

chemicals and their mixtures. The book provides the reader with a framework of the terms 'permeation rates' and 'breakthrough times'. Using the predescribed data base, the book goes on to develop a list of compatibility charts that will provide the user with an invaluable tool to assist in the mitigation of the incident.

This book, when used in concert with the 'GlovES+' computer program should be included in the resource library of any organization in the hazardous materials response industry.

DAN KERR

*Accidental Releases of Air Toxics: Prevention Control and Mitigation*, by D.S. Davis, G.B. DeWolf, K.A. Ferland, D.L. Harper, R.C. Keeney and J.D. Quass, Noyes Data Corp., Park Ridge, NJ, 1990, ISBN 0-8155-1210-4, 649 pp., \$ 86.

As the review was being written, the US Congress was in the process of passing a significant revision of the Clean Air Act. One of the most important aspects of their act deals with air toxics. The concern expressed by the legislators mainly revolve around chronic emissions of these chemicals. But there is another mode of release – accidental. An that is the topic of the book, which presents an overview of the methods available for identifying, evaluating, preventing, controlling and mitigating hazards in facilities that use, manufacture or store acutely toxic chemical that could be released into the air.

The book is really a combination of three manuals written for the US EPA by members of the Radian Corporation. These three manuals deal with the following topics in the control of accidental releases of air toxics:

- User's Guide
- Prevention and Protection Technologies
- Post-Release Mitigation Measures

The first section begins with a brief history of accidental releases such as Bhopal and Chernobyl (two devastating accidents that have had a tremendous effect on the chemical and nuclear industries). Next, hazardous chemicals and their key properties of interest are defined. These introductory chapters are followed by chapters on hazards in process operations, method for hazard identification and evaluation, principles of control, guide to facility inspections and costs of accidental releases and their prevention.

The second section of the book (Manual No. 2) has four major sections (following a short introductory section):

- Section 2, which covers process design consideration, addresses the basic fundamental and operational characteristics, of chemical process systems. It highlights the major hazards associated with various characteristics of systems, and discusses control measures that reduce three hazards.

- Section 3, covers physical plant design and considers how inappropriate design practices for the physical facility and its hazards contribute to accidental chemical releases.
- Section 4, discusses procedures and practices such as management policies, operator training, maintenance practice and other topics.
- Section 5, discusses protective systems including scrubbers, flares and secondary containment systems.

Costs are given for installation and operation of the various mitigation systems.

The third and final manual incorporated in this one book addresses post-release mitigation measures that may reduce the consequences of an accidental toxic chemical release after it has occurred. This section's scope is outlined by the title of the chapters:

- Emergency planning and training
- Facility siting and layout
- Detection and warning system
- Vapor dispersion
- Meteorological instrumentation
- Secondary containment
- Spray, dilution and dispersion systems
- Foam systems

GARY F. BENNETT

*International Technologies for Hazardous Waste Site Clean-up*, by T. Nunno, J. Hyman, P. Spawn, J. Healy, C. Spears and M. Brown, Noyes Data Corp., Park Ridge, NJ, 1990, ISBN 0-3155-1238-4, 283 pp., \$ 45.

The cost of cleaning up problem hazardous waste sites in the United States is staggering. No one can predict within an order of magnitude the final cost to the country, but it is in the order of billions of dollars. So any help the nation can get by way of better or more economic clean-up methods will be extremely beneficial.

Consequently the purpose of this project, which is the subject of the US Environmental Protection Agency report on which the book is based is to identify and assess international technologies that could be utilized for hazardous waste sites remediation in the United States. Emphasis was placed on technologies that have been developed and/or applied in Europe, Japan and Canada. As a result of literature survey and personal contact, 95 technologies have been identified that may be applicable the Superfund site remediation.

For each of the 95 technologies, 63 were found to merit further review of their progress; 15 of these technologies came from NATO/CCMS (Committee