RADIATION REVIEW

UW - Madison Safety Department
262-8769

Radiation Safety Program
August 1993

Training For Radiation Workers

Starting Sept 1, 1993, Radiation Safety will present a 4-hour training session weekly for all new, non-clinical radiation workers. Persons who have previously passed the radiation safety exam will not be required to attend the 4 hour block, however all are welcome.

Radiation Worker Training Schedule

1. Training held at Biochemistry will be in room 1B (lecture) & Room 1 (Biochem Teaching Lab).

2. Because training dates & location are subject to change, call the Safety Office a few days before the scheduled training date to confirm.

3. Training schedule for the 29 Oct 93 to 28 Dec 93 is tentative.

4. Groups of 10 or more people, i.e. groups of new graduate students, should call Safety and arrange an on-site training date.

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Training Schedule

Date	Day	Begins	Ends
01 Sept 93	Wednesday	8:00 AM	12:00 PM
07 Sept 93	Tuesday	12:30 PM	4:30 PM
17 Sept 93	Friday	8:00 AM	12:00 PM
23 Sept 93	Thursday	12:30 PM	4:30 PM
29 Sept 93	Wednesday	8:00 AM	12:00 PM
08 Oct 93	Friday	12:30 PM	4:30 PM
13 Oct 93	Wednesday	8:00 AM	12:00 PM
21 Oct 93	Thursday	12:30 PM	4:30 PM
TENTATIVE DATES			
29 Oct 93	Friday	8:00 AM	12:00 PM
02 Nov 93	Tuesday	12:30 PM	4:30 PM
10 Nov 93	Wednesday	8:00 AM	12:00 PM
19 Nov 93	Friday	12:30 PM	4:30 PM
24 Nov 93	Wednesday	8:00 AM	12:00 PM
02 Dec 93	Thursday	12:30 PM	4:30 PM
10 Dec 93	Friday	8:00 AM	12:00 PM
14 Dec 93	Tuesday	12:30 PM	4:30 PM
22 Dec 93	Wednesday	8:00 AM	12:00 PM
28 Dec 93	Tuesday	12:30 PM	4:30 PM

Who Is Required To Attend The Four Hour Training?

1. Anybody who needs or wants a badge. Exception: Clinical X-ray personnel.
2. Anybody who works with radioactive materials.
3. Anybody who handles, packages or carries radioactive waste or who signs for and distributes radioactive materials.
4. Any laboratory worker who works in a lab or area designated as a restricted area.

You should read the manual "Radiation Safety for Radiation Workers" in preparation for the class. It is unlikely you will pass the exam with the 4 hour training alone. Please note you will not be permitted to work in a radiation lab without attending this training.

Who Is Not Required To Attend The Four Hour Training?

1. Students who use radioactive materials in a laboratory course. The course must have an assigned course number and a radiation safety lecture. Total radioactivity must be less than that specified in Appendix R in the University Radiation Safety Regulations.
2. Laboratory workers who frequent the labs or areas designated as restricted areas, but do not work there.
3. Laboratory workers (student or otherwise) who are hired as dishwashers.

Requests for exception to the training requirement must be submitted in writing to the Safety office. They will be considered on a case-by-case basis.

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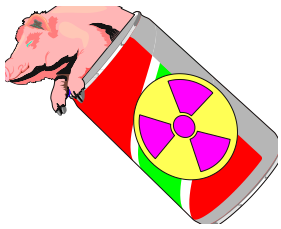
Waste Watchers

You've all heard the tale of the 3 little pigs, and how haste and precipitous actions often lead to ruination. It is for that reason that we have rules and regulations. Let me tell you another "pig" tale:



It was 5:30 PM on Saturday, 3 July, when I received a phone call at home from the University Hospital Administrative Officer. He had received a call from the chief of the Hazardous Material Response Team (HAZMAT) in Springfield, Mass. The HAZMAT responded to an incident at the Central Post Office in Springfield where a box containing 34 lead pigs used to contain ^{32}P vials broke open and spewed its contents on the floor. He said that the pigs all had "Caution - Radioactive Material" stickers on them and various chemical names (e.g. Guanosine 5'-triphosphate, [alpha-^{32}P], etc.), the package had a return address of UW Hospitals and Clinics, 600 Highland Ave, and was being sent to New England Nuclear. I went to the office and looked through our shipping log but found nothing we had sent to Massachusetts. I called the admin officer who related that the DuPont emergency response team had responded and the situation was now under control. When I tried to reach this HAZMAT chief, he was on a cellular phone which would not accept call-ins, so I left things as they were.

