professor at the University of Wisconsin, Menomonie, WI and has reduced the experiments so they will inform as well as inspire students. While some of the experiments have been used for years, many are new. The more advanced ones require a high performance liquid chromatograph (HPLC), photodiode array spectrophotometer, a gas chromatograph (GC) with integrator, an atomic absorption spectrophotometer (AA), a bomb calorimeter, several Spectronic 20s, pH meters and analytical balances.

The 20 experiments cover a wide range within environmental chemistry, from analysis of copper and arsenic in treated wood, phosphates in detergents, salts (ionic compounds) in water, measurement of dissolved oxygen, BOD, and rate of oxygen absorption in water, to identification of FD&C dyes by visible spectrophotometry. Detection of fuel components by gas chromatography is especially interesting in teaching the various components of gasoline, and also the detection of polycyclic hydrocarbons in water should be of wide interest.

The book is arranged for instant use, and is a most practical guide.

HOWARD H. FAWCETT

Construction Hazard and Safety Handbook, by R.W. King and R. Hudson, Butterworths, London, ISBN 0-408-01347-8, 477 pages, 1985, available only from Ralph King, 42, Reigate Road, Ewell, Surrey, KT17 1PX, UK, price $35.00 (incl. postage and packing, send cheque with order).

Before any industrial or laboratory operation can be started, some construction or re-building is usually necessary, but frequently overlooked until an undesired and costly mishap occurs. This volume recognizes the necessity of safety in various types of construction, since the records clearly show it is one of the most dangerous activities undertaken by man.

One author (R.H.) has been a practising safety officer in the construction industry for twenty years with experience in all aspects of contracting, while the co-author (R.K.), a chemical engineer, has 25 years of varied industrial experience with large industry, especially in the petrochemical field.

The content of the book concerns 'on-site' safety in building, civil engineering, chemical and process plant construction and offshore engineering, in sufficient detail to cover the hazards of individual trades.

Part I stresses the scope, activities and safety aspects of the construction industry, including the size and hazards of construction, ranging from multi-storey buildings to off-shore platforms. Using the International Labour Organization statistics, data are given to make safe these various occupations, which range from bricklaying and carpentry to roofing, including the high risk occupations, such as steel erection, tubular metal scaffolds, roof work, demolition, excavation, tunneling and other underground work, as well as compressed air atmospheres and water diving, and steeplejacks. Each topic is supplemented with detailed references.

Part II is unique since it stresses the health hazards (including chemicals exposure) to construction workers, and the necessity for control through medical surveillance and monitoring. Volatile organic solvents, as well as water-soluble inorganic compounds are noted, as well as the need for proper respiratory protection (not just a crude mask) when working with or around areas where asbestos, paint, and other agents are used. Eye protection, an often neglected "on-the-job" requirement, is stressed.

Physical health hazards, including noise, and its effect on hearing, mechanical vibration, and electromagnetic radiation, UV radiation, lighting levels for efficient construction, and electricity (which manifests itself not only in human shock but in the ignition source for flammable materials), as well as a serious hazard for welders are discussed with references. Other health hazards include biological hazards, including poisonous plants. Poisonous animals, such as certain snakes, are included in this list. The weather, both from the temperature and relative humidity, and the need for protective clothing, is noted. Working in cramped and unusual positions produces various injuries which may be, at times, disabling, such as slipped discs. Purity of drinking water and other foods both on and off the job should be considered. Mental stress, including strain and unhappiness, also can contribute to inability to work safely. Hazard monitoring including instrumentation necessary to effectively conduct it, is reviewed, again with references.

Part III discusses Fire, Explosions and Allied Hazards. The careless use of LPG (liquefied petroleum gases), use of fire to burn off paint on older buildings, other hazards such as the proper use and storage of explosives when used in demolition, high-visibility clothing, proper use of ladders, and a general assessment of the supervision of the project conclude the volume.

Regardless of the country or the specific laws, this volume contains the real fundamentals which will inspire better safety, which has both economic as well as human importance. It is clearly written, and will inspire construction workers to a better, more profitable, and longer life.

HOWARD H. FAWCETT

Emergency Relief System Design Using DIERS Technology, by H.G. Fisher, H.S. Forrest, S.S. Grossel, J.E. Huff, A.R. Muller, J.A. Noronha, D.A. Shaw and B.J. Tilley, Published by AIChE, 345 East 47th Street, New York, NY, 10017, 1992, ISBN 0-8189-0568-1, 538 pages, $130 (AIChE members), $165 (non-members).

The Design Institute of Emergency Relief Systems, DIERS, has been one of the more successful U.S. research efforts funded by an industry-wide consortium. Costing approximately $1.6 million since its inception in 1976, the program has spun off a fairly large body of technical literature concerning modeling of two-phase discharge and vessel "swell" upon rapid depressurization.

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