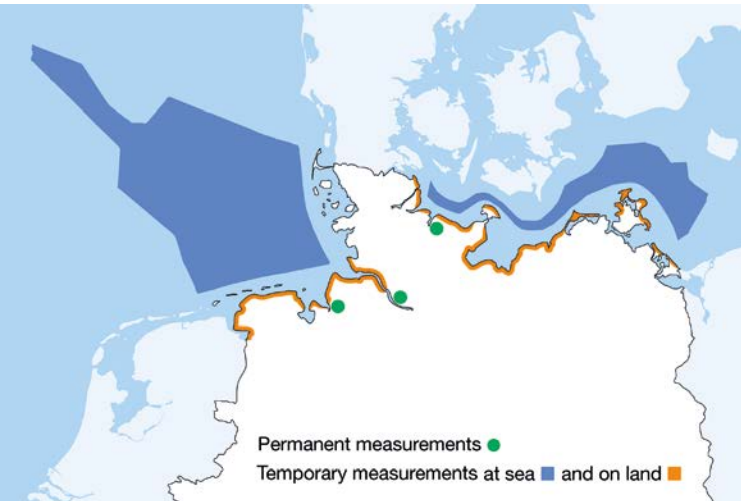
Ship emission monitoring network

The BSH operates three fixed measurement stations in Wedel near Hamburg, Bremerhaven and Kiel, as well as one mobile measurement station. This is temporarily placed at various locations along the German coast. In addition, the BSH's survey, wreck search and research vessel ATAIR is equipped with a comparable sensor system to monitor ship emissions from passing ships at sea.



The BSH cooperates closely with other European countries such as Belgium, the Netherlands, Denmark, Sweden and Finland, which take similar measurements. The aim is to jointly establish, operate and further develop a harmonised ship emission monitoring network in Europe.

www.bsh.de | posteingang@bsh.de | ship.emission@bsh.de

BSH in Hamburg
Bernhard-Nocht-Str. 78 · 20359 Hamburg
Phone: +49 (0) 40 3190-0 · Fax: +49 (0) 40 3190-5000

BSH in Rostock
Neptunallee 5 · 18057 Rostock
Phone: +49 (0) 0381 4563-5 · Fax: +49 (0) 381 4563-948

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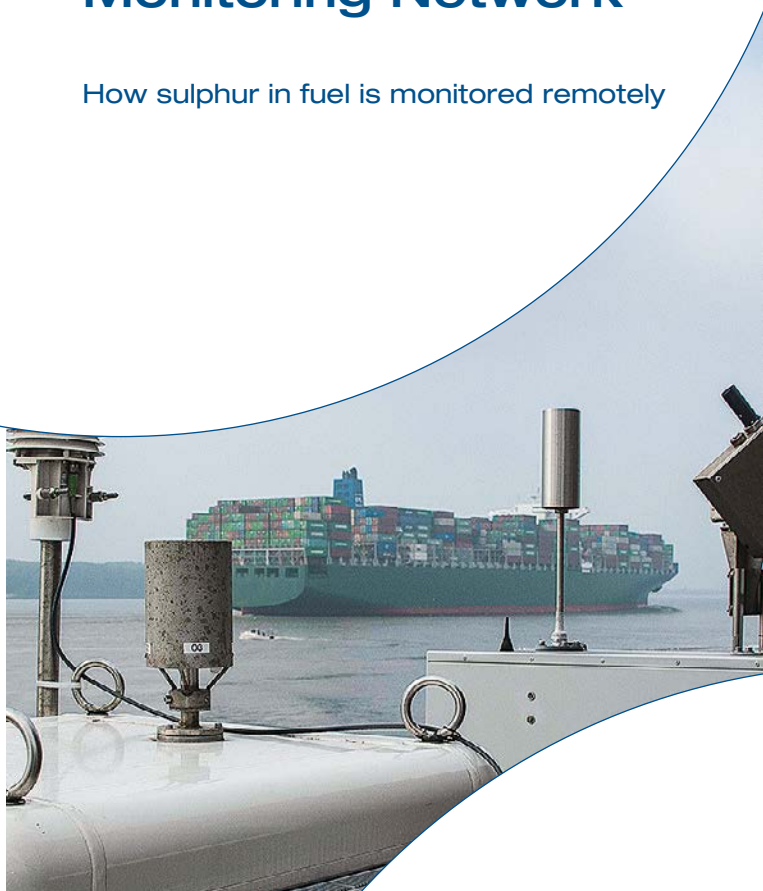
BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Our Ship Emission Monitoring Network

How sulphur in fuel is monitored remotely



For people and the environment

Ship emissions are polluting the air. Negative consequences are noticeable particularly along the coast and in port cities. The international MARPOL convention (Annex VI) therefore sets sulphur limits for marine fuels to protect people and the environment. In the North Sea and Baltic Sea, a sulphur content of 0.10 percent may not be exceeded in the fuel.

Other fuels or Scrubbers?

Shipping companies must switch to low-sulphur fuels or alternative fuels, such as liquefied natural gas (LNG). Alternatively, they have to operate exhaust gas cleaning systems (known as Scrubbers) to remove sulphur from the exhaust gas while continuing to use high sulphur fuels. Therefore, it is associated with higher operating costs to comply with the threshold.

Remote and on-board inspections

The BSH measures ship emissions remotely along frequented shipping lanes to check whether the ships comply with the threshold. These results provide an indication of the sulphur content in the fuel. Thus, conspicuous ships can be selected for on-board inspection in the next port.

① The exhaust plume of a passing ship is transported by the wind to a measurement station on the shore. There, the concentration of the gases sulphur dioxide (SO_2), carbon dioxide (CO_2) and nitrogen monoxide (NO) are measured to estimate the sulphur content in the fuel.

② The measured plume can be automatically assigned to a passing ship based on the Automatic Identification System (AIS), as well as the wind direction and speed.

③ If necessary, BSH staff checks the measurement and identifies the associated ship.

④ If the ship is conspicuous, the responsible authorities are automatically informed via e-mail, usually within two hours. In addition, the ship is reported to a European database so that it can also be inspected outside of Germany.

⑤ In German ports, state inspectors like the waterway police control conspicuous ships. They take a fuel sample on board that is analysed in a laboratory for use in legal proceedings.

⑥ If the fuel sample exceeds the sulphur threshold, administrative or criminal proceedings can be initiated.