International Atomic Energy Agency (IAEA)

Input to 2016 SG report on oceans and the law of the sea

Part I "Marine debris, plastics and microplastics"

Operating its own marine laboratories, the International Atomic Energy Agency (IAEA) assists Member States in the application of isotope technology to better understand and control the challenges posed by marine pollution, including marine debris, plastics and microplastics to the coastal and marine environment.

Recent studies have demonstrated that once ingested by bilvalves and fish, microplastics have the potential to translocate from the digestive tract to the circulatory system of marine organisms and act as vectors of organic pollutants adsorbed from the surrounding seawater. Organic Pollutants accumulated in organisms may lead to toxicological and ecotoxicological effects on marine biota and may also be transferred to humans through the consumption of contaminated seafood. Applying the best available techniques to identify the sources, amounts, pathways, distribution, trends, nature and impacts of marine debris, especially plastics and microplastics to prevent their accumulation and minimize their levels in the marine environment is essential. In this context, radiotracer and other isotopic techniques are powerful scientific tools to assess the fate of contaminants in the marine environment.

As part of on-going efforts by the scientific community to understand the impact of microplastics, the IAEA Environment Laboratories in Monaco participated in an Intercalibration exercise organised in 2014 by the International Pellet Watch (IPW) and the Tokyo University of Agricultural and Technology of Japan on the analysis of Persistent Organic Pollutants (POPs) in plastic pellets, in order to compare analytical procedures used in different laboratories. The exercise was supported by UNESCO/IOC/GEF and Transboundary Waters Assessment Programme (TWAP). Further work is planned by the IPW to streamline analytical methodologies for the determination of POPs in plastic pellets in view of using relevant data to assess marine pollution status.

Regularly providing capacity building support for a transition to a green economy, the IAEA is also supporting the development of radiation technologies for the preparation of novel biodegradable polymers to be used instead of conventional plastics in the production of packaging materials, such as bags, containers and bottles. The wide production and use of such bio-plastics can reduce the use of persistent plastics and prevent the accumulation of plastic debris and microplastics in the oceans.