

Contaminants as Marine Environmental Tracers: An Overview

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The advent of the industrial age has led to both purposeful and accidental releases of a myriad of inorganic, organic and radioactive contaminants to the earth-atmosphere-ocean system. While the input of contaminants has negatively impacted many biological systems and food webs, the supply of a number of anthropogenic chemicals has proved invaluable in improving our understanding of the rates and mechanisms of environmental processes, such as atmospheric transport, ocean mixing and circulation, particle transport and sediment accumulation, as well as providing validation of model simulations of biogeochemical processes. Improvements in sample collection and analytical techniques has further advanced the breadth and scope of contaminants as environmental tracers. This presentation will provide a broad overview of the utility of anthropogenic contaminants as tracers of marine environmental processes, highlighting recent examples including the accidental release of radioactive contamination from the Fukushima Daiichi nuclear powerplant in Japan, the deliberate release of radioactive contaminants from nuclear reprocessing facilities in France, as well as other examples resulting from the increased production of human-made chemicals to the marine environment.