Volume I
June/July 2024

Welcome to the first newsletter specific to radiation, laser safety and X-Rays. Each bimonthly newsletter will cover educational topics to assist lab personnel and students who work with radioactive isotopes or use lasers within the lab.

Radiation and Laser Safety Focus

Radiation Safety News

The radiation safety program is responsible for all operational aspects of X-rays, radiation and laser safety at Case Western Reserve University (CWRU).
These responsibilities include:

- **training all personnel in the safe use of radioactive material**
- **administering the personnel and environmental dosimetry program**
- **procurement of all radioactive material**
- **shipment and receipt of all radioactive material for CWRU.**
- **collecting, packaging, and disposing of all radioactive waste**
- **performing routine laboratory assessments and providing one on one education to lab personnel**
- **commissioning and decommissioning of all radioactive material use areas including laboratories**
- **emergency response for the university**
- **calibration of radiation survey instruments**
- **technical assistance regarding radiation, lasers, and X-rays**

The radiation safety program is managed by the radiation safety officer (RSO). The RSO is a member of the Radiation Safety Committee which oversees the program operations.

Troubleshooting Common Radiation Survey Meter Problems

Problem: While conducting a survey, the survey needle is acting erratically and is not providing a consistent reading.

Solution: Keep the meter held as steady as possible near the area being measured. If the needle continues to be unstable, there may be an electrical short in the cable wire connecting the survey meter to the probe. Try replacing the cable with one from a meter that is working properly. If that does not work, get the meter serviced immediately and contact the Environmental Health and Safety (EHS) department.

Problem: The survey meter needle goes all the way to the right and stays there while surveying the work surfaces.

Solution: The scale setting needs to be adjusted. Turn the scale dial to a larger multiplier factor. If the meter is already at its highest setting and the needle is continuing to register readings all the way to the right, there may be radioactive material present in the work area, or the probe may be contaminated. Move the probe away from the area being measured, if the signal does not change the probe is contaminated, if it does change the work area is contaminated.

Problem: The survey meter needle does not move at all.

Solution: First, check to ensure that the battery cover is secure and closed. Next, check the battery power level. To perform this, turn the dial on the meter to the "BAT" setting. If the meter dial reads before the "BAT TEST,"; it is time to have the batteries changed.

Problem: Background level is much higher than anticipated.

Solution: Take the reading again in an area that is known to have a low-level reading. If the meter is still reading high levels, the survey meter probe may be contaminated. Thoroughly wipe down the probe with a lab wipe and recheck levels.

Problem: My survey meter's last calibration date was over one year ago.

Solution: All survey meters must be calibrated at least once a year. Review the tag attached to the survey meter to determine the last calibration date. Please stop using the meter if it is out of calibration date and contact the EHS office for the proper calibration of the meter.

Contact Us

Environmental Health and Safety
Case Western Reserve University
2220 Circle Dr.
Cleveland, OH 44106
216-368-2906
cwruehs@case.edu
www.case.edu/ehs

Staff

Felice Porter, RSO
fst2@case.edu

Joseph Nikstenas, ARSO
jen@case.edu

Yelena Neyman
yxt13@case.edu

Kumudu Kulasekere
kck40@case.edu

Jeffrey Neistadt
Jxn393@case.edu

Naomi Boles
Administration
neb51@case.edu

Gayle Starling-Melvin
EHS Training
ges83@case.edu

Training Opportunities

Medical countermeasures, or treatments for radiation exposure and contamination, is a training module that aids in better understanding what medical treatments are available for radiation exposure and contamination, how they work, and how and when they should be used. This training is perfect for medical and nursing students, laboratory staff and safety personnel. It is approximately 60 minutes and length including videos, quizzes, and case studies. To view the training, please visit https://www.orau.gov/rsb/countermeasuretraining/.

Are you caught up on your mandatory EHS training? EHS offers several courses for training the CWRU community in safe practices. Pre-registration is required for all initial training via Zoom. Class sizes may be limited. Retraining is available on Canvas. Any questions about training should be directed to Ashlei Cannon, axc1483@case.edu or Gayle Starling-Melvin, ges83@case.edu.

Training includes:

Biosafety
Driver Safety
Formaldehyde
Hazard Communication
Hazardous Materials Shipment
Laboratory Safety
Laser Safety
Radiation Safety
Respiratory Protection
Ultraviolet Safety
X-Ray Safety

For more information, go to case.edu/ehs/training

Name that Isotope!

Each newsletter will introduce a new isotope for you to identify as well as provide the answer to the previous newsletter's isotope. Some may be easier than others to identify but have fun with it!

During my decay process, I release an atom that transforms into a non-radioactive helium atom, and in the process, I emit a type of ionizing radiation in the form of a beta particle. Emission of this beta particle is what makes me potentially dangerous to lab workers. My chemical behavior is the same as that of hydrogen. Therefore, I can exist in a gaseous state as well as in the form of water. I can even replace one or both stable hydrogen atoms in water to become a part of the water molecule! If this occurs, the water is also colorless and odorless so you may not even know I'm there.

The beta particle I emit has extremely low energy. As a matter of fact, you may not even be able to find me with standard handheld survey instruments as my beta particle only travels about 6 mm in air. My emitted beta particle cannot penetrate the typical thickness of the dead skin layer that exists on the outside of the body. Don't be fooled by this though, as I am hazardous in large quantities and can find my way into the body through inhalation, skin absorption, and ingestion.

Nonionizing Radiation: Is it dangerous??

We use, and are exposed to, nonionizing radiation sources every day. We use microwaves to heat our food, toasters that use infrared waves to burn our toast, and we watch television, talk on cell phones, and listen to the radio using radio waves. These are all nonionizing forms of radiation. Visible light, radar, laser light, and ultraviolet light also fall into this radiation category.

Some forms of nonionizing radiation can damage tissues. For example, too much ultraviolet (UV) light from overexposure to the sun is known to cause some skin cancers—even moderate amounts of sun can cause skin burns.

In addition to the sun, UV waves are emitted by lights used in tanning beds, black lights, and lights used to pasteurize fruit juices. Some UV waves have an energy that is high enough to cause a structural change within atoms.

Visible light waves are also a form of nonionizing radiation, as is the light beam emitted by a laser. A laser beam can be visible, as in the case of a laser pointer, or a laser can emit an invisible beam of UV or infrared waves. With enough energy, lasers can cause biological damage, which is why they are useful in medicine to treat some skin cancers or to break up kidney stones.