

requested by clients includes full-time/short-term, full-time/long-term, part-time assignments, technical representation for internal meetings and committees, and assisting with purchasing and clerical matters related to health and safety.

International issues: Due to the global marketplace of many companies, consultants can no longer focus strictly on the United States (OSHA and EPA) but must look at international requirements.

Low cost/high quality/short delivery: These are increasing demands by clients where marketplace positioning is vital. Successful consultants will struggle to find and maintain quality employees, while maintaining a range of experience levels. This issue is complicated by compensating worthy employees at market rates while still maintaining cost competitive rates.

Environmental standards and regulations: As environmental, safety, and health regulations overlap, health and safety consultants are now being asked to assist in environmental aspects, such as SARA Title III, Risk Management Plans, ISO 14000.

Health and safety consultants will continue to be challenged by the ever-changing marketplace. Consultants who position themselves to adapt to change will survive. Focusing on administrative issues and adapting to the needs of their clients will require the successful consultant to be a keen business person to survive.

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LESSONS LEARNED FROM THE DOE WORKER SAFETY AND HEALTH RESPONSE LINE. M.A. Chillingworth, SCIENTECH, Inc., Germantown, MD; E. Crampton, U.S. Department of Energy, Germantown, MD

The U.S. Department of Energy (DOE) established the Worker Safety and Health Standards Response Line to provide timely, consistent and accurate answers to questions regarding the application of DOE, OSHA, and consensus standards submitted by DOE employees and its contractors. The Response Line has identified unnecessary and costly practices and designs, resolved disputes, saved research time and resources, assisted in regulatory compliance, identified measures to protect workers and provided current information. Since 1993, more than 2500 questions to the Response Line have been researched and answered by CIHs and CSPs, reviewed by DOE and faxed to the caller, typically in less than a week. Much of this database is now available to the public on the Internet. Although the information is specific to the DOE-regulated community, the questions are typical of those found in any general industry or construction activity. The most popular topics are asbestos, hazardous wastes, injury/illness recording, fall protection, personal protective equipment, confined spaces, and lead. An analysis of the topics covered by this database reveals the complexities of standards enforcement in a changing economic and regulatory environment, as well as the dilemmas faced by professionals and workers in the field. For example, new standards or new activities are often accompanied by com-

pliance uncertainty. In other cases, OSH professionals are challenged by management to prove that the measures they recommend are required under current regulations. Sometimes, there is a difference in interpretation among professionals as to the requirements. This database offers a significant source of technical information, opportunities for teaching examples and trends analyses. Uses of the database include informing headquarters and field management of the trends in safety issues in the field, incorporating its questions and answers into handbooks, and allocating resources to topics which generate the most questions.

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APPLYING INFORMATION TECHNOLOGY AND THE INTERNET TO PROMOTE HEALTH AND SAFETY. L. Teng, L. Gibbs, M. Dougherty, C. Madison, Stanford University, Stanford, CA

Incidence rates and worker compensation claims for ergonomic injuries and illnesses have been on the rise in most workplaces, including academic institutions. Educating and training workers regarding ergonomics is key to reversing this general trend. At Stanford University, it was recognized that training a large, diverse population comprised of faculty, staff, and students working and learning in research and administrative environments would be a challenge. The university had previously relied on traditional classroom instruction to train and educate employees regarding ergonomics. Rather than continuing with this venue, a more technological approach to education and delivery of information was developed. This program includes (1) an interactive, multimedia CD-ROM training program, which focuses on computer workstation use; (2) a Web site for ergonomic information, viewing available ergonomic equipment and supplies, etc.; and, (3) an electronic mail system to request assistance from the university's environmental health and safety department. Interactive, multimedia programs deliver training which is effective (i.e., employees successfully learn and retain information), flexible (e.g., employees work at their own pace, according to their schedules and convenience, plus work forces can staggered), cost effective (e.g., reduce employee down time and trainer time), and well-documented (i.e., records tracked as part of training). Stanford University's CD-ROM program features a self-evaluation form which results in a feedback system to enable the prioritization of work-site evaluations and the upgrade of engineering controls.

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DEVELOPMENT OF A SAMPLING AND ANALYTICAL METHOD FOR THE MEASUREMENT OF ADIPIC ACID PARTICULATE IN WORKPLACE AIR. J. Calpin, Laboratory Corporation of America, Richmond, VA; R. Claiborne, Health and Hygiene, Inc., Charlotte, NC

The use of adipic acid and aqueous adipic acid solutions as a sprayed coating on glass sheets in a production operation necessitated the development of a sampling and analytical

procedure to document personal breathing zone exposures to this agent. Although a TLV is published, no sampling and analytical procedure is available, other than total gravimetric particulates, to measure this compound at and below the 5.0 mg/m³ TLV. In many instances, other airborne particulates are present, and would directly interfere with the result.

