

## **Fate of consumer-product chemicals in the subsurface environment: twenty-five years of research on Cape Cod, Massachusetts, USA**

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**Abstract** Research on the occurrence and fate of emerging contaminants has focused on surface waters, and less is known about their behaviour in subsurface environments. Groundwater is often a repository for wastewater treatment plant effluents through direct or indirect recharge. As a result, contaminants of interest include consumer-product chemicals that are disposed of down the drain, such as laundry detergents, and are sources of natural and synthetic compounds. Once disposed of down the drain, removal of consumer-product chemicals depends on processes such as biodegradation, sorption, and volatilization during treatment. This paper summarizes 25 years of research on the subsurface fate of organic and inorganic chemicals of consumer-product origin in a wastewater-derived groundwater contamination plume on Cape Cod, Massachusetts, USA. These field investigations provide insight into mechanisms controlling the fate of contaminants in the subsurface and their rates, as well as the interactions between geology, hydrology, chemistry, and biology.