Ecological risk assessment of microplastics in the marine environment

Gert Everaert ⁎† 1, Lisbeth Van Cauwenberghe 2, Maarten De Rijcke 1, Albert A. Koelmans 3, Jan Mees 1, Michiel Vandegehuchte 1, Colin R. Janssen 2

1 Flanders Marine Institute – Wandelaarkaai 7, B-8400 Ostend, Belgium 2 Ghent University, Laboratory of Environmental Toxicology and Aquatic Ecology – Coupure Links 653, B-9000 Ghent, Belgium 3 Wageningen University, Aquatic Ecology and Water Quality Management Group – P.O. Box 8080, 6700 DD Wageningen, Netherlands

The presence of microplastics in the marine environment has been an issue of concern for over a decade now, but the environmental risks of microplastics in marine environments have, to date, not been addressed and quantified. The environmental risk assessment of microplastics presented here quantifies, based on a regulatory framework for assessing environmental risks of pollutants, safe concentrations for the marine pelagic and marine benthic compartment. Above these safe concentrations adverse biological effects are likely to occur. At most locations, the in situ concentrations in the upper pelagic compartment remain below the safe concentration. However, even today, we found a potential risk in sites that are heavily polluted with buoyant microplastics. As human populations continue to grow, and if our dependence on plastic does not change under a business as usual approach, we may expect a steady and substantial increase in microplastic concentrations in both the pelagic and benthic marine environment. Adverse effects of microplastics are to be expected on highly polluted beaches and in coastal ecosystems as of the second half of this century if plastics emissions are not reduced.

Keywords: ecological risk assessment, microplastics, marine plastic debris, risk characterisation

⁎Speaker †Corresponding author: gert.everaert@vliz.be

Risk perception of microplastics. An explorative study identifying aspects potentially influential in risk perception of microplastics

Bomm Laura ⁎ 1

1 Strategic Communication Department, Wageningen University – Netherlands

Although microplastics result from human activities and concern human societies and nat- ural environments, public risk perception has gained rather little scientific attention from social