

<b>Johns Hopkins Safety Manual</b>	<i>Policy Number</i>	<b>HSE 909</b>
<i>Subject:</i>	<i>Last Review Date</i>	09/23/08
<b>Emergencies Involving Radioactive Materials</b>	<i>Page</i>	1 of 2

## 1. Preventive Measures

Many accidents involving radioactive materials can be avoided if the recommended procedures for safe handling are followed by all laboratory personnel. New techniques and procedures should be approved by the Radiation Safety Officer and, when necessary, tested by dummy runs. Where danger of contaminating the person exists, suitable protective clothing and gloves shall be mandatory. Workers shall be thoroughly familiar with the location of telephone, exits and all available safety devices.

### 1.1. Spills

Where danger of spills of radioactive solution exists, secondary pans and trays shall always be used. Containers should be kept covered whenever possible, and only those amount of radioactive solutions that are immediately necessary should be drawn from stock. Double containers, tightly gasketed, and with chemically inert absorbers, should be used for transporting radioactive solutions if spillage will create a hazardous condition. When feasible, radioactive solution should be stored in similar containers. Laboratory benches or hoods where spills may occur should not drain to the sewer but to separate containers.

### 1.2. Dusts, Mists, Fumes, Organic Vapors and Gases

Adequate forced ventilation is always a first precaution to be considered in laboratories working with radioactive dusts, mists, fumes, organic vapors or gases. The use of glove boxes and hoods, provided with adequate exhaust fans, is mandatory. Floors of hoods and glove boxes should be covered with disposable papers to catch dust, spray or condensate. Radioactive gases and volatile materials, whether, in the laboratory or in storage areas, should always be kept in gasketed, gas tight containers.

### 1.3. Fires and Other Major Emergencies

If possible, all radioactive materials in the laboratory not immediately in use should be stored in a manner that will safeguard against possible accidental spread of radioactive contamination in the event of a major disaster.

## 2. Emergency Procedures

### 2.1. Minor Spills Involving No Radiation Hazard to Personnel

- a. Notify all other persons in the room at once.
- b. Permit only the minimum number of persons necessary to deal with the spill into the area.
- c. Confine the spill immediately.
  - Liquid Spills:
    - Don protective gloves
    - Drop absorbent paper on spill
  - Dry Spills:
    - Don protective gloves
    - Dampen thoroughly, taking care not to spread contamination
- d. Notify the JHMI Radiation Control Unit as soon as possible. The Radiation Safety Officer will be responsible for the remaining steps.
- e. Decontaminate.
- f. Monitor all persons involved in the spill and cleaning.
- g. Permit no person to resume work in the area until a survey is made.
- h. Prepare a complete history of the accident and subsequent activity related thereto for the necessary records.

### 2.2. Major Spills Involving Radiation Hazard to Personnel

- a. Notify all persons not involved in the spill to vacate the room at once.
- b. If the spill is liquid, and the hands are protected, right the container.
- c. If the spill is on the skin, flush thoroughly.
- d. If the spill is on clothing, discard outer or protective clothing at once.
- e. Switch off all fans.
- f. Vacate the room.
- g. Notify the JHMI Radiation Control Unit as soon as possible. The Radiation Safety Officer will be responsible for the remaining steps.
- h. Take immediate steps to decontaminate personnel involved, as necessary.

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<b>Emergencies Involving Radioactive Materials</b>	<i>Page</i>	2 of 2

- i. Decontaminate the area (Personnel involved in decontamination must be adequately protected).
  - j. Monitor all persons involved in the spill and cleaning to determine adequacy of decontamination.
  - k. Permit no person to resume work in the area until a survey is made.
  - l. Prepare a complete history of the accident and subsequent activity related thereto for the necessary records.  
Send a copy of the report to the Radiation Safety Committee (to be reviewed during their quarterly meeting) and appropriate administrators if any individual has received an abnormal radiation exposure.
- 2.3. Accidents Involving Radioactive Dusts, Mists, Fumes, Organic Vapors and Gases
- a. Notify all other persons to vacate the room immediately.
  - b. Hold breath and close escape valves, switch on air circulating devices, etc., if time permits.
  - c. Vacate the room.
  - d. Notify the JHMI Radiation Control Unit at once.
  - e. Ascertain that all doors giving access to the room are closed and post conspicuous warnings or guards to prevent accidental opening of doors.
  - f. Report at once all known or suspected inhalations of radioactive materials. The JHMI Radiation Control Unit will be responsible for the remaining steps.
  - g. Evaluate the hazard and the necessary safety devices for safe re-entry.
  - h. Determine the cause of contamination and rectify the condition.
  - i. Decontaminate the area.
  - j. Perform air survey of the area before permitting work to be resumed.
  - k. Monitor all persons suspected of contamination.
  - l. Prepare a complete history of the accident and subsequent activity related thereto for the necessary records.  
Send a copy of the report to the Radiation Safety Committee and appropriate administrators, if any individual has received significant radiation exposure.
- 2.4. Injuries to Personnel Involving Radiation Hazard
- a. Wash minor wounds immediately, under running water while spreading the edges of the gash.
  - b. Report all radiation accidents to personnel (wounds, overexposure, ingestion, inhalation) to the Radiation Safety Officer as soon as possible.
  - c. Call a physician to treat the injuries at once.
  - d. Permit no person involved in a radiation injury to return to work without the approval of the Radiation Safety Officer and the attending physician.
  - e. Prepare a complete history of the accident and subsequent activity related thereto for the necessary records.  
Send a copy of the report to the Radiation Safety Committee and appropriate administrators.
- 2.5. Fires or Other Major Emergencies
- a. Alert all personnel in immediate danger.
  - b. Report the fire immediately regardless of size
    - i. Pull nearest fire box.
    - ii. Dial 5-4444 tell the operator the building involved, the floor, the kind of fire, your name and extension number.
  - c. Try to put out manageable fires. If fire is not manageable, leave the area immediately, close the door, wait for assistance.
  - d. Permit no person to resume work until work conditions allow.
  - e. Monitor all persons involved in combating the emergency.
  - f. Prepare a complete history of the emergency and subsequent activity related thereto for the necessary records. Send a copy of the report to the Radiation Safety Committee and appropriate administrators, if any individual has received significant radiation exposure.

REVIEW CYCLE

Every three years.