Most Authorized Users (AU) and radiation workers will eventually be involved in an inspection by the Ohio Department of Health (ODH). The next routine inspection is expected to occur sometime during the fourth calendar quarter (likely November or December) of 2010. One method inspectors use to try to determine the status of regulatory compliance is review records, and observe and communicate with laboratory personnel. One of the Radiation Safety Office’s (RSO) roles is to provide training and guidance to build consistency and confidence in radioactive material (RAM) users. This role includes performing audits and surveys to ensure laboratories are using RAM safely while indirectly helping to prepare workers for ODH inspections.

The proper method to prepare for an inspection is to routinely perform laboratory practices correctly and consistently using good radiation safety practices. Follow the “Maxims of Good Radiation Laboratory Practice” in Section 5.4 of the Radiation Protection Procedures Manual (AU Manual). Document required information and maintain the records in an organized file. Keep the laboratory clean and orderly at all times. If you follow the preceding suggestions you should never be concerned about an ODH inspection.

Do not alter laboratory practices during an ODH inspection. Individuals should work with confidence and not fear or be intimidated by an inspector. Laboratory personnel should be courteous and professional with the inspector. Provide all requested records promptly. Maintain a positive attitude and give honest answers to questions. Don’t hesitate to say, “I don’t know, but I will find out” or “I don’t understand the question.” Write down any deficiencies noted during the inspection and contact the RSO for assistance in correcting those deficiencies.

The following are examples of questions you may be asked by an ODH inspector.

- What radionuclides do you work with?
- What training have you had?
- How did you get your RAM?
- Where is your RAM stock stored?
- What do you do with your empty RAM box?
- How much RAM do you use at a time?
- How do you keep track of your RAM inventory?
- What do you do prior to working with RAM?
- How do you survey your work area?
- How do you know your survey meter is working properly?
- What do you do after you have completed working with RAM?
- What do you do if you find contamination?
- How would you decontaminate a laboratory bench?
If you use tritium, how would you perform a survey?
What option do you have if you become pregnant?
Where is your radioactive waste stored?
How is your radioactive waste collected?
Where do you eat your lunch?
What do you do when you leave the laboratory and no one else is present?
What do you do if a stranger walks into the laboratory?
How do you secure your RAM?

TEMPORARY USE OF COUNTERS

Occasionally, liquid scintillation counters or automatic gamma counters break down. It is the responsibility of the Authorized User (AU) to have the counter repaired or replaced. But how does an AU fulfill monthly survey requirements, count wipe tests or radioactive samples during the period when a counter is inoperative? What options are available to an AU?

There are three options. The options include: 1) Obtain approval to temporarily use (≤ 30 days) another AU’s counter; 2) Obtain approval to temporarily use (≤ 30 days) a Radiation Safety Office (RSOf) counter; or 3) Add a “counting” room with an operable counter to the AU’s authorization.

Obtain approval to temporarily use another AU’s counter. An AU may request to use a working counter under the authorization of another AU. First, the AU/AU staff member needs to discuss possible solutions with other AU/AU staff. The AU seeking temporary use must send a request (e.g., email or fax) to the Radiation Safety Officer (RSO) requesting permission for use of the counter. The request must include the name of the AU who has oversight of the counter, along with the building and room number where the counter is located. The AU with oversight of the operable counter must also communicate with the RSO (e.g., email or fax) indicating agreement for the other AU to use the counter. Once both requests have been received and reviewed, the RSO will notify both AUs (usually by email) an approval for temporary use is granted for up to 30 days. A condition for the approval of temporary use will require a documented survey be performed at the end of the temporary use period.

Obtain approval to temporarily use a RSOf counter. Temporary approval for up to 30 days to count samples using a counter at the Radiation Safety Laboratory (RSL) or RSOf Reading Campus Lab is also an option. As with the previous example, an AU seeking temporary use must send a request (e.g., email or fax) to the RSO requesting permission for use of an RSOf counter. The RSO will review the request and notify the AU (usually by email) an approval for temporary use is granted for up to 30 days. When approval is received, the AU/AU staff will be instructed to contact the RSOf Package Room (558-9070) or the RSOf Reading Campus Lab (558-4222) to arrange a time to count samples. (Remember, the RSOf Reading Campus Lab is only manned from 1:00 – 2:00 pm each day.)

For the two options above, it must be noted the approval for temporary use of a counter only allows for counting of samples and not storage of radioactive material (RAM) in the counting room. RAM samples must be returned for storage and/or disposal to a laboratory on the requesting AU’s authorization.

Adding a “counting” room with an operable to the AU’s authorization. Permanent approval for use of a counter may be obtained by adding the associated counting room to an AU’s authorization. The Radiation Control and Safety Program (RCSP) requires all paperwork associated with a change in authorization be submitted at least 30 days in advance. The RSOf processes room commissioning requests as quickly as practical, and frequently the process can be completed in less than two weeks. To add a counting room, complete all applicable sections (1, 5 & 11) of a RS Form 6.0 (Application for Non-Human Use of Radioactive Materials) and submit the form to the RSOf. In section 11, both the applicant’s signature, and Department or Division Chair’s signature are required. Once the RSOf receives the RS Form 6, the RSOf staff will perform a commissioning review and survey of the room. After the room is commissioned, the AU will be notified. It is critical to remember, the counting room must be commissioned prior to counting any samples.

As a reminder, appropriate Personal Protective Equipment (PPE) (i.e., lab coat and gloves) are always required to be donned when handling RAM. Furthermore, whole body and finger ring dosimeters are required for many radionuclides (e.g., beta emitters with a maximum energy ≥ 250
keV and all energies of gamma and x-rays). Always remember to wear your lab coat, gloves, and whole body and finger ring dosimeters when transferring and/or handling possible RAM samples, even vials for counting.

