

Book reviews

Thermal Hazards of Chemical Reactions, by T. Grever, Elsevier, Amsterdam, Industrial Safety Series, Vol. 4, 1994, (US) \$217.25, (Dfl.) 380.00, 424 pp., ISBN: 0-444-89722-4

Chemical plants are inherently dangerous and a significant fraction of that danger is posed by exothermic reactions. If uncontrolled, runaway reactions can lead to gaseous emissions and/or an explosion. Undesired exothermic reactions initiated during production, purification or storage by too high temperatures, or other causes, have similar destructive effects although their origin is different.

The purpose of this book (according to its preface) was to provide a basis for understanding the hazards posed by exothermic reactions. The author has 20 years of experience in accident investigation. As a result, he developed an interest in collecting and comparing safety-relevant data of products.

The book has ten chapters titled:

- Introduction
- Phenomenology of explosions in reacting systems
- Test methods for exothermic decomposition and secondary reactions
- Discussion of characteristic data of exothermic decomposition
- Exothermic secondary reactions
- Primary reactions
- Incidents in chemical processes
- Thermal explosion and runaway under practical conditions
- Thermal hazard evaluation of chemical reactions
- Safety relevant data of substances

This book is not simply a descriptive text. It is soundly based on theory, thermodynamics and experimentation - or at least the first six chapters are. Chapter 7, however, discusses several explosions in the chemical industry as a prelude to a discussion of the safe design of processes and safety measures. Seventeen accident case histories are discussed under the following general titles:

- Runaway of primary reactor
- Incidents involving secondary reactions
- Incidents involving deflagration processes
- Thermal explosions in peripheral parts of the plant

For practicing engineers, perhaps the most valuable chapters are 9 and 10: "Thermal hazard evaluation of chemical reactions" and "Safety relevant data of substances."

This book is exceedingly pleasant to read, having been typeset in larger than normal type, having well drawn diagrams and even some (surprisingly, because of the high cost) colored photographs.

GARY F. BENNETT

Hazardous and Industrial Wastes: Proceedings of the Twenty-Sixth Mid-Atlantic Industrial Waste Conference, edited by C.P. Huang, Technomic Publishing, Lancaster, PA, 1994, \$95.00, 771 pp., ISBN: 1-56676-211-1

This annual conference was organized by the Universities in the Mid-Atlantic region of the United States plus New York and Ohio. These proceedings are one of two annual conferences proceedings I anticipate with enthusiasm every year (the other is the Purdue Industrial Waste Conference).

This year the theme was “Enhancing Industrial Growth and Protecting our Environment: A Partnership Between Industries and Government.” A total of 128 papers were presented at the conference in 12 different sessions; 84 of those papers are published under the following headings:

- Remediation
- Biological Processes
- Advanced Chemical Oxidation
- Adsorption Processes
- Case Studies
- Soil Treatment
- Pollution Prevention/Waste Minimization
- Resource Recovery/Reuse
- Groundwater Management
- Freshwater Systems
- Solid Residue Management
- Pollutant Fate and Transport

An index covering this (the 26th) plus five prior conferences is included.

GARY F. BENNETT

Toxic Properties of Pesticides, by N.P. Cheremisinoff and J.A. King, Marcel Dekker, New York, NY, 1994, \$135.00, 336 pp., ISBN: 0-8247-9253-X

Pesticides by their very nature are toxic compounds. As such, they are regulated in the United States by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) that states no pesticide may be sold or distributed unless it is approved.

This book is intended to assist the practitioner in the proper usage and registration of pesticide ingredients. Thus, it appropriately begins with four short chapters on “Regulations and Safety.”