

EMERGING AQUATIC CONTAMINANTS

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Water bodies across the country are impacted by so-called legacy contaminants, which are chemicals that remain in the environment long after they were first introduced. Polychlorinated biphenyls (PCBs) are examples of legacy contaminants in the Mohawk and Hudson Rivers. Legacy contaminants are well studied, and cleanup methods to reduce their concentrations have been developed. However, in addition to legacy contaminants, hundreds – perhaps thousands – of “emerging contaminants” impact our waterways. Better termed “contaminants of emerging concern,” these contaminants are not routinely monitored but can enter the environment and have known or suspected negative ecological and/or human health effects. Examples of emerging contaminants are pharmaceuticals and the chemicals in personal care products, among others. Such chemicals enter our waterways either directly (i.e., sunblock washing off a swimmer) or indirectly (i.e., through wastewater treatment plants). The sheer numbers of chemicals in the products we use every day means that we do not have a complete knowledge of their environmental toxicity and fate, nor are they currently regulated in wastewater effluents and/or drinking water. Though introduced at relatively low concentrations, many of these contaminants are stable and therefore persistent, such as perfluoroalkyl acids, which are used in the manufacture of stain-resistant coatings, insecticides and fire-fighting foams. In addition, these contaminants are released to the environment in a constant stream, so long-term low-dose exposures are of concern. In order to make decisions about the regulation and remediation of emerging contaminants it is important to understand their fate in the aquatic environment, which is affected by many processes (Figure 1). This presentation is focused on defining and identifying emerging contaminants and exploring their routes of introduction to the aquatic environment. In addition, information about the occurrence and fate of select contaminants will be presented.

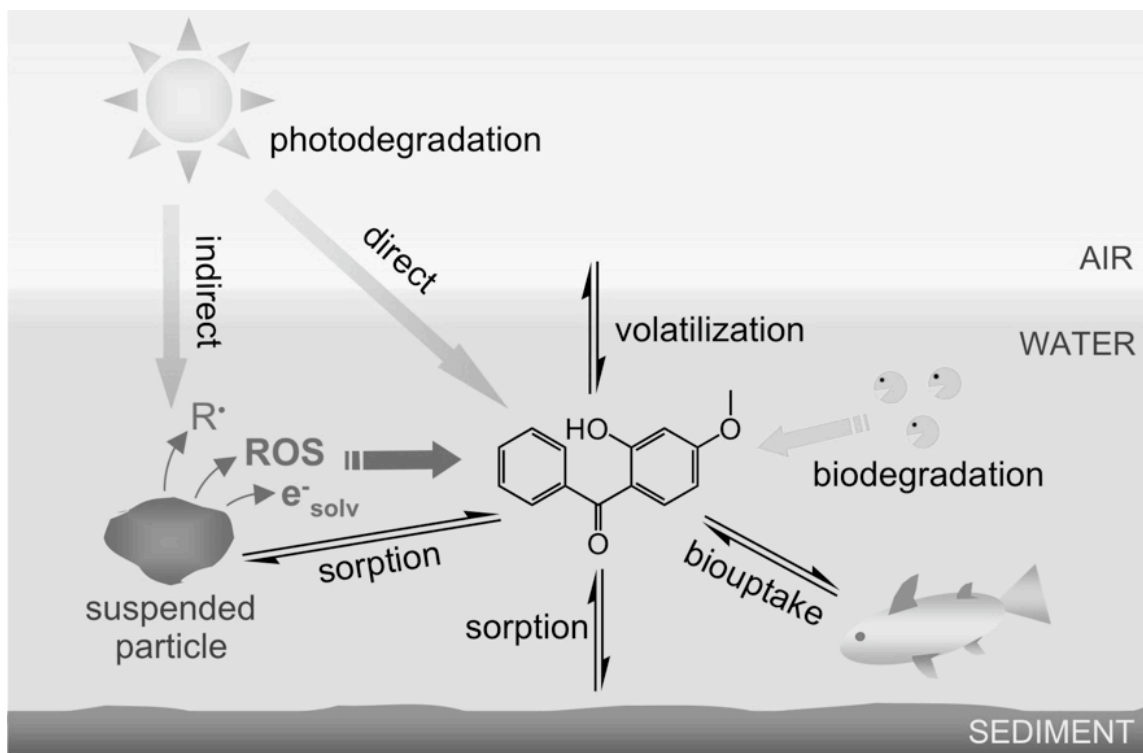


Figure 1. Processes that affect the fates of emerging contaminants in the aquatic environment.