The ultimate goal of the University of Cincinnati’s (UC) Radiation Control and Safety Program (RCSP) is to support the beneficial uses of radiation sources while minimizing worker and general public exposure to ionizing radiation. The RCSP is committed to keeping doses ALARA (As Low As Reasonably Achievable) and ensuring a safe working environment. ALARA mandates that radiation exposure to individuals (e.g., Authorized Users (AU), radiation workers, members of the general public) be kept as far below regulatory limits as practical.

The Ohio Department of Health (ODH) requires all persons who work with radioactive material (RAM) or radiation generating equipment (RGE) be monitored (e.g., register for and wear a radiation dosimeter) if there is the possibility of receiving a dose greater than 10 percent of the regulatory limits. The annual regulatory limits for a radiation worker exposure are:

- 5 rem to the whole body
- 15 rem to the lens of the eye
- 50 rem to the hands and forearms, feet, and ankles
- 50 rem to the skin of the whole body/skin of any extremity

UC’s license/registrations require that all individuals using RAM/RGE which emits beta radiation with maximum energies > 250 keV or gamma/x-ray radiation of any energy be issued and wear dosimeters.

Landauer, Inc. is the current dosimeter vendor for UC’s RCSP and provides dosimeters that are exchanged monthly. (Pickup of new dosimeters must be completed by the third business day of the month and drop off of old dosimeters completed by the tenth of the month.) Old dosimeters are shipped to Landauer, Inc. for processing. Once processed, the dosimeter records are mailed to the Radiation Safety Office (RSOf) for review. Occasionally, a dosimeter report will indicate a result that requires follow-up. The result may be directly related to the extent an individual was working with RAM or RGE (e.g., Did you work significantly more hours or perform significantly more procedures involving radiation during the period?) The result may also be an indication good radiation safety practices are not being observed (e.g., Is it possible the dosimeter was near a radiation source when you were not present?

Did you accidentally expose yourself to...
a beam of radiation?). Dosimeter reports are reviewed for many items, including doses requiring a formal ALARA investigation. The RCSP has developed an ALARA investigational program which sets investigation limits below the regulatory limits. When an individual’s recorded dose exceeds an ALARA limit an investigation appropriate for the ALARA level is initiated. ALARA I investigations are initiated when an individual’s whole body dosimeter results indicate $\geq 125$ mrem or ring dosimeter results indicate $\geq 1250$ mrem in a calendar quarter. ALARA II investigations are initiated when an individual’s whole body dosimeter results indicate $\geq 375$ mrem or ring dosimeter results indicate $\geq 3750$ mrem in a calendar quarter.

Radiation workers whose dosimeter results indicate a dose exceeding the ALARA I level will be informed in writing of the dose and will be required to complete an ALARA Investigation Evaluation form summarizing their radiation use/exposure for the time period. Once returned, the ALARA Investigation Evaluation Form is reviewed by the RSOf for optimal use of radiation safety practices and follow-up is performed as necessary. ALARA II level investigations include completion of an ALARA Investigation Evaluation Form as well as a meeting during which the RSOf staff observes the individual’s radiation safety practices and procedures. If poor radiation safety practices were being used by an individual, corrective action is initiated and/or retraining is performed. Upon completion of an ALARA investigation, a report summarizing the investigation is drafted and forwarded to the Radiation Safety Officer (RSO). The RSO reviews the report for applicable action and presents the findings to the Radiation Safety Committee (RSC).

It is critical individuals who use RAM and RGE understand the importance of minimizing their radiation exposure. Individuals must continuously use good radiation safety practices and the basic principles of TIME, DISTANCE, and SHIELDING to keep their own radiation exposure and those around them ALARA.

**SHARED RADIOACTIVE MATERIAL ROOMS**

Many rooms commissioned for radioactive material (RAM) use have multiple Authorized Users (AU) approved to use the room. When this type of situation exists, individual AU’s should be aware of their limitations and responsibilities, as well as the advantages and disadvantages associated with sharing a RAM use room.

Sharing a RAM use room does not automatically result in shared radionuclides, RAM, or radiation workers. AU’s in a shared RAM use room frequently are not authorized for every radionuclide authorized for use in the room. Radionuclide(s) allowed to be used in a room are limited to those listed on each individual AU’s authorization. For example, one AU’s authorization may allow P-32 and S-35 use while another AU’s authorization may allow C-14 and H-3 use. Four different radionuclides are authorized for use in the shared room, but the first AU is authorized to use only two of the radionuclides (P-32 and S-35) and the other AU is only authorized to use the other two radionuclides (C-14 and H-3). Sharing a RAM use room also does not grant permission for an AU to use RAM in another AU’s inventory unless transfer is approved by the Radiation Safety Office (RSOf). RAM may only be used by the AU or radiation worker under the supervision of the AU it was ordered. The same limitation applies to radiation workers. A radiation worker may only use RAM within the inventory of the AU(s) whose supervision they are working under. A radiation worker may use all of the RAM in a shared room if the individual is listed as a radiation
Record cards are completed and submitted for each AU with RAM waste in the container.

If a noncompliance or area of concern is observed (e.g., eating, drinking, smoking), the noncompliance or area of concern is issued to all AU’s listed on the shared room unless a “responsible” AU is identified or an AU can be eliminated from the noncompliance or area of concern. A “responsible” or “not responsible” AU may be “identified” by one of the following methods.

