



# Decontamination of Heavy Metals: Processes, Mechanisms, and Applications (Advances in Industrial and Hazardous Wastes Treatment)

By Jiaping Paul Chen

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**Decontamination of Heavy Metals: Processes, Mechanisms, and Applications (Advances in Industrial and Hazardous Wastes Treatment)** By Jiaping Paul Chen

Heavy metals, such as lead, chromium, cadmium, zinc, copper, and nickel, are important constituents of most living organisms, as well as many nonliving substances. Some heavy metals are essential for growth of biological and microbiological lives, yet their presence in excessive quantities is harmful to humans and interferes with many environmental processes. Heavy metals are also nonbiodegradable, making them more difficult to remediate.

**Decontamination of Heavy Metals: Processes, Mechanisms, and Applications** tackles the subject of heavy metals in the environment, with special emphasis on their treatment, removal, recovery, disposal, management, and modeling.

## *Concepts, Cutting-Edge Technologies, and Applications*

The book provides in-depth coverage of the major hazardous heavy metals that are found in water, land, and facilities and that have significant effects on public health and the environment. After an overview of heavy metal contamination, the text reviews the concepts and technologies of pollution prevention. It then examines technologies for metal decontamination, ranging from precipitation?which is the most commonly used?to cutting-edge technologies such as precipitation-crystallization, ion exchange, membrane filtration, and electrolysis. Mathematical models for metal removal and recovery are also included.

## *Develop a Feasible Total Heavy Metal Control Program*

Complementing other books in the *Advances in Industrial and Hazardous Wastes Treatment* series, this volume presents important research related to the remediation of heavy metals. Extensive references are included for readers who want to trace, duplicate, or improve on a specific industrial hazardous waste

treatment practice. A comprehensive handbook for environmental professionals, researchers, and students, it provides technical information to help readers develop a feasible total metal control program that can benefit both industry and local municipalities.

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## **Decontamination of Heavy Metals: Processes, Mechanisms, and Applications (Advances in Industrial and Hazardous Wastes Treatment) By Jiaping Paul Chen Bibliography**

- Sales Rank: #4608549 in Books
- Brand: Brand: CRC Press
- Published on: 2012-12-18
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x 1.30" w x 6.30" l, 1.67 pounds

- Binding: Hardcover
- 454 pages



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### Editorial Review

#### Review

This book covers fundamental theories of metal removal, including calculation of metal ion uptake in environmental systems. Professionals and students working in environmental engineering may find this book a very useful reference. ... This book is organized with a deliberately logical flow, defining concepts at the beginning, and gradually building up theories and applications.

?Dr. Gang Chen, Florida State University, USA

#### About the Author

**Dr. J. Paul Chen** is an associate professor of environmental engineering at the National University of Singapore. His research interests are physicochemical treatment of water and wastewater and modeling. He has published more than 100 journal papers and book chapters with a citation count of more than 2,500 and an H-index of 28. Professor Chen is also the co-editor of *Heavy Metals in the Environment* (CRC Press, 2009). He holds seven patents in the areas of sorption technologies, ballast water management, and exhaust gas treatment. Professor Chen has received various honors and awards, including guest professor of the Hua Zhong University of Science and Technology and Shandong University of China, and Distinguished Overseas Chinese Young Scholar of National Natural Science Foundation of China. He has been recognized as an author of highly cited papers (chemistry and engineering) of ISI Web of Knowledge. Professor Chen received his master's in engineering from the Tsinghua University of Beijing and his Ph.D. from the Georgia Institute of Technology, Atlanta.

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