



Lab Safety

Spectrum

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UW - Madison Safety Department Chemical and Radiation Protection
30 N. Murray St. 262-8769 <http://www.fpm.wisc.edu/safety>

Radioactive Materials License No. 25-1323-01

Help Line 265-5518

Newsletter as a Training Tool

Use of hazardous materials in research is regulated by several federal and state agencies. The Occupational Safety and Health Administration (OSHA) and Wisconsin Department of Commerce (DComm) regulate chemical use while the Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR) regulate chemical wastes. Radioactive materials are regulated by the Nuclear Regulatory Commission (NRC) and Wisconsin Radiation Protection while machine produced radiation and lasers are regulated by OSHA, Food and Drug Administration (FDA) and Wisconsin Radiation Protection. All of these agencies stress that workers must be trained initially and retrained annually in general safety measures and precautions related to the specific hazards that workers may encounter.

In the June, 2005 edition of the newsletter, we discussed Spill Response, Radioactive Material Inventory and Survey requirements, and the Laboratory Emergency Information sheet found outside your labs door. This edition of the newsletter discusses the relationship between your lab and the Safety Department. Together with the June, 2005 edition, it can be useful as part of your lab's annual safety refresher. All of the Safety Department's newsletters can be viewed at: <http://www2.fpm.wisc.edu/safety/Radiation/news.html>

Remember, in the event of an emergency or if you really need to speak with a safety person, our "Hot Line" is 5-5518. Additionally, the home phone numbers of several Safety Department personnel are listed as emergency contacts in every lab on campus.

If you or any of your colleagues would like to be put on the subscription list for Lab Safety Spectrum, please email Ralph North at rnorth@fpm.wisc.edu.





Chemical Hygiene Plan

Investigations of workplace accidents have shown that nearly all accidents are preventable. They occur primarily because the worker was not using the proper equipment, or was not using proper techniques, or did not have adequate knowledge of the hazards involved (poor or lack of training). The OSHA Laboratory Standard requires workers be informed of the hazards in their workplace. This is accomplished by the lab's Chemical Hygiene Plan. A template for a Chemical Hygiene Plan can be found in Appendix C of the Laboratory Safety Guide along with Chemical Hygiene Plan requirements and frequently-asked questions.

For most chemical uses, the Laboratory Safety Guide can serve as the Plan without significant elaboration. However there is one class of chemicals, called Particularly Hazardous Substances, for which additional planning is required. Particularly Hazardous Substances include select carcinogens, reproductive toxins, and compounds with a high degree of acute toxicity. Appendix D of the Guide provides a list of carcinogens and reproductive toxins and the criteria for determining acute toxicity. There is also an approval form which, when completed, provides a detailed procedure for safely working with the compound. The completed form can be added to the lab's Chemical Hygiene Plan to cover future uses of the compound.

Safety Department personnel can come to your lab and assist you in safe use, provide guidance in appropriate storage. Additionally, the Working Safety with Chemicals training class is offered weekly (see schedule below). If your lab has a relatively large group of students needing this training, we could make arrangements to conduct the class at your facility.

Hazardous Waste

After using these compounds in research, the residue, or wastes, are regulated by the EPA to protect both the public and the environment from harmful pollutants. The Laboratory Safety Guide provides several sections on waste disposal. Appendix A provides an alphabetical listing of 3300 chemicals and the acceptable disposal procedure for that chemical found in Chapter 7.

Additionally, Safety Department personnel will come to you lab to collect wastes and surplus chemicals. The schedule for collection is: west campus (CSC, Rennebohm) on Monday afternoon, main campus on Tuesday, Chemistry on Wednesday afternoon. To schedule an On-Site Hazardous Material pick-up, go to <http://www2.fpm.wisc.edu/chemsafety/oshmm.htm> and complete the Surplus or Waste Chemical Pickup Request. Pressing "Submit" sends an eMail to Safety. Additionally, you will need to complete an appropriate form found at the following site:

<http://www2.fpm.wisc.edu/chemsafety/forms.htm>.

Radiation Safety

Labs using radioactive materials follow a routine program where radioactive material is ordered through CORD

<http://www2.fpm.wisc.edu/safety/Radiation/radreq.html>

Inventories are kept of use and disposal, meter surveys are performed continually while using the material and formal meter and wipe surveys are conducted monthly (see June 2005 newsletter).

