

Preparing Samples for Shipment to a Laboratory

The amount of sample material required for an analysis varies based upon whether the material is a solid, liquid, or scale. ARS requires approximately ½ pound of solid type material (about one quart) to perform an analysis. Sludges are considered a solid material for radioactive material analysis. Pure scale samples are an exception to the ½ pound thumb rule. ARS is able to perform an analysis on as little as 10 grams of pure scale material. 10 grams of scale is roughly the size of a 25 cent piece.

ARS asks for one gallon of liquid when performing radioactive material analysis of liquid type materials. In some cases ARS can perform analyses on as little as one liter of liquid type material.

There are no refrigeration requirements for radioactive material samples. Samples do not need to be shipped on ice or otherwise kept cool.

There are no requirements for the sample containers other than they should not leak or break during shipment. Use plastic jars or bottles whenever possible. Avoid using glass jars or bottles as these have a higher potential to break during shipment. Zip lock type bags can be used for dry material as long as the bag is sealed tight and will not spill or leak its contents during shipment.

There are no preservative requirements for solid type samples. Solid samples do not need to be preserved.

There are no regulatory preservative requirements for liquid samples. However, the EPA recommends that drinking water samples be preserved to a pH less than 2 using nitric acid or hydrochloric acid.

A fully completed chain of custody form should always accompany samples sent to a laboratory. ARS will send or fax you a chain of custody form if you do not have one. A chain of custody can also be found on this website.

Shipping Samples for Analysis

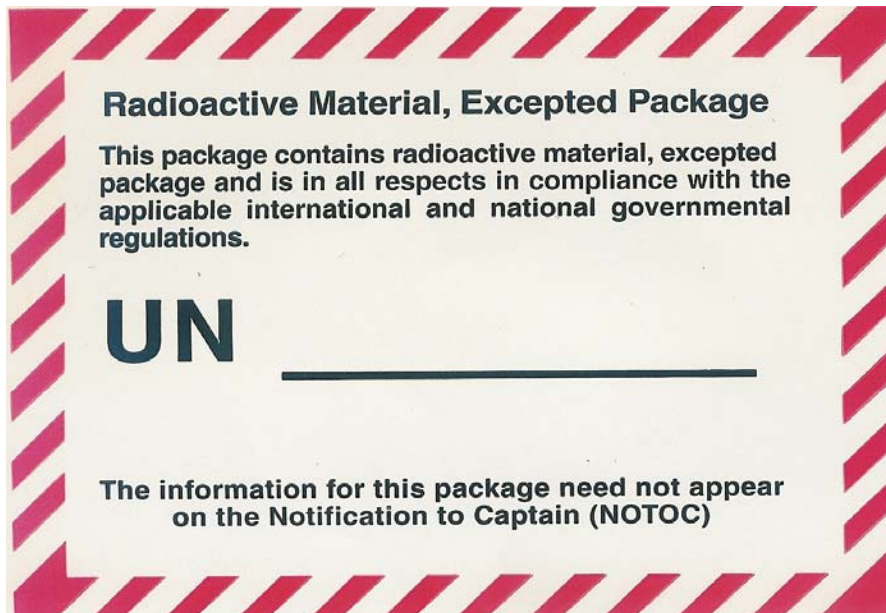
Samples may be tentatively classified as a "Limited Quantity" shipment, based on the shippers' knowledge of the material, if the following conditions are met:

- 1.) A private or commercial carrier is used (UPS, Federal Express). Generally speaking, it is against the law to mail radioactive material using the US Postal System.
- 2.) The maximum allowable radiation level on the external surface of the package can not exceed 500 µR/hr. (If 500 µR/hr on the outside of the package is exceeded, try using a larger package, or limit the number of samples inside the package).

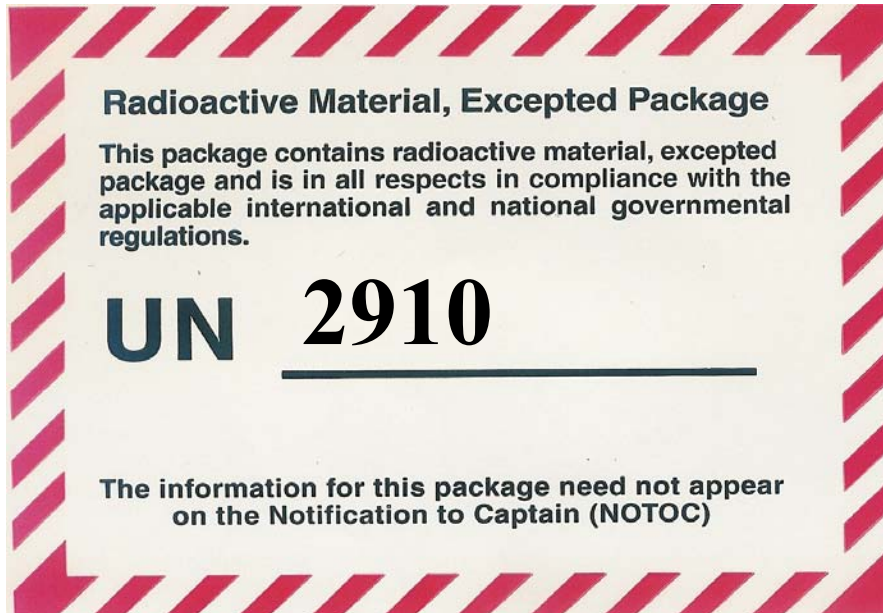
- 3.) The outside of the inner packaging, or if there is no inner packaging, the outside of the packaging itself, must bear the word "Radioactive". This requirement is usually met by writing the word "Radioactive" on the actual sample containers themselves.
- 4.) The UN Identification Number "UN2910" must be marked on the outside of the package.

