

first item consulted when pursuing a line of enquiry in this field. As a research tool it is unique and fills a major deficiency in the hazardous materials literature. It also provides a satisfactory, if somewhat overwhelming, introduction to the subject. Indeed, the size of the book and its impressive list of over 50 contributors are the result of the first ever attempt to treat the many aspects of hazardous materials in one volume, and these statistics are surely indicative of the magnitude and inter-disciplinary nature of the subject.

J.E. HOOKHAM and R.F. GRIFFITHS

Acceptable Risk, by B. Fischhoff, S. Lichtenstein, P. Slovic, S. Derby and R. Keeney, Cambridge University Press, Cambridge, 1981, ISBN 0-521-24164-2, 185 pages incl. index, £15.00 .

The authors of this highly readable book are well known for their work in the social aspects of risk and risk management. Their approach reflects the multidisciplinary (primarily social science) expertise of the group; it is a worthy successor to earlier explorations in this area of risk, which is concerned with management and social factors, and with how the technological aspects interact with these facets.

The authors examine first the knotty problem of why acceptable risk questions are so hard to resolve, and give examples of approaches that have been adopted. There is much here that will give food for thought for the technologist concerned with risks of all kinds. The treatment is intelligent, provoking and very readable to the non-social scientist (such as the present reviewer). A commendable feature of the book is the inclusion of substantial concluding chapters with recommendations for research and for current practice in risk management. All in all, a worthwhile book and good value at the price.

R.F. GRIFFITHS

High Risk Safety Technology, by A.E. Green (Ed.), Wiley, Chichester, 1982, ISBN 0-471-10153-2, 654 pages incl. index, £25.00.

This book consists of a compilation of contributions from 44 authors, the material being organised in four parts. The Library of Congress and the British Library publication data list the subject matter as Industrial Safety — Addresses, Essays, Lectures. This is a fair description that reflects its nature better than the statement on the jacket that “The material has been struc-

tured both as a text and as a comprehensive source of reference”.

As might be expected of such a collection, the style and content are enormously varied, both in scope and in quality. The chapters thus range from serious technical reviews of some stature to what can only be described as, in one case, a polemic on behalf of the nuclear industry. Some of the contributions are rather insubstantial, and some include large sections that are available elsewhere. This is to be expected in such a compilation, and much more in the way of critical appraisal and co-ordination would be required to achieve the aim quoted from the jacket. In an apparent attempt to emulate textbook style, the chapters include sets of examples and questions for the reader to try. Some of these questions are numerical, and answers are given at the end of the book; others require an essay as a response. The authors do not always give the basic material even for the numerical examples. Lack of co-ordination results in repetition, of graphs, of definitions (event and fault trees), of basic material (the nature of ionising radiation); this detracts from any status claimed for this as a textbook. There are many misprints, some obvious ones in the syntax and spelling, but others affecting equations. The individual specialist will know when there is an error in the treatment of his subject, but his confidence in the reliability of the sections dealing with technical aspects outside of his expertise will be undermined by this. A glossary is included, with many useful entries, but one wonders who will need to be informed that Toxicology is “The study of toxic effects of drugs”, and one also wonders at the narrowness of the definition.

Again, the definitions of the term “risk” given in the glossary in some cases contradict those given in the main text, even allowing for the fact that there are many different expressions (rather than definitions) of risk in current use. Given that there is such a range of expressions of risk it is surprising to read, at the beginning of Chapter 1.3; “As shown in Chapter 1.1, risk is a probabilistic concept and is quantified by the product of the accident frequency and the consequence of the accident”. This expectation-value definition of risk has been widely criticised as taking no account of the distribution of consequence size; indeed, the form of expression known as the $f-N$ line (of which many examples are to be found in this book) was developed with this aspect in mind, and some discussion would have been appropriate if the author wished to defend the frequency-times-consequence approach. One is even more surprised to find that Chapter 1.1 in fact does not give support to the statement.

The same author refers to the well-known Farmer criterion for releases of iodine-131 from thermal reactors as defining the boundary between acceptable and unacceptable risks. This reads rather more into the Farmer criterion than many people would be willing to support, and certainly more than is contained in the original form of that criterion. As noted by Kinchin in Chapter 1.1, the Farmer criterion is a frequency-of-release versus quantity-of-¹³¹I relationship which can be converted into an expression in terms of consequences (as fatalities). To do this one needs to assume particular or

representative distributions of population and of weather conditions in order to calculate consequences, and, to be realistic, one needs to specify the inventory of other radionuclides that may be released at the same time. This of course is the purpose of specifying release inventories for particular accident sequences (see table 1.3.6-1 drawn from the Rasmussen Report as an example). All this would be icing on the cake if it were true, as stated on p. 32 of Chapter 1.3.1, that iodine-131 is “the fission product that carries the greater threat to health than any of the other fission products that might be released in a reactor accident” (sic). One has only to refer to tables of dose conversion factors for various radionuclide exposures by inhalation or ingestion to convince oneself that this statement is somewhat less than the full picture.

In spite of these deficiencies the book does contain some authoritative and well written contributions, and the potential buyer would be well advised to inspect a library copy to assess for himself whether, on balance, the compilation is one that he will find indispensable. Those with an interest in this growing field are urged to do this, in fairness to those authors who have obviously put high quality contributions forward for inclusion in this compendium.

The individual contributions are entitled:

Part 1 — Safety Assurance:

The Concept of Risk; The Regulatory Position — United Kingdom and Elsewhere; Analysis of Risk; Fault Trees and Event Trees; Fault Analysis; Probability Assessment; Consequence Assessment; Overall Assessment; Operational Safety; Application of Regulatory Control to High Risk Plant; Human Reliability in Risk Analysis; Causes of Human Error; Discussion Around a Human Factors Data-Base — An Interim Solution: The Method of Paired Comparisons; Emergency Planning; Public Relations in the United Kingdom; Government Sponsored Assessment; Data Banks for Events, Incidents, and Reliability; Reliability Measurement and Confirmation.

Part 2 — Safety Technology in Industry:

Chemical; Computer Security; Systems Reliability Assessment in Health Care Engineering; Coal-Mining; Safety Technology for Offshore Oil Platforms; Pharmaceutical; Electric Power; Reprocessing Irradiated Nuclear Fuel.

Part 3 — Specific Hazards:

External Hazards; Fire and Explosion; Gas Clouds; Non-Ionizing Radiation; Ionizing Radiation; Biological Hazards.

Part 4 — Future Aims: Philosophy, Legislation, Standards:

The General Scene in the United Kingdom; Europe; Safety Regulations in the USA.

Personally, I found a sufficient number of worthwhile contributions to merit purchase at the price.