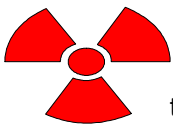


**Environmental Safety
Health and Update
Safety Newsletter**



PERSONNEL CONTAMINATION MONITORING

Over the past few years, there have been two well-publicized cases of internal contamination of individuals working with radioactive materials. In each incident the institution involved had a well-organized radiation safety program. In both cases, the causes of the contamination have not been determined. Over the past ten years, there have been no reported incidents of personnel internal contamination at UCSF. Internal contamination results from ingestion, inhalation, or transdermal absorption of radioactive material. Use of designated fume hoods, and personnel protective equipment mitigate the opportunity for intake of radioactive material.

The following are a few very simple common laboratory precautions which could eliminate such incidents. These include:

- Use disposable, latex, or vinyl gloves.
- Wear lab coat to protect clothing.
- Wear splash protective goggles or face shields when transferring liquids when a splash may occur.
- Do not eat or drink in the laboratory.
- Do not store food or drinks in the lab.
- Clean all spills immediately.
- Remove your gloves before handling "clean equipment".
- Use an appropriate portable survey instrument to monitor yourself and your clothing after using radioactive materials.

Appropriate Instrumentation

Often we are asked what is meant by the term appropriate instrumentation. At UCSF, labs use two broad types of such instruments:

- fixed radiation detection instruments, and
- portable radiation detection and monitoring instruments

a) Fixed Instruments

These include **gamma, or well counters** used for detection of a gamma emitting radionuclide and Liquid Scintillation Counter (LSC) used for detection of a beta emitting radionuclide. These instruments have high detection efficiencies for most radioactive materials used at UCSF and are commonly used for measuring the radioactive content of samples as well as the wipes taken during routine contamination monitoring.

b) Portable Instruments

These are battery operated, portable, and are commonly referred to as "survey instruments". These **instruments** have two basic parts:

1. A radiation sensitive detector in which the incident radiation interacts and produces an electronic signal.
2. An electronic processing and display unit, which converts the signal from the detector into a digital or analogue read out.

At UCSF most probes are either end window G-M, pancake or NaI (scintillation). Regardless of the specifics of each unit, the general mode of operation is the same and the incident radiation has to be able to penetrate the probe in order to produce a detectable signal. This ability to penetrate the probe is a

function of the energy of the radiation and the material of the probe surface (window) through which the radiation enters the probe.

What makes an instrument "appropriate" is the type of detector used. For example, a G-M probe isn't suitable for a low energy radionuclide such as ³H or ¹²⁵I, while it is appropriate for a radionuclide such as ³²P. NaI on the other hand is appropriate for ¹²⁵I detection. Therefore, for an instrument to be appropriate for detection of a radionuclide it must be able to respond to the energy range of the radionuclide (see Radiation Safety Training Manual for details).

ETHIDIUM BROMIDE UPDATE

Last July a researcher was treating ethidium bromide solutions using an established procedure. As the researcher was filtering the solution, the filter set-up broke. A vacuum hose provided the pressure to pull the solution into the filter. The researcher does not know whether it was the excessive pressure on the glass apparatus or the integrity of the glass flask that caused the glass to break. The researcher's reason for filtering the solution was economics.

There are other established methods for treating ethidium bromide solutions; however, the California EPA considers them treatment subject to special permit. The permit process is lengthy and complex, and EH&S does not recommend seeking such permits. EH&S will readily collect and dispose of ethidium bromide solutions for you - there are no charges for routine pick-up. Simply follow the EH&S procedures for disposal and the waste will be picked up.



HALOGEN LAMPS

Halogen lamps have recently come under scrutiny for their role in a number of fires around the country. According to the Consumer Product Commission, these fixtures have caused over 100 fires and 10 deaths in the United States in the last few years. The primary causes of this safety risk are:

**THINK
SAFETY**

- the high operating temperature of halogen light bulbs (most lamps utilize 300 watt bulb but both 300 & 500 watt replacement bulbs are widely available at equivalent prices),
- lamps left on in unoccupied rooms,
- clothing, drapes, blankets or combustible materials draped over a lamp.

Although no University of California campus has reported a fire caused by a halogen lamp, their use has been restricted in university resident halls throughout the country, including the University of California, Berkeley. Some universities have required students wishing to use these lamps to:

1. replace the existing bulbs of 300 to 500 watts with 150-watt bulbs,
2. retrofit older halogen lamps with protective grates,
3. never leave a halogen lamp "on" when the room is unoccupied, and
4. never drape combustible materials over the lamp.

If faculty, staff, and students at UCSF follow these recommendations, the possibility of a fire caused from the use of halogen lamps should be avoided. If you have any questions, please call Katie Shypertt at the Office of Environmental Health and Safety (476-0570).

JULY LAB FIRE

The critique of a fire that recently occurred in a UCSF laboratory offers an opportunity to share with others some lessons learned from this event. The

fire broke out while an organic solution was being heated with a Bunsen burner. However, because of the quick action of laboratory personnel to extinguish the fire, no one was injured and limited damage to the lab occurred. Following the fire, laboratory personnel began looking at the resources available to them to respond to an emergency with a more critical eye.

