

## **INSTRUCTIONS FOR OPENING RADIONUCLIDE SHIPMENTS**

All packages containing radioactive material are physically received at the Department of Environmental Health & Safety where the external radiation levels are monitored and contamination of the package exterior is assessed. The radioactive stock vial(s) in the package is logged into the radionuclide inventory. The Department of Environmental Health & Safety will not normally open packages unless there is a particular need, such as possible damage or to verify the contents of the package or the intended recipient.

The radionuclide user must follow the procedures below when opening all radionuclide packages.

### **GENERAL PROCEDURES**

1. Radioactive packages must be opened and inspected as soon as possible after receipt. Solutions inadvertently stored upside down may gradually leak. Also, suppliers often will not accept claims for damaged shipments not inspected within a short time after delivery.
2. Contamination surveys of packages containing soft beta emitters (e.g. H-3, C-14, S-35, Ca-45, P-33) must be conducted using a liquid scintillation counter (LSC). Packages containing isotopes with beta radiation of higher energy (e.g. P-32, Na-22, Cl-36, Ru-86, I-131) and most gamma emitters (e.g. Cs-137, Cr-51, Fe-59, Co-60) may be surveyed using a thin end-window GM survey meter or a LSC. Packages containing low energy gamma emitters (e.g. I-125) may be surveyed using a low energy gamma survey meter or a LSC. If you are uncertain which instrument to use to conduct a contamination survey, contact Environmental Health and Safety at 831-8475.
3. Records of the results of surveys must be maintained.
4. Disposable plastic gloves, a laboratory coat, and eye protection must be worn while processing a shipment.
5. Packages containing radioactive iodine or other isotopes with significant possibility of volatility must be processed in a laboratory hood.
6. Vials containing hard beta or gamma emitters should not be grasped by hand. Tongs or other remote handling devices should be used for these packages.
7. As used in these procedures, "*Outer Container*" means the cardboard box or other shipping container in which the radioactive material is shipped from the manufacturer. The term "*Source Holder*" means the inner package (usually a lead pig, aluminum canister, plastic sleeve, etc.) in which the vial or bottle containing the radioactive material is placed.

### **SPECIFIC PACKAGE OPENING/INSPECTION PROCEDURES**

**To be followed in the order listed below**

1. Provide ample workspace with provisions for placing the source holder such that it will not affect the monitoring instrumentation's background.
2. Visually inspect the unopened package for evidence of apparent damage or leakage. If none is noted, proceed to Step 3.
3. Open outer container and remove packing slip. Check packing slip for contamination and place it in a "*clean*" area if no contamination is found.

4. Remove packaging material (Styrofoam, padding, etc.) and immediately check material for contamination.
5. If contamination is found, carefully remove gloves, place them on the container, monitor yourself thoroughly, and contact the Department of Environmental Health and Safety, 831-8475 for instructions. Do not proceed further without consulting with the Department of Environmental Health and Safety.
6. Remove the source holder from the outer container. Smear the unopened source holder with a "*Q-Tip*" or filter paper and monitor the smear to check for contamination. If contamination is noted, return to Step 5.
7. Open the source holder, remove the final source container (using a remote handling device if the nuclide is a hard beta or gamma emitter), and check the vial label to verify that the contents agree with the packing slip and with your purchase order. At this time, also quickly check the final source container for visible evidence of leakage or breakage of seals.
8. Wipe the outside of the final source container with a "*Q-Tip*" or filter paper and monitor this wipe to check for contamination. If contamination is noted, return to Step 5.
9. Place the final source container in a storage area with appropriate shielding. Be sure to refrigerate or freeze if appropriate.
10. If your survey shows no evidence of packing material contamination, leakage, or discrepancy between the material/amount ordered and that received, remove or obliterate all radiation symbols and "*Radioactive Material*" labels from the empty outer container and discard as normal trash.
11. Remove gloves and dispose of them as radioactive waste. Monitor your hands to confirm that they have not been contaminated.
12. When all of the above steps have been completed, log the contents of the package (date received, nuclide, activity, chemical form, purchase order number, etc.) into your laboratory's radioisotope inventory record. The material is now ready for routine use according to your authorization.

#### **CAUTION**

When manipulating the final source container, be very careful of possible radiation exposure to your hands. Also, perform these operations in a containment that will avoid loss of the contents in the event the final container escapes from slippery fingers, tongs, etc.