# RADIATION REVIEW

UW - Madison Safety Department
262-8769

Radiation Safety Program
March 1994

**Safety Department Annex**

***Room 19 Biochemistry***
***HOURS: 9:00 am - 3:00 pm Monday thru Friday***

# Drop Survey Meters for Calibration
# Retrieve Survey Meters after Calibration
# Get your Thyroid Scan
# Drop Off Tritium Bioassays
# Pick up Radiation Safety Literature

## Safety Move Update

The Safety Department move has been rescheduled for the week of May 2, 1994. Our new address will be 103 N. Lake St. Existing service and personnel phone numbers will remain the same. Some phone numbers will be added for Safety Department personnel who are presently sharing phones. Our objective is to make this move go as smoothly as possible without any interruption or inconvenience to you, our customers. As always, the Safety Department Annex, room 19 Biochemistry, will be open between 9:00 am and 3:00 pm inclusive, Monday through Friday. At the annex, you may pick up and drop off survey meters for calibration, get thyroid scans, drop off bioassays, and obtain literature. The Safety Department Annex phone number is 265-5241.

## Transportation Training

As outlined in the last issue of the Radiation Review, a HAZMAT employee is defined as "anyone who ships or prepares for shipment, hazardous materials" as defined in the Code of Federal Regulations 49 CFR 172-180. This includes workers who ship or transport radioactive materials off campus and workers who prepare radioactive materials for shipment off campus. Each HAZMAT employee is required to be initially trained, and receive refresher training once every two years. If you think you fall into this category and have not received the booklet titled "Transportation of Radioactive Materials at University of Wisconsin - Madison", please call Ralph at 262-1524 to request a copy. Read the booklet, complete the quiz on pp. 17-20, sign and date the quiz and return it to UW Radiation Safety. You will be issued a Certificate of Completion if you pass, which you should keep with your files.

# RADIATION SAFETY NOTICES

## Waste Watchers

**DECAY AND DISPOSAL TO THE NORMAL TRASH**

Radiation Safety is always glad to pick up waste from your radioactive procedures. However, if decaying waste and subsequently disposing it to the normal trash is suitable to your laboratory's waste management strategy, it must be done properly. Anyone wishing to utilize this option should carefully read Chapter XIX in the University Radiation Safety Regulations. Please notice:

1) Only waste containing radionuclides with a half-life of less than 65 days is suitable for decay-in-storage.

2) Waste must be stored for at least ten half-lives after it is packaged. After this time, there will be approximately 0.1% of the original amount remaining.

3) Monitor all surfaces for detectable radiation and/or radioactivity (in CPM for beta emitters or mR/hr for gamma emitters). The survey should show less than .05 mR/hr (essentially background) or less than 100 cpm when surveyed with a thin window GM survey meter with the probe within one centimeter of the trash.

4) Obliterate all labels.

5) Fill out the lower right corner of a Radioactive Waste Disposal form and send it to CORD.

6) Retain all records for at least three years. Records must include:

a) Date of disposal

b) Date waste was placed in storage. This date and the date in a) above must be at least ten half-lives apart.

c) The radionuclide(s) decayed

d) The make, model, serial number and calibration date of the survey instrument used.

e) The background reading in CPM or mR/hr, as appropriate.

f) The maximum reading in CPM or mR/hr as measured at the surface of the waste.

g) The name of the person doing the disposal.

7) No substance that is a Toxicity Characteristic waste may be thrown in the normal trash. When these are packed for Radiation Safety pickup, you must include the chemical and its concentration on the box sticker, as well as on the yellow Radioactive Waste Disposal form.

Failure to follow these rules will result in a violation being issued to your authorization. Please call 2-8769 and ask for a Radioactive Waste Management Specialist if you have questions.

**LEAD PIGS**

Do not throw lead pigs in solid radioactive waste nor in your normal trash. UW Radiation Safety will recycle your lead pigs. Please follow the following procedure:

1) Monitor each pig for radiation and/or radioactivity using a thin window GM.

