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BOOK REVIEW

Arsenic in the Environment

Part I: Cycling and Characterization. 430 pages, hard cover.
Part II: Human Health and Ecosystem Effects. 292 pages, hard cover.
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This two-part volume on arsenic is the latest in a series of volumes devoted to the environmental pollution, transformation, fate, and management, as well as ecological and human health risks of various toxic substances. Arsenic is one of the four most toxic elements, besides lead, mercury, and cadmium, and has been used by man since ancient history. Its new found use is as a semiconductor in the electronics and computer industries. Presence of arsenic in the natural environment and its continued industrial production, uses, and subsequent release into the environment, keeps this metalloid on the forefront of toxicological interest. Therefore, this book is a timely addition to the available literature, as it summarizes various facets of environmental arsenic, including its impact on human health.

Part I of this volume begins with a historical perspective of arsenic production and use. It is followed by chapters devoted to mobilization and bioavailability of arsenic from soil, cycling in contaminated waters, and removal from drinking water by chemical additives and adsorbents. A number of other chapters are devoted to biotransformation and bioaccumulation of arsenic in fresh water and marine environments by microbes, algae, phytoplanktons and fish. Whereas most of the chapters are reviews, others detail specific examples of the persistence of arsenic in natural and polluted environments in various parts of the world.

Part II of the volume is devoted mainly to human health aspects of arsenic, although effects on marine and terrestrial plants and animals are also included. It begins with a well-written account of the history of clinical uses and misuses of arsenic, which is

followed by several reviews on the epidemiological accounts of arsenic toxicity. Also presented is the information from studies in animals about metabolism and toxicity of inorganic and organic arsenicals, including those used in semiconductor industry. Yet another chapter is devoted to carcinogenic and atherogenic effects of arsenic. Like Part I, Part II is composed mostly of review chapters. However, there are two chapters which describe specific effects of arsenic on DNA synthesis and DNA damage caused by organic arsenicals. A mathematical model for estimating human exposure to arsenic through contaminated drinking water is also provided. The last two chapters comprise nearly a third of the total pages. Although these chapters duplicate the information already available in other chapters on the sources, uses and toxicity of arsenic, they do provide additional useful information. For example, the largest chapter, Chapter 11, provides data about the normal concentrations of this element in the environment and in selected species of flora and fauna, as well as the toxic effects in terrestrial and marine plants and animals. This chapter also provides specific recommendations for protection of natural resources and human health. All of this information is well summarized in tabulated form. The last chapter summarizes the chemistry and toxic effects of specific organic arsenicals in marine organisms. Overall, Part II of the volume is an excellent collection of up-to-date information on this subject.

The book is a compilation of information on diverse topics and is a valuable resource for individuals interested in the geochemistry, ecology, pollution prevention, and biochemical and toxicological effects of arsenic in plants, animals and man.

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