

Transportation of Dangerous Goods Regulations

Amendment 6

REGULATORY IMPACT ANALYSIS STATEMENT

The RIAS was published with Amendment 6 (SOR/208-34) in the Canada Gazette, Part 2, on February 20, 2008. It is not part of the Regulations.

DESCRIPTION

The Transportation of Dangerous Goods Act, 1992 (TDG Act, 1992) and the Transportation of Dangerous Goods Regulations (TDG Regulations) are intended to promote public safety in the transportation of dangerous goods in Canada.

The Regulations Amending the Transportation of Dangerous Goods Regulations clarify requirements, address safety issues, align the TDG Regulations with changes to international recommendations and international modal requirements, and continue to improve safety in the transportation of dangerous goods.

Table of Safety Standard and Safety Requirements Documents, Section 1.3.1, and Definitions, Section 1.4

The amendments update references to the documents listed in the Table to new section 1.3.1 and to the definitions in section 1.4 of the TDG Regulations to:

- The 14th Revised Edition of the Recommendations on the Transport of Dangerous Goods (UN Recommendations), published by the United Nations;
- The 4th Revised Edition of the Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria, 2003, published by the United Nations;
- The 2006 Edition of Volumes 1 and 2 of the International Maritime Dangerous Goods Code (IMDG Code), including Amendment 33-06, published by the International Maritime Organization (IMO);
- The 2007-2008 Edition of the Technical Instructions for the Safe Transport of Dangerous Goods by Air, published by the International Civil Aviation Organization (ICAO Technical Instructions), and the 2007-2008 Edition of the Supplement to the ICAO Technical Instructions; and
- The 2006 edition of Title 49 of the Code of Federal Regulations of the (49 CFR).

Underwriters' Laboratories of Canada (ULC) standards for the manufacture, testing, marking and use of fire extinguishers are included in the Table to complement the exemption for fire extinguishers in section 1.47.

The amendments also update the references in the Table to new section 1.3.1 to the revised versions of National Standards of Canada CGSB-43.147 and CSA B339.

The National Standard of Canada CGSB-43.147 deals with tank cars and multi unit tank car tanks (otherwise known as “tonners”) for the transport of dangerous goods by rail. The new edition of this standard contains changes reflecting advances in technology and operational experience. The changes include more frequent requalification intervals for certain pressure relief valves in anhydrous ammonia service, new requalification requirements on tank cars equipped with internal lining, and registration requirements for facilities that requalify tonners by visual inspection.

The new edition also prescribes conditions under which highway tanks and tube trailers may be transported by rail. Until now, transport of highway tanks by rail could only be done under a Permit for Equivalent Level of Safety.

In addition, the new edition prohibits certain tank cars transporting refrigerated liquefied gases from being assembled into a train by rolling freely down an incline to be coupled (“free switching” or “humping”) to other railway vehicles, exempts cars carrying molten sulphur and certain high temperature dangerous goods from bottom discontinuity protection, and clarifies requirements for a successful leak test following field maintenance.

The National Standard of Canada CSA B339 deals with cylinders, spheres and tubes for the transportation of gases. New clauses allow a bend test as an alternative to the flattening test for TC-3AXM and TC-3AAXM tubes. The bend test was shown to be an equivalent test to the flattening test. New definitions clarify terms “reclaimed refrigerant gas,” “recovered refrigerant gas” and “recycled refrigerant gas.” Clause 24.2.5 is revised to allow a 10-year requalification period for containers used for reclaimed refrigerant gases since the latter are considered non-corrosive. Clause 24.6.1.1 clarifies the marking requirements following requalification. Clause 24.7.1 clarifies the information to be shown on a requalification report. Most of the remaining changes are editorial in nature.

In the Table to new section 1.3.1 and in the definitions in section 1.4, those sections in the UN Recommendations, the ICAO Technical Instructions, the IMDG Code and 49 CFR that deal with security measures are not adopted in the TDG Regulations. Currently, the TDG Act, 1992 does not provide enabling authority to make regulations regarding security or to incorporate by reference documents that contain security requirements.

