Personal Care Compounds in the Environment: Pathways, Fate, and Methods for Determination

The release of personal care compounds (PCCs) with wastewater effluent is increasingly becoming a pertinent environmental problem. PCCs once released are persistent in the environment and are detected in surface waters and sediments. In addition, PCCs can interfere with the endocrine systems of humans and wildlife. This is seen by an increasing incidence of intersex fish exposed to PCCs downstream of wastewater outflows. The author addresses the issue of PCC release by providing a few studies on the occurrence and fate of specific PCCs including polycyclic musk fragrances, the antimicrobial agent Triclosan, organophosphate flame retardants, and estrogenic hormones and mimics in the environment.

According to the author, the purpose of this book is to cover the most important classes of toxic chemicals from personal care compounds and provide data on the toxicity and bioaccumulation in various ecosystems. The introduction of the book includes a basic description of sewage treatment processes followed by a description of enantioselective separation systems such as gas chromatography–mass spectrometry (GC–MS) or high performance liquid chromatography (HPLC) systems. The body of the book covers the fate of different PCCs by presenting studies of the mass balance of a compound in a standard treatment facility, followed by fate and transformation in surface, marine, or drinking waters. The book concludes with a more detailed description of the analytical chemistry methods used in the case reviews. The methods cover in more detail the sample collection, compound extraction from different environmental matrices, and optimization of the analytical detection methods.

The book was written “to help fellow scientists, students, and people purely interested in the environmental sciences.” While a general audience would be able to follow the introduction, only an audience with a scientific background could follow the analytical methods discussion and the case studies included after it. This book is an excellent source for scientists interested in the fate and analytical detection methods of polycyclic musk fragrances, anti-microbial agent Triclosan, organophosphate flame retardants, and estrogenic hormones in standard treatment facilities as well as surface waters. The book very specifically addresses these compound categories and, therefore, should not be used as a general text for students or by the public interested in the effects of personal care compounds in the environment.

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Published in J. Environ. Qual. 36:1926 (2007).
doi:10.2134/jeq2007.0016br
Received 23 July 2007.
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