

hydrogen chloride may present problems in exhausting the gases if an incident occurs resulting in a release of the chemicals. Electrical hazards (high voltage) are also present, and the proper enclosure of the equipment, with proper respect and use of safe operation procedures, are stressed. This package of training aids should be used wherever lasers are used.

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Safety Considerations in Microscale Chemical Laboratories, by Ruth A. Hathaway, Symposium at the 197th National Meeting of the Division of Chemical Health and Safety, American Chemical Society. Available from Ms. Ruth Hathaway, 1810 Georgia, Cape Girardeau, MO 63701, no ISBN, 43 pp., \$7.50 (CHAS members) \$10.00 (others).

As Dr Alamino, Chair of the DCHAS has noted in the Preface, safety, environmental issues and associated costs have had a significant impact on the laboratory phase of chemistry instruction in recent years. The evolution of microscale laboratory techniques and procedures has enabled institutions faced with large capital expenditures for compliance-mandated improvements to continue to offer chemistry laboratory courses. This publication reflects the latest information on the use of microscale laboratory techniques as part of a comprehensive chemistry curriculum. The safety of the student and the environment are emphasized in the presentations.

The evolution of microscale equipment, as presented by Dr Hathaway, who also chaired the symposium, traces the development of equipment since 1866, including the writings of Haushofer in 1885, the microbalance in 1886, the 0.2–0.5 mm diameter and 2–3 long capillary tubes, and the microvoltmeter in 1908. The editor asks whether microscale chemistry gives the student a proper and balanced view of a compound. A total of 54 references document this introductory chapter.

Dr David Shaw then presents 'Using microscale experiments in general chemistry: An experiment to determine heat of neutralization'. He reported on his efforts to study the applications of microscale experiments in general chemistry courses; the jury is still out on these efforts, documented by four references.

The "Safety of microscale general chemistry experiments" was handled by Dr Michael Hampton and Dr Jerry Mills. They note that small quantities of sample, with plastic apparatus, are the accepted practices, reducing the hazard even when known hazards are being studied. The subject of "Laboratory design and waste disposal in the undergraduate microscale organic laboratory" was explored by Dr Kenneth Williamson, while Dr George Wahl presented a view of the 'Microscale organic laboratory at a large state university', giving 11 ref-

erences. Professor Zvi Szafran and associates at Merrimack College discuss The 'Microscale inorganic laboratory: Safety, economy and versatility' giving the economic aspects of microscale laboratories in considerable detail, with 12 references. On this area the final paper, 'Coordination of introductory microscale inorganic and organic chemistry laboratories', presented by Dr Ronald M. Pike and associates with input from Dr Dana Mayo, discusses the planning and supervision as that inorganic laboratories can be of assistance to organic laboratories, and vice versa. Several examples of this cooperation are cited, among the 16 references given.

The most important function of a separate booklet of this type is to permit persons with specific interests to obtain the equivalent of being in the audience without the travel, time and living expenses associated with a national meeting. It is hoped more texts of this type, specialized in the style but highly authoritative, will be forthcoming to diffuse knowledge which otherwise would have been difficult to share.

The booklet is recommended for anyone (administrator, supervisor, training associate or chemist) who is involved in planning and operating microscale chemical laboratories. Dr Ruth Hathaway, as organizer and chair of the symposium, is also to be commended for an excellent document.

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Safety and Health for Engineers, by R.L. Brauer, Van Nostrand Reinhold, New York, NY, 1990, ISBN 0-442-21125-2, 651 pp, \$93.00.

This volume is authored by a professional engineer at the University of Illinois and the U.S. Army Laboratory. It is concerned with the relatively meager background knowledge many engineers and other professionals have at hand on health, safety and legal aspects, and the necessity for a more complete understanding of injury prevention, theory and practice. While laws and regulations continue to increase concerns (and often confusion), the cost-effective and competitive positions can be ignored only at significant moral, legal and economic risk. Fundamental concepts are introduced early in the volume, and clearly define the importance of these often neglected aspects of engineering and management.

The volume provides excellent orientation for the engineer and others in subjects often ignored or as yet unrecognized. For example, one of the 38 chapters deals with biohazards and "sick-building syndrome" and what the engineer should know to cope with the hazard. ("Sick-building syndrome" is defined as an illness when more than 20% of the occupants report illnesses as