

**An overview of nanoplastics present in the environment: A new group of nanomaterials?**G.T.Gimiliani¹

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Plastic pollution is an internationally recognized problem and an understanding of the behavior of plastic particles in the environment is still under development [1]. In the environment, plastics degrade into microplastics, i.e. fragments and fibers, then fragmented to nanoplastics (NPs) eventually. These microplastic particles range between 1 mm to 5 mm [2], while the definition of NPs is still under debate; different studies have set the upper size limit from 1 nm to 1 mm [3]. Daily discharges of microplastics are estimated in the range of 50,000 up to 15 million particles, whereas no information on NPs discharges is available yet [4]. The present overview highlights the importance of NPs as a contributor to environmental pollution, which are considered emerging pollutants nowadays. NPs are homo- and/or heteroaggregates conformed with colloidal behavior [3]. The presence of these particles has been evidenced in the atmosphere [5], soil and marine environment, that represents an ultimate sink for contamination [6]. According to the International Standard Organization (ISO), a manufactured nanomaterial is intentionally produced for commercial purposes to have specific properties or specific composition, therefore, the NPs cannot be considered as such [3]. Moreover, release and impact on the environment of these particles is still not evident. Though several studies with engineered plastic nanomaterials showed toxicity and sub-lethal effects with consequences not only at organism and population level but on the overall ecosystem [6], are not representative results [8]. However, current difficulties in sampling, identifying and characterizing nano-sized debris make it hard to assess their occurrence in the environment. Thus, NPs is a recent issue in the scientific community and deserves further attention to establish new remediation technologies.

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