

“The first gives the policy context for environmental risk assessment and introduces the reader to how environmental science and engineering are used in decision making. The second introduces the reader to the fundamental principles underlying environmental assessment and response actions. The third introduces risk assessment and environmental toxicology, with guidance on how hazards and dose responses are determined, how exposures can be estimated, and techniques for calculating risks under a number of realistic scenarios. . . . The book’s fourth part shows how the practitioner can put these fundamental principles to work to clean up environmental problems, and introduces environmental management considerations and the expectations of environmental professionals.”

Very early, Vallero caught my attention with a discussion of problems faced by the Great Lakes. Contamination of these magnificent bodies of water has caused a number of locations to be designated as Areas of Concern and Remediation Action Plans are being developed for each. An excellent discussion of why this contamination is of concern is given under the sub-heading of “Beneficial Use Impairments”, i.e., degradation of fish populations, benthos, phytoplankton, zooplankton, and esthetics.

Following this section is a key discussion on “Understanding Policy by Understanding Science”. Vallero notes, “Too often, it seems we are asked to manage or lead without an adequate understanding of what it is we are managing or leading. To assess and address environmental issues and problems appropriately and thus make sound environmental decisions require at least a basic understanding of the scientific principles affecting those issues, problems, and decisions.” To which I say, “Amen”.

Among other topics discussed in this chapter are US laws dealing with the environment. Included are short discussions of the National Environmental Policy Act (NEPA), the Clean Air Act, and water quality legislation.

The second major section of the book deals with risk assessment which the author notes is “. . . a multifaceted and complex mix of science, engineering, and technology”. Risk assessment, he notes, “. . . must follow the prototypical rigors of scientific investigation and interpretation”. Chapter titles in this section include:

- Fundamentals of environmental physics.
- Applied contaminant physics: fluid properties.
- Environmental equilibrium, partitioning, and balances.
- Movement of contaminants in the environment.
- Fundamentals of environmental chemistry.
- Chemical reactions in the environment and biological principles of environmental contamination.

Section three is entitled “Contaminant Risk”. Thoroughly discussed are the hazards posed by chemicals. Vallero goes from the past to the present by first quoting Paracelsus’ definition of a poison. In his definition, Paracelsus notes that the dose is the major aspect of importance as it differentiates be-

tween a poison and a remedy. From the past, Vallero enters the future by discussing the US Resource Conservation and Recovery Act (RCRA). He cites the four physical/chemical classes by which a waste is classed as being hazardous: corrosivity, ignitability, reactivity and toxicity. Included in this chapter is a section entitled “Contaminant Exposure and Risk Calculations”. Cancer risk calculations are discussed here among other topics.

The fourth and final major section of the book is entitled “Interventions to Address Environmental Contamination”. The first chapter in this three-chapter section is entitled “Contaminant Sampling and Analysis”. The subsequent two chapters discuss how to manage risk and conduct environmental decision making. Key to this analysis is a list of 19 questions to be answered on the important topic of how to communicate scientific information.

The book has a plethora of basic information on waste treatment. For example, there is a good discussion of both incineration and biological waste treatment.

There were two interesting writing techniques used by the author. He puts much information in “shaded boxes” throughout the book to highlight discussion topics. For example, a box entitled “Bioremediation Example 1” asks the question “What is the difference between biostimulation and bioaugmentation in biological treatment of hazardous chemical contaminants? Which approach do hazardous waste remediation engineers prefer?” Then he goes on to answer the questions in the same box.

Finally, I note, each chapter ends not with a normal list of references but with an extensive section entitled “Notes and Commentary”. Included in his discussion are reference citations but more importantly the author discusses the meaning and ramifications of many of his statements in the book.

