

GENERAL RADIATION PROTECTION REQUIREMENTS AND PRECAUTIONS

1. There shall be no smoking, eating, drinking, applying cosmetics, or storage of food in any area where unsealed and unpacked sources of radioactive materials are used, handled, transferred, or stored.
2. Dogs or other pets are not allowed in radioisotope laboratories or area.
3. There shall be no mouth pipetting of radioactive solutions.
4. Whenever practical, the user should perform a trial experimental run using inactive (or low activity) material to establish the adequacy of procedures and equipment.
5. Before performing operations on a source of radioactive material, radiation levels shall be measured. Handling tongs, or a suitable remote-handling device shall be used for handling a source or container that emits a dose rate, at contact, in excess of 0.1 rem per minute (1 mSv/min), unless specifically authorized by the Radiation Safety Committee.
6. When performing operations that might produce airborne contamination (i.e., evaporations, sanding, or grinding, transfers of unsealed powdered or volatile radioactive material), exhaust ventilation approved by the Radiation Safety Committee shall be used.
7. Protective gloves, a lab coat, and closed shoes (heel and toe) with no perforations shall be worn at all times during operations involving the handling of unsealed radioactive materials.
8. After handling unsealed radioactive material, wash hands before leaving the laboratory.
9. Materials and equipment shall be surveyed before removal from a potentially contaminated area.

SECURITY

Non-exempt quantities of radioactive material in a laboratory shall be under the constant surveillance and immediate control of an authorized user or secured from unauthorized removal from the laboratory.

CAUTION SIGNS AND LABELS

1. Each laboratory storing or using radioactive material must be posted with appropriate signs, in conformity with 105 CMR 120.
2. Each container of radioactive material shall be labelled by the user in conformity with the following procedures, which meet State regulations:
 - a) Each container holding radioactive material more than the quantities listed in 105 CMR 120.242 must have a durable, clearly visible label bearing the radiation caution symbol and

the words "CAUTION RADIOACTIVE MATERIAL" or "DANGER RADIOACTIVE MATERIAL".

- b) These labels should state the quantities and kinds of radioactive materials in the containers, and date of measurements of quantities.
- c) Labeling is not required for laboratory containers, such as beakers, flasks, and test tubes used transiently in the laboratory procedures while the user is present.
- d) For purposes of these labeling requirements, when there is a combination of radionuclides in known amounts, the limit of the combination will be derived as follows: Determine for each radionuclide in the combination the ratio between the quantity present and that quantity listed for the radionuclide in 105 CMR 120.242. The sum of ratios for all radionuclides in the combination may not exceed 1.

WORK SURFACES

All work areas (bench tops, hoods, floors, etc.) as well as storage areas adjacent to permanent setups and sinks should be covered at all times with stainless steel, plastic trays, or other impervious materials. For some purposes plastic backed absorbent paper will be satisfactory. If such paper is used, it should be discarded frequently to prevent the spread of contamination.

PERIODIC SURVEYS OF RADIATION AREAS

The immediate areas (hoods, bench tops and storage areas) where radioactive materials are used should be checked for contamination periodically by the radiation workers in that laboratory. In addition, these areas should be inspected every time there is reason to suspect a contamination incident.

RADIOACTIVE CONTAMINATION OF AREAS

No radioactive contamination can be tolerated. Exceptions are active work areas clearly marked with the standard radiation caution signs or tape. Any contamination not confined to protected surfaces should be reported immediately to the Licensed Investigator. The Licensed Investigator will supervise the decontamination of these areas or equipment.

DECONTAMINATION OF AREAS CONTAMINATED WITH RADIOACTIVITY

Preparations for decontamination should begin promptly after you have determine the extent of the contamination. The individual responsible for the contamination will generally do the clean-up under the supervision of the Licensed Investigator. The area or equipment should be considered contaminated until proven otherwise.

Equipment purchased with grant funds will not be released by the College until laboratories under a departing investigator have been inspected and release by the Radiation Safety Officer in writing. It is the responsibility of the departing investigator to accomplish any necessary decontamination.

DECONTAMINATION OF PERSONNEL CONTAMINATED WITH RADIOACTIVITY

Notify Licensed Investigator immediately after a contamination accident. Wash body area involved thoroughly for 2 or 3 minutes using only mild soap and lukewarm water. If this procedure is not immediately and completely effective, notify the Radiation Safety Officer.

AEROSOLS, DUSTS AND GASEOUS PRODUCTS

Procedures involving aerosols, dusts or gaseous products, or procedures that might produce airborne contamination shall be conducted in a hood, glove box or other suitable closed system. All releases from such systems shall not exceed the maximum permissible concentration in air for the radionuclide in question. See 105 CMR 120.296 for appropriate values. Where practical traps should be incorporated in the experimental setup to insure that environmental releases are as low as possible. Radioactive gases or materials with radioactive gaseous daughters must be stored in gas-tight containers and kept in areas having approved ventilation. Hoods used for radionuclide work must be tested to insure that they meet the minimum requirements for air velocity at the face of the hood.

IODINE VAPORS

Procedures that could generate iodine vapors shall be conducted in a glove box or radionuclide hood with an adequate flow rate and charcoal filters. Advice must be sought from the Radiation Safety Officer before conducting experiments with iodine and the facilities should be evaluated for containment purposes.