



RADIATION REVIEW



**UW - Madison Safety Department
262-8769**

**Radiation Safety Program
February 1993**

NEW RADIATION SAFETY OFFICER

Ronald Bresell is the new Radiation Safety Officer for the University of Wisconsin - Madison. He has been in the radiation safety field since 1976 when he attended the Army Nuclear Reactor Operators Course. Most of the safety work he has done was in the medical and medical research arena, having spent one year at Walter Reed Army Medical Center in Washington; four years as RSO at Letterman Army Medical Center and Letterman Army Institute of Research in San Francisco; three years at the Pacific Environmental Health Engineering Agency in Sagami, Japan (where he visited research labs in Bangkok and Kuala Lumpur); three years at Fitzsimons Army Medical Center in Denver; and three years at the Academy of Health Sciences in San Antonio.

NEW TRAINING MATERIAL FOR LABORATORY TECHNICIANS

Authorized users should have received the booklet "**Radiation Safety Training Outline for Laboratory Technicians**". This booklet is a supplementary outline for authorized users to use as a guide to train radiation workers. Authorized users who did not receive the booklet should call the Safety Department and request one. Radiation workers should ask their authorized users for the booklet and read it. Safety is currently revising its training manual and expects to publish a new one in March or April.

HEALTH PHYSICS CORNER

RADIATION PROTECTION FOR THE PREGNANT WORKER

It has long been known that undifferentiated cells that are rapidly dividing are highly radiosensitive. In the embryo stage, cells meet both these criteria, and in fact it has been found that the embryo or fetus is sensitive to certain radiation effects, particularly during the first trimester. The current Standards for Protection Against Radiation, 10 CFR 20, doesn't provide special exposure limits for the embryo/fetus.

The new 10 CFR 20 which will go into effect January 1, 1994 requires that the licensee (ie UW-Madison) ensures that the radiation dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman does not exceed .5 rem (5 mSv). Please remember that this is a Maximum Permissible Dose. The University is committed to the concept of ALARA, to keep all radiation doses As Low As Reasonably Achievable. Pregnant radiation workers should inform their supervisors. The U.S. Nuclear Regulatory Commission has published a Regulatory Guide, 8.13, called Instruction Concerning Prenatal Radiation Exposure. This is Appendix S of the University Radiation Safety Regulations. Extra copies are available from UW Safety.



“IT COULDN'T HAPPEN HERE”

Some of you may have heard of the incident involving ^{32}P at the University of Michigan. The following news item is excerpted from a recent NRC newsletter:

The University of Michigan, Ann Arbor, Michigan reported to NRC Region III that a spill of approximately 1 millicurie of ^{32}P had occurred in a laboratory in the Medical Science and Research Building. The ^{32}P was in a soluble liquid form and was used for research. A 3-person NRC inspection team was dispatched to the site on September 15, 1992. The team performed confirmatory surveys of areas in the laboratory building, and in the home of the graduate student who was involved in the spill. The NRC inspectors joined university health physicists in 3 teams which also surveyed 15 homes of persons who had worked in the laboratory area. Contamination levels of 2,000 to 30,000 disintegrations per minute (dpm) per 100 square centimeters were found in the home of the graduate student....Lower levels of contamination were found in four other homes or automobiles....The homes were decontaminated and some materials (shoes, rugs, automobile floor mats) were removed for further cleaning. Contamination levels in the laboratory were as high as 1,500,000 dpm per 100 cm^2 . Bioassay tests were performed for 14 persons, and no evidence of any uptake was detected. The NRC inspection team determined the spill occurred while the graduate student was working in the laboratory on the evening of Friday, September 11. The student did not make an adequate survey following his work, and the contamination was not discovered until September 14, during a receipt survey on a package.

The article does not adequately describe the incident. Costs for the clean-up were approximately \$30,000

(labor, material, etc.) as well as research losses (because all labs on the floor were closed for the 3 - 4 day clean-up period). University of Michigan was fined \$3750 for failure to perform proper surveys which resulted in radioactive contamination in the public domain and failure to perform necessary surveys of unrestricted areas.

This incident occurred because a user failed to do a "routine" survey. As a result, a small spill became a large problem. If you have a spill, however small, notify Safety, even if you cleaned it up well. Safety can provide on-site training in all areas of radiation safety upon request.

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CORD

When ordering radioisotopes through CORD, some of you may be irritated at paying a "CORD" fee. Besides insuring that you receive radionuclides at the lowest possible cost, that the package is not leaking or unsafe, that it is what you ordered, etc., some of the fee also goes to eliminating the waste.

