

Environmental Health and Safety
Safety Update**SPECIAL TRAINING ISSUES**

EH&S is continually looking for ways to provide safety training in an effective manner. We must meet the training requirements of the various regulatory agencies, while minimally disrupting your research schedules. This year, we plan to utilize the EH&S Safety Update newsletter to support training directly. There will be two special editions focused on training - one in June and one in July. In order to comply with the regulations, each employee should read the entire newsletter and sign the back stating they have read the material. At a time convenient for your group, your Department Safety Advisor will answer any questions, provide any laboratory specific information, and assist you as needed in implementing the training concepts. We hope that this will be an effective method for providing training material, and would appreciate your feedback.

HAZARD COMMUNICATION FOR LABORATORIES

Hazard Communication for Laboratories, more commonly called the Chemical Hygiene Plan (CHP), is the California Occupational Safety and Health Administration (Cal-OSHA) standard that only applies to laboratory workplaces where chemicals are used in a non-routine, non-production manner by workers with at least some education and training in science. This regulation preempts its older sibling the Hazard Communication Standard (HazCom Standard) for most laboratory operations. The unique feature of the standard is the mandated CHP, from which it derives its nickname. This unique regulation has a historical place in the progression of occupational safety and health standards development, which makes it worthwhile to examine its evolution.

When Federal OSHA initiated its standards development process in the early 1970s, they focused primarily on physical hazards that caused traumatic injuries. Their approach to controlling occupational exposures to hazardous chemicals was to develop lists of permissible exposure limits (PELs). The PEL is a performance standard, i.e. the employer is free to "perform" any control option provided compliance

is achieved (compliance being employee exposure below the PEL). While this works well for the chemical hazards where the toxicological mechanism is well understood, like carbon monoxide, it became readily apparent that it was insufficient for the vast majority of chemicals. This is even more obvious when one realizes that we only had PELs for only about 400 of the thousands of chemicals in use. Even the 400 PELs were established by the best "guesstimates" of health and safety professionals based on the limited information available to them. Add to this the emerging knowledge about carcinogens, reproductive effects, latency periods and synergistic actions and Federal OSHA was left struggling with the best approach to protect workers. They found the solution in 1980, when California enacted its Hazardous Substances Information and Training Act. This statute required employers to obtain the chemical Material Safety Data Sheet (MSDS) for every hazardous substance in their workplace and make them available to employees. Employers had to train workers on understanding the MSDS and working safely with hazardous substances. Federal OSHA adopted this approach and the HazCom Standard was born.

The HazCom Standard is what we call a horizontal standard: it applies broadly across almost all types of operations - a regulatory "one size fits all". The HazCom Standard, to which it is commonly referred, is a good fit for industrial applications where chemically unsophisticated workers typically receive prolonged exposure to large quantities of a few chemicals. It is not a good fit for laboratory workplaces where short term exposure of scientists to varying amounts of chemicals is more likely to occur. Federal OSHA recognized this, and in 1991 enacted the laboratory standard titled Occupational Exposure to Hazardous Chemicals in Laboratories. The specific application to laboratories makes this a vertical standard, due to its narrow band of application. This regulation replaces or supersedes other Federal OSHA requirements regulating the control of hazardous substances in laboratories. California has its own version of this regulation which is enforced by Cal-OSHA.

Now that we have a sense of the CHP's development, we can appreciate its components. First it is important to realize it does not apply to all laboratories - just research and hospital laboratories.

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LEAD-BASED PAINT HAZARDS

Lead poisoning is the number one environmental health hazard facing children today. Although anyone can be lead poisoned, children 2 months to 6 years of age are at higher risk. They are especially sensitive because of their size and more frequent exposure to lead. Children absorb about half of the lead that enters their body and retain about five times more lead than adults. Exposure to lead increases children's risk of developing permanent learning disabilities, hearing loss, lower intelligence quotas, reduced concentration and attentiveness, and other behavioral problems. Pregnant women need to be especially concerned as lead can cause abnormal fetal development. The good news is that lead poisoning is preventable.

Since lead has been successfully removed from gasoline and food, the foremost environmental source of lead for young children is lead-based paint (LBP), which was commonly used prior to the 1978 ban on LBP for residential and consumer use. The primary method of children becoming lead poisoned is eating lead dust, paint chips or soil containing lead. Children naturally place their thumbs, fingers, toys, and other objects into their mouths. Lead enters the blood stream and is then deposited in bones and other body tissues.