2) Pack uncontaminated pigs in a small box, weight < 50 lbs.

3) Label box and yellow Radioactive Waste Disposal form "Lead Pigs"

4) Put out with regular Monday and Wednesday pickups.

## Health Physics Corner

**RADON GAS**

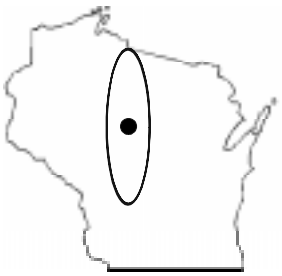
Radon-222 is an inert radioactive gas which is one of the decay products of the naturally occurring uranium-238 decay series, and is preceded in this series by radium-226. Since radium-226 is found in minute quantities in virtually all soil, bedrock, and groundwater, radon-222 is also found in these materials. However, since radon is a mobile inert gas, it is able to migrate away from the location of its parent (radium-226) and emanate through soil and rock into the earth's atmosphere where it is quickly diluted. Thus, it is present as a component of the natural background radiation to which all living things are exposed. Typical outdoor concentrations of radon-222 (overland and near the earth's surface) are measured to be in the range of 0.1 to 1.0 picoCuries per liter (pCi/L) of air. One picoCurie, corresponding to 2.2 radioactive disintegrations per minute, is one trillionth of a Curie, a basic unit of radioactivity. A concentration of one pCi/L of radon gas implies that 2.2 atoms of radon disintegrate per minute in one liter of air. Prolonged exposure to elevated levels of radon can lead to an increase in the risk of lung cancer.

According to the 1987 joint USEPA/Wisconsin Health Department random survey of 1200 Wisconsin homes, 26.6% of Wisconsin homes are estimated to have radon screening results above the USEPA guideline of 4 picoCuries per liter of air. Once radon gains entry to the home from soil gases or water supplies, the building construction and ventilation characteristics determine the concentration that is allowed to develop within the living environment. While modern, "tight" energy efficient homes may reduce the amount of radon entering the home, they may also greatly increase the concentration because of reduced ventilation and outdoor air exchange rates. Older "loose" or "drafty" homes may have better ventilation, but may also have larger areas exposed to the soil. Radon typically enters the home through cracks in the foundation, perforated drain tiles under foundation footings, sump wells, crawlspaces, or around plumbing and sewer pipe foundation penetrations. While it is practically impossible to prevent any radon from entering the building, significant reductions to satisfactory levels are always achievable. This is accomplished by sealing areas of exposed earth, ventilation of drain tiles or sump well systems, dilution of the indoor air, or a combination of these techniques.

Mitigation costs of elevated indoor radon range from $200-$2000, and are dependent on the technique used and the building characteristics.

*Excerpted with Permission from*

**John A. Micka**
**Wisconsin Radiological Laboratories**



# RADIATION SAFETY NOTICES

**Wisconsin Radiological Laboratories (WRL)** is a Madison based primary testing laboratory specializing in environmental radioactivity measurements. For a cost of $15, you can get a complete, simple to use, and accurate test kit for screening indoor radon. If you have any questions, contact WRL, John Micka, President, 608/244-4646.

**CORD Hours -** On Good Friday, April 1, CORD will be closed in the afternoon. Radioactive material will be received and delivered in the morning.

**Caps on Liquid Bottles -**
Please be sure when you pack liquid as waste that you put the caps on tightly. Use parafilm if necessary to achieve a good seal. Never use a cap that doesn't fit properly.

**Student Wanted**
Radiation Safety has an immediate opening for a student helper. The ideal candidate will have Monday and Wednesday afternoons off and be able to lift 50 lbs. Apply in person at 317 N. Randall Ave.

**UW-Safety Dept.**
**317 N. Randall Ave.**
**53715**
**(608)262-8769**