

who will have to deal with hazardous material spills. At the front of the book, one is given an example of shipping papers and shown how to find the chemical name, classification and United Nations identification number. This information (on the inside cover) is followed by guidebook use directions, CHEMTREC's telephone number and how to use it.

The first major section lists chemicals in numerical order based on their UN ID Numbers; for each chemical an action guide (action guide gives information pertinent to groups of chemicals) number is given, plus the chemical name (corresponding to the UN number). Chemicals listed in this first section, the book notes, in **BOLD ORANGE**, "may require isolation or evacuation of the spill area"; e.g. ammonia is so listed. The second section of the book lists chemicals alphabetically by name with corresponding action guide and UN numbers given.

There are 66 Action Guides, for groups of chemicals, each giving the potential hazards for: (1) fire or explosion, and (2) health hazards. Emergency action information of the following type is also given in each "guide": (1) what to do in case of a fire (large or small), (2) spill or leak (large or small) and (3) first aid.

The last section of the book contains evacuation tables with recommended distances for removal of people from the spill area during the initial phase of an accident involving volatile hazardous liquids or gases shipped in bulk or multiple container loads.

In context and design, this U.S. government book is very similar to the Government of Canada's 1979 Emergency Response Guide for Dangerous Goods, published by the Ministry of Supply and Services.

GARY F. BENNETT

Loss Prevention in the Process Industries, by Frank P. Lees, Butterworth & Co., London, two volumes, 1316 pp., 1980, £ 37.50 each volume.

Recent disasters at Flixborough and Seveso have, by the very scale of the losses and the immediacy of communication, brought to the attention of the public the potential hazards of modern technological processes. Losses on this scale have always been associated with industry and engineering and have been dealt with and ameliorated by competent and dedicated engineers as and when social conditions have permitted. It is only recently, however, that Loss Prevention has been studied as a subject in its own right.

The processing industries are indebted to Professor Lees for bringing together between these four covers a comprehensive account of the development and present status of the subject. Professor Lees himself has made significant contributions in the field and is well known as a speaker and educator. This book reflects his experience and amply satisfies the criteria which he set himself i.e. to produce "a balanced and integrated text which presents the

basic elements of the subject, which covers the recent period of intensive development and which gives a reasonably competent bibliography.”

The book is rather expensive (£ 75 for the two volumes) and one would need to be sure of its relevance before purchase. The contents are therefore given in some detail below to allow the reader to make his or her own assessment.

Chapter 1 deals with the background to the historical development of loss prevention and the problems associated with large single stream plants and sets the subject in context, distinguishing it from conventional safety and total loss control. Chapter 2 deals with statistics and Chapter 3 with the development of legislation and its culmination in the Health and Safety at Work Act in the U.K., the Occupational Safety and Health Act in the U.S.A. and the regulations which have arisen from these acts. Chapter 4 deals with the control of major hazards, Chapter 5 with economic and insurance aspects and Chapter 6 with the highly relevant subject of management systems and procedures.

The remaining 13 chapters of the first volume cover a wide range of engineering and technology including reliability engineering, identification and assessment of hazards, siting and layout of plant, process and pressure system design, instrumentation, process computers and protective systems. Human factors are not neglected and there is a very interesting chapter dealing with man/process interactions. Loss of containment and dispersion of material, ignition, fire, explosion, toxic chemicals and the effects of toxic release are extensively covered in the last 5 chapters of volume 1.

The second volume contains a further 10 chapters, 12 appendices, approximately 7000 references and the most comprehensive index that this reviewer has ever seen. The chapters in the second volume cover commissioning and inspection; plant operation, maintenance and modifications; transport; emergency planning; personal safety including occupational hygiene, personal protection, rescue and first aid; accident research and safety systems. There are appendices on Flixborough, Seveso, case histories, standards and codes, institutional publications, information sources, laboratories and pilot plants, pollution and noise, failure and event data, Canvey, model licence conditions for certain hazardous plants, and units and unit conversions.

This is indeed a monumental work, it fulfills a real need and it will be many years before it is superceded. The book is intended for teaching and for use by engineers in the process industries. There are many other industries to which its subject matter applies and every manager, engineer and scientist working in industry in its broadest sense should have access to these volumes and will find something of value in them.

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