WHAT IS THE OSHA LABORATORY STANDARD (1910.1450) AND A CHEMICAL HYGIENE PLAN?????

The OSHA standard is titled Occupational Exposure to Hazardous Chemicals in Laboratories, 29 CFR 1910.1450. This rule supercedes all other OSHA health standards in 29 CFR part 1910, support Z with exceptions for specific requirements for OSHA regulated substances. This means that it supercedes the hazard communication standard. Risk Management and Safety has established a lab safety video with test in the LRC (8-4581) for students and employees to view. Graded tests will be returned to supervisors.

The main elements of a CHP are listed below:

### Chemical Hygiene Plan

In a laboratory where hazardous chemicals are used, the employer must develop and carry out the provisions of a written Chemical Hygiene Plan (CHP). The CHP must include the necessary work practices, procedures and policies to ensure that employees are protected from all potentially hazardous chemicals in use in their work area. The plan must be available to employees, to employee representatives, and to the Assistant Secretary for Occupational Safety and Health.

1) Employee Training and Information

The employer must provide employees with information and training to ensure that they are aware of the hazards of the chemicals present in their work area. This information must be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations.

If you would like to submit topics for the Safety Element, have any questions regarding CHPs, or would like to have assistance in developing a CHP, please contact Kerry J. Smith, BYU Industrial Hygienist at 378-2943 (email: kerry_smith@byu.edu)

**Please post this newsletter in your lab for other employees and students to read.**
Employee training must include:

- the contents of this standard and its appendices;
- the location and availability of the employer's Chemical Hygiene Plan;
- the permissible exposure limits for OSHA (see MSDS or contact RM&S);
- signs and symptoms associated with exposures to hazardous chemicals used in the laboratory;
- the location and availability of known reference material on the hazards, safe handling, storage and disposal of hazardous chemicals found in the laboratory including, but not limited to Material Safety Data Sheets (MSDS) received from chemical suppliers.

Do you work with Hydrofluoric Acid (HF) in your laboratory or other location? Let's see what you know about it. The following is a brief quiz about HF. The answers are located at the end of this article on the next page.

1. Hydrofluoric Acid (HF) is used in which of following settings?
   a. Laundromats  d. Artistic Glass Shop
   b. Oil Refineries  e. All of the above
   c. Semi-conductor Industry

2. Storage containers should be made of?
   a. Glass  c. Plastic
   b. Wood  d. Metal

3. Which material, at low concentration, readily penetrates the skin without causing pain?
   a. Sulfuric acid  c. Nitric acid
   b. Mercury  d. HF

4. Which of the following is the most hazardous acid at 10% concentration?
   a. HF  c. Sulfuric acid
   b. Hydrochloric acid  d. Nitric acid

5. If you use HF in your laboratory, what must you have in your first aid kit?
   a. First aid cream  c. Bicarbonate powder
   b. Standard kit is OK  d. Calcium Gluconate cream

6. The best glove material for working with HF is?
   a. PVC  d. Butyl rubber
   b. Nitrile rubber  e. Leather
   c. Neoprene

7. Treatment for serious HF burns may include injections by a physician.
   a. True  b. False

8. Which of the following are likely effects from significant exposures to HF?
   a. Hypocalcemia  c. Black lung
   b. Narcosis  d. Deafness

9. If HF is splashed into the eyes and Calcium Gluconate cream is available, what should the immediate response be?
   a. Apply baking soda directly to the eyes
   b. Rinse until material is washed away or maximum of five minutes
   c. Rinse for at least fifteen minutes
   d. You should never put water on a HF burn

10. Contaminated clothing from a person involved in a HF spill and that was rinsed in an emergency shower is?
    a. OK to handle  c. clean clothing
    b. ready for the DI  d. still potentially hazardous

http://www.byu.edu/hr/risk/sprog6.html

HYDROFLUORIC ACID
HYDROFLUORIC ACID (continued)

HF is a highly corrosive acid which can severely burn skin, eyes, and mucous membranes. The vapors from anhydrous HF or its concentrated solutions can also burn these tissues.

HF is similar to other acids in that the initial extent of a burn depends on the concentration, the temperature and the duration of contact with the acid. HF differs, however, from other acids because the fluoride ion readily penetrates the skin, causing destruction of deep tissue layers. Unlike other acids which are rapidly neutralized, the process may continue for days if left untreated. Most non-industrial burns are caused by dilute concentrations of HF (e.g., less that 15% HF).

Concentrated HF causes immediate severe, burning pain and whitish discoloration of the skin which usually proceeds to blister formation. In contrast to the immediate effects of concentrated HF, the effects of contact with more dilute hydrofluoric acid or its vapors may be delayed, and this is one of the problems with the recognition of some HF burns. The following information was provided by Allied Signal (the largest manufacturer of HF):

<table>
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<tr>
<th>Concentration</th>
<th>Clinical Signs</th>
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<td>20-50%</td>
<td>May not produce clinical signs or symptoms for one to eight hours.</td>
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<tr>
<td>2-20%</td>
<td>Latent period may be up to 24 hours</td>
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<tr>
<td>&lt; 2%</td>
<td>May cause delayed symptoms if contact time is long enough.</td>
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For any HF burn, even low concentrations (< 2%), prompt first aid treatment is of utmost importance. Calcium Gluconate cream can be applied to the contact area after it has been rinsed for a maximum of 5 minutes. Calcium Gluconate cream is available on campus at Chem Stores.

As you might guess, the information contained in this article is not comprehensive, but merely composed of several important points. Specific training is recommended from BYU’s Risk Management & Safety for all BYU staff and students who work with or around HF. Protect your students, employees and yourself by calling Kerry J. Smith, Industrial Hygienist for HF training. Please give at least two weeks notice. Also, in the near future an HF Program will be available at the Risk Management & Safety internet address, http://www.byu.edu/hr/risk/index.html.

Answers to quiz:
1. e, 2. c, 3. d, 4. a, 5. d, 6. a or c, 7. a, 8. a, 9. b, 10. d