

Contaminants of emerging concern in the North Sea: Exploring their occurrence via unmanned sampling from ships of opportunity

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Marine coastal waters are receptors of thousands of chemical pollutants. Several anthropogenic chemicals were detected in surface water even in remote oceanic regions [1]. A number of international conventions aim at regulating some classes of prioritized substances of particular concern. Priority lists, however, are generally limited to a few dozens of chemicals with well-studied toxic properties [2]. Unregulated chemicals frequently detected in environmental samples include several classes of chemicals encompassing both high- and low- production volume substances, e.g., antifouling pesticides, plasticizers, anticorrosive agents, surfactants, flame retardants, pharmaceuticals, personal care products, herbicides and food additives [3]. These are further referred to as Contaminants of Emerging Concern (CECs). Risks posed by CECs to the environment and human health are largely unknown due to the lack of information about their occurrence and sub-lethal toxicity effects.

Running exploratory studies to target CECs in marine waters is necessary for an effective development and implementation of marine protection actions. A possible strategy for cost-effective monitoring considers the use of unmanned sampling devices on ships and marine platforms of opportunity. This study demonstrates the possible effective use of existing robotic sampling devices installed on the European FerryBox fleet [4] to detect a broad range of chemical contaminants at ng/L and sub-ng/L levels. The outcomes of this work have been published in an impacted journal [5].

References

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