

Explosives found in North Sea fish

There are large quantities of conventional munition in the water off German coasts that were dumped there after the II. World War. Since then, the munition has been rusting on the seabed and releasing pollutants. Researchers from the Thünen Institute investigated whether fish living there were affected. In CONMAR, Thünen researchers have for the first time analysed fish from the vicinity of coastal munitions dumping areas in the North Sea for residues of the prominent carcinogenic explosive trinitrotoluene (TNT). A highly sensitive analytical device (LC-MS/MS) was used for the detection. The researchers had already used this to detect TNT contamination from munition in fish from the Baltic Sea. In the Baltic Sea, the munitions are partially exposed on the seabed due to corrosion of the casings and the fish have direct contact with them.

The situation is quite different in the North Sea with much of the dumped munitions are buried under sand and silt and the constant currents quickly disperse and dilute any leaking chemicals. Until now, there have been hardly any studies on fish from the German North Sea. This has changed now: In the vicinity of investigated dumping areas in the German Bight, it has now been possible to clearly

demonstrate the contamination of fish with the degradation products of TNT. The concentrations were low (ng/ml), but clearly detectable. The highest signals were found in fish near a munition dumping area on the island of Wangerooge. However, none of the chemicals could be detected in most of the fish. The diseases, parasites and health indicators analysed in the same fish fortunately showed no indication of any impairment of fish health by munitions.

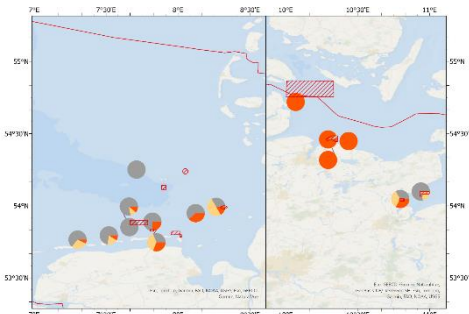


Fig 1. Upper panel shows water sampling locations between 2018 and 2023. Orange regions are known to be contaminated with munitions. Lower panels show the distribution of dissolved TNT in deep waters of the Kieler Bucht. Munitions-contaminated regions are colored in blue.

The munitions have been lying in the German part of the North Sea for many decades: The chemicals leak out and are found in fish. Even if

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the contamination of fish is currently still moderate, we are in favour of including explosives in fish in environmental monitoring. These results were published in a new study [Kammann et al. 2024](#).

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CONMAR at the 34th annual meeting of SETAC Europe

The SETAC Europe Conference took place in Seville from 5-9 May 2024. SETAC is a non-profit, globally active organisation that brings together over 90 countries. The theme of this year's meeting was: "Science-based solutions in times of crisis: Integrating Science and Policy for Environmental Problems." CONMAR was represented with a total of 9 contributions (see [here](#)).

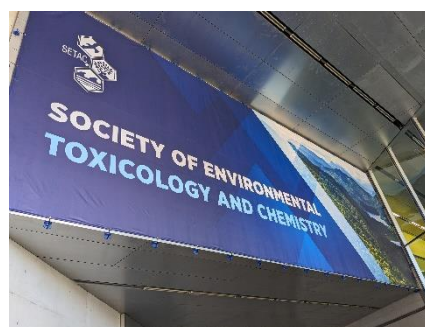


Fig. 2 SETAC 2024 in Sevilla

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CONMAR organises an information day

On 24 June, a large information event was held at GEOMAR to mark the start of the BMBF Sofortprogramm "Munitionsbergung In der Nord- und Ostsee". At the first part of the event, around 100 invited representatives from the Federal Government and the State of Schleswig-Holstein (SH), companies, the German Navy, the KRD SH, the Federal Police and the scientific community came together in order to get informed about the status-quo and to exchange. The attendees were welcomed by Mr Tobias Goldschmidt, Minister for Energy Transition, Climate Protection, Environment and Nature (MEKUN) of the state of SH. The second part of the event was addressed to the wider public. Visitors were able to see the exhibition "North Sea Wrecks" from the German Maritime

Museum (DSM), and get themselves informed on information booths presenting techniques and work related to the topic of munitions. Last but not least a series of lectures with various contributions from CONMAR was offered. More information can be found [here](#).



Fig. 3. Informationstag "Munitionsräumung - Jetzt geht's los"

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