At 3:30 PM on Friday, 9 July, I received a phone call from the DuPont Radiation Safety Officer who related that he had

responded to the incident. They surveyed and cleaned all of the lead pigs and found no contamination, but the Postal Inspectors had taken the package

wrappings and were having their branch

in Milwaukee investigate. The pigs had apparently been collected over a several year period and there were 28 Guanosine ^{32}P, 2 Adenosine ^{32}P, 2 Deoxycytidine ^{32}P, and 2 $Na^{125}I$.

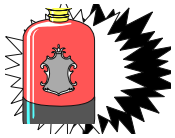
I obtained about 12 order numbers from the RSO and proceeded to determine who had received the packages. Of the 12, 6 had gone to a single user. That was pretty conclusive. However, the distressing thing was that 6 shipments had gone to 4 other users in 3 other buildings on campus. The question to ask, "If all users need to tell CORD of radioactive materials transfers, how come CORD has no record that the other users transferred their material to the user who had received 6 vials?"

The thing to remember, Safety will take care of your radioactive waste. Even empty lead pigs can be disposed of through the Safety Department. First, monitor the pigs for radioactive contamination using a GM meter, then package them in a strong box, and label the box as lead pigs. The box must weigh 50 pounds or less. Place the box for pickup along with your radioactive waste boxes, and write on the "Radioactive Waste Disposal" form, one box of lead pigs. DO NOT SEND LEAD PIGS TO THE VENDOR. But, if you don't want to give them to Safety for disposal, at least remove all "Caution - Radioactive Materials" stickers.

RON BRESELL RADIATION SAFETY OFFICER

Preventing Implosion Hazards

Implosion, violent inward collapse, may occur in the laboratory when vacuum pumps or other equipment which produce negative pressure are used with glass vessels. Glass shards may be propelled in any direction, embedding in the eyes or flesh, causing cuts as well as the possibility of chemical irritation or radioactive contamination. Some things you can do to minimize implosion hazard are:



- ☞ Use proper shielding. A fume hood with the vertical sash lowered provides protection from flying glass, as well as containment for hazardous substances.

- ☞ Use the proper container. Round-bottom flasks are preferable to flat-bottom. Replace glass with plastic whenever possible. Use filament tape on containers, except where an oxidizing gas such as oxygen or ozone are being stored (organic constituents in tape may ignite).

- ☞ Establish procedures which indicate specifically which container to use. Train and monitor new personnel.

Did You Know?

According to Sandia National Laboratories, the combined seas of the world contain about 464,300,000,000 Curies (1.7 X 10^{10} TBq)

of radioactivity.

Up-coming Radiation Safety Changes

The NRC has promulgated a complete revision of Title 10, Code of Federal Regulations, Part 20, Radiation Protection. Radiation Safety had to completely rewrite the University Radiation Safety Regulations and will be sending a copy to each principal investigator by 15 September. Several of the more significant changes are:

Surveys. All users will be required to perform contamination surveys monthly if they have on hand or use more than 200 :Ci (0.2 mCi) in any 30 day period. If contamination surveys are required, the survey must include both a meter and wipe survey except in the case of ^{3}H for which only wipe surveys for contamination are required.

Contamination Levels. Survey results should be recorded in units of dpm rather than cpm. The conversion is:.

$$dpm = \frac{(cpm - background)}{efficiency}$$

Table 5. Action Levels for Removable Surface Contamination

Contamination Units	Type of Radioactive Emitter		
	Alpha (α)	$\beta^1\gamma$,x	Low Risk β^2
dpm/100 cm^2	66	660	2,200
Net cpm/100 cm^2	23	230	770

Records. Records related to use of radioactive materials (e.g., surveys, inventories, etc.) must be maintained for a minimum period of 3 years.

Dosimetry. Some exposure limits (e.g., thyroid, lens of the eye, etc.) have been changed. All workers will be provided a report of their exposure annually.

Amendment Requests

We have been receiving amendment requests signed by laboratory personnel, rather than the principal investigator. These requests cannot be processed for approval. All amendment requests MUST be signed by the authorized user.

Your amendment request can be lost before we receive it or when we send it for processing. Before you send us an amendment request, please make two copies, send the original and a copy to the Safety Department, and keep a copy for your records. Thank you.

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