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TITLE: Effects of scrubber washwater discharge on microplankton in the Baltic Sea

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ABSTRACT:

In 2020, the global cap of maximum allowable sulphur content in marine fuel will be reduced from the current 3.5% to 0.5%. Another way to reduce the sulphur emissions is to install a seawater scrubber that cleans exhausts but instead release acidic water containing nutrients and contaminants back to the marine environment. In the current study, scrubber washwater was tested on a Baltic Sea microplankton community. A significant increase in chlorophyll a, particulate organic phosphorus (POP), carbon (POC) and nitrogen (PON) were observed when the community was exposed to 10% scrubber washwater for 13 days as compared to the control. A laboratory experiment with the filamentous cyanobacteria *Nodularia spumigena* and the chain-forming diatom *Melosira cf. arctica* showed negative responses in photosynthetic activity (EC10 = 8.6% for *N. spumigena*) and increased primary productivity (EC10 = 5.5% for *M. cf. arctica*), implying species-specific responses to scrubber washwater discharge.

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