Several approaches to the analysis were attempted, including ion chromatography, high performance liquid chromatography, and UV spectrophotometry. Only GC/FID was found to be acceptable, but only after conversion of the adipic acid to the volatile dimethyl ester.

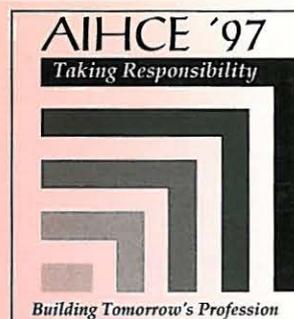
Results show that collection onto various types of filters performed acceptably, but that glass fiber filters were preferred. Quantitative derivatization to the dimethyl ester using a commercial BF₃/methanol catalyst was accomplished in a closed vessel. Extraction with chloroform from the aqueous/methanol mixture of the dimethyl ester was quantitative and served to sensitize the procedure down to a detection limit of 20 micrograms per sample.

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CAREX: A NEW INTERNATIONAL INFORMATION SYSTEM FOR OCCUPATIONAL EXPOSURE TO CARCINOGENS. T. Kauppinen, J. Toikkanen, Institute of Occupational Health, Helsinki, Finland; D. Pedersen, NIOSH, Cincinnati, OH

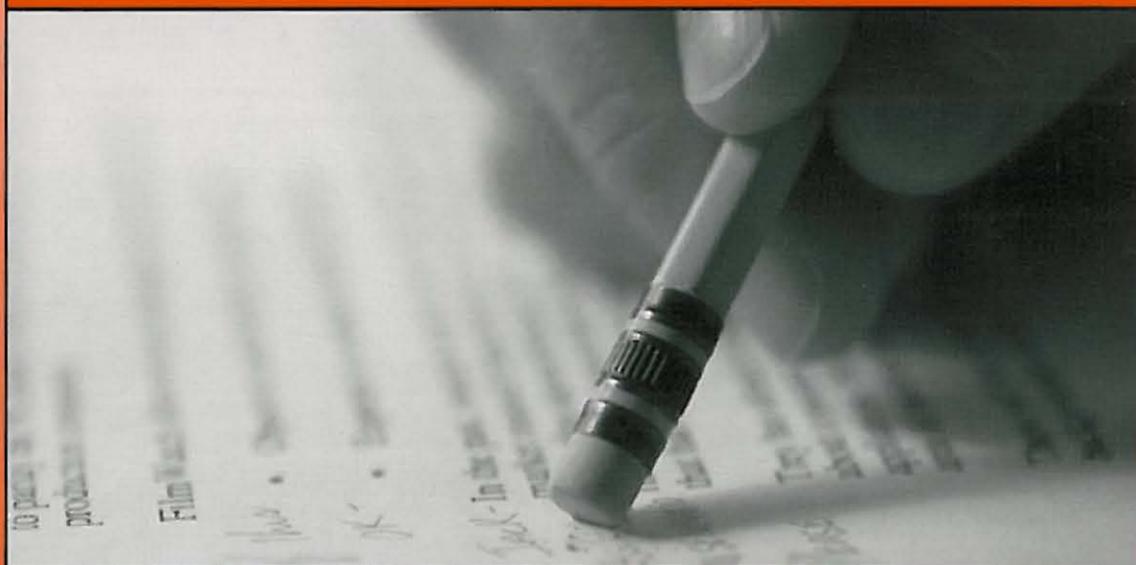
The lack of information on the extent and industrial distribution of occupational exposure to carcinogens in most countries makes quantitative risk assessment and hazard surveillance very difficult. The CAREX (CARcinogen EXposure) database, constructed with support from the Europe Against Cancer program of the European Union, provides selected exposure data and documented estimates of the number of exposed orders by country, carcinogen, and industry. CAREX includes data on 139 carcinogens evaluated by the International Agency for Research on Cancer (all agents in Groups 1 and 2A, and selected agents in Group 2B), displayed across the 55 industrial classes of the United Nations systems (ISIC Revision 2). The 1990-93 occupational exposure to these carcinogens is estimated for the 15 countries of the European Union in 2 phases. First, estimates are generated automatically by the CAREX system on the basis of national work force data and exposure prevalence estimates from two reference countries (the United States and Finland) which had the most comprehensive data available on carcinogen exposures. Second, a network of national experts assesses these estimates in view of their similarity/dissimilarity to the perceived exposure patterns in their own countries. The CAREX system permits these experts to select appropriate first estimates or to generate and document modifications of these estimates in a personal computer-based system. If reasonably accurate workforce data and expert knowledge on national exposure patterns are available, the CAREX system may also be applied to additional countries. Computerized exposure information systems such as CAREX are a feasible way to collect, evaluate, save, and disseminate information on occupational exposures at the international level.

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Abstracts

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