trondheim, and daughter companies in Houston, Texas, USA, and Perth, Western Australia. NGI was established in 1953.

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