



# Radiation Safety Department

## Newsletter



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FALL 2009

### Special points of interest:

- Radioactive wastes require safe & proper handling
- RSD optional fetal monitoring service
- How to protect yourself from radiation exposure
- Rules to remember when ordering radionuclides and radiation devices

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## Welcome

The WVU Radiation Safety Department, along with members of the Radiological Safety Committee and its sub-committees, are committed to the ongoing development & implementation of the current radiation safety program that includes WVU Campuses, the Robert C. Byrd Health Sciences Center, Jefferson Memorial Hospital, WVU Hospitals Inc., and Blanchette Rockefeller Neurosciences Institute. All research activities involving the use of radioactive materials, radiation producing devices, and the diagnostic and therapeutic use of radiation in humans, non-humans, and animals is overseen by the Radiation Safety Department

and the committees. In managing this program, the Radiation Safety Department Staff will provide guidance and enforcement to guarantee a safe working environment for all individuals working with radioactive materials or devices located within these facilities. The WVU Radiation Safety Officer (RSO), with regard to US Nuclear Regulatory Commission (U.S. NRC) regulation, has been granted sufficient authority, organizational freedom and management prerogative by the institution to identify all radiation safety problems, initiate or provide corrective actions in order to stop unsafe operations, and suspend any operation that is found to cause

an excessive radiation hazard as rapidly and safely as possible in carrying out his duties. All responsibilities of the Radiation Safety Officer (RSO) are carried out under the direct supervision of the Vice President for Health Science Center, the university's Chief Executive Official, who has federal licensing authorities. It is also the responsibility of the WVU Radiation Safety Officer (RSO) to provide timely reports to the U.S. NRC and the West Virginia Radiological Health Program (WV RHP) as appropriate and required by regulation.

## Management & Disposal of Radioactive Wastes

WVU developed these procedures to ensure the safe & proper handling, labeling & packaging of radioactive waste and to continually be in compliance with all federal, state & local regulatory requirements and the Radiation Safety Manual (RSM).

Appropriate waste disposal records MUST be maintained at all times.

Radioactive waste MUST be stored in appropriate containers.

Radioactive waste MUST be appropriately labeled.

Integrity of the waste containers MUST be assured.

Radioactive waste MUST be secured against unauthorized access or removal.

All radioactive waste is picked up by the Radiation Safety Department (RSD) and processed for final disposition. Radioactive waste must never be disposed of in regular trash.

# Pregnancy and Radiation

## RSD Fetal Monitor Service

It is up to the pregnant radiation worker to decide whether or not she will formally declare her pregnancy to her supervisor in writing and/or the RSD. General consideration is to limit the radiation dose received by the pregnant woman and the embryo/fetus and to avoid substantial variation in dose. A monthly fetal radiation monitoring device will be assigned to the female to monitor the embryo/fetal dose rate to be worn on the waist in addition to the individual monitoring device. This remains in effect until it is withdrawn in writing from the woman or she verbally communicates with RSD stating that she is no longer pregnant. For protection of the embryo/fetus of a declared pregnant woman, the dose to the fetus should remain less than 0.5 rem (5 mSv) during the entire pregnancy.



## Guidelines for Transportation of Radioactive Materials On or Between WVU Campuses

- Radiation Safety will comply with current institutional and regulatory guidelines for inspecting and processing incoming shipments of radioactive materials.
- Shipping container will be secured for transportation with packing tape.
- Radioactive material security seal with emergency contact information will be affixed to the top of the shipping container.
- Copy of the vendor packing slip, with emergency hotline information, will be attached to the outside of the shipping container and will serve as the manifest.
- Copy of the “Radioactive Material Inventory & Waste Disposal Record” is placed inside shipping container along with any additional documentation required by Radiation Safety for the material purchased.
- Principal Investigator/Authorized User’s (PI/AU) or lab personnel will be notified of material delivery at the Health Sciences Center.
- Lab personnel make arrangements for pickup and transportation.
- No mode of public transportation shall be used to transport radioactive materials (e.g. bus, PRT).
- Transporter must be registered with the Radiation Safety Office as a “Radiation User” and current with all training requirements.
- Transporter must possess a valid driver’s license and vehicle insurance.
- Transporter must provide **valid photo ID** and signature before package will be released by the Radiation Safety Office.
- Transporter is responsible for properly securing package in transport vehicle and delivering materials directly to PI’s lab location. **Radioactive materials shall not, at any time, be left unattended.**
- Elevator use should be restricted to “Radiation User” only during radioactive material transport in WVU buildings.

### *Radiation Fact*

**Ionizing radiation interferes directly with cell division, which may lead to cancer. Ironically, radiation will also kill cancer.**

# The Tri-Foil



The tri-foil is the international symbol for

radiation. The symbol can be magenta or black, on a yellow background. This sign is posted where radioactive materials are handled. This sign is used as a warning to protect people from being exposed to radioactivity. There are different versions of this symbol and they may be shown at potentially

dangerous sites. For example, the signs would be posted where radioactive materials have been found and a site clean-up is happening. You might also see the symbol in a hospital where radioactive medicine is used, or in a university or research facility.

## How Can I Protect Myself From Radiation?

### TIME

Decrease the amount of time you spend near the source of radiation

### DISTANCE

Increase your distance from the radiation source

### SHIELDING

Increase your shielding between you and the radiation source

### Radiation Fact

- According to the American Cancer Society (ACS), 15 minutes to a half an hour lying in a tanning bed is equivalent to an entire day on the beach.

## Effects of Radiation Exposure on Human Health

The effects of radiation exposure on human health varies depending on many factors one of which is whether the dose is to the entire body or to a specific area of the body. The basis of this article will address doses to the whole body. A dose of 0 to 50 rem received in a short or long period of time shows no observable health effects on the human body. Although your

chances of getting cancer slightly increase above 10 rem. We may also see short-term blood cell decreases for doses of about 50 [rem](#) received in a matter of minutes. Doses of 100 to 200 rem are likely to cause nausea and fatigue. Any doses of 200 to 300 rem will cause vomiting and require medical attention. Doses of 300 to 500 rem will cause hair loss within a

week, along with nausea, vomiting, and diarrhea within hours. If medical attention is not sought death is likely. Exposure to radiation doses as high as 500 to 1200 rem in a short period of time will most likely lead to death within a few days. Likewise, receiving a dose >10,000 over a short period of time will lead to death within a few hours.

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Regular Business Hours:  
8:00 am - 4:30 pm

*Radiation Safety can be contacted 24 hours a day, 7 days a week by using our on-call pager number:*

*(304) 987-1586*

*Please provide your full, 7-digit phone number when paging*

*In case of an emergency, or if you need to contact RSD after regular business hours, please use this number*

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## **ARU/PI Important Rules to Remember When Ordering Radionuclides and Radiation Producing Devices**

1. Radionuclides cannot be ordered using a credit card!
2. A separate PO # must be generated for radionuclide orders requiring multiple ship dates.  
(E.g. an order for 0.5 mCi of P-32 to be delivered on June 15, July 15, August 15, would require that three PO #s be generated—one for each date.)
3. RSD is responsible for issuing all radionuclide purchase order numbers and completing on-line receiving data entry.
4. Radionuclide order must be the exact radioisotope approved under the purchase order issued by RSD Buyer.

**80% of ionizing radiation comes from natural sources;  
the other 20% comes from man-made radiation sources**