

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.

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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;

4. Waste site ecology;
5. Moisture and heat flows;
6. Heat generation and transport;
7. The kinetics of decomposition of wastes;
8. Decomposition issues;
9. Sensitivity analysis and conclusions.

The Table of Contents contains a very detailed list of the topics in each chapter, an inclusion I found very useful.

The most valuable aspect of the book, in my opinion, is the comprehensive data found in Chapter 3. Those data include a description of individual wastes and characteristics (paper wastes, food wastes, yard wastes, plastic wastes). Data given include the percent weight and MSW, percent water and percent ash. Discussed following the descriptions of the wastes is the fate (deterioration/degradation) of plastics. The authors note that plastics disappearance is often too poorly characterized in experimental studies to be analyzed as substrates in a hypothetical reactor. This discussion is the first one I have encountered on plastics degradation. Continuing in the chapter, the authors discuss the dually important topics of generation of landfill leachate and the characteristics of landfill gas.

In Chapter 4, entitled "Waste Site Ecology," the presence of toxic compounds in the leachate is briefly discussed.

Interesting topics included in this chapter are: types of organisms present; impact of environment on organism types; waste site scavengers (such as bears and other animals); and the role of soil fungi.

The least useful aspect of the book (in my opinion) was the elegant mathematical treatment of the landfill reaction processes. That analysis takes up the rest of the book (Chapters 5–9). I do not believe the extremely variable landfill environment merits the sophisticated mathematical analysis that the authors have constructed. However, the authors are to be commended for their courage in attempting this analytical approach.

The book ends with two appendices that contain a plethora of data on waste properties and landfill gas properties.

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Interfacial applications in environmental engineering

Mark A. Keane (Ed.), Marcel Dekker, Inc., New York, NY, Surfactant Science Series vol. 108, 2003, \$165.00(US), 379 pp., ISBN: 0-8247-0866-0

This book is a compilation of papers presented at a specialty symposium entitled "Application of Interface Science in Environmental Pollution Control." The session was part of an ACS meeting in Chicago, IL in August 2001.

The papers in the book are on a wide range of topics including fundamental studies of general interest and overview of strategies for pollution abatement. The editor notes that