

OCCURRENCE AND EFFECTS OF PHARMACEUTICALS IN THE BELGIAN COASTAL ZONE

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For freshwater ecosystems, a considerable number of studies have reported detectable levels of common pharmaceuticals. For the marine environment, however, only a limited number of studies are available. While concentrations of pharmaceuticals in the marine environment are generally thought to be lower than in freshwater, potential effects cannot be excluded since these substances are designed to exert a well-defined effect at low doses.

In this study, which is part of the INRAM project aimed at developing an integrated impact assessment and monitoring strategy for the Belgian coastal zone, environmental concentrations of 15 pharmaceuticals were determined in Belgian marine waters. Ecotoxicological data have been generated for a number of the most frequently observed compounds, using the marine diatom *Phaeodactylum tricornerutum* (72h growth inhibition test) and the Pacific oyster *Crassostrea gigas* (24h larval development test) as test species.

Of the 15 pharmaceuticals analyzed, nine were frequently detected. The highest concentrations were found for salicylic acid (855ng/L, Oostende harbour), carbamazepine (119ng/L, Oostende harbour) and atenolol (88ng/L, Oostende harbour). Based on the ecotoxicological test results and the environmental monitoring data, an initial risk characterisation was performed. This exercise indicated that individual substances do not pose a substantial risk to marine life in the Belgian coastal zone. However, the potential risks of mixtures and long term effects still need to be established.