Additional Requirements for Shipments by Air

5. The International Air Transportation Association (IATA) regulations require a "Radioactive Material, Excepted Package" label to be attached to the outside of the shipping package if the package will be transported by air. Fedex is now requiring the use of the "Radioactive Material, Excepted Package" on the outside of the package.



The UN Identification Number "2910" should be written on the label on the line next to the "UN". The UN 2910 identification number does not need to be written elsewhere on the outside of the package if the "Radioactive Material, Excepted Package" label is being used. (See step 4 above).



The label can be ordered from various label providers. Label Master stocks the “Radioactive Material, Excepted Package” labels (reference label style L335R). Label Master can be contacted at 800-621-5808 or at www.labelmaster.com.

Additional Requirements for Fedex Shipments

Fedex has specific requirements for completing the Fedex Bill of Lading. These requirements are in addition to requirements “1” through “6” described above under the heading of “Shipping Samples”.

In Block 5 of the Fedex Bill of Lading, titled “Packaging”, the “Other” block should be checked.

In Block 6 of the Fedex Bill of Lading, titled “Special Handling”, under the heading of “Does this shipment contain dangerous goods?”, the “Yes, Shippers Declaration Not Required” block should be checked.

Fedex also requires that the proper shipping name be written somewhere on the Bill of Lading. The following verbiage is required:

Radioactive Material, Excepted Package – Limited Quantity of Material, UN2910

The above verbiage can be written anywhere on the Bill of Lading, however, most people write it in the space provided for “Your Internal Billing Reference.”

Questions regarding the shipment of UN2910 material via Fedex should be directed to the Dangerous Goods Specialist at the Fedex “Dangerous Goods Hotline”, Telephone

901-344-3000.

FedEx US Airbill Express FedEx Tracking Number **849743641056** Form ID No. **0200** **Sender's Copy**

1 From Please print and press hard
 Date _____ Sender's FedEx Account Number _____
 Sender's Name _____ Phone () _____
 Company _____
 Address _____ Dept./Floor/Suite/Room _____
 City _____ State _____ ZIP _____

2 Your Internal Billing Reference First 28 characters will appear on invoice
Radioactive Material, Excepted Package – Limited Quantity of Material, UN2910

3 To
 Recipient's Name _____ Phone () _____
 Company _____
 Recipient's Address _____ Dept./Floor/Suite/Room _____
 Address _____
 City _____ State _____ ZIP _____

4a Express Package Service Packages up to 150 lbs.
 FedEx Priority Overnight Next business morning*
 FedEx Standard Overnight Next business afternoon*
 FedEx First Overnight Earliest next business morning delivery to select locations**
 FedEx 2Day Second business day*
 FedEx Express Saver Third business day*
FedEx Envelopes rate not available. Minimum charge: One-pound rate.

4b Express Freight Service Packages over 150 lbs.
 FedEx 1Day Freight* Next business day**
 FedEx 2Day Freight Second business day**
 FedEx 3Day Freight Third business day**
* Call for Confirmation. ** Declared value limit \$500.

5 Packaging
 FedEx Envelope*
 FedEx Pak* Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak
 FedEx Box
 FedEx Tube
 Other

6 Special Handling Include FedEx address in Section 3.
 SATURDAY Delivery Available ONLY for FedEx Priority Overnight, FedEx 2Day, FedEx 1Day Freight, and FedEx 2Day Freight to select ZIP codes.
 HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight.
 HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.
 Does this shipment contain dangerous goods?
 No Yes As per attached Shipper's Declaration Yes Shipper's Declaration not required
 Dry Ice Dry Ice, UN 1845
 Cargo Aircraft Only
Dangerous goods (including Dry Ice) cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.
 Sender Acct. No. Section 1 will be billed.
 Recipient
 Third Party
 Credit Card
 Cash/Check

FedEx Acct. No. _____ Exp. Date _____
 Credit Card No. _____
 Total Packages _____ Total Weight _____ Total Declared Value* \$ _____
*Our liability is limited to \$100 unless you declare a higher value. See back for details. FedEx Use Only

8 Sign to Authorize Delivery Without a Signature
 By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.
 No. Date 11/03/04 • Part #150201 • ©1994-2003 FedEx • PRINTED IN U.S.A. MAMA 04 ***
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 By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.
 Questions? Visit our Web site at fedex.com or call 1.800.GoFedEx 1.800.463.3339.

RETAIN THIS COPY FOR YOUR RECORDS.

Background Regulatory Information Regarding the Shipment of Samples

There are many different types of radioactive material shipments that can be made under the DOT regulations. The type of radioactive shipment that needs to be made is based on the activity (Curie content) and radiation levels of the material being shipped. It takes a laboratory analysis to determine the Curie content.

This leaves us with a dilemma. How can we properly ship a sample to a laboratory for analysis when we do not know the radioactivity of the sample?

Fortunately, the DOT has recognized this dilemma and has given us guidance in 49CFR172. A summarized version of 49CFR172.101(c)(11) states that "...a material for which the hazard class is uncertain and must be determined by testing may be assigned a tentative proper shipping name, hazard class, identification number and packing group, if applicable, based on the shipper's tentative determination according to the defining criteria contained in 49CFR and the shippers knowledge of the material."

The tentative shipping category that should be chosen for NORM samples is "Limited Quantity." The proper DOT shipping name is: Radioactive Material, Excepted Package – Limited Quantity of Material. The UN Number is UN2910 and the hazard class is Class 7 (Radioactive).