

Fourteen papers, of which five are presented in German, are included. About one-half of the papers describe contributions to the development of mathematical models for turbulent dispersion of heavier-than-air gases released into the atmospheric boundary layer at ground level. The remaining papers deal with related but more specific topics such as dispersion of gasoline vapors accidentally released in road tunnels, analysis of the potential explosion effects which may result from the ignition of unconfined vapor clouds, and risk analyses for storage and transport of liquified natural gas. There is also an overview of research activities in the United States up to the date of the symposium.

The papers presented on turbulent dispersion of heavy gases are primarily authored by investigators from the European community, where the development of heavy gas dispersion models for use in hazard assessment appears to have received more attention than in the United States in the past five years. The author has provided an introduction to the book which reviews the main physical processes which occur during the release of heavy gases stored under pressure at ambient temperature and during the release of refrigerated gases stored at near-atmospheric pressure. Attention is properly called to the complications which differentiate the processes occurring in such releases from those treatable by conventional trace-contaminant atmospheric pollutant dispersion modeling techniques.

The book will be of considerable interest to the growing number of people involved in the estimation of risks associated with manufacture, transport, and storage of heavy toxic and/or flammable gases. The potential hazard associated with such activities is a hotly debated subject about which resolution is badly needed. Although most of the controversy in the United States about hazards associated with gas-clouds formed during accidental release has centered on the risks involved in the transport of liquified natural gas, the European research community appears to have attached more importance to the development of an understanding of the hazards which are to be expected from accidental release of a number of potentially hazardous gases stored in large amounts. The availability of this book will hopefully aid in the consolidation of international research efforts toward development of a better understanding of the complex problem of atmospheric turbulence dispersion of dense gases.

J. HAVENS

Handbook of Toxic and Hazardous Chemicals, by Marshall Sittig, Noyes Publications, Park Ridge, New Jersey, 1981, 729 pp., \$64.

An understanding of the book's area of coverage can be given best by quoting from the foreword:

"The handbook presents concise chemical, health and safety informa-

tion on nearly 600 toxic and hazardous chemicals, so that responsible decisions can be made by chemical manufacturers, safety equipment producers, toxicologists, industrial safety engineers, waste disposal operators, health care professionals, and the many others who may have contact with or interest in these chemicals due to their own third party exposure.

Included in the book are *all* of the substances whose allowable concentrations in workplace air are adopted or proposed by the American Conference of Governmental Industrial Hygienists (ACGIH), *all* of the substances considered to date to be the Standards Completion Program of the National Institute of Occupational Safety and Health (NIOSH), *all* of the priority toxic water pollutants defined by the U.S. Environmental Protection Agency (EPA) and most of the chemicals in the following classifications: EPA "hazardous wastes"; EPA "hazardous substances"; chemicals reviewed by EPA in Chemical Hazard Information Profiles (CHIPS) documents; and chemical reviewed NIOSH Information Profile Documents."

The chemicals are listed in alphabetical order in a table of contents that begins the book. Information given for each chemical (if available) includes: The toxic list in which it appears; Physical description, e.g. white crystalline solid; Code number: (1) Chemical Abstract Services, (2) NIOSH Registry of Toxic Effects of Chemical Substances, (3) United Nations numbers for individual chemical commodities (these are given for quick entry into guidebooks or automated data retrieval); U.S. Department of Transport (DOT) designation as a hazardous material, explosive, poison, etc.; Synonym; Potential exposure; Incompatibilities; Air: (1) permissible exposure limits, (2) determination of concentration; Water: (1) permissible concentration, (2) determination of concentration; Route of entry; Harmful effects or symptoms; Points of attack; Medical surveillance; First aid; Personal protection methods; Respirator selection; Suggested disposal method; References.

Although much of the information contained in the book is available elsewhere: in the U.S. Coast Guard's *CHRIS Handbook*, the International Technical Information Institute's *Toxic and Hazardous Industrial Chemicals Safety Manual*, and Sittig's own *Hazardous and Toxic Effects of Industrial Chemicals*, as I have stated before, "when dealing with the toxic chemicals, the need for accurate detailed and extensive information makes a library of several books essential. No single book will likely have all the information needed." To that end, this book brings together a great deal of information on toxic chemicals. It is an important contribution to the working literature on toxic materials.

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