

<b>Johns Hopkins Safety Manual</b>	<i>Policy Number</i>	<b>HSE 904</b>
<i>Subject:</i>	<i>Last Review Date</i>	09/23/08
<b>Procedures For Using Radioactive Materials</b>	<i>Page</i>	1 of 2

1. Proper Posting of Laboratories, Areas, and Equipment

- 1.1. A "CAUTION RADIOACTIVE MATERIALS" sign must be conspicuously posted on the doors to laboratory areas where radioactive materials are being used or stored (see Appendix D). The name and home phone numbers of the individual responsible for the posted area should be shown in the designated place on the sign in order to facilitate contact in case of emergency. The authorized user shall be responsible for seeing that the posted information is current. The signs must not be removed from any room except by JHMI Radiation Control Unit personnel following an inspection survey.
- 1.2. Storage areas shall be conspicuously marked with a "CAUTION RADIOACTIVE MATERIAL" sign. In addition, containers in which materials are transported or stored shall bear a durable, clearly visible label bearing the radiation caution symbol and the words "CAUTION RADIOACTIVE MATERIALS". Container labels shall also state the quantities and kinds of radioactive materials in the containers.
- 1.3. Radiation areas in the laboratory, i.e., areas where radiation levels might expose individuals to 5 millirem in any one hour; or in any five consecutive days, a dose in excess of 100 mrem, shall be posted with the sign "CAUTION RADIATION AREA".
- 1.4. All equipment contaminated with radioactive material shall be marked with signs, decals, or other conspicuous means. Labeling shall not be required for laboratory containers such as beakers, flasks and test tubes, used transiently in laboratory procedures during the presence of the user.
- 1.5. All laboratories that are authorized for the storage or use of radioactive materials must be posted with a sign that states that eating, or drinking is prohibited.
- 1.6. All signs referred to in this section are available from the JHMI Radiation Control Unit.

2. Shielding of Sources

The JHMI Radiation Control Unit will check during their periodic surveys of the laboratory to insure that adequate shielding is used in all radiological operations. The total amount of shielding materials that will be necessary will depend on the amount of activity and the type of radiation involved. In some instances, it may be necessary to construct a "hot cell" or a large shielding barrier to meet shielding requirements. The Radiation Control Unit will be available for consultation on all shielding problems encountered.

3. Aerosols, Dusts and Gaseous Products

- 3.1. Procedures involving aerosols, dusts or gaseous products or procedures which might produce airborne contamination in excess of regulatory limits shall be conducted in a hood, dry box, or other suitable closed system.
- 3.2. All release from such systems shall not exceed the maximum derived air concentration for nuclide in question. However, where practical, traps should be incorporated in the experimental set-up to insure that environmental releases are as low as possible.
- 3.3. Radioactive gases must be stored in gas-tight containers and must be kept in areas having approved ventilation.
- 3.4. Hoods to be used for radioisotope work should be tested periodically to insure that they meet the minimum requirements for air velocity at the face of the hood. Check with Radiation Control Unit for hood performance specifications and the requirement for use (isotopes and activities).

4. Work Surfaces

Work areas should be covered at all times with stainless steel or plastic trays, uncracked glass plates, or other impervious materials. For some purposes, a plastic-baked absorbent paper will be satisfactory. However, if such paper is used, it should be discarded frequently to prevent active materials from dusting off the surface.

5. Periodic Surveys of Radiation Areas

All radioactive materials laboratories shall be surveyed for contamination on a weekly basis. The weekly surveys shall be conducted by the Authorized User (or designee). Additional surveys shall be conducted each and every time

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there is reason to suspect a contamination incident. Records shall be kept on both positive and negative survey results in chronological sequence in a binder specifically for that laboratory. Survey records must be readily available for review by the Radiation Control Unit. A survey entry must be made for each week for each laboratory. The entry shall be either the results of the contamination survey or a statement that radioisotopes have not been used since the last survey.

6. Laboratory Monitors

Each authorized user (other than those where H-3 is used exclusively or where only exempt quantities of other radionuclides are handled) must be equipped with a portable or semi-portable monitoring device suitable to the radioactive materials authorized, for use for personnel and area monitoring.

7. Removal of Equipment from the Laboratory

Once used for radioactive substances, equipment shall not be used for other work or sent from the area to cleaning facilities, repair shops, or returned to the source of supply, until demonstrated to be free of contamination.

8. Repair of Maintenance of Equipment in the Laboratory

Equipment to be repaired by shop and maintenance personnel, or by commercial service contractors, shall be demonstrated to be free of contamination prior to servicing. If it becomes necessary to make emergency repairs on contaminated equipment, the work will be supervised by the Radiation Safety Officer, who will assure that the necessary safeguards are taken. It is the responsibility of the laboratory personnel to request this supervision from the JHMI Radiation Control Unit.

9. House Vacuum Lines

House vacuum lines are vulnerable to contamination. When laboratory vacuum is used to manipulate radioactive materials, a suitable trap must be employed to insure that the building vacuum pump system do not become contaminated. A general set-up for a simple bench-top aerosol /fluid trap is detailed in the Johns Hopkins Institutions Biosafety Manual.

10. Radioactive Contamination of Areas

In general, no radioactive contamination can be tolerated. Exceptions to this will include certain hood trays, stainless steel trays, Kimpak covered surfaces, or other equipment which is used frequently for active work and which will be clearly marked with the standard radiation caution signs or stickers. Any contamination that is not confined to protected surfaces should be reported immediately to the JHMI Radiation Control Unit. The JHMI Radiation Control Unit will supervise the decontamination of such areas or equipment.

11. Procedures Involving the Use of Radioactive Materials in Animals

Prior to performing procedures involving animals and radioactive materials, the researchers must consult with the JHMI Radiation Control Unit to formulate a safe procedure.

REVIEW CYCLE

Annually