

Book reviews

Industrial Solvents Handbook. Wesley L. Archer, Marcel Dekker, New York, NY, 1996, 316 pp., plus floppy (computer) disk, ISBN: 08247-9718-3

This reference book examines the physical and chemical properties, uses, and toxicity of organic solvents utilized in the chemical and related process industries. Environmental concerns are safe handling are also examined. Categories discussed include industrially important solvents such as acids, aliphatic and heterocycle amines, aldehydes, aliphatic and aromatic hydrocarbons, esters, ethers, glycol ethers, halogenated hydrocarbons, ketones, nitroparaffins, monohydric and polyhydric alcohols, and several miscellaneous solvents.

To begin, Archer defines the term solvent as follows: “A substance in which another substance is dissolved forming a solution. A solvent is also used to suspend or change the physical properties of a material.” Most organic liquids, he notes, can act as a solvent in an industrial process.

The introduction (Chapter 1) is followed by a chapter entitled “Environmental and Safety Issues.” References to the Clean Air Act, SARA Title III, RCRA, TSCA and OSHA. In the latter section, Archer gives a list of OSHA air concentration limits of over 100 organics. He also discusses MSDSs, use of CD-ROM information info discs, and the worldwide web. He also lists address of U.S. EPA regional and state EPA offices. These data are reprinted so often, I think it was a waste (albeit only 5 pages) of space.

Chapter 3 is a short discussion of the safety aspects of the handling of solvents. Discussed are MSDSs, physical hazards (fire, explosion and reactivity) and health hazards (inhalation, skin absorption and chronic problems) and safe work practices.

How to select a new solvent was the focus of Chapter 4 entitled “Hansen Solubility Parameters of Solvents.” The Hansen solubility parameters can be used to classify solvents in terms of their nonpolar, polar and hydrogen bonding characteristics. Use of the Hansen solubility parameters theory, Archer notes, will allow one to systematically search for a solvent substitute or determine the solubility of a resin/polymer in a certain solvent or solvent blend. The data necessary to construct computer spreadsheet that can utilize the Hansen solubility parameter theory are included on a floppy (computer) disk in a pocket at the end of the book. This theory is then applied in the next (fifth) chapter to categorize resins and polymers.

Having covered the theory, Archer moves on to discuss the various solvent categories (as noted previously) starting with acids in Chapter six. All of the succeeding chapters

follow the same format as the sixth, consisting of an introduction, nomenclature, physical properties, uses, toxicity (generally referring one to the appropriate MSDS), environmental concerns (solvent emission regulations — referring generally to the Clean Air Act) and ecological effect and storage and handling (storage tanks — material construction, handling considerations, and disposal).

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Quantitative Microbial Risk Assessment. Charles N. Haas, Joan B. Rose and Charles P. Gerba, John Wiley & Sons, Inc., New York, NY, 1999, \$90.00, 449 pp., ISBN: 0-471-18397-0

Quantitative microbiological risk assessment is the application of principles of risk assessment to the estimate of consequences from a planned or actual exposure to infectious microorganisms. This assessment can assist in public health planning to evaluate or prevent the occurrence of public impact via drinking water (*Giardia*, Hepatitis, *Escherichia coli*, *Cryptosporidium*, *Campylobacter* and *Vibrio*) or food (*Salmonella*, *Escherichia coli*, *Shigella*, *Staphylococcus aureus*, etc.).

To highlight the significance of this problem, I gathered some statistical data from the introduction:

- There were 403,237 reported cases of *Cryptosporidium* infection from community drinking water in the U.S. in 1993-1994
- The annual average *Salmonella* foodborne infection in the US averaged 4235 in the 1988-1992 period

In the Introduction, the authors wrote: “The prevention of infectious disease transmission from human exposure to contaminated food, water, soil, and air remains a major task of environmental and public health professionals. Indeed, some have argued that the property of virulence of human pathogens is one that is favored by evolutionary interactions between pathogens and host populations and therefore will always be of important concern. The objective of this book is to set forth comprehensively the methods for assessment of risk from infectious agents transmitted via these routes in a framework that is compatible with the framework for other risk assessments (e.g. for chemical agents) as set forth in standard protocols.”

The relevance (indeed the importance) of the topic was emphasized by an article in a most unlikely journal — *Forbes*, V 163, p 156 (May 17, 1999). This magazine is a U.S. financial publication. The article dealt with the financial impact of an outbreak of *Escherichia coli* strain 0157:H7 in the Pacific U.S northwest and its impact on the food chain that resulted from the contamination and the death of four children. That topic is discussed on p. 53 of the text in the chapter discussing Microbial Agents and Their Transmission.

This book has the following nine (9) chapters:

- Scope of Coverage
- Microbial Agents and Their Transmission