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Exhaust Gas Cleaning Systems on Board Ships and Impact on Crews' Health: A Feasibility Study Protocol

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Abstract : Exhaust gas cleaning systems, also known as scrubbers, are today widely used to allow for the use of High Sulphur Heavy Fuel Oil and still comply with the regulations limiting sulphur content in marine fuels. There are extensive concerns about environmental consequences, especially in the Baltic Sea, from the wide-scale use of scrubbers, as the wash water is acidic (ca pH 3) and contains high concentrations of toxic, carcinogenic, and mutagenic substances. The aim of this feasibility study is to investigate the potential adverse effects on seafarers' health with the ultimate goal of raising awareness of chemical-related health and safety issues in the shipping environment. The project got funding from the Swedish Foundation. The team will extend previously compiled data on scrubber wash water concentrations of hazardous substances and pH to include the use of strong base in closed-loop scrubbers, and scoping assessment on handling and disposing practices. Based on the findings (a), a systematic review of risk assessment will follow to show the risk of exposures, the establishment of the hazardous levels for human health as well as the respective prevention practices. In addition, the researchers will perform (b) a systematic review to identify facilitators and barriers of the crew on compliance with the safe handling of chemicals. The study will run for 12 months, delivering (a) a risk assessment inventory with risk exposures and (b) a course description of safe handling practices. This feasibility study could provide valuable knowledge on how pollutants found in scrubbers should be considered from a human health perspective to facilitate evidence-based informed decisions in future technology- and policy development to make shipping a safer, healthier, and more attractive workplace.

Keywords : health and safety, seafarers, scrubbers, chemicals, risk exposures
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