- Compressed gas cylinders: marking, labeling, inspecting, testing, disposition
- Cleaning components, equipment and system for oxygen service

Part Three provides information on the properties, uses and handling of 44 different gases (or gas groups) that are of current commercial importance. Complete information is given in individual monographs devoted to each of these gases; the data given include:

- Identifying information
- Physical constants
- Description
- Grades available
- Uses
- Physiological effects
- Materials and construction
- Safe storage, handling and uses
- Disposal
- Handling leaks and emergencies
- Methods of shipment
- Containers
- Methods of manufacture
- References

The fourth part of the book, the appendix, is the shortest of all sections; it contains the following four chapters:

- Glossary of terms
- List of abbreviations
- State regulatory agencies and codes
- Publications of the Compressed Gas Association

My overall assessment is that there is no more definitive treatise available (and there should not be considering the source) on the topic of compressed gases.

GARY F. BENNETT

Countermeasures to Airborne Chemicals, by J.M. Holmes and Ç.H. Byers, Noyes Data Corp., Park Ridge, NJ, 1990, ISBN 0-8155-1232-5, 330 pp., $ 45.00.

The Bhopal tragedy has spawned numerous studies and reports in the United States on the potential for release of toxic substances, response thereto and potential control thereof. This report was issued by two members of the Oak Ridge National Laboratory as a result of a study commissioned by the (US) Federal Emergency Management Agency (FEMA).

The report covers three major topics:

1. The nature of the threat from incidents involving airborne hazardous chemicals described. Based on available data bases, a new methodology for ranking chemical hazards is proposed and tested.
2. Existing responsibilities of federal, state and local agencies, as well as the part played by the private sector, have been surveyed. Legislation at all levels of government has been reviewed and, in the light of this analysis, the role of FEMA was examined. Institutional approaches to new and existing methods

for reducing risk were evaluated and recommendations have been made for these approaches.
3. Technical options (for control of volatile chemicals) are discussed in the light of the most hazardous situation and recommendations are made for research where needed. Established, new and emerging technologies are discussed. Finally recommendations are made regarding actions which would improve preparation, training, mitigation and response.

This is one of the best government reports I have read recently, although I think it's mistitled. A better title would have been *Hazardous Material Releases: Response, Planning and Prevention.* The author really covered all the above topics well, especially the planning phase for volatile hazardous material release response.

True to the book's title the authors do discuss countermeasures (such as foaming and covers) for volatile chemicals (and they do a reasonable job controlling these materials for a short period of time). Not very well covered (for little space was devoted to the topic) is dispersion modeling.

Two unique developments I found were:
1. A plot of the number of spills versus amount of chemicals produced annually–they correlate well; I have tried without success to plot these data for a number of years and was delighted to see someone succeed where I could not.
2. The development of a methodology for ranking chemical hazards based on: (a) toxicity level of airborne gases, vapors or aerosols; (b) fire and explosion potential; (c) mobility of the substance after release; (d) domestic production and location of major production plants; and (e) domestic shipments, based on a numerical rating the authors defined four hazard levels. They are listed below with examples of chemicals in each:

- Very high risk material—acetaldehyde, ammonia, chlorine
- High risk material—cumene, phenol, xylene
- Moderate risk material—acetone, crude oil, sodium
- Low risk material—butyl acetate, hexane, kerosene

I highly recommend the book to someone who wants the basics of emergency planning response. It makes a good beginning.

GARY F. BENNETT

Hazardous Waste Minimization, by H.F. Freeman (Ed.), McGraw-Hill, New York, NY, 1990, ISBN 0-07-022043-3, 343 pp., $ 42.50.

There is no more timely topic than waste minimization or as the U.S. Environmental Protection Agency (U.S. EPA) prefers to call it, 'Pollution Prevention'. This book is being reviewed as the U.S. Congress is discussing (and