



Nicolas KALOGERAKIS

MITIGATION MEASURES TO TACKLE MICROPLASTIC POLLUTION IN THE MARINE ENVIRONMENT

Plastic debris represents a significant problem among the various pollution problems facing the marine environment. Several studies have been conducted on the fate and weathering of plastics in the marine environment including the generation and fate of microplastics. Sorption of toxic substances present in seawater by microplastics represents an additional environmental concern.

Laboratory results on the biodegradation of plastics show great variability. An important question, which remains unanswered, is what is the level of weathering that makes the common plastics, in particular those with a C-C backbone, biodegradable at a reasonably fast rate. Is Natural Attenuation a potential biodegradation route that allows us to hope for clean oceans?

In this presentation, we focus on the determination of biodegradation and fragmentation rates of polystyrene and polyethylene films naturally weathered on beach sand as well as polypropylene films weathered in seawater mesocosms. Results from 300-day long field experiments in Souda Bay (Crete, Greece) are also presented. Our findings are very encouraging pointing to new challenges that need to be addressed for a successful biodegradation of plastics in the marine environment as well as significant advances in the context of circular economy.