

RADIOACTIVE MATERIALS SPILLS

The instructions contained in this SOP provide additional guidance regarding spills and decontamination of radioactive materials and supplement the procedures provided in the EHS SOP, **Radiation Accidents**. Any spill of radioactive material shall be cleaned up immediately. Spills are classified as major or minor using the following table.

Table 1. Radioactive Material Spill Classification

| Radionuclide | Minor Spill Level | Major Spill Level |
|--------------------|-------------------|-------------------|
| C-14 | ≤1 mCi | > 1 mCi |
| H-3 | ≤10 mCi | > 10 mCi |
| P-32/33 | ≤ 0.1 mCi | > 0.1 mCi |
| S-35 | ≤ 1 mCi | > 1 mCi |
| I-125 | ≤0.1 mCi | > 0.1 mCi |
| Ca-45 | ≤1 mCi | > 1 mCi |
| Cr-51 | ≤ 10 mCi | > 10 mCi |
| Se-75 | ≤1 mCi | > 1 mCi |
| Other Radionuclide | ≤0.1 mCi | > 0.1 mCi |

Immediate Spill Response Procedures

For **minor spills**, perform the following:

- Don appropriate personal protective equipment (e.g., nitrile gloves, laboratory coat, safety spectacles).
- Right the container of spilled liquid.
- Notify all persons in the area at once.
- Permit only the minimum number of persons in the area necessary to deal with the spill.
- Confine the spill immediately.
- Drop absorbent paper on a liquid spill; dampen dry spills to prevent further spread.
- Decontaminate using a monitor to check the progress of the work.
- Monitor all persons involved in the spill and the cleaning.
- Make note of the spill in survey records. Perform and document contamination surveys to demonstrate successful decontamination.
- Contact the EHS Office at 402.472.4925 for assistance as necessary.

For **major spills**, perform the following:

- Don appropriate personal protective equipment (e.g., nitrile gloves, laboratory coat, safety spectacles).
- Right the container of spilled liquid.
- Notify all persons not involved in the spill to vacate the area at once.
- If the spill is on clothing, take necessary precautions to prevent direct contamination of skin.
- Vacate the room and restrict entrance until the RSO or his/her designee is on site and takes command.
- Contact the RSO immediately at 402.472.4925 or after hours dial 911.
- Take immediate steps to check and decontaminate involved personnel.
- Prepare a record of the cause of the accident and names of personnel involved.

Personnel Decontamination

If an individual is injured, medical attention of the injury takes priority over radioactive material decontamination. Contaminated clothing should be carefully removed and placed in an appropriate radioactive waste container.

If contamination of the skin occurs, contact the RSO at 402.472.4925. Skin decontamination is performed by progressive cleansing of the contaminated location using mild cleaning agents such as soap and water. Use warm water when performing skin decontamination. Do not use hot or cold water for skin decontamination.

Decontamination is monitored using a survey instrument or swipe survey as appropriate. The skin decontamination end point is reached when:

- No further decrease in contamination is achieved through repeated cleansing.
- Contamination is considered low enough to no longer be a significant hazard.
- Further decontamination would be more harmful than helpful.

Decontamination of Facilities/Equipment

When performing decontamination of facilities/equipment, minimum PPE consists of laboratory coat, eye protection, gloves and closed toe shoes.

Typically, areas contaminated with radioactive materials can be decontaminated using household cleaners. Preparations for decontamination should begin promptly when contamination is discovered. Decontamination procedures should begin with cleaning the area of least contamination, progressing to the area of greatest contamination. Cleaning materials should be disposed as radioactive waste.

Instrument surveys should be performed to monitor the progress of decontamination (not applicable for H-3). A swipe survey is necessary to demonstrate that decontamination below action levels has been achieved. The action level for all radionuclides, except I-125, is 1000 DPM. The action level for I-125 is 220 DPM. If contamination cannot be reduced below action levels, contact the RSO. See the EHS SOP, ***Contamination Surveys for Radioactive Material Laboratories***, for additional information.