This year waste disposal fees at one of the three radiation landfills in the US are approximately \$300 per cubic foot (\$2,250 per 55 gallon drum). The Safety Department uses several NRC-accepted programs to reduce waste volume significantly, however, the user is the prime generator of waste. One method you can use to help us reduce costs is to survey gamma and high energy beta (e.g., I-125, P-32) lab wastes to insure it is contaminated. If the material is not contaminated, deface all radiation labels and dispose of it as uncontaminated normal trash.



ENVIRONMENTAL RADIONUCLIDE ANALYSES

The Radiation Protection Unit of the State Lab of Hygiene performs radiochemical analysis on a variety of environmental matrices. Analyses available include radon, radium, strontium, tritium, uranium and gamma emitters. The cost per test ranges from \$14.50 to \$157.00 depending on the nuclide requested.

The Radiation Protection Unit is EPA certified and is regularly inspected by the EPA and the NRC. The lab maintains complete quality assurance programs, ensuring high quality data.

Contact Lynn West or Dave Schleis (263-4766) for additional information.

THINKING OF REMODELING OR NEEDING REPAIR?

Before you allow any trade workers (i.e. plumbers, carpenters, electricians, painters, sheet metal workers or outside contractors) to work in labs or areas in the lab containing radioactivity, you must do a radiation survey to indicate that the area they will be working in is free of radiation and radioactive materials. The trade workers will be asking you some specific questions before they begin work.

To the right is the checklist provided to the trade workers to complete. After it is completed by the trade worker, lab personnel need to send a copy of the completed list and the survey results to the Safety Department. You should retain the original copies of the form and the survey results for your records. Do review the checklist and prepare your lab for the workers so that work can be done safely and without any delays.



CHECKLIST FOR TRADE WORKERS WORKING IN ROOMS CONTAINING RADIOACTIVE MATERIALS

- Ask the person in charge of the room to do a radiation survey. Surveys must indicate the area where you will be working will be free of radiation.
- Ask lab personnel to explain the results of the radiation survey before you begin work. Ask about the background reading. All readings of the area where you will be working should be less than 2 times the background reading. **If there remains any questions regarding the survey call UW Safety (2-8769).**
- Ask lab personnel to keep the area where you will be working radiation free for the duration of your work.
- Either someone from the laboratory will be present at all times while you are working, or radioactive materials must be secured or moved to a different room.
- Ask the person in charge of the room if there are any other hazards (e.g. chemical, biological) you should be aware of.
- Wear appropriate protective attire, i.e. safety glasses, gloves, hard hat, etc.
- Do not eat, drink, or smoke in the room.
- If you are injured or cut, attend to the injury immediately and report the incident to your supervisor.
- Wash your hands and forearms with soap and water before breaks, lunch, and at the end of the work day.

WASTE WATCHERS

MIDWEST INTERSTATE COMPACT REGION

Historical Background

Most of the low-level radioactive waste from the United States is currently being disposed at facilities near Barnwell, South Carolina and Hanford, Washington. In an effort to better manage the nation's low-level radioactive waste, Congress has passed two major laws, the 1980 Low-Level Radioactive Waste Policy Act and the 1985 Amendments to the Act. Under the Act, each state is responsible for disposal of waste generated within its borders. To meet this goal, states were encouraged to join together to form regional compacts to develop and operate new disposal facilities. In addition, the Act allowed compacts with existing disposal sites in South Carolina and Washington to stop accepting waste from outside their compacts in 1986. This was later extended to January 1, 1993 provided certain milestones were met towards developing new facilities. To meet their obligations under the Act, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin formed the Midwest Interstate Low-Level Radioactive Waste Compact and a Commission consisting of one voting member for each participating state. Based on volume of waste generated, Michigan was chosen as the site state for the Midwest compact. On July 24, 1991, Michigan's membership in the Compact was revoked for failure

to move ahead in siting a facility and Ohio was chosen as the new host state.

What This Means to UW - Madison

As of January 1, 1993, UW - Madison no longer has access to the facility in Washington. We may be able to continue to dispose waste at the South Carolina site until June 30, 1994, contingent upon progress of the Midwest Compact to develop its own disposal facility. This availability is not without its costs, however. Beginning January 1, 1993 the out-of-compact surcharge will be \$220 per cubic foot, over five times what it was in 1991. For this reason it is imperative that we reduce the amount of radioactive waste produced by each laboratory, as well as keeping waste separated by nuclide and physical form, so we are better able to manage the waste that we can't avoid producing.



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