

two books in the series, but if they are as good as this one I will be delighted.

Wang et al. have written, in my opinion, one of the best texts I have reviewed recently (aside from a few minor problems noted below). Its 12 chapters (titles following) comprehensively cover the topic of air pollution control:

- Air Quality and Pollution Control
- Fabric Filtration
- Cyclones
- Electrostatic Precipitation
- Wet and Dry Scrubbing
- Condensation
- Flare Process
- Thermal Oxidation
- Catalytic Oxidation
- Gas-Phase Activated Carbon Adsorption
- Gas-Phase Biofiltration
- Emerging Air Pollution Control Technologies

The editors note that each chapter was contributed by authors who were given latitude in format and coverage. All chapters seem to have conformed reasonably well to a general format. However, I found the treatment of design costs to be somewhat different between the chapters. Some of the costs and cost update data are out of date. A minor suggestion would be for the next edition, and I hope there is one, would be to put updates for cost data in the Appendix to be referred to by all chapter authors.

A feature I like very much was the inclusion of numerous examples of the design principles discussed. That feature, however, was carried to excess in the chapter on "Wet and Dry Scrubbing" where 30 different examples were given. Given that Wang holds several patents in this area and has published numerous reports on the topics, this is not surprising.

I have four other minor concerns to note. (1) Since cyclones remove only the largest particles, it seems strange to me that the editors discuss their operation after the chapter on fabric filters which are very efficient in removing all particle sizes. (2) I am curious as to why gravitational collectors (ancient and relatively inefficient particle control devices) were discussed in the "Emerging Air Pollution Control Technologies" chapter. (3) My personal preference when quoting journal articles is to include the article title in the citation; this was not done here. (4) Problems for student assignment were not included.

The above minor concerns aside, I found the book to be excellent and strongly recommend its use as a text.

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Henry J. McDermott, Air Monitoring for Toxic Exposures, Second ed., Wiley Interscience, Hoboken, NJ, 2004, USD 125.00, 700 pp., ISBN 0-471-45435-4.

A concern in the United States as well as in many other industrial countries for terrorist attacks has spawned new chapters in many recent books I have reviewed. And that is so in this book, wherein Chapter 4 deals with "Air Monitoring at Emergencies Including Terrorist Events." The author writes:

"This chapter provides guidance on performing air monitoring at emergencies including spills, releases, terrorism events, and similar situations where airborne contaminants may present a risk to responders or the public. Terrorism events include release or potential release of chemical (both chemical warfare and toxic industrial chemicals), biological, or radioactive agents. Terrorism events and other types of emergencies are grouped together because the preplanning and other aspects of air monitoring are similar for both."

This chapter has two purposes. Its goal is to:

- Provide first responders and others with a defined role in terrorism or emergency response with detailed information on air monitoring that they can use in preparing response plans, developing liaisons with specialized response teams from other agencies, selecting and obtaining equipment, preparing procedures and training staff.
- Provide sampling practitioners without a formal role in incident response with enough background so that they can have an awareness of the topic and can plan for any response that might be an incidental part of their normal role in occupational or environmental monitoring."

Hazards discussed under the terrorist event category include chemical warfare agents (such as sulfur mustard, phosgene, and organic phosphate esters), toxic industrial chemicals, biological agents (such as anthrax and *Clostridium botulinum*), and radiological hazards. In the central of the chapter, the author discusses air sampling methods for chemical agents using military test kits, colorimetric detector tubes, direct reading instruments, and sample collection devices (followed by laboratory analysis).

Following this section is a short discussion of air sampling methods for biological agents and radioactive hazards. Of note in this discussion was the reference section wherein 16 of 23 references were to Aberdeen Proving Grounds reports.

In part two of the text entitled "Sample Collection Device Methods for Chemicals" there are the following four chapters:

- Introduction to monitoring using sample collection devices
- Sample collection devices for gases and vapors
- Sample collection methods for aerosols
- Concurrent sampling for vapors and aerosols

The next major section of the book, which is entitled "Real-Time Measurement Instruments," has six chapters titled as follows:

- Introduction to monitoring using real-time methods
- Instruments with sensors for specific chemicals
- General survey instruments for gases and vapors
- Instruments for multiple specific gases and vapors: GC, GC/MS, and IR
- Colorimetric systems for gas and vapor sampling
- Real-time sampling methods for aerosols

Discussed next are procedures for monitoring airborne agents other than chemicals, i.e., radon and bioaerosols such as bacteria, fungi, molds, and viruses.

The final segment of the text ends with the following four chapters that contain information on specific sampling procedures. These chapters are titled as follows:

- Specific sampling situations
- Biological monitoring
- Surface sampling methods
- Bulk sampling methods

Although I have sampled industrial stacks and have limited experience with detector tubes, most of the information in this book is well beyond my personal experience. From what I read, I can only conclude that what is presented is well-written, understandable, and complete. The book should be in the library of every emergency response team as well as conventional sampling groups.

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Richard J. Lewis Jr., SAX's Dangerous Properties of Industrial Materials, 11th ed., John Wiley & Sons, Inc., Hoboken, NJ, 2004, ISBN 0-471-47662-5 (print), 0-471-47661-7 (CD-ROM) (three volumes, 4860 pp., US \$595.00 (each for print and CD-ROM)).

One of the very early books I obtained for my personal library when I was active with the hazardous materials re-

sponse unit of our city was SAX'S Handbook. It was a single volume that contained a great deal of information on hazardous chemicals. As extensive as that information was, this new edition goes far beyond the volume I used. The 11th edition contains a fantastic amount of data on chemicals. The information provided to me by the publisher notes that 26,000 chemicals are discussed of which 2600 appear in SAX's book for the first time.

According to the brochure I received, "Each entry includes the following data (where available): the DPIM code, hazard ratings, entry name, CAS number, DOT number, molecular formula, molecular weight, line structural formula, a description of the material and physical properties, and synonyms. Also listed are the toxicity data, with references for reports of primary skin and eye irritation, mutation, reproductive, carcinogenic, and acute toxic dose data."

I am writing this review using a media press kit and not the full book itself, but that is not a problem as I was supplied with numerous (60 in total) photocopied pages from two different sections of the book.

The first section I was given began with the "B" materials. I was surprised to see bacilli discussed as most hazardous chemical information books I have used in this area did not include the dangers of bacterial exposure. This section contains reports on *Bacillus cereus*, *Bacillus subtilis*, and *Bacillus thuringiensis*. I was surprised to note the second of these bacteria (*B. subtilis*) has data for OSHA PEL and ACGIH TLV values. Even though my training was as a biochemical engineer, I have never run across data before on bacterial PEL and TLV levels.

In deference to modern methods of information transfer and accessibility, Wiley has published several versions of this handbook: three-volume print version, CD-ROM, on-line database (Wiley notes this information is always up-to-date), and CD-ROM networkable version (for numerous users).

If there is one book on hazards of chemicals and safety with respect thereto that the first responder or laboratory chemist or practicing chemical engineer should have, this is it.

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