First, special care must be taken when a flame is used to heat organic solutions. Do not leave the set up during this procedure. In this instance, laboratory personnel were aware of the location of their fire extinguisher and knew how to use it. The blaze (whose flames almost reached the ceiling) was quickly put out using their triplex dry chemical fire extinguisher.

After the fire was put out, items were identified that may be of interest to others.

1. The location of the nearest alarm pull station was not known. Everyone in the lab should know the location of alarm pull stations.
2. There was no smoke detector located in this lab contrary to the understanding of lab personnel. All UCSF labs do not have smoke detectors and/or sprinklers. You should know the safety features available in your lab including the location of the nearest emergency shower and eyewash station.
3. A fire extinguisher was not available in an adjoining lab of about the same size that used and stored the same types of chemicals. The lab has ordered another fire extinguisher for this area.
4. A different type of fire extinguisher (i.e. a CO₂ versus a triplex dry chemical) should be used because of the major clean up required following the use of the dry extinguisher.
5. The lab's Emergency Action Plan needs to be reviewed and revised based on this experience.

As a reminder, all requests for emergency assistance including fires should be reported by calling 9-911. The

UCPD Dispatcher answers these calls and will call the San Francisco Fire Department to respond, if necessary. Remember in the case of a fire to follow the R.A.C.E. procedure:

Rescue: Anyone in immediate danger, if safe to do so.

Announce: Call 9-911 and activate the nearest fire alarm pull box immediately. Then communicate your discovery to other people in the area and instruct them to evacuate the area.

Confine: Anytime smoke is noticed, all doors are to be closed. This isolates the smoke source and minimizes its effect on personnel and equipment.

Extinguish: If safe to do so, the fire is small and personnel are trained in the use of a fire extinguisher. If not,

Evacuate: Close the door, evacuate the area and assemble at the designated location.

- If you discover a fire, leave the room, shut the door and go to a safe place to report it.
- Evacuate to the safe area predetermined in your disaster plan.
- Remain calm and identify yourself

when reporting the fire. Give the location and nature of the fire emergency. Answer the questions the dispatcher or operator asks you as directly and completely as possible. Do not hang up until the dispatcher terminates the call. *(Continued on Page 3, See Fire)*



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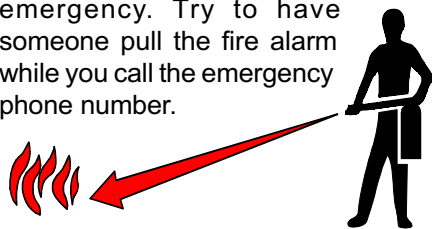
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(Fire, Continued)

- Activate the manual fire alarm located nearest the site of the emergency. Try to have someone pull the fire alarm while you call the emergency phone number.



- After you have sounded the alarm and called the emergency number, if the fire is still very small (no larger than a wastebasket), you know how to use a fire extinguisher and have one nearby, you may choose to try and extinguish the fire. Always keep your back to an exit. If the extinguisher is emptied and the fire is not completely out, evacuate immediately.
- If you decide to extinguish the fire using an extinguisher, remember the acronym "PASS":

- P** Pull the retaining pin
- A** Aim the nozzle at the base of the flames
- S** Squeeze handle completely
- S** Sweep from side to side

- Avoid breathing smoke. A fire can generate a great amount of smoke and fumes. Combustion byproducts can be hazardous, so be cautious. Cover your mouth and nose whenever possible with a wet cloth. Heat and smoke rise: stay low to the floor if necessary to avoid smoke inhalation.
- Walk to the nearest exit, closing all doors as you go, and evacuate to your emergency assembly area.
- Keep clear of all emergency vehicles and wait for further instructions.
- If you extinguish the fire, still call 9-911. Fires can rekindle.
- Know the locations of all exits, telephones, and fire extinguishers in your area.

CONTROLLED SUBSTANCES

This article will briefly summarize the Controlled Substance Program and hopefully answer some of the following questions: Who participates in the Controlled Substance Program? How does a PI apply? What are the procedures for disposal of Controlled Substances? What to do if Controlled Substances are lost or stolen? As a general rule, the first person to contact is your Department Safety Advisor (DSA) when you have any questions about Controlled Substances.

Use of Controlled Substances is subject to strict Federal and State regulations. The Federal regulations are enforced by the Drug Enforcement Administration (DEA) and set specific requirements and restrictions on registration, acquisition, usage, record keeping, transfer, storage and disposal. The Controlled Substance Program at UCSF includes all DEA Scheduled I to V drugs known as Controlled Substances as well as DEA List 1 formerly known as "Precursor" Chemicals, DEA List 2 previously known as "Essential" Chemicals and California Schedule Chemicals. Information on classification of a particular chemical can be obtained from the Controlled Substance Manual located at the EH&S Website at www.ehs.ucsf.edu/Manuals/Cua/csu%20chap%201.html. If you have problems classifying a chemical, see your DSA for information as to whether or not a particular chemical is included in the Controlled Substance Program.

