

5. Fate and behavior of endocrine disrupters in sludge treatment and disposal;
6. Endocrine disrupters in receiving waters;
7. Endocrine disrupters in drinking water and water reuse;
8. Management strategies for endocrine disrupters in the aquatic environment.

The topic of the book, Pollution by endocrine disrupters, is one potential water pollution problem that I have never before considered (in my sheltered world of industrial pollution control). This book has opened my eyes to a whole new area of concern for the potential impact of synthetic chemicals on the environment and human health. As I said, the book is well-written and -referenced. I predict it will have an impact on the water pollution control field.

Gary F. Bennett

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Hazardous Materials Chemistry for Emergency Responders, 2nd edition

Robert Burke, Lewis Publishers, Boca Raton, FL, 2003, \$99.95(US), 466 pp., ISBN: 1-56670-580-0

Emergency response personnel, especially firefighters, daily respond to incidents involving hazardous chemicals. Their safety is dependent on their knowledge and understanding of chemicals and chemistry. However, few line firefighters have taken college chemistry courses. This book addresses that lack of knowledge.

Burke, an instructor in hazardous materials and columnist for fire-oriented magazines, has done an excellent job of presenting “chemistry” in a readable and understandable fashion. Mastery of the material he presents would be invaluable for first responders, especially the officer in charge of a hazardous material incident.

The introduction logically sets out the problem of hazardous material spills. Burke describes the large number of chemicals used in daily commerce; he cites 63,000 chemicals used outside the laboratory environment with the number increasing every year. He also notes that the Department of Transport (US DOT) regulates over 3800 hazardous materials in transportation. Over 6000 transportation accidents involving toxic chemicals were reported in the United States during the statistical period from 1996 to 2000. These accidents resulted in more than 50 deaths, 100 of injuries and 1000 of persons evacuated from their homes or sheltered in place. Also discussed in this beginning chapter is the US DOT Hazard Classification of Chemicals. This initial material is followed by a discussion of the NFPA 704 Marking System, i.e. the diamond. The final segment of this chapter is a discussion of the competencies required by both OSHA 1910.120 and NFPA 472. These capabilities define the level of training needed for the operations level, technician level and incident commander.

In Chapter 2, Burke discusses “The Basics of Chemistry”. He begins, logically, with the Periodic Table. Next, he lists the 39 HazMat Elements. For each of them, he describes the history, sources, important compounds, uses and isotopes. Additionally, he gives their symbol, atomic weight, DOT class, four-digit number, placard symbol, physical state and NFPA diamond data.

The remainder of the book is organized around the US DOT's nine hazard classes: explosives; compressed gases; flammable liquids; flammable solids; oxidizers; poisons; radioactive materials; corrosives; and miscellaneous hazardous chemicals. Each chapter is different as is each US DOT class. Burke generally discusses the nature of the chemicals in each class. Included is information about the hazards posed and examples of incidents involving the chemicals. Liberal use is made of appropriate pictures of storage, transport and past spills. Especially interesting were photographs of BLEVEs.

The final chapter is entitled "Incompatible and Unstable Chemicals". This discussion treats conditions in which chemicals are mixed and that mixing may cause a reaction that ranges from mild to violent, producing heat or cold, spontaneously combusting, producing toxic or corrosive vapors or even exploding.

The book ends with a 14-page glossary, list of acronyms and recognized abbreviations, telephone contact numbers, resource guides, selected technical references, IUPAC Rules and Nomenclature and references.

Each chapter is followed by a list of review questions for the student. The answers to these questions are found in the appendix.

Were I to teach a basic chemistry course to first responders, this book would be one that I would seriously consider for adoption. It is generally well written, logical in its content and complete in its coverage. My only criticism is that the list of references is sparse and does not cite several information sources that I would have cited.

Gary F. Bennett

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Waste sites as biological reactors: characterization and modeling

Percival A. Miller, Nicholas L. Clesceri (Eds.), Lewis Publishers, Boca Raton, FL, 2003, 398 pp., US\$ 139.95, ISBN: 1-56670-550-9

Disposal of residential, commercial and industrial waste is a continuing (and even increasing) world-wide problem. Whether to recycle, burn or landfill is an ongoing debate. The popularity (as evidenced by being the disposal method of choice) of landfilling continues in spite of this debate. What occurs in these landfills, the authors state, "is exceedingly complex." It is this complexity that Miller and Clesceri address.

This book treats waste disposal sites as biological reactors focusing on the biodegradation aspects of the disposal site presenting original analyses of waste and reactor kinetics, decomposition, temperature, moisture effects and heat properties. Discussed are the generation of landfill gas and leachate chemicals. Detailed composition and property data are given.

The authors have given us nine well-developed chapters that are titled as follows:

1. Introduction;
2. Physical characteristics of waste sites;
3. Characterization of disposal wastes: physical and chemical properties and biodegradation factors;