Children with lead poisoning usually have no symptoms, especially in low to moderate cases. Consequently, experts recommend that all children under 6 years old have a blood lead test as this is the only way to detect lead poisoning. Every parent should ask their child's doctor about having their child tested for lead.

In communities where houses are old and deteriorating, LBP chips and dust are a significant source of exposure. LBP was commonly used on window and door frames, kitchen and bathroom walls, baseboards and exterior wood

surfaces. As the paint chinks, chips, cracks, or peels from deteriorated surfaces, dust is created. Walking on small paint chips, or opening and closing a painted frame window, can create lead dust. Home repair and maintenance (sanding, scraping or heating LBP) can also generate lead dust. Other sources of lead include deposits possibly present in soil after years of use of leaded gasoline, and from industrial sources.

The magnitude of this problem has motivated national interest. In 1993, Congress passed the "Residential Lead-Based Paint Prevention Act" and initiated a national emphasis program to protect children and insure a stock of lead safe housing in the future. California state and local governments were active in the field of lead poisoning prevention even before the federal government: in 1991 the San Francisco Health Department carried out a preliminary assessment of childhood lead poisoning among San Francisco children. This results of this study indicated that over 8% had elevated blood levels! The Board of Supervisors approved an ordinance to develop a comprehensive lead poisoning prevention program to address this problem locally.

At UCSF, we are equally concerned and are focusing attention on lead exposure in Child Care Centers, Aldea Housing and other areas where small children may be expected to frequent. EH&S, at the forefront of this activity, is developing a comprehensive program to protect families. Educational programs such as health fairs, brown bag talks and presentations for child care providers and users are planned. Aldea Housing residents receive an educational booklet on lead hazards and what they can do to protect their children. Our crafts personnel, especially painters, are trained to control lead dust and follow-up with proper clean-up techniques. We remain committed to protecting the campus and surrounding community, especially young children.



A SAFER CAMPUS

The Campus Safety Fair will be held October 2nd & 3rd in the Medical Sciences Lobby, Saunders Court.

The 2nd Annual Campus Safety Fair will provide displays, videos, computer training, games and prizes - all geared toward the unique safety needs of the Campus Community.

We'll show you many ways to make your workplace a safer one. Exhibits from laboratory safety supply vendors and workstation ergonomic specialists are planned. Other displays will provide updates in Biological, Chemical, Radioisotope, and General Workplace Safety. We're hoping to have lots of useful Safety Giveaways & maybe even a Free Prize or Two!



CO₂ TANK GASKETS

Many campus laboratories are in need of gaskets for their CO₂ tanks. Although UCSF's previous CO₂ gas tank supplier provided gaskets with their tanks, the present vendor does not provide this service.

To remedy this problem, Materiel Management's Distribution Department will make certain that all delivery per-
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(CO₂, continued)

sonnel have the gaskets with them when making deliveries so that the gaskets are immediately available to departments that request them. The gaskets are also kept in the Materiel Management Distribution Department. Please call Pierce Henry at 476-5907, Alex Mendoza at 476-5908 or fax 502-4277 with questions.

NEW UCSF BIOSAFETY MANUAL TO BE RELEASED

For the first time since 1982, the UCSF Biosafety Manual has undergone a complete re-write. The new manual, soon to be released, is set in easy-to-read Arial font and consists of two sections, 13 chapters which present campus biosafety policy and 14 appendices of reference information.

The policy section of the manual presents, among other things, the hierarchy of the biosafety program at UCSF, the Biological Use Authorization (BUA) process and requirements, the application of Biosafety Levels (BSLs) to laboratories, the principles of biosafety, protection from injury and exposure in the laboratory, medical waste management, transportation and shipment of biological materials, and importation and exportation permits. The appendices provide useful information on a wide range of biosafety-related topics including Risk Groups and Biosafety Levels, laboratory audits, the Bloodborne Pathogens Standard and the UCSF special medical surveillance programs.

The 1997 UCSF Biosafety Manual will be available on-line soon in searchable format on the EH&S Web site at http://www.ehs.ucsf.edu. For those without Web access, the Manual will be available on diskette in Microsoft Word for both Macintosh and PC systems. Comments, corrections and contributions for future versions will be appreciated; please forward them to the Biosafety Officer at Box 0942.

