Transportation of Radioactive Materials

November 2012

Alberta Government
This material is meant as a guide to certain parts of the Transportation of Dangerous Goods Regulations and is not meant to be a substitute for them. It is the responsibility of handlers, offerers and transporters of dangerous goods to consult the Regulations for the exact requirements. The Coordination and Information Centre of Alberta Transportation can provide accurate information regarding the Regulations 24 hours a day.

Co-ordination and Information Centre

Alberta Transportation
Dangerous Goods and Rail Safety Branch
Main Floor, Twin Atria Building
4999 – 98 Avenue
Edmonton, Alberta, T6B 2X3

Tel. Edmonton: (780) 422 – 9600
Tel. Province-wide: 1 (800) 272 – 9600
Fax: (780) 427 – 1044

These telephone lines are recorded to assist in responding to the emergency (natural/manmade) and/or inquiry regarding dangerous goods and to ensure that the information is accurate. Direct any questions regarding the recording to the Compliance Officer responding to your call or contact the Manager of the CIC at 780-427-8660. Legal Authority: Dangerous Goods Transportation and Handling Act, Section 13(1).
INTRODUCTION

The transportation of radioactive materials is regulated under the following regulations:

- the Transportation of Dangerous Goods (TDG) Regulations, and
- the Packaging and Transport of Nuclear Substances Regulations
- the International Atomic Energy Agency’s Regulations for the Safe Transport of Radioactive Materials

This information bulletin covers the legal requirements under the Transportation of Dangerous Goods Regulations and the sections referred to in this bulletin are taken from these regulations. If you require information on the Packaging and Transport of Nuclear Substances Regulations, the Dangerous Goods and Rail Safety Branch of Alberta Transportation recommends that consignors and carriers contact the Canadian Nuclear Safety Commission at (613)995-5894.

CLASSIFICATION

Substances defined as Class 7, Radioactive Materials in the Packaging and Transport and Nuclear Substances Regulations are included in Class 7, Radioactive Materials (Section 2.37).

The classification of radioactive materials is a joint effort between the Nuclear Safety Commission and the International Atomic Energy Agency. The Dangerous Goods Branch of Alberta Transportation strongly recommends contacting the Nuclear Safety Commission when attempting to classify any radioactive materials.

MEANS OF CONTAINMENT

A person must not handle, offer for transport or transport dangerous goods included in Class 7, Radioactive Materials, in a means of containment unless the means of containment is in compliance with the “Packaging and Transport of Nuclear Substances Regulations” (Section 5.17).
DOCUMENTATION

Consignor Responsibilities

A consignor is defined as a person in Canada who is named in the shipping document as the consignor; imports or who will import dangerous goods into Canada; or if the previous do not apply, has possession of dangerous goods immediately before they are in transport. It is the responsibility of the consignor to prepare and give a shipping document to the carrier or an electronic copy, if the carrier agrees. If the consignor is an importer of dangerous goods then he or she must make sure that the carrier has a shipping document prior to the dangerous goods being transported in Canada [Section 3.1].

Carrier Responsibilities

A carrier is defined as a person who whether or not for hire or reward has possession of dangerous goods while they are in transport. A carrier must not take possession of a shipment of dangerous goods unless they have a shipping document for the dangerous goods. If the carrier accepts an electronic copy of a shipping document then they must produce a paper copy to carry with the shipment [Section 3.2].

If the dangerous goods are passed to another person, the carrier must provide a copy of the shipping document to that other person who could be another carrier or the consignee (final receiver) of the dangerous goods.

Location of Shipping Document

The driver of a power unit must ensure that a copy of the shipping document is kept in a pocket mounted on the driver’s door, or within the driver’s reach. If the driver leaves the power unit he or she must place the document in the door pocket, on the driver’s seat or on a location that is clearly visible to anyone entering the power unit through the driver’s door [Section 3.7].

After unloading a shipment of dangerous goods or disconnecting a cargo unit (for example, a trailer) from a power unit, the carrier must place the shipping document in a waterproof receptacle attached to or near the means of containment containing the dangerous goods. This is necessary if the shipment is left in an unsupervised area or possession of the dangerous goods has not been transferred to another person (Section 3.10).

