

hackers may attempt to gain access to remotely controlled systems.

At this point in the review, I think it would be useful to list the chapter titles:

1. Introduction
 2. Water/wastewater infrastructure
 3. Homeland security strategy: water/wastewater
 4. Security philosophy: know thine enemy
 5. Vulnerability assessment
 6. Drinking water contamination threats and incidents
 7. Cyber security: SCADA
 8. Emergency response
 9. Security techniques and hardware
 10. A changed nation
- Appendix: Safety requirements of Sections 1433, 1434, and 1435 of Safe Drinking Water Act

In the past, I have reviewed several of the 48 books on safety, occupational health, water and wastewater operations, environmental science and concentrated animal feeding operations that Spellman has authored. None has disappointed me. Spellman writes clearly, logically and focuses on the problems and their solutions. His books are practical rather than theoretical. This book should be consulted by all those involved in the provision of water and wastewater services.

Gary F. Bennett*

*Department of Chemical and Environmental Engineering,
The University of Toledo, Mail Stop 305, Toledo,
OH 43606-3390, United States*

*Tel.: +1 419 531 1322; fax: +1 419 530 8086.
E-mail address: gbennett@eng.utoledo.edu

3 August 2007

Available online 11 August 2007

doi: 10.1016/j.jhazmat.2007.08.014

Lead Regulation Handbook, E.E. Shea (Ed.), second ed. Government Institutes/Scarecrow Press, Lanham, MD (2007). 304 pp., Price: US\$ 95.00, ISBN: 978-0-86587-161-8

During the last two decades, numerous scientific studies have been published linking the exposure of very young children to lead-based paint hazards that result in neurological damage as manifested by lower performance on intelligence tests as well as behavioral problems. Hence this book, written by an attorney who has had considerable practical experience with the metal itself as well as serving as an attorney for plants producing resins and pigments for the paint industry.

“Cutting to the chase,” I turn to Chapter 22 which provides an excellent discussion of important new developments in lead-based paint litigation including the major lawsuits based on a

public nuisance theory. The basis of most of the suits is the danger lead-based paint (in homes) poses to children and, of course, the significant removal cost.

I was not at all surprised by that chapter dealing with legal issues. Indeed, I thought the topic would dominate the book. But I was wrong.

Shea begins the book with three very informative chapters entitled:

- Lead—general background.
- Modern uses of lead and lead compounds.
- Lead mining and production; alloys and compounds.

The material in these chapters appears to have been adapted from two major chemical technology encyclopedias. Abstracted or not, the material is very nicely presented in a very readable form even including a four-page flow diagram illustrating the production of lead.

Chapter 4 discusses the health effects of lead and its compounds. A large amount of the data is from foreign sources. The good news is that exposure to lead has been declining rapidly. Lead ingested fell from 200 $\mu\text{g}/\text{day}$ in 1940 to 90 $\mu\text{g}/\text{day}$ in 1974 and 10 $\mu\text{g}/\text{day}$ in 1988. Mean blood cell concentration plummeted also from 12.8 in 1976 to 2.8 in 1991 to 1.6 $\mu\text{g}/\text{dL}$ in 1999–2002. This is good because Shea discusses a litany of potential effects of lead ingestion. In this discussion, Shea supplies a list of reviews of major studies supported by literature citations.

The next chapters report on the major U.S. environmental laws dealing with lead. Separate chapters discuss lead as covered by: The Clean Air Act; The Clean Water Act; The Safe Drinking Water Act; The Emergency Planning and Community Right-to-Know Act; The Solid Waste Disposal Act, as amended by The Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation and Liability Act; Occupational Safety and Health Act; The Federal Hazardous Substances Act; The Consumer Products Safety Act; The Federal Food, Drug and Cosmetics Act; The Hazardous Materials Transportation Act; The Lead-Based Paint Poisoning Prevention Act and The Residential Lead-Based Paint Hazard Reduction Act; The Toxic Substances Control Act; The Atomic Energy Act of 1954; and State and Environmental Health Laws.

The next to last two chapters are entitled:

- Evaluation, inspection and abatement of paint, dust and soil.
- Standards organizations: ACGIH, ASTM, NAS, NSF, and ANSI.

As noted previously, the last chapter deals with litigation.

