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Baltic Sea Centre's reply to DG ENV's consultation on the strategic approach to pharmaceuticals in the environment

We welcome the Commission's initiative to reduce harmful effects of pharmaceuticals in the environment and believe that the issue needs to be addressed at several stages of the lifecycle of a pharmaceutical substance.

Important upstream measures include facilitating for public procurement to put requirements on ERA for products and withdrawing OTC status for APIs with negative environmental effects (e.g. Diclofenac). The actual reduction potential associated with these measures needs to be quantified as they may not suffice to reduce environmental levels below relevant toxicity thresholds. End-of-pipe measures like advanced wastewater treatment thus become important to complement source control.

In April 2017, the Swedish EPA published a report on advanced treatment of pharmaceutical substances in wastewater. It concludes that there is a need for introducing advanced wastewater treatment. The need is [quote] *justified on the basis of the risk of long-term effects of a constant exposure to low levels of pharmaceutical substances in the aquatic environment with possible adverse effects on aquatic organisms, as well as the fact that some pharmaceutical substances are persistent and will remain in the environment and accumulate in biota. As future impacts on the environment and human health are difficult to predict, the introduction of advanced treatment can be justified on the basis of the precautionary principle*.

We support these conclusions. Lowering the risk of what today remain unanticipated adverse effects is particularly important for water soluble and persistent pharmaceuticals and other micropollutants since they easily escape conventional wastewater treatment plants (WWTPs), spread in waterways and accumulate in the aquatic environment.

Conventional WWTPs often poorly remove pharmaceuticals as many are by design highly water-soluble compounds that are resistant to biodegradation. In the case of advanced treatment, the removal efficiencies vary depending on substance, technology and wastewater quality, but is currently on average around 70-80% in full scale applications of single additional treatment steps. Combinations of technologies such as advanced oxidation (O3), adsorption onto activated carbon (AC) and ultrafiltration (UF) can increase removal efficiencies, removing a wider range of micropollutants and pathogens. Costs for full scale implementation are in the range of ca 0.014 (O3, large WWTP) – 0.19 (UF + PAC or UF + GAC, medium size WWTP) euro/m3

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treated wastewater. Energy consumption ranges between 0.01 (GAC) – 0.5 (UF + GAC) kWh/m3. (Estimated for WWTPs between 20 000–500 000 PEs in Sweden by Swedish EPA and Swedish Environmental Research Institute IVL). Costs and energy consumption are anticipated to decrease with technology development, operation optimisations and increased market demand.

It should be noted in the strategy that a generally improved quality of wastewater to reduce risks associated with pathogens, APIs and other micropollutants, is crucial for a transition to a circular economy, where reuse of wastewater for irrigation and aquifer recharge is encouraged. Generally reduced chemical emissions via UWWTPs also increases chances of reaching good chemical status under the WFD for substances that enter the aquatic environment via these pathways.

Legal incentives are needed to encourage implementation of advanced wastewater treatment. As with nutrients and organic matter today, treatment efficiency requirements or threshold levels of concentration of selected pharmaceuticals and other indicator substances should be included in new legislation related to wastewater such as in future revision of the UWWD. Furthermore, the polluter pays principle should be considered in the strategy. Finding legal measures that make the chemical industry pay for removal of their products from the water cycle can constitute a possibility to finance the upgrade of wastewater treatment.

Lastly, the roadmap recognises knowledge gaps, likely due to a lack of data on levels of APIs in the environment. MS through their PoMs under the WFD should be required to better fulfil existing monitoring, making data transparent and easily accessible for the public, e.g. also report non-detects, analytical methods and detection/quantification limits in a standardised format. In a revision of the WFD they should be required to screen more extensively for APIs. Overall, this will facilitate data collection as well as implementation of future stringent control of PIE.