

# Guidelines for Handling Packages Containing Nuclear Substances

## Identifying Packages Containing Nuclear Substances

Packaging and labeling of nuclear substances is governed by the CNSC's **Packaging and Transport of Nuclear Substances** (PTNS) regulations. They may be shipped in **Excepted, Industrial I/II/III, Type A, Type B, and Fissile Material** packages with clear radioactive category labels to show dose rates.

On **Excepted Packages**, no external labeling is required, and the safety mark **RADIOACTIVE** must be visible upon opening the package. The radiation level at any point on the external surface of the package must not exceed 5  $\mu\text{Sv/h}$ . All other packages must be categorized by radiation level and display the corresponding radiation warning labels as follows:

The transport index (TI) is the maximum radiation level in  $\mu\text{Sv}$  per hour at 1 m from the external surface of the package, divided by 10.

**Example:** 1  $\mu\text{Sv/h}$  (0.1 mrem/h) at 1 m equals a TI of 0.1.



### Category I - WHITE

Does not exceed 5  $\mu\text{Sv/h}$  at any location on the external surface of the package.

### Category II - YELLOW

Does not exceed 500  $\mu\text{Sv/h}$  at any location on the external surface of the package and the TI does not exceed 1.

### Category III - YELLOW

Does not exceed 2 mSv/h at any location on the external surface of the package and the TI does not exceed 10.

**Radiation Safety Officer (RSO):**

**Phone Number:**

## Opening Packages Containing Nuclear Substances

1. Examine the package for damage or leakage. If the package is damaged or leaking, contain and isolate it to minimize radiation exposure and contamination, and comply with Section 19 of the PTNS regulations.
2. If an appropriate survey monitor is available, monitor the radiation fields around the package and note any discrepancies.
3. Avoid unnecessary direct contact with unshielded containers.
4. Verify the nuclear substance, the quantity, and other details with the information on the packing slip and with the purchase order. Log the shipment details and any anomalies in the inventory record.
5. Report any anomalies (radiation levels in excess of the package labeling, incorrect transport index, contamination, leakage, short or wrong shipment) to the RSO. When opening packages containing unsealed nuclear substances, additional steps should be taken:
6. Wear protective clothing while handling the package.
7. If the material is volatile (unbound iodine, tritium, radioactive gases, etc.) or in a powder form, open the package in a fume hood.
8. Open the outer package and check for possible damage to the contents, broken seals, or discoloration of packing materials. If the contents appear to be damaged, isolate the package to prevent further contamination and notify the RSO.
9. If no damage is evident, wipe test the inner package or primary container which holds the unsealed nuclear substance. If contamination is detected, monitor all packaging and, if appropriate, all locations in contact with the package, for contamination. Contain the contamination, decontaminate, and dispose in accordance with the conditions of the Nuclear Substances and Radiation Devices licence.

Contact the CNSC at [cnsccinfo.ccsn@canada.ca](mailto:cnsccinfo.ccsn@canada.ca) or 1-888-229-2672 or [nuclearsafety.gc.ca](http://nuclearsafety.gc.ca)



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