



Book review

ORGANIC POLLUTANTS IN THE WATER CYCLE

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The book "*Organic Pollutants in the Water Cycle*" is an important source for anyone who is interesting in the studying and understanding the processes which unfolding in the water cycle.

The occurrence of polar pollutants in other compartments of this cycle, and their removal in or passage through other barriers than wastewater treatment or soil is also investigated.

In order to ensure environmental protection it is necessary to know and understand the relations between different media and the interactions and the effects of some of the compounds that are discharged in these media and the ecosystems present. The organic compounds are present in water, soil and air perturbing the natural cycles and influencing both the biotic and the abiotic factors of the ecosystems.

The book is structured on 12 chapters, Acknowledgments, References and a Subject Index. All chapters are uniformly structured, covering properties, pollution sources, occurrence in wastewater, surface water, and groundwater as well as water treatment aspects, while ecotoxicological and assessment aspects are also covered.

The first chapter of the book represents an overview of analytical methods for polar pollutants. Analytical strategies and approaches to the trace analysis of polar pollutants from environmental samples are outlined rather than described in detail.

The second chapter, *Residues of Pharmaceuticals from Human Use*, presented the occurrence of pharmaceutical residues, their fate during sewage treatment and in the environment, and natural and technological processes that are able to remove these residues from sewage or raw water used for drinking water supply. This chapter mainly focuses on the environmental aspects of residues from human medicine, exclude those compounds such as antibiotics or X-ray contrast media that are described in Chapter 3 and 4.

Chapter 3, *Antibiotics for Human Use*, refers to the situations generated by the fact that antibiotics used in human and veterinary medicine enter into the aquatic environment. Most of these antibiotics are not satisfactorily biodegraded either in sewage treatment plants or in the aquatic environment. To reduce the discharge of antibiotics with municipal wastewater, the treatment of effluent using oxidation processes and membrane filtration technology as well as filtration and reverse osmosis have been described. This chapter presents also that are the effects of the antibiotics on aquatic organisms.

Chapter 4, *Iodinated X-ray Contrast Media* explains that are the sources of the X-ray. These compounds are presents in surface waters, in groundwater and also in wastewater. The usual wastewater treatment techniques are inappropriate for the removal of iodinated X-ray contrast media (because of the higher stability of the compounds), and therefore the potential of ozonation and advanced oxidation processes in drinking water and wastewater have been studied.

In chapter 5 are made considerations about veterinary pharmaceuticals. Thus are described several substance classes used in veterinary medicine, pathways to the environment and occurrence in wastewater treatment plants. Also are presented aspects related the presence the veterinary pharmaceuticals in the surface waters, groundwater and water treatment.

Chapter 6 deals with polar herbicides and their metabolites. At the beginning are presented general aspects regarding herbicides, classification and application, and several classes of herbicides. Then are discussed aspects about treatment of water polluted whit pesticides and the possibilities for removal from water of these compounds.

Chapter 7 offers a review on aminopolycarboxylate complexing agents. Beside a shot presentation of the aminopolycarboxylates,

this chapter discusses about types of application of aminopolycarboxylates, options of treatment of the wastewater, fate and effects in surface water and in groundwater.

In the chapter 8 are discussed about the amines. Thus the characterization of amines and choice of compounds and properties are presented. Also, some considerations are made on the production and emission sources, followed by wastewater treatment options (biological treatment, oxidative technologies and membrane technologies), and transformation and degradation processes in surface water (abiotic processes, biological degradation) and in groundwater (sorption and transformation processes).

Chapter 9 is the subject of surfactant metabolites. First, are presented some data regarding principal application of the surfactants, aerobic biodegradation of surfactants, a classification and a short description about classes of surfactants. Next, there are discussed aspects regarding surfactants and their metabolites in wastewater treatment plants, in surface waters and in drinking waters. In the same chapter there are presented other aspect regarding risk assessment and the ecotoxicity of surfactants.

Chapter 10 is focused on the methods for disinfection of drinking water and is detailed for European Union, Germany and United State.

Also, are presented the most important disinfectants using for drinking water disinfection and some aspects about disinfection by-products (DBPs) and measures to control DBPs.

Chapter 11 treats about toxicology and risk assessment of pharmaceuticals. A comparison of International Risk Assessment Procedures has been performed, and the situations from European Union, US, Japan, Canada are presented.

In the final chapter of the book some considerations about assessment and management of chemicals are made. Some discussion about basic legislation and current guidelines for risk assessment and risk management of chemicals in Europe, Germany and United State of America are highlighted. Also, it is analyzed a classification of a groups of specific chemicals – pesticides, biocides, pharmaceuticals, detergents and cleansing agents and of their characteristics.

The book *Organic Pollutants in the Water Cycle* offers an important information source for researchers and professionals working in water quality monitoring, water supply, or wastewater treatment, as well as environmental and water chemists, geochemists, ecologists, chemists and engineers.

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