

Spatial distribution of Triclosan in a semi-enclosed estuarine embayment; Greenwich Bay, Rhode Island

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Triclosan is an anti-microbial agent commonly used in the formulation of many personal care and consumer products. Much of the triclosan used by consumers enters the aqueous waste stream following use and is partially removed in waste water treatment plants (WWTP). However, the portion not removed during treatment enters receiving waters via the plant effluent. Once in the environment, a significant portion of triclosan is adsorbed to particles, removed from the water column, and deposited in sediments. Currently, little information exists on the factors controlling the fate and transport of triclosan in the estuarine environment.

This study aims to determine the spatial distribution of triclosan concentrations in surface sediments of a semi-enclosed embayment in which the input of WWTP effluent is thought to be the primary source of triclosan. A statistically randomized hexagonal grid design was implemented to identify station locations for sampling of sediments. Surface sediments were collected using a Van Veen sediment sampler, extracted and analyzed for triclosan using GC/MS-EI. Preliminary results indicate that triclosan levels in Greenwich Bay correlate with those of the sediment's total organic carbon percentage. A strong declining trend in sediment triclosan concentrations is observed from the WWTP to the mouth of Greenwich Bay, indicating that it is being rapidly removed from the water column to the sediments of this embayment.

Keywords: Triclosan; Emerging contaminant; Biocide; Sediment; Antimicrobial agent