

RADIATION DECOMMISSIONING GUIDE

This guide provides an overview for the decommissioning process, including instructions for completion of the Radiation Decommissioning Form.

DECOMMISSIONING PROCESS

The decommissioning process is comprised of verifying:

1. All inventory has been accounted for and has either been used, disposed of or transferred to an authorized person
2. Waste is appropriately managed (disposed of or transferred to an authorized person)
3. Contamination Monitoring has been conducted using equipment is calibrated and can detect the energy and activity to the limits set by CNSC
4. All personnel have either left the lab or will continue under another person's permit.
5. Signage is removed (symbols and wording)

Decommission can apply to either Permits, Locations, and or Equipment.

PART A SCOPE OF DECOMMISSIONING (or TRANSFER)

Permits (unsealed or sealed in a device)

- complete Table I of Decommissioning Form

Room (or parts of room) to be decommissioned as an authorized use /storage area for radioactive material

- complete Table II of Decommissioning Form

Equipment

- complete Table III of Decommissioning form

PART B INVENTORY & WASTE

Inventory is considered any material (stock, aliquot, or samples) that remain in the possession of the permit holder. The Office of Risk Management will provide the Permit Holder with the list of radioisotopes that have not yet been recorded as being disposed of. This list will identify each radioactive material and its current activity as of the date listed (decay is accounted for). Depending upon the age of the material it may have decayed to below regulated levels.

- For Unsealed sources, complete Table IV of the Decommissioning Form
- For Equipment, no requirements to complete

Note: All Use and Disposition sheets must report activities and disposal in the SI units as required by CNSC. (Contact the Radiation Specialist to obtain forms that have embedded conversion equations.)

Waste logs must be available and accurate.

PART C CONTAMINATION MONITORING

- Only results using calibrated equipment which has been approved for monitor the specific radioisotope energies will be accepted.
- All areas where radioactive contamination may exist must be monitored. (Surfaces such as: bench tops, sinks, sink drains, fumehoods, fumehood ducts, floors near waste and use areas, refrigerators or another surfaces that may have become contaminated)
- A map must be submitted indicating use, storage and wipe test locations.
- Results for each area monitored must be recorded as Bq/cm²; CPM counts alone will not be accepted!
- Contamination monitoring must be performed for all decommissioning types (Permit, room & instrument) where unsealed and sealed sources have been used.
- If instrument has not been calibrated within the past month, either complete the Operational Check or prove by some method that the instrument is functioning properly and the results are accurate.

➤ For unsealed sources and equipment, complete Table V - Contamination Monitoring

Operational Check Example

Calibration std.	Activity of Std. (dpm)	Activity Measured (cpm)	Known LSC Efficiency for radioisotope	Calculated Activity	In Agreement Yes/No
3H	254300	120395	50%	127150	Yes

$$\begin{aligned}
 \text{Calculated activity} &= \text{Activity of Std} * \text{Efficiency} \\
 &= 254300 * 0.5 \\
 &= 127150
 \end{aligned}$$

(For 14C the efficiency for most LSC is 97%)

CNSC Monitoring Criteria:

Unfixed contamination (averaged over an area not exceeding 100 cm²) does not exceed:

- 0.3 Bq/cm² for all class A radionuclides,
 - 3 Bq/cm² for all class B radionuclides,
 - 30 Bq/cm² for all class C radionuclides, or
 - or the most stringent limit may be used.
- Fixed contamination must be reported to the Radiation Specialist who then must inform CNSC.
 - Contamination Monitoring Records: CNSC has stipulated in the regulations that the last 3 years of records must be available. You can either submit the originals or send us scanned records. If you are decommissioning your permit, the Radiation Specialist will retain the records. If you are decommissioning a room or location, you are responsible for keeping your last 3 years of records.

Monitoring equipment used must be:

- to be able to detect the limits prescribed by CNSC
- if a survey meter is used, it must be calibrated in the last year.
- in working order (calibration standards must be run along with samples.)

PART D PERSONNEL

All personnel listed on the permit must be removed as an authorized user or transferred to another Permit ..

- For all decommissioning types, complete Table VI - Status of Authorized Users

PART E SIGNAGE

All signs and symbols must be removed from all locations listed on your permit. Signage includes permits, CNSC poster, labels on waste containers etc.

- For all decommissioning types, respond to questions.

Finally, complete signature box, then send the completed form electronically (rad.safety@uottawa.ca) or by internal mail (Radiation Specialist, ORM , Suite 840, 1 Nicholas)