**RECORDING ACCURATE DOSE RESULTS**

Authorized Users (AUs), radiation workers, students and other individuals who work in areas where ionizing radiation is used may be required to be monitored to determine the radiation dose they received while working with radioactive material (RAM) or x-ray equipment. Regulations and the Radiation Control and Safety Program (RCSP) require monitoring of external occupational dose to demonstrate compliance with the occupational dose limits. If monitoring is required, the regulations require the licensee or registrant to supply and require the use of individual monitoring devices (e.g., whole body dosimeters). The licensee or registrant must also ensure any individual issued a dosimeter routinely wears the dosimeter device at the unshielded location most likely to receive the highest radiation exposure.

Radiation workers may receive a radiation dose attributed to the work they perform and any ambient radiation exposure in their work environment. A dosimeter is worn to document the worker’s radiation dose from workplace radiation sources.

In addition to measuring occupational radiation dose, dosimeters also record “background” radiation. Background radiation has two primary sources; cosmic radiation and terrestrial radiation. The background dose within the recorded “occupational dose” is minimized by subtracting the background dose as determined by either a control dosimeter or as an estimate (estimated at 6 mrem/month). Subtracting background dose provides a more accurate record of a worker’s radiation dose from radiation sources in the workplace.

A scenario which may affect dosimeter results involves a radiation worker who has two or more employers and at both workplaces the worker’s assigned duties involves exposure to radiation, e.g., a part-time x-ray technician working at two hospitals. Regulations require the licensee or registrant to know the radiation dose a radiation worker receives under their license and/or registration as well as an individual’s total accumulated occupational dose. Each licensee or registrant will issue a dosimeter to the radiation worker if there is a possibility the radiation worker may receive more than 10 % of the annual occupational dose limit. Promptly reporting occupational dose information from personal monitoring by other licensees or registrants to the RSOf ensures your RCSP dose records accurately reflect the current year’s total occupational dose.

Could an unusually high dosimeter reading be the result of non-occupational sources of radiation or from exposure at another facility? The answer is yes. Millions of medical procedures are performed each year in the United States with some of the patients being occupational radiation workers and/or individuals who work with radiation workers. Medical procedures involving radiation include x-ray and nuclear medicine procedures. A common nuclear medicine procedure conducted is the heart stress test. For a heart stress test, a radiopharmaceutical containing either Tc-99m (T ½ - six hours) or Tl-201 (T ½ – three days) is administered to the patient. If the patient is a radiation worker and wore their assigned dosimeter during the stress test, the radiation exposure from the radiopharmaceutical retained in their body would be recorded on the dosimeter. The dose from medical procedures is not to be included in occupational doses; therefore, work issued dosimeters should not be worn during medical procedures and, depending on the procedure and the potential work related radiation exposure, possibly for a few weeks after. Consult the Radiation Safety Office (RSOf) if you have questions about wearing your dosimeter after being administered a radiopharmaceutical.

Listed below are dosimeter care and use tips to assist with achieving accurate dosimeter data.

- Never share or wear another person’s dosimeter. Each dosimeter is intended to be worn by only the designated person.
- Do not intentionally expose a dosimeter to radiation outside occupational exposure.
- If your dosimeter may be contaminated, notify the RSOf promptly and request a replacement dosimeter.
- Never wear your dosimeter when you receive a medical x-ray or other medical radiation procedure.
• Store your dosimeters in a safe place at work rather than at home.
• Store your dosimeters away from sources of radiation.
• Store your dosimeters away from sources of heat (some dosimeter types are sensitive to heat).

When dosimeter results indicate a radiation worker has received an unusual dose, e.g., an unexplained high dose, an investigation may be initiated by the RSOf. Dose results for radiation workers are important legal records. Achieving accurate results is a combination of wearing dosimeters correctly and following procedures.

AUDIT QUESTION & ANSWERS

Q. Do all memorandums received by an Authorized User (AU) from the Radiation Safety Office (RSOf) have to be posted?

No. Memorandums regarding audits having been performed, decommissioning changes, training and inventory do not have to be posted. The “posting requirement” only pertains to recent noncompliance and area of concern notices. When a noncompliance or area of concern is issued, the AU must ensure the noncompliance(s) and/or area(s) of concern, and associated corrective action are communicated with all radiation workers under their authorization. The AU may accomplish this requirement in one of two ways. One option is to post the noncompliance and/or area of concern notices in a visible location for lab personnel to reference. The second option is for the AU or delegate to verbally or in writing, inform all radiation workers of the noncompliance(s) and/or area(s) of concern, and clearly document this communication. Either communication method must include the corrective action implemented.

RAM SECURITY

Recently, thefts within laboratories has been increasing. Therefore, ensuring radioactive material (RAM) security continues to be a significant concern. Always be aware of who is in your laboratory and confront any unfamiliar individuals. Keep RAM locked up or under direct observation at all times to prevent an unauthorized person from removing the RAM or gaining access to the RAM. The last person leaving a RAM–use laboratory should ensure the door to the laboratory is either locked or all of the RAM inside the room, including waste, is locked up.

RSOF ASSISTANCE

Authorized Users (AU) and/or their staff are encouraged to call the Radiation Safety Office (RSOf) for assistance with any radiation safety concerns. The RSOf will provide advice and/or assistance to AUs or their staff on solutions to problems or difficulties they are experiencing. The assistance includes procedures to reduce radiation exposure and/or contamination, and practical solutions to problems that may place the authorization in a noncompliant situation.

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