UNIVERSITY OF SOUTH CAROLINA
RADIATION SAFETY POLICY NO. 9

USC NOVEMBER 1985
(Revised May 2011)

Decontamination of Laboratories and Personnel
A. Policy and Purpose

This policy is designed to provide safe and effective methods for the decontamination of laboratory work areas, equipment and personnel in order to minimize personnel radiation exposure and prevent the spread of contamination.

B. Definitions

1. **external contamination** - contamination found on the skin or hair;

2. **internal contamination** - contamination of the blood and organs by inhalation, ingestion, or absorption of radioactive materials.

C. Responsibilities

1. The **principal investigator** shall ensure that laboratory contamination is adequately contained and proper decontamination procedures are utilized, when necessary.

2. The **individual user** is responsible for informing the principal investigator of any contamination (local or widespread) found in the laboratory and will work with the principal investigator in decontaminating the laboratory and/or personnel, if necessary.

3. The **radiation safety officer** will oversee decontamination efforts when a significant portion of the laboratory is contaminated and will ensure that laboratory and personnel are safely decontaminated.

D. Procedures and Safety Practices

1. **Laboratory Decontamination:**

   a. If laboratory contamination is localized (e.g., a small portion of a workbench or floor) and is found to be more than three times the normal background levels for the laboratory (determined by GM survey or smear results), then decontamination procedures must be instituted by laboratory personnel.

   b. If laboratory contamination is widespread (e.g., on workbench, chairs, floor, refrigerator, etc.) or if removable contamination in any area exceeds 1,000 dpm alpha or 20,000 dpm beta/gamma, then decontamination procedures must be supervised by the Radiation Safety Officer or his designate.

   c. Attempts should be made to keep contamination localized. Use dry paper towels to absorb liquid or cover a dry spill with a damp cloth.
d. To reduce the further spread of contamination, eliminate all traffic in the area. If floor contamination is extensive, rope off the area and lock all doors leading to the area. A step-off area must be established at the contamination boundary and shoes, lab coats, gloves, etc. must be removed in the step-off area to avoid spreading contamination. All personnel leaving a contaminated area must have their hands, feet, shoes and clothing surveyed.

e. Radcon® or cleaners containing alcohol (409®, Fantastik®) are usually most effective in removing loose contamination from hard surfaces. Gloves and protective clothing must be worn when decontaminating an area. Generally, glassware and counter tops can be decontaminated by repeated washings.

f. Survey the area repeatedly with a GM counter or by taking wipe samples. Continue to clean the area until contamination is removed. If contamination cannot be removed, contact the Radiation Safety Office for further instruction.

2. Personnel Decontamination

a. External contamination (even in small amounts) must be treated seriously. External contamination results in local skin exposure. Radioactive materials can penetrate intact skin, especially when organic solvents are present. Contamination may also be ingested or inhaled and may be spread to other areas or personnel. Therefore, it is most critical to remove loose contamination as quickly and safely as possible.

1). The following procedure is to be used to decontaminate the skin:

   a). Wet contaminated area and apply mild soap; use luke-warm water-not hot water;

   b). Work up a good lather and use a soft bristled brush, if necessary;

   c). Repeat at least 3-4 times; monitor between washes;

   d). If necessary, use a mild abrasive such as lava soap or a paste of cornmeal and Tide, 50/50, wash and dry the skin and monitor again.

2). The following procedure is to be used to decontaminate the hair:

   a). Shampoo hair with head deflected backwards; wear gloves!
   b). Rinse with 3% citric acid; wash again and rinse;
   c). Dry hair with dryer and monitor.

3). If eyes are contaminated:
a). Spread eyelids;
b). Rinse thoroughly with water in a direction from the nose to the lateral angle of the eye.

4). If whole body contamination exists:
   a). Remove all clothing;
   b). Shower immediately with water; brush with mild soap;
   c). Repeat at least 4 or 5 times;
   d). Towel dry and monitor;
   e). If unsuccessful, await for physician's orders.

5). Any wound acquired in the presence of radionuclides must be considered contaminated until proven otherwise. The following procedure is to be instituted:
   a). Rinse wound under running water;
   b). Delimit contaminated area with waterproof material;
   c). Decontaminate skin around the wound;
   d). Remove wound cover and apply a sterile dressing;
   e). Notify the Radiation Safety Officer immediately.

b. Internal Contamination:

1). If internal contamination is suspected, the following action is to be taken:
   a). Notify the Radiation Safety Officer;
   b). Determine the time of accident, the type of uptake (ingestion, inhalation, and absorption), the isotope involved, and the chemical nature and level of activity of the contaminant.
3. Decommissioning of a laboratory

When a principal investigator is vacating a laboratory, all equipment must be decontaminated, all radioactive materials and chemicals must be disposed in a proper manner and all work surfaces and storage locations must be free of any contaminants (both radioactive and non-radioactive). The University has developed a laboratory decommissioning policy that must be followed under these circumstances. It can be found at the Environmental Health & Safety website at:

http://ehs.sc.edu/Acrobat/EHS-M-017.pdf

E. References