The Controlled Substance Program is a campus program and is applicable to all UCSF laboratory activities and non-medical support facilities, including those under contracts or grants. In brief, those academic staff eligible to participate in the Controlled Substance Program are members of the Academic Senate as well as "In Residence", "Adjunct", "Clinical", and Professional Research Series serving more than 50% of full time with titles of Professor, Associate Professor, Assistant Professor and Instructor. The Medical

Center has its own Controlled Substance Program and is detailed in the "Hospital Formulary".

For the vast majority of substances, the application procedure is not complicated. Contact your DSA for a Controlled Substance Application and Authorized User forms. Applications need to be signed by the PI and he/she must also complete and sign an Authorized User form, even if they will never be directly using the substance. Needless to say all persons who will be handling the chemicals must complete and sign the Authorized User form. If the PI has not completed a set of signature cards in the past, they too will be necessary before Material Management can process orders. Modifications such as adding or deleting a substance, changing locations, adding or deleting an Authorized User etc. can be made to an existing approved application by contacting your DSA.

The following summarized uses are more complicated. If you are planning on using any Schedule I substance, it is imperative that EH&S and Material Management be notified because the DEA registration for these substances is specific to the PI. The UCSF blanket registration is not sufficient. Any use of Schedule I, human uses of Schedule II and Drug Abuse Treatment also require California Research Advisory Panel (C-RAP) approval. Usage of Schedule II substances Carfentanyl, etorphine hydrochloride and diprenorphine have DEA restrictions more stringent than the other Schedule II drugs. Contact Eileen Lloyd @ 502-8653 for advice on how to expedite your application more efficiently.

Chemical suppliers have been increasing their scrutiny of substances on DEA List 1, DEA List 2 and the California List. Labs that have never enrolled in the Controlled Substance Program in the past have been required to enroll and procure their chemicals through
(Continued on Page 4, See C. S.)

In This Issue:

- Personnel Contamination Monitoring
- Ethidium Bromide Update
- Halogen Lamps
- July Lab Fire
- Controlled Substances
- Pet Peeves
- Communicable Disease Program Survey

COMMUNICABLE DISEASE PROGRAM SURVEY

EH&S has been charged with developing the UCSF Communicable Disease Policy (CDP) for the Chancellor's Advisory Board on AIDS and Emerging Infections. In order to develop a comprehensive program, and to compile accurate data on the number of personnel impacted by the program, a survey is being sent to Investigators who have a Biological Use Authorization (BUA). If you received one of the surveys, please complete it as we need as much data as possible to accurately project the full scope and cost of the CDP for the Chancellor. Thank you.

PLEASE HAVE ALL PERSONNEL IN YOUR LAB INITIAL HERE AS EVIDENCE OF CONTINUING EDUCATION AND KEEP THIS NEWSLETTER IN YOUR LOGBOOK.

(C. S. Continued)

Material Management. Questions about ordering these chemicals through Material Management can be addressed to *Gale Black @ 502-3023* or *Cheryl Buckins @ 476-8807*. If you have problems or additional questions do not hesitate to contact *Eileen Lloyd at EH&S @ 502-8653*.

Some labs may have Controlled Substances that are expired or no longer needed. These drugs cannot be disintegrated, crushed into powder and dissolved in water for disposal. They must be personally delivered to an Environmental Protection Agency (EPA) approved incinerator or sent to a DEA registered disposal firm for destruction. Contact *Bert Luistro at EH&S @ 476-0964* for disposal information.

Another aspect of Controlled Substances that may be overlooked is Incident Reporting. An incident is defined as any loss or theft of Controlled

Substances. Losses must be reported verbally to Material Management and EH&S will immediately follow up with a written report. The UCSF Police department may meet with the Faculty Participant and investigate such losses. All reports will be forwarded to Material Management and EH&S.

In summary:

- Your DSA is the first person to contact regarding Controlled Substances.
- After your Controlled Substance application and signature cards have been completed, contact Material Management for details on ordering Controlled Substances.
- If you need to dispose of Controlled Substances call EH&S.
- Immediately report any incidents such as loss or theft to the Director of EH&S and Manager of Material Management.
- Contact EH&S with any other questions.

PET PEEVES



Do you have a pet peeve regarding safety? Here are a couple that EH&S has frequently heard. What are yours?

Wearing Gloves in Public Places

Lab personnel know that they must wear appropriate gloves when the potential for contact with toxic materials exists, that gloves need to be inspected before each use and replaced periodically. You should always assume that your gloves are contaminated. So when you're in public places, i.e. an elevator, you should remove your glove to punch the elevator button, to open or close a door, to answer the phone, etc.

Pipettes Overhanging Lab Benches

Avoid placing contaminated pipettes on lab benches such that they overhang and possibly can contaminate passers by or get knocked to the floor.