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**Kenneth W. Oldfield (Ed.), *Emergency Responder Training Manual for the Hazardous Materials Technician, Second Edition*, John Wiley & Sons, Inc., Hoboken, NJ, 2004, ISBN 0-471-21387-X (641 pp., US\$ 89.95).**

This book, the editor notes, “. . . is designed to address the training needs of personnel who respond to emergencies involving hazardous materials.” In my opinion, that goal is fulfilled and fulfilled very well. This, the second edition, has new material that includes:

- Emergency response to terrorism incidents, including incident command, site control, personal protective equipment, air monitoring, and more.
- Updated information of revised OSHA regulations, including the respiratory protection standard, focusing on both its requirements and its application.
- Competency criteria mandated in the National Fire Protections Association's standard on emergency response.
- Emphasis on the Unified Command structure as part of the Incident Command System for managing large incidents.

Responding to terrorist threats is a problem that arose since the last edition. In response, this book has a new chapter (as noted above) entitled "Terrorism and Weapons of Mass Destruction [WMD]." Subsections in this chapter include:

- Terrorism and weapons of mass destruction defined.
- The role of WMDs in terrorism incidents.
- Special considerations for terrorism events.
- Basic considerations for WMD agents.
- Types of WMD agents and their hazards.
- Basic guidelines for responding to terrorism/WMD incidents.

Additionally, there are added sections throughout the book specific to WMD response. These inclusions are in chapters dealing with site control, personal protective equipment and decontamination. Regardless of the topic discussed, the safety of emergency responders is emphasized throughout the book.

The first chapter (appropriately entitled "Introduction to Hazardous Materials") introduces the reader to hazardous materials by answering the following questions:

- What are hazardous materials?
- Why are we concerned about them?
- Why are they harmful?

"This chapter also provides an overview of hazardous materials response and response roles and explains how the book can be used training responders to fill these roles."

Of the definitions of hazardous materials provided (DOT's, EPA's and OSHA's) I like the one by Ludwig Benner, a former member of the US National Transportation Board, who "...defined a hazardous material as a substance that jumps out of its container at you when something goes wrong, and hurts or harms the things it touches."

Chapter 2, entitled "Response Laws, Regulations, Standards, and Other Policies," begins with a discussion of probably the worst chemical disaster in the United States – the Texas City, Texas, explosion of ammonium nitrate contained in the French Liberty Ship, Grandcamp. Killed, were 600 people (including the ship's crew and all 27 members of the local fire department). Interspersed in the book are stories of other famous (or should I say infamous) hazardous materials incidents including the near-catastrophic nuclear core reactor

failure of the power plant at Three Mile Island, Pennsylvania; the release of methyl isocyanate in Bhopal, India; and the mishap at Union Carbide's pesticide plant in Institute, West Virginia that resulted in the release of aldicarb oxime pesticide. Also discussed in the book are BLEVEs as well as the explosion of a railroad tank car at Waverly, Tennessee containing LPG. More recent events such as the terrorist explosion at Oklahoma City, Oklahoma, the sarin release in a Japanese subway, and the September 11, 2001 attack on New York City also are mentioned.

While computer programs are not discussed extensively in this book, the contributors do discuss CAMEO (Computer-Aided Management of Emergency Operations), which is "a multifunctional multipurpose computer program system with 12 informational modules and three software programs." One of these programs is areal location of hazardous atmospheres (ALOHA), which calculates atmospheric chemical vapor dispersion.

Overall, the coverage of training for response to hazardous material incidents is comprehensive with chapters (in addition to the above) discussing response laws and regulations, incident management, chemical hazard assessment, human health effects of chemicals, physical hazards, air surveillance, site control, personal protective equipment and decontamination. Even discussed, is the impact of stress in emergency response.

My overall evaluation of this book is that it is well written with the inclusion of numerous tables, figures, and photographs to illustrate the points made and will well-serve the response community. All fire departments and response units will be well-advised to purchase a copy.

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**Nolberto Munier, Multicriteria Environmental Assessment: A Practical Guide, Kluwer Academic Publishers/Springer, Dordrecht, The Netherlands, 2004, ISBN 1-4020-2089-9 (320 pp., Paperback, US\$ 61, EUR€ 55, GPB 38).**

The jacket cover states, "The purpose of this book is to analyze, with actual examples, different techniques that have been developed to tackle the complex task of making an Environmental Impact Assessment (EIA) of a project."