11. Spill or Unplanned Release Procedure

11.1 Release of Radioactive Mists, Fumes, Vapors and Gases
Notify all persons in the area of the incident. Ask them to hold their breath and leave the area as soon as possible and

1. If the fume hood is not already on, hold your breath and switch on fume hood.

2. Leave the area as soon as possible and close doors behind you.

3. Wait in an area that would not be contaminated and immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.2 Personal Contamination
If you know or suspect a person’s body (eyes, skin, hair) or clothing is contaminated, immediately:

1. Stop work immediately!

2. Remove contaminated clothing including contaminated gloves or lab coat. Keep the contaminated items separate within the radiation work area.

3. Take action to decontaminate, in this order:
   - eyes
   - skin
   - hair

4. As soon as possible, inform your supervisor and call the Radiation Safety Officer (RSO) for assistance in safe decontamination techniques.

5. MONITOR
   For isotopes other than H-3, locate the contamination using appropriate contamination meter (for procedure see section 10.4.1 of this RSP). Ask a colleague for assistance to summon help if you are contaminated. Monitor slowly (one centimeter per second) with setting on fast response. Monitor hands and your feet carefully to ensure they are not contaminated to reduce the chance of spreading the contamination.
When contamination with H-3 (tritium) is suspected, it is safest to assume that contamination has not been removed. Take all reasonable steps to limit the spread until you have confirmed the absence of contamination with wipe testing and use of the Liquid Scintillation Counting Technique (see Section 10.4.2 of this RSP).

6. Report the incident to the Radiation Safety Officer as soon as reasonably possible.

11.2.1 Eye decontamination

1. Use local eyewash as soon as possible. If your fingers are contaminated, ask for assistance to hold your eyelids open.

2. Flush eye(s) for at least 15 minutes.

3. MONITOR (see 11.2.5 above) for contamination and, if necessary, repeat the flush.

4. Immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.2.2 Body (skin) decontamination

Body contamination includes when you have a cut.

1. Flush contaminated skin or body parts taking care not to spread contamination to non-contaminated body parts. Use warm (not hot) water. Rinse. Do not scrub as this could promote deeper tissue penetration or increased local blood flow that could subsequently spread the contamination throughout the body.

2. MONITOR (see 11.2.5 above) the area where possible skin contamination occurred

3. Immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.2.3 Hair decontamination

1. Flush contaminated hair under warm running water for at least 10 minutes taking care not to spread contamination to non-contaminated body parts.

2. MONITOR (see 11.2.5 above) and if necessary repeat the procedure.

3. If the contamination persists it might be necessary to clip the contaminated hair. Do not discard contaminated hair. Keep clipped hair in radiation work area.

4. Immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.3 Contaminated Personal Protective Clothing (gloves or lab coat)

1. Immediately remove contaminated item.
2. Placed contaminated item on an under-pad or in a plastic bag to control contamination. Do not discard contaminated item. Keep the contaminated item separate within the radiation work area.

3. MONITOR (see 11.2 5. above) yourself with an appropriate contamination method to confirm you are not personally contaminated.

5. Immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.4 Internal or External Radiation Exposure
In the event of suspected (or known) exposure to any person, immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.

11.5 Radioactive Spill or Radioactive Contamination (Non-Personal)
In the event of radioactive contamination or spill, which does not involve injury or personal contamination, immediate action must be taken to limit the spread of contamination.

1. Ensure your own safety and the safety of others. Do not do anything to contaminate yourself or others.
   • Immediately inform co-workers in the area. Keep unnecessary personnel away from the area.
   • Leave fume hood fan on.
   • Do not do anything to cause increased spread of contamination.
   • Step back 1 or 2 meters – preferably onto a clean disposable absorbent pad.
   • If appropriate, check people in immediate area for radioactive contamination before proceeding.
   • If possible, inform supervisor of the situation and ask for their assistance.

2. Cordon off the area to keep unnecessary persons from entering the contaminated area.

3. If you are not trained to cope with the severity of incident, or the spill is a Major Radiological Incident (involves more than 10MBq (270uCi) or 100 EQ whichever is more restrictive) (See the third column of Appendix D at the end of this manual for a list of 100 EQ):
   • Immediately call the Radiation Safety Officer (RSO). The contact information for the RSO is on the first page of this manual.
   • Wait outside the contaminated area in the immediate vicinity for the RSO. Remain available to help with decontamination and provide assistance as directed by the RSO.

4. If you know it is a Minor Radiological Incident involving less than 10MBq (270uCi) or 100EQ, whichever is more restrictive, non-volatile and no personal contamination:
   • Get the Spill Kit and contamination meter (for radioisotopes H-3 or C-14 plan to use Liquid Scintillation Counting).
   • Wear a clean lab coat and gloves to prevent personal contamination.
   • Wear protective shoe covers, or, alternatively, the floor may be covered with absorbent pads (absorbent side down) and only walk on the pads.
5. MONITOR (see 11.2 5. above) the area to determine the extent of contamination with a suitable contamination meter. For H-3 and C-14, use liquid scintillation techniques.

6. For spills: Surround the spill with absorbent material. Cover liquid spills with absorbent material. Use wetted absorbent material for dry spills. Allow the absorbent material at least 10 minutes in contact with the spill.

7. While you are waiting, prepare waste containers and tags for waste created during the decontamination procedures. All wastes are to be disposed of in accordance with Section 12 on Waste Disposal. Remember to keep higher level and lower level waste separate.

8. Wearing clean disposable gloves, lift the absorbent material and place into appropriate waste container(s).

9. Check for radioactive contamination: MONITOR (see 11.2 5. above) and if necessary, continue to decontaminate using more of the absorbent material. The initial approach should be scrubbing with small quantities of warm water containing soap or detergent. Use no more liquid than necessary in order to minimize the spread of contamination.

10. Re- MONITOR for contamination and repeat until removable contamination is below 0.5Bq/cm² or whatever limit is specified on the Permit for the involved radioisotope. There are reporting requirements if CNSC Contamination Limits (see column 9 of Appendix D at the end of this manual) are exceeded.

11. Package and tag all waste generated.

12. Write a report.
   - Provide a written record of decontamination procedure and results of subsequent monitoring.
   - Analyze the contributing factors to the incident and take action to reduce the possibility of a re-occurrence.
   - File the Report in the Radiation Safety Records binder in the room where the incident occurred.
   - Send a copy to the Radiation Safety Officer.

11.6 Contacting the Radiation Safety Officer to Report
Contact the Radiation Safety Officer to report the situation as soon as possible. Radiation Safety Officer has the responsibility to:
   - Assess or arrange for the assessment of worker exposure to ionizing radiation.
   - Revise or remove restrictions on access to the area in terms of radiological hazard.
   - Supervise the monitoring of areas for radioactive contamination and the decontamination process.
   - Report incidents as required by regulations.