DISABILITY MANAGEMENT SERVICES NEWS

The Disability Management Services (DMS) Division of Human Resources is pleased to announce the March 31, 1997 return of Bruce Flynn to UCSF. Bruce, for many years the manager of Employee Rehabilitation Services at UCSF, from 1986-92, now returns as interim manager of DMS, comprised of both Employee Rehabilitation Services and the Workers' Compensation units. Bruce brings with him additional experience in disability management gained in five years with Wells Fargo Bank as the Disability Manager and as the president of the Northern California Chapter of the Disability Management Employer Coalition. He will be working with EH&S as well as other campus programs, to coordinate services aimed at preventing injuries and reducing the negative impact of disability on the UCSF workforce.

ERGONOMIC STANDARD

On April 17, 1997, the California Occupational Safety and Health Standards Board re-adopted a proposed ergonomic regulation. On April 22, 1997, the regulation was resubmitted to the Office of the Administrative Law (OAL) for approval. After 30 days, if approved, it will be incorporated into Cal-OSHA regulation Article 106, Section 5110 as the ergonomic standard. The following is a summary of the standard:

- A. This regulation shall apply to a job where a repetitive motion injury (RMI) has occurred to more than one employee under the following conditions:
1. The RMIs were predominantly caused by a repetitive job, process, or operation.

- 2. The RMIs were incurred while performing a job process of identical work activity e.g. word processing. or
3. The RMIs were musculoskeletal injuries as diagnosed by a physician. and
4. The RMIs were reported to the employer within the last 12 months.

Once the above conditions are met, the employer must do the following:

- B. Implement an ergonomic program to minimize RMIs. The program shall include:
1. Worksite evaluation - Identify what causes the RMIs.
2. Control of Exposure - Correct the problem e.g. redesign work station, job rotation or work breaks.
3. Training:
- Explain the ergonomic program.
- The exposures which have been associated with RMIs.
- The symptoms and consequences of injuries caused by repetitive motion.
- The importance of reporting symptoms and injuries to the employer.
- Methods used by the employer to minimize RMIs.

Once an employer implements these measures, the employer's obligations are satisfied unless it is shown that a measure known to but not taken by the employer is substantially certain to cause a greater reduction in such injuries, and that this alternative measure would not impose additional unreasonable costs.

The University of California Office of Environmental Health and Safety will work closely with Mr. Bruce Flynn of Risk Management, and Employee Health Service of the Medical Center, to implement the ergonomic program.

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Ergonomic Standard

(Hazard, continued)

Photography laboratories and production laboratories where product testing is carried out are not covered by the CHP. They are deemed to be more like industrial applications. Next, the Laboratory Standard has much in common with its older sibling the HazCom Standard. Both require that there must be a plan for identifying and labeling hazards, maintaining collections of MSDSs, providing ongoing training on hazard recognition and control, and notifying employees of their right to obtain safety information. Also, while it replaces or supersedes most Cal-OSHA requirements regulating the control of hazardous substances in laboratories, it does not supersede all of the Carcinogen Regulations. A few specific requirements in the Carcinogen Regulations must still be applied to laboratory operations.

As one would expect for a vertical standard, the CHP focuses on research laboratory processes and operations. What

follows is a brief summary of the salient features of the CHP which is the cornerstone of the regulation:

The Chemical Hygiene Plan shall be in writing, include the following elements, and indicate the measures to ensure laboratory employee protection:

- Designation of a Chemical Hygiene Officer who is responsible for implementation of the CHP.
- Standard operating procedures incorporating safety and health considerations for work with hazardous chemicals.
- Criteria the employer will use to determine and implement control measures to reduce employee exposure to hazardous chemicals.
- Requirement that fume hoods and other protective equipment shall function properly.
- Provisions for employee information and training.
- The circumstances under which a particular laboratory operation, procedure

or activity shall require prior approval before implementation.

- Provisions for medical consultation and examinations for exposure to hazardous chemicals.
- Provisions for additional employee protection for work with particularly hazardous substances, such as "select carcinogens" (defined in the regulation), reproductive toxins and substances which have a high degree of acute toxicity.
- The CHP shall be reviewed and evaluated for effectiveness at least annually and updated as needed.

The UCSF Chemical Safety Program (CSP) is being updated - the CHP forms its foundation as research and hospital laboratories are a significant part of our facilities and operations. Mandates from the Cal-OSHA Hazard Communication Standard and the San Francisco Hazardous Materials Management Plan and Business Inventory are being incorporated into the CSP.