

RADIATION EMERGENCY PROCEDURE

Minor Spill Decontamination Procedure

Minor contamination incidents are an expected consequence of handling radiopharmaceuticals. If they are discovered and cleaned up promptly, they are usually insignificant and do not require reporting to the RSO. However, if even a small volume of uncontrolled radioactive material is clearly visible or has spread, it is considered a spill. Prompt action, in addition to merely cleaning it up, is required. Consult the table on the next page for guidance in determining whether a major spill procedure or a minor spill procedure should be implemented.

Begin by putting on disposable waterproof gloves.

1. Stop the spill

Stop the spread of the radioactive material by covering it with absorbent paper or other absorbent material.

2. Warn other people

Warn other people that a spill of radioactive material has occurred so they will not contaminate themselves or spread contamination.

3. Clean the spill

Carefully decontaminate the area with detergent and water, using absorbent paper towels. Do not spread contamination. Treat the paper towels as radioactive waste unless careful monitoring shows otherwise.

4. Monitor the area

- Monitor the spill area with the appropriate survey instrument, such as the pancake detector. If contamination is less than 100 cpm, or about twice background, the spill has been adequately cleaned up.
- If the contamination is greater than 100 cpm, take a wipe sample. If the wipe sample shows greater than 100 cpm (measured in a low background area), repeat step 3.
- Resurvey the area, and if it is still greater than 100 cpm, call the RSO

Areas that contain fixed contamination must be shielded to ensure radiation survey limits are not exceeded.

MAJOR SPILLS

Major spills are those involving large volumes or high activities. Estimate the amount of radioactivity spilled. Initiate a major or minor spill procedure based on the following information. Spills above these millicurie amounts are considered major and below these amounts are considered minor. As always, the goal is to prevent radiation exposure to personnel in addition to stopping the spread of contamination.

Relative Hazards of Common Radionuclides

Radionuclide	Millicurie	Radionuclide	Millicurie
P-32	1	Tc-99m	100
Cr-51	100	In-111	10
Co-57	10	I-123	10
Co-58	10	I-125	1
Fe-59	1	I-131	1
Co-60	1	Sm-153	10
Ga-67	10	Yb-169	10
Sr-85	10	Hg-197	10
Sr-89	1	Au-198	10
Y-90	1	Tl-201	100

Reference: NUREG 1556 Volume 9, rev.2

Begin by putting on disposable waterproof gloves.

1. **Clear the area of non-essential staffs**

Warn everyone to immediately leave the area.

2. **Cover the spill**

Cover the spill with absorbent paper to prevent the spill from spreading.

3. **Leave the room**

Make sure everyone leaves the room, then secure the door to ensure the room is not re-entered and to avoid further spread of contamination.

4. **Call the RSO**

The RSO will take charge and give further instructions.

5. **Clean the spill**

Carefully decontaminate the area with detergent and water, using absorbent paper towels. Do not spread contamination. Treat the paper towels as radioactive waste unless careful monitoring shows otherwise.

6. **Monitor the area**

- Monitor the spill area with the appropriate survey instrument, such as the pancake detector. If less than 100 cpm, or about twice background, the spill has been adequately cleaned up.
- If greater than 100 cpm, take a wipe sample. If the wipe sample shows greater than 100 cpm (measured in a low background area), repeat step 5.
- Resurvey the area, and if it is still greater than 100 cpm, restrict the use of the room until it decays to background, or further decontamination efforts are made.

Some large spills, such as those involving significant radiation exposure to personnel, are required to be reported within 24 hours.

FIRE or EXPLOSION

Follow the Radiation Emergency Handbook, which is required by the license to be available. In general, call the RSO, clear the area, and if possible, remain nearby and send someone else for help.