Radioactive waste is collected from labs at the same time that surplus chemicals and chemicals are collected. To request a waste pick-up, complete the form at:

<http://www2.fpm.wisc.edu/safety/Radiation/pkup.html>

In order for your waste to be collected and your CORD inventory adjusted, the lab must complete a Radioactive Waste Disposal Form and attach a form to one of the containers.

Radiation Safety personnel also provide training for persons using nuclear gauges and other portable radioactive sources. Additionally, training is provided for persons using one of the UWs Cesium irradiators and for persons needing to transport radioactive material away from the UW campus.

Safety personnel can also survey your x-ray machine, electron microscope (these seldom leak radiation), and x-ray diffraction units. We also have the instruments to survey ion implantation devices.



Radiation sources operating at energies above 10 kilovolts have the potential to emit x-rays.

Lastly, while not one of our expert areas, the Safety Department has the ability to measure electromagnetic field strengths in the microwave, RF, and very low frequency range.

The Safety Department's Radiation Safety for Radiation Workers booklet has a chapter on every type of radiation you might encounter at the UW.

Chemical / Radiation Safety Supplies

When the team collect hazardous waste, they can also leave off supplies you may need. Safety supplies suitable 5-gallon carboys for collecting flammable solvent wastes. These are either white or yellow. The yellow carboys are for wastes containing chlorine and other halogens. Besides 5-gallon radioactive waste carboys, radioactive supplies include forms, labels, tags, 1, 2, and 4-quart containers, and small, medium or large yellow plastic bags. These can be requested when completing a waste pick-up request.

Pregnancy Surveillance

Epidemiological studies have suggested the embryo / fetus is more sensitive to effects from high (> 10 rem) radiation doses than adults. Therefore lower radiation dose limits apply to the fetus of a pregnant radiation worker than the mother; 500 mrem for the fetus vs. 5000 mrem for the mother. This effectively limits the radiation exposure of a pregnant radiation worker to 500 mrem.

The University's Pregnancy Surveillance Program is a voluntary program. Together with the pregnant worker, the Safety Department will review her radiation exposure history, her lab's workload (type and quantity of radionuclides), and, if appropriate, provide suggestions to reduce exposure ALARA and well below the 500 mrem. To inquire into this program call the Safety Department (2-8769) and ask for Sally Rowe or email radpro@fpm.wisc.edu and we will contact you.



Laser Safety

Lasers produce very narrow, intense monochromatic (i.e., one color) and coherent (i.e., in phase) beams of light. Today, laser devices are commonly found in many work areas. Properly emplaced and operated, laser devices can be of great benefit. Lasers are regulated by the Food & Drug Administration and OSHA. The FDA attempts to insure marketed lasers can be operated safely. However, even when operated properly, some lasers are capable of causing injury. Chapter 14 in the Radiation Safety for Radiation Workers manual addresses laser safety. We have a Health Physicist with special training in laser safety. If you have questions about the lasers in your lab, need special training in laser safety, etc., call Arne Jansen at 2-9608. Laser eye exams are available at no charge for personnel who work with Class IIIB or Class IV lasers. Contact Occupational Health Officer Tom Kenney at 263-2177 for assistance.



Chemical & Radiation Training / HazMat Transport Training

Radiation and Chemical Safety training classes are offered weekly at Union South; each class satisfies either OSHA or NRC training requirements. There is also a Transportation training class if you ship or receive (directly from the carrier -- e.g., FedEx) hazardous materials. The schedule for each of these classes is in the table below. Chemical and Radiation training normally begin at 9:30 AM and 12:30 PM, respectively, except on the dates noted. Transportation training is either 1 hour, basic, or 3 hour, shipping specific, training (visit our web site for more information).

Wednesday	September 28	Wednesday	October 26	Thursday	November 24**
Thursday	October 6	Tuesday	November 1	Tuesday	December 6
Friday	October 14**	Wednesday	November 9	Wednesday	December 14
Thursday	October 20	Thursday	November 17	Monday	December 19

**** Chemical training on these dates begins at 1 PM; Radiation at 8:30 AM**

Transportation Training -- Shipping Hazardous Material (monthly)

Wednesday	September 21	11 am – 3 pm
Thursday	October 27	9 am – 1 pm
Friday	November 18	9 am – 1 pm
Thursday	December 15	11 am – 3 pm

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