Information on the Shipping Document

The information on a shipping document must be easy to identify, legible and printed in indelible ink. The shipping document may be prepared in English or in French (Section 3.4). The table below describes the minimum required information that must appear on a shipping document.
<table>
<thead>
<tr>
<th>Shipping Document Information</th>
<th>When Required</th>
<th>Where in The Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Always</td>
<td>3.5(1)(b)</td>
</tr>
<tr>
<td>Name and address of consignor</td>
<td>Always</td>
<td>3.5(1)(a)</td>
</tr>
<tr>
<td>Description of goods in the following order</td>
<td>Always</td>
<td>3.5(1)(c)</td>
</tr>
<tr>
<td>a. Shipping name</td>
<td>Always</td>
<td>3.5(1)(c)(i)</td>
</tr>
<tr>
<td>b. The technical name of the most dangerous</td>
<td>If Provision 16 of</td>
<td>3.5(1)(c)(i)(A)</td>
</tr>
<tr>
<td>substance related to the primary classification</td>
<td>Schedule 2 applies</td>
<td></td>
</tr>
<tr>
<td>c. Primary classification</td>
<td>Always</td>
<td>3.5(1)(c)(ii)</td>
</tr>
<tr>
<td>d. Subsidiary classifications</td>
<td>If Any</td>
<td>3.5(1)(c)(iv)</td>
</tr>
<tr>
<td>e. UN number</td>
<td>Always</td>
<td>3.5(1)(c)(v)</td>
</tr>
<tr>
<td>f. Packing group</td>
<td>If Any</td>
<td>3.5(1)(c)(vi)</td>
</tr>
<tr>
<td>The quantity in the International System of Units</td>
<td>Always</td>
<td>3.5(1)(d)</td>
</tr>
<tr>
<td>(SI) (^1)(^2)</td>
<td>For dangerous goods in small</td>
<td></td>
</tr>
<tr>
<td></td>
<td>containers requiring safety labels</td>
<td></td>
</tr>
<tr>
<td>The number of containers (^2)</td>
<td>Always</td>
<td>3.5(1)(e)</td>
</tr>
<tr>
<td>The words “24-Hour Number” followed by a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>telephone number where the consignor can be</td>
<td>Always</td>
<td>3.5(1)(f)</td>
</tr>
<tr>
<td>easily reached (^3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Response Assistance Plan (ERAP) number</td>
<td>If Required</td>
<td>3.6(1)</td>
</tr>
<tr>
<td>and telephone number to activate it</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. If the quantity of dangerous goods is less than 10% of the container’s maximum fill limit then the words “Residue – Last Contained” followed by the shipping name of the dangerous goods last contained in the means of containment may be used to describe the quantity. This does not apply to Class 2, Gases, in small means of containment or for Class 7, Radioactive Materials [Section 3.5(4)].

2. A consignor can also use the telephone number of an agency that is competent to give the technical information on the shipment. For example, it is possible to use CANUTEC as a source of technical information provided that the consignor has received permission in writing from CANUTEC [Section 3.5(2)].

3. If the quantity of dangerous goods or the number of small means of containment changes during transport, the carrier must show on the shipping document or on a document attached to the shipping document the change in the quantity of dangerous goods or the number of small containers [Section 3.5(5)].
Section 3.6(3)(d) of the TDG Regulations states that dangerous goods in Class 7 require additional information on their shipping document. This information is specified in Section 17 of the Packaging and Transport of Nuclear Substances Regulations. Information on these requirements can be obtained from the Canadian Nuclear Safety Commission at (613)995-5894. A copy of the Packaging and Transport of Nuclear Substances Regulations can be obtained from the website:

http://www.nuclearsafety.gc.ca/eng/regulation/

SAFETY MARKS

The labels and placards required to be displayed by this Part must be determined in accordance with the “Packaging and Transport of Nuclear Substances Regulations” [Section 4.14(1)].

Labels

All Class 7, Radioactive Materials, that are transported in a small means of containment must display labels required by the TDG Regulations. A small means of containment has a capacity of 450 litres or less. The means of containment must display the dangerous goods label(s), the shipping name and the UN number of the product [Sections 4.10 to 4.12]. A label must be at least 100 mm on each side with a line running 5 mm inside the edge [Section 4.7(2)].

