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Electronic Supplementary Material

This supplementary material has not been peer reviewed.

Title: **Substances of Emerging Concern in Baltic Sea Water – Review on Methodological Advances for the Environmental Assessment and Proposal for Future Monitoring**

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Table S 1 Conducted literature searches following the procedure described by Mengist et al. 2020. For this study, 3 review objectives were defined and the specifications of the conducted searches are described in the respective cell columns. The literature searches were performed from April 2020 to July 2021.

REVIEW OBJECTIVES AND SCOPE OF THE SEARCHES		
Which concentrations for contaminants of emerging concern are reported for Baltic Sea surface water?	**Which methodological advances are reported for the chemical analysis of contaminants of emerging concern in marine water?**	**Which effect-based methods exist that could be used for marine water analysis?**
TARGET COMPOUND CLASSES		
pharmaceuticals / UV-filters / estrogens and estrogenic compounds / polar pesticides / per- and polyfluoroalkyl substances / algal toxins		
ADDITIONAL CLASSIFICATION		
chemical analysis / effect-based analysis	sample processing / analytical approaches / passive sampling	*in situ* field monitoring / *in vitro* bioassays / effect-directed analysis
SEARCH STRATEGY, SOURCES		
• databases Web of Science and HELCOM	• database Web of Science or Science Direct • reports of marine science organizations • reports of water policy working groups	
SEARCH KEYWORDS		
pharmaceuticals | UV-filter | estrogen | pesticide | perfluoroalkyl | PFAS | nodularin | microcystin | polybrominated phenols | polybrominated dibenzo-p-dioxins | AND Baltic Sea	• sample processing: solid-phase extraction | AND pharmaceutical | UV-filters | UV-stabilizers | estrogen | pesticide | PFAS | perfluoroalkyl |algal toxins AND seawater | marine • analytical approaches: HRMS | FT-ICR-MS | Orbitrap | MS-MS mass-spectrometry | multi method AND contaminant AND marine | ocean | seawater • passive sampling: passive sampling AND seawater • effect-based methods: effect-based | in vitro bioassay | in vivo bioassay | effect-directed analysis AND marine | seawater | water	
INCLUSION CRITERIA		
• within review objective from title and abstract • accessible • English language	• within review objective from title and abstract • accessible • English language • reports not older than 2010 • method applied in seawater or promising for seawater analysis	
EXTRACTED INFORMATION		
• Baltic Sea study area • study year • mode of assessment (chemical or effect-based) • method details • surface seawater conc.	• description of the method • reported limitations • example study sites and key findings	
ANALYSIS		
• summary or reported data • outlining predominant substances within compound classes for the Baltic Sea • describing methods for chemical and effect-based analysis potentially suitable for analysis of marine water • built recommendations for improved assessment of the state of the Baltic Sea on data		

References

Mengist, W., T. Soromessa, and G. Legese. 2020. Method for conducting systematic literature review and meta-analysis for environmental science research. *MethodsX* 7: 100777. doi:10.1016/j.mex.2019.100777.