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Book reviews

Handbook of Industrial Toxicology and Hazardous Materials, Nicholas P. Cheremisinoff, Marcel Dekker, New York, 1999, \$225.00, 928 pp., ISBN: 0-8247-1935-2

Cheremisinoff is a master at searching the literature, extracting relevant information, and compiling a text from his efforts. The fact he has edited (or co-edited) more than 150 books is evidence of his efforts and ability in this endeavor.

This book is one such effort. It contains little, if any, new material (or analysis) but does combine and reprint much of the literature on the topic, some useful, some not, much of which is found elsewhere.

On the positive side, I note that the book provides much relevant (safety and other) information on 1000 chemicals (Chapter 5). For each chemical, data given are: (1) Chemical Description (including synonyms), (2) Observable Characteristics, (3) Physical and Chemical Properties and (4) Health Hazards. While useful, these data are found in several other books in my library. However, if one does not have another book containing hazardous chemical data, this one would be useful.

However, I did not find the reproduction of the U.S. Department of Transportation (DOT) *Emergency Response Guidebook* in Chapter 6 worthwhile. The 140 pages devoted to reproducing this widely distributed book were an ill-advised use of space.

Conversely, I was impressed by the information in the 90-page Chapter 2, entitled “Industrial Hygiene Sampling and Personal Protection.” The author notes “This chapter is organized into an introductory discussion on the chemistry of hazardous Materials, followed by two main sections. The first deals with personal sampling practices that would be implemented by an industrial hygienist to determine worker exposure to chemicals. The information in this section covers OSHA recommended sampling techniques. The second major section provides an overview of worker safety with regard to handling chemical and other hazardous materials.” Although I have seen much of the included material in other books, I found the presentation here interesting with some new information on monitoring I had not seen before.

Chapter 3 is essentially a list of chemical synonyms, preceded by a mainly unconnected short preamble. Such a list is useful, especially for spill response. Again, I already have such a list in my library.

Chapter 4, entitled “Guide to Chemical Reactivity, Fire and Explosion” is divided into three major subsections described by the author as follows: “This chapter is organized into three major subsections. The first section covers theory and practical

information concerning hydrocarbon fires. Both the chemistry and pertinent data concerning this important class of chemicals are discussed from a fire safety standpoint. The second subsection provides a guide to chemical reactivity for incompatible binary mixtures. The third subsection provides extensive data tables and information on the flammability and chemical compatibility of commercial chemicals.’’

Chapter 8 is simply a glossary of approximately 700 toxicology and material handling terms. An Appendix contains a 30-page list of chemical structures for select chemical compounds.

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Cost-Effective Remediation and Closure of Petroleum-Contaminated Sites, Douglas C. Downey, Robert E. Hinchee and Ross N. Miller, Battelle Press, Columbus, OH, 1999, \$65.00, 297 pp., ISBN: 1-57477-071-3

Petroleum hydrocarbons are the most common chemicals used by society — and consequently it is not surprising their release to the environment has yielded the most contamination problems (or, conversely, cleanup opportunities). To this end, the authors have written this book whose purpose “... is to provide environmental managers and their supporting technical specialists with a comprehensive strategy for cost-effectively cleaning up soils and groundwater contaminated by petroleum releases.’’

The book provides practical answers to many of the following questions that must be addressed when one is developing a remediation or closure plan for a petroleum-contaminated site:

- Is the existing site characterization adequate to make a remedial decision?
- Can the site be placed in a closure status because no potential pathways exist for human or ecological exposure?
- What role is natural attenuation playing in site remediation and is it sufficient to eliminate future risk?
- Can the risk-based corrective action (RBCA) process be applied to speed up the site closure process?
- If significant exposure pathways exist, what remedial technologies are available and how will you select the best technology?
- How can I work with regulators and other interested parties to gain their approval of a site closure plan?

Following the Introduction, the writers have five chapters designed to provide the reader with a comprehensive strategy for completing all phases of a risk-based site remediation. These chapters are:

- Site Closure Strategies,
- Site Characterization,
- Evaluating Source Reduction Technologies,

- Plume Remediation,
- Documentation.

The foregoing material only takes up one-third (104 pp.) of the book. The latter two-thirds is filled by appendices which include:

- Case Studies —
 - Wurtsmith AFB, MI
 - KC-135 Crash Site, Wurtsmith AFB, MI
 - Site ST-27, Charleston AFB, SC
 - Site ST-14, Carswell AFB, TX
- Overview of Applicable Regulations
- Documenting Natural Attenuation
- Developing Risk-Based Cleanup Goals
- Remediation Time and Cost Estimates and Recommended Pilot Testing
- Recommended References

The emphasis (as the book's title suggests) is cost-effective cleanup based, however, on risk analysis. This cost effectiveness results from utilizing a combination of land-use control, site-specific risk assessment, natural attenuation and focused source reduction technology.

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Pollution Prevention Opportunity Assessments for Research and Development Laboratories, Jill Engel-Cox and Kim Fowler, Battelle Press, Columbus, OH, 1998, US\$29.95, 100 pp., ISBN: 1-57477-070-5

On the first page of the first chapter, entitled "Introduction: Preventing Pollution in the World of Research and Development," the authors outline their whole book with the following advice on how to conduct a P² (Pollution Prevention) laboratory assessment:

- Get Started — Choose a diverse team, including a researcher to lead the assessment.
- Collect Information — Gather data about key waste-generating activities by identifying the material usage, quantifying waste streams, and walking through facilities and laboratory space where activities are being conducted.
- Brainstorm — Brainstorm pollution prevention opportunities.
- Analyze — Research and analyze pollution prevention opportunities for waste reduction, cost savings, and return on investment.
- Make Recommendations — Make recommendations for pollution prevention implementation projects based on the waste and cost analysis.
- Document — Document your work and implement the opportunities.

Indeed, the six steps given above are the six chapter titles of the book.

Their introductory chapter covers "some basic concepts, such as describing pollution prevention, discussing what a pollution prevention opportunity assessment is, noting the

benefits of assessments, and showing how they fit into a pollution prevention program. Each subsequent chapter covers a step in the pollution prevention opportunity assessment process. At the beginning of each chapter is a list of the activities to complete that step. Each chapter also includes an example of how a team of researchers completed that step and the results. A detailed report from the example is included in the appendix.’’

The authors provide copies of five worksheets that they have found to be useful in documenting their pollution prevention opportunity assessment efforts — beginning with a description of the team and its activity (#1) and ending with a final project summary (#5).

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