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Which coastal and marine environmental contaminants are truly emerging?

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ABSTRACT

To better understand the past and present impact of contaminants of emerging concern (CECs) in coastal and marine ecosystems, archived samples were analyzed for a broad suite of analytes, including pharmaceuticals and personal care products (PPCPs), flame retardants (including PBDEs), perfluorinated compounds (PFCs), and current-use pesticides. Surface sediment, mussels (*Mytilus* spp.) and sediment core samples collected from the California (USA) coast were obtained from environmental specimen banks. Selected CECs were detected in recent surface sediments, with nonylphenol (4-NP), its mono- and di-ethoxylates (NP1EO and NP2EO), triclocarban, and pyrethroid insecticides in the greatest abundance. Alkylphenols, triclocarban, and triclosan were present in sediment core segments from the 1970s, as well as in *Mytilus* tissue collected during the 1990s. Increasing concentrations of some CECs (e.g., miconazole, triclosan) were observed in the surface layers (ca. 2007) of a sediment core, in contrast to peak concentrations of 4-NP and triclocarban corresponding to input during the 1970s, and an apparent peak input for PBDEs during the 1990s. These results suggest that chemicals sometimes referred to as "emerging" (e.g., alkylphenols, triclocarban) have been present in the aquatic environment for several decades and are decreasing in concentration, whereas others (e.g., miconazole, triclosan) are increasing.