Gary F. Bennett*

*Department of Chemical and Environmental Engineering, The
University of Toledo, Mail Stop 305, Toledo,
OH 43606-3390, United States*

*Tel.: +1 419 531 1322; fax: +1 419 530 8086.
E-mail address: gbennett@eng.utoledo.edu

20 August 2007

Available online 30 August 2007

doi: 10.1016/j.jhazmat.2007.08.065

Computational Toxicology: Risk Assessment for Pharmaceutical and Environmental Chemicals, S. Ekins (Ed.). John Wiley & Sons Inc., Hoboken, NJ (2007). 836 pp., Price: US\$ 140.00, ISBN: 978-0-470-04962-4

This book is the first in Wiley's new series entitled: "Technologies for the Pharmaceutical Industry." Given the broad scope of the topic, it is not surprising that there are a multitude (70) of contributors from nine countries. The book has five major sections:

- Introduction to toxicology methods (5 papers).
- Computational methods (3 papers).
- Applying computers to toxicology assessment: pharmaceutical (12 papers).
- Applying computers to toxicology assessment: environmental (4 papers).
- New technologies for toxicology: future and regulatory perspectives (3 papers).

Of most interest to readers of this journal will be the papers published in the fourth major section. They are by title:

- The toxicity and risk of chemical mixtures.
- Environmental and ecological toxicology: computational risk assessment.
- Application of QSARs in aquatic toxicology.
- Dermatotoxicology: computational risk assessment.

The editor notes in the Preface that: "This book includes a comprehensive discussion of the state of the art of currently available molecular-modeling software for toxicology and their role in testing strategies for different types of toxicity when used alongside in vitro and in vivo models." The editor later states: "This book is not aimed solely at laboratory toxicologists, as scientists of all disciplines in the pharmaceutical, chemical industries, and environmental sciences will find it of value."

Toxicology is, in the broadest sense, the study of adverse affects of drugs or chemicals on living systems, but how and why are questions that need answers. To this end, modern computational methods are assisting in screening and in answering those questions. As with so many other mysteries of science, computational science and information technology are being employed to explain the unknown, and this task is large. Whereas 212,000 chemicals were known in 1965, 12,000,000 are known now. Given that number, their appearance in water, air and soils with concomitant human exposure is inevitable. Thus, the need for health impact assessment is extremely important.

One technique new to me was the use of QSARs (Quantitative Structure-Activity Relationships) for the prediction of the toxicity of chemicals based on their molecular structure and/or physicochemical properties.

Gary F. Bennett*

Department of Chemical and Environmental Engineering, The University of Toledo, Mail Stop 305, Toledo, OH 43606-3390, United States

*Tel.: +1 419 531 1322; fax: +1 419 530 8086.
E-mail address: gbennett@eng.utoledo.edu

21 August 2007

Available online 30 August 2007

doi: 10.1016/j.jhazmat.2007.08.066

Bioavailability, Bioaccessibility and Mobility of Environmental Contaminants, J.R. Dean. John Wiley & Sons Inc., Hoboken, NJ (2007). 316 pp., Price: US\$ 170.00, ISBN: 978-0-470-02577-2

This book is the 11th in a series entitled "Analytical Techniques in the Sciences." This series includes a number of open learning/distance learning books which cover major analytical techniques and their applications in the physical, life and materials sciences. Dean, the author of this book, has written two others entitled: (1) *Methods for Environmental Trace Analysis* and (2) *Practical Inductively Coupled Plasma Spectroscopy*.

The goal of this series of books is to provide a broader coverage of the many areas of science in which analytical techniques and methods are commonly utilized. The books are, according to the publisher, "... presented in an easy-to-read, user-friendly style with each chapter including both learning objectives and summaries of the subject matter covered." Also included are self-assessment and discussion questions with responses given in appendix. The book has the following eight chapters:

1. Contaminated land and the link to human health.
2. Sample preparation and analytical techniques for elemental analysis of environmental contaminants.
3. Sample preparation and analytical techniques for persistent organic pollutant analysis of environmental contaminants.
4. Methods used to assess bioavailability of metals.
5. Methods used to assess bioavailability of persistent organic pollutants.
6. Methods used to assess oral bioaccessibility.
7. Selected case studies on bioavailability, bioaccessibility and mobility of environmental contaminants.
8. Recording of information and selected resources.

Gary F. Bennett*

Department of Chemical and Environmental Engineering, The University of Toledo, Mail Stop 305, Toledo, OH 43606-3390, United States