The regulation requires that if the dangerous goods are included in Class 7, Radioactive Materials, two labels must be displayed in the small means of containment for the primary class [Section 4.10(1)(c)]. The labels must be displayed on two opposite sides of the outer surface of the small means of containment, other than the side on which it is intended to rest or be stacked during transport [Section 4.10(3)(c)].

In addition to the requirements listed above, the following must be displayed on the primary class label for the dangerous goods:

a) the name or symbol of the radionuclide, the name or symbol of the most restrictive of the radionuclides in the mixture; and
b) the activity and the transport index of the dangerous goods [Section 4.14(2)(b)].

Class 7, Radioactive Material, Labels and Optional Placards
When transporting Class 7, Radioactive Materials, a placard and UN number must be displayed on a large means of containment if the dangerous goods [Section 4.15(1)]:

- are in a quantity or concentration for which an Emergency Response Assistance Plan is Required;
- are included in Class 7, Radioactive Materials, for which a Category III Yellow Label is required;
- have a gross mass greater than 500kg.

If a large means of containment contains dangerous goods included in Class 7, Radioactive Materials, and a Class 7 placard is required to be displayed, the means of containment must have displayed on it the Class 7 placard required or the appropriate optional Class 7 placard illustrated above [Section 4.7(5)].

When several different dangerous goods are transported together the display of primary classification placards and UN numbers is regulated according to the table in Section 4.15 of the Transportation of Dangerous Goods Regulations.

The UN number must be displayed in the centre of the placard or on an orange panel next to the placard without the prefix “UN” [Section 4.8(2)]. The example below shows how a placard and UN number can be displayed.
A subsidiary class placard must also be displayed on each side and each end of a large means of containment for dangerous goods for which an ERAP is required and that have a subsidiary classification of [Section 4.15(4)]:

- Class 8 and the dangerous goods are UN number is UN2977, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, FISSION, or UN2978, RADIOACTIVE MATERIAL, URANIUM HEXAFLUORIDE, non-fissile or fissile excepted.
Placards must be displayed on each side and each end of a large means of containment. They may be displayed on a frame that is permanently connected to the large means of containment. The placard may also be placed at the front of a truck instead of on the leading end of a trailer unit of the truck. The placards must be visible from all four sides of a large means of containment, or moved to an appropriate position where they are visible [Section 4.15(3)].

### Placard Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front of the truck or front of the cargo unit</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Both sides of the cargo unit</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>Rear of the cargo unit</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

### Orientation of Labels and Placards

Labels and placards must be displayed “square on a point”. That is, resting on a corner rather than on a side [Section 4.7(1)]. The example below shows the proper orientation.

### Safety Mark Orientation

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Correct" /></td>
<td><img src="image" alt="Incorrect" /></td>
</tr>
</tbody>
</table>
Anyone who handles, offers for transport or transports dangerous goods must be adequately trained and have a valid Dangerous Goods Training Certificate or must be in the presence of and under the direct supervision of a trained person.[Section 6.1].

A person is adequately trained if the person has sound knowledge of the topics listed below that relate directly to the person’s duties [Section 6.2]:

- classification of dangerous goods, shipping names, UN numbers, packing groups;
- schedules 1, 2 and 3
- shipping documentation;
- safety marks;
- certification safety marks, safety requirements and safety standards;
- emergency response assistance plan requirements;
- reporting requirements;
- safe handling and transportation practices, including characteristics of dangerous goods;
- proper use of equipment; and
- emergency measures to take in case of releases.

The employer issues a training certificate when he/she has reasonable grounds to believe that an employee possesses adequate training. A training certificate must have the following information [Section 6.3(1)]:

- the name and address of the employer,
- the name of the employee,
- the date when the training certificate expires preceded by the words “Expires on” or “Date D’expiration”,
- the aspects of handling, offering for transport or transporting dangerous goods for which the employee is trained, and
- the signatures of the employer and the employee [Section 6.3(3)]
A self-employed person who has reasonable grounds to believe that he or she is adequately trained and who will perform duties to which the training relates must issue to himself or herself a training certificate [Section 6.3(2)].

The employer or self-employed person must keep a record of training and a copy of a training certificate from the date the training certificate was issued until two years after it expires [Section 6.6].

The training certificate must be immediately presented to an inspector who requests for it [Section 6.8].