



RADIATION REVIEW



UW - Madison Safety Department
262-8769

Radiation Safety Program
February 1991

CORD HOURS

All radioactive materials must be ordered through CORD (Central Ordering, Receiving and Distribution) located in the Safety Department. Ordering hours are 8:00 AM to 11:30 AM & 12:30 PM to 2:00 PM. The telephone number is 262-6511. If you have a question regarding item availability or price, please call or stop in between 2:00 PM and 4:15 PM.

If you need a gas chromatograph with a Ni-63 ECD source, please inform CORD before you order.

LETTERS OF RECOMMENDATION

If you leave UW and try to get funding from a granting agency in another state, it is likely you will be asked to provide a letter of recommendation and/or information pertaining to our adherence to our NRC License. This information can be obtained by contacting:

Sue Engelhardt, RSO
317 N. Randall Ave.
Madison, WI 53715

Please provide your name, address, the information you're requesting, and where you want the information sent.

AT THE MOVIES

The Health Physics staff has a set of ten 15 minute videotapes called *The Story of Radiation* dealing with the fundamental concepts of ionizing radiation. We will be showing them in their entirety sometime in April. If you are interested in viewing these tapes, please call 262-8769 and ask for Abdul or Ralph so we can get an idea of how many people to expect and arrange the best date and time. Bring your own popcorn.

SOME PEOPLE ASK

Do I need to wear a lead apron when I work with radioactive materials?

No. Lead aprons are usually worn by people who use diagnostic x-ray machines to attenuate the scatter of x-ray radiation. People who work with radioactive materials that emit high energy beta particles or gamma/x-rays do not need to wear lead aprons, because they are required to have bench top shielding to reduce the exposure to radiation. The bench top shielding must be:

- made of plexiglass or similar low density material for high beta emitters and made out of lead for gamma emitting radionuclides.
- of sufficient thickness to stop most of the radiation (i.e. 3/10" of plexiglass for P-32.)
- placed between your body and the radioactive materials during the entire procedure.

Wearing a lead apron without having appropriate bench top shielding:

- may give you a false sense of security because the thickness of the lead apron may not be sufficient to stop the gammas emitted from the nuclide you are using.
- may result in using the same shielding materials. Lead is the wrong shielding material for high energy beta emitters(i.e. P-32) The betas emitted by the P-32 produce more x-rays when they are stopped by lead.
- may result in unnecessary physical stress. Lead aprons are relatively heavy to wear. This is especially true for pregnant women.
- may provide protection only for you, but no protection for others in the lab.
- may be contaminated and become a source of radiation that is close to your body.

RADIOACTIVE WASTE AT UW-MADISON

Until last year, the University shipped a good portion of our waste off-site for disposal purposes. Some of it was stored for decay at an off-site location and some of it was sent to Hanford, Washington for burial. It is becoming more and more difficult to ship our waste. One, Hanford, Washington does not really want to take our waste anymore and after 1992 will probably refuse to take it. Second, the company that stored our waste for decay and disposal as normal trash will no longer accept these wastes. Third, it is becoming very expensive to ship our waste anywhere. It is economically feasible when drums cost \$225.00 each; drums now cost around \$600.00 each and in the next year or so, that cost could go as high as \$5000.00 each. With this in mind, the radiation safety group reviewed alternate waste management options available to us.

Radiation Safety is incinerating almost all of our waste at the Herrick Drive Incineration Facility. Wastes are burned by waste group, based on the type of radioactivity, volatility of the material, and half life. After the waste is collected from campus, it is taken to our Mills St. Facility where it is sorted into groups.

Some of the waste is stored for decay and then incinerated, some is taken directly to the incinerator for processing and some of it is put on shelves for eventual shipment. After each of the burns, the ash is collected from the incinerator and radioactivity in the ash is quantified. The ash that has no radioactivity in it goes to the landfill. The

ash with decayable activities is stored until background is achieved, and then this ash is also landfilled.

The ash that has long lived radioactive materials in it

is kept for eventual shipment (this is only about 20 drums/year). The incineration program, coupled with the University's plan to build us a larger storage/processing building, will allow the University to manage its wastes effectively for many years to come. If we are going to manage our own radioactive waste, it is imperative that you, as researchers and physicians do your part to assure that our wastes can be processed in the fashion described above. Be sure to package your wastes in clearly marked boxes; do not mix hard plastic tubes in with your paper trash in that this will cause excessive smoking; make sure you don't mix your waste streams together.

Radioactive Waste Guidelines

- 1) Don't mix nuclides**
- 2) Label boxes clearly**
- 3) Separate your waste**
- 4) Dispose you own hard plastics**

If you put a long lived nuclide into a box with decayable waste, it could result in the University having several drums of ash that can't be landfilled. Therefore, we ask that you separate your wastes as much as possible. Wash your plastic tubes, ependorf tips, etc. and throw them away in the normal trash. When in doubt CALL US.

Our incineration program is a vital component of managing our own radioactive waste. Without this capability, we would need a space about equal to Camp Randall Stadium to store all of our wastes or research using radioactive materials could be jeopardized. It is important that we not have any Asurprises in our ash. If you suspect that some of your waste may have been contaminated with something, keep that portion of the waste separate and call us for a special pickup. Thank you.

IT'S WHAT WE PAY THEM FOR

The International System of Units is initiating the use of new units of measurement with regard to radioactivity:

Guide to SI Units	
Radiation Dose Equivalent	
<u>Old (rem)</u>	<u>New (sievert)</u>
0.1 mrem	1 μ Sv
0.5 mrem	5 μ Sv
1.0 mrem	10 μ Sv
2.5 mrem	25 μ Sv
1.0 rem	10 mSv
10.0 rem	100 mSv
100.0 rem	1 Sv
Activity	
<u>Old (Curie)</u>	<u>New (Becquerel)</u>
1.0 pCi	37 mBq
27.0 pCi	1 Bq
1.0 nCi	37 Bq
27.0 nCi	1 kBq
1.0 μ Ci	37 kBq
27.0 μ Ci	1 Mbq
1.0 mCi	37 Mbq
1 Ci	37 GBq

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