- The actual noncompliant AU/individual is identified.
- An AU agrees to take full responsibility for the noncompliance or area of concern.
- An AU is identified as the only AU under whose authorization the noncompliant item could have occurred (e.g., noncompliance involves P-32 and is the only AU with P-32).
- An AU can be eliminated based on the information available (e.g., noncompliance involves P-32 and the AU does not have P-32 in their inventory/authorization).

The security status for AU’s of a shared RAM use room remains the same. It is each individual AU’s responsibility to ensure all RAM on their inventory is either locked up or maintained under constant surveillance (direct line of sight) at all times. The primary method for securing RAM is to lock up the RAM. Locking up RAM as close to the source as possible will best prevent a noncompliance (e.g., lock refrigerator versus relying on lab door locks). Responsibility for RAM security lies with the AU or radiation workers under the AU.

In shared areas, communication is critical between AU’s and associated radiation workers so noncompliances and/or areas of concern are eliminated.

Laboratory equipment may be shared among AU’s. Like shared space, it is recommended the AU/radiation worker perform a thorough survey of any shared equipment (e.g., hoods, centrifuges) before use.

RAM waste containers and/or storage areas may also be shared. Although not a common practice, the option is available. A single Radioactive Waste Container Log Sheet (RS Form 3) may be utilized (attached to the RAM waste container) to record RAM waste information. All AU’s sharing the RAM waste container must have their name recorded at the top of the log sheet. When the RSOIf is notified of a RAM waste pick up, ensure all Radiolotope Use Worker and has received lab-specific training from all of the AU’s authorized in the shared room.

It is strongly recommended (and good radiation safety practice) that an AU/radiation worker perform a thorough survey for contamination prior to working with RAM in a shared room. A pre-work survey best ensures contamination does not exist from a previous procedure (whether from the individual performing the survey or from another individual).

There are distinct advantages and potential disadvantages for AU’s who share a RAM use room. An advantage is AU’s may also “share” surveys. Required documented surveys (e.g., monthly survey) may be performed by one of the AU’s if the survey covers all the AU’s RAM work area. It is not uncommon for one AU to take responsibility and perform all the surveys and/or for AU’s to rotate the task of performing surveys. If surveys are shared, all AU’s should ensure the survey was completed and be aware of the results. Never assume another AU performed the survey. If the survey is not completed, all AU’s who share the RAM use room may be issued a noncompliance. (Note: Documented surveys may be “shared”. “No-use” documentation cannot be shared.)
WARM WEATHER PPE

Personal Protective Equipment (PPE) is worn to protect an individual from contamination. No skin should be exposed where the possibility exists for contamination. Shorts and skirts with bare legs, and open-toed shoes (e.g., sandals) do not provide adequate protection should an accident involving radioactive material (RAM) occur. Authorized Users (AU) need to remind their staff and pay close attention to ensure laboratory workers wear proper protection in warm weather.

INDIVIDUAL AU REPORTS

There is a new feature on the Radiation Safety Website (www.uc.edu/radsafety). The new feature is called “Individual AU Reports.” Using the feature, an Authorized User (AU) may obtain reports applicable to their radioactive material (RAM) authorization(s). The reports include, the AU’s authorization(s), the AU’s compliance history (“violation”), the AU’s current inventory (unsealed and if applicable, sealed), a list of radiation workers under the authorization and their training, and a list of radiation workers who need training (this last report will be the most useful towards the end of the year when the training deadline begins to approach). An AU logs into the reports using their UC Central Login (6+2) user name and password. (This would be the same user name and password used to sign into the UC mail).

A minor issue is known with AU’s who are not in the UCADS domain. The simple fix requires the programmer enter domain specifics on an AU-by-AU basis. (Unfortunately, the programmer could not get the information regarding each AU’s domain.) When printing reports, export to Acrobat PDF using the export function within the report (on the toolbar). When a date is requested, either click on the calendar or type a date using the format mm/dd/yy. If an AU has trouble using the new feature, contact the Radiation Safety Office (RSOf) for assistance.

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

RSOF STAFF

Vicki Morris, Radiation Safety Officer
Mark Cornelissen, Assistant Radiation Safety Officer
Dramane Konate, Assistant Radiation Safety Officer
Ken Egan, Senior Radiation Safety Specialist
Edward Case, Radiation Safety Specialist
Beth Boston, Radiation Safety Specialist
Jason Collier, Radiation Safety Specialist
Dave Root, Senior Health Physics Technician
Mark Powers, Senior Health Physics Technician
Dave Kobza, Senior Health Physics Technician
Dick Henderer, Staff Health Physics Technician
Janine Sumrall, Staff Health Physics Technician
Margaret Frank, Junior Health Physics Technician
Carolyn Hurt, Business Manager
Debbie Kirkpatrick, Program Manager
Robin Davis, Administrative Secretary
Patricia Kerley, Records Management Officer

We are on the web:
www.uc.edu/radsafety
Phone: 513-558-4110
Fax: 513-558-9905

Radiation Safety Office
University of Cincinnati
170 Panzeca Way
P.O. Box 670591
Cincinnati, OH 45267-