Sections 1.5 and 1.6

Sections 1.5 and 1.6 were re-structured to clarify the existing text. In the re-structuring, section 1.5 was changed to an “applicability” section that clarifies the applicability of the Regulations unless there are exemptions in sections 1.15 to 1.48 or in Schedule 1 or 2.

Explosives

Changes to the requirements for explosives are introduced to clarify the use of net explosives quantity and articles, to remove undue restrictions for users transporting explosives, and to enhance harmonization between Natural Resources Canada (NRCan) Explosives Regulations and the TDG Regulations.

Currently, quantities of explosives in the TDG Regulations are expressed in kilograms of Net Explosives Quantity (NEQ). However, some Class 1 dangerous goods contain very small amounts of very sensitive explosives. These do not fit well into TDG Regulations based upon weight. For instance, 10,000 detonators or 100 boxes of detonators, which would be a sizeable load, would have a NEQ of 10 kg. Therefore, quantities of explosives are now expressed either in kilograms NEQ or number of articles.

Changes to the placarding requirements are intended to increase the safety of first responders. Currently, placards for explosives are required when the total gross mass exceeds 500 kg or when the emergency response assistance plan index exceeds 75 kg NEQ.

The Explosives Regulatory Division (ERD) of NRCan believes that if a load of Class 1 (excluding 1.4) exceeds 10 kg NEQ or 1,000 articles then a placard should be displayed. Consequently, modifications to sections 1.31 and 4.15 introduce placards for explosives in classes 1.1, 1.2, 1.3 or 1.5 when the amount of explosives exceeds 10 kg NEQ or when the number of articles exceeds 1,000. The number of articles (1,000) is a compromise between practicality and risk.

A net explosives quantity of 10 kg is less than the normal quantity in a case of commercial explosives (25 kg) and so most small loads of more than a case will require placards. Less than case loads are often much smaller than a 10 kg NEQ. The ERD does not expect many examples of 9.9 kg NEQ without a placard.

Section 1.15, 150 kg Gross Mass Exemption, removes a few explosives (cutters and signals for railway tracks) while adding several explosives used in shooting sports, signalling and pyrotechnics. Section 1.15 also exempts cartridges for rifles or pistols that have calibres below 12.7 mm and all cartridges for shotguns.

Section 1.16, 500 kg Gross Mass Exemption, includes a few additional class 1.4 explosives (signals, signal and power device cartridges, fireworks, flares). This is essentially for the users of explosives.

Section 1.31, Class 1, Explosives, Exemption, no longer includes an exemption from Part 7, Emergency Response Assistance Plan and Part 8, Accidental Release and Imminent Accidental Release Reporting Requirements.

Paragraph 3.5(1)(d) is revised to reflect the changes for explosives regarding the use of NEQ and number of articles when indicating the quantity of explosives on a shipping document. The italicized note following paragraph (d) is revised to enhance clarity through the examples provided.

Since NRCan will abolish the Explosives Vehicle Certificate (EVC), all references to this certificate are repealed. A new section 9.5 retains the restriction for maximum net explosives quantity on a road vehicle.

UN1005, Anhydrous Ammonia

The primary class of anhydrous ammonia is being changed. It was first classified as a toxic gas, Class 2.3, in Canada in 1982, reclassified only in Canada as a corrosive gas, Class 2.4, in 1985, and is currently classified as a non-flammable, non-toxic gas, Class 2.2. It will once again be classified as a toxic gas, Class 2.3. This change in primary class is in response to Transportation Safety Board recommendations that the Department of Transport review the primary class and safety marks for anhydrous ammonia following three derailments: near Britt, Ontario on September 23, 1999; in Red Deer, Alberta on February 2, 2001; and in Minot, North Dakota on January 18, 2002. The derailments led to the release of anhydrous ammonia vapours, which resulted in numerous injuries and two fatalities.

The current UN Recommendations classify anhydrous ammonia as a toxic gas, Class 2.3. The U.S. 49 CFR classifies anhydrous ammonia as a non-flammable, non-toxic gas, Class 2.2, for domestic transportation and as a toxic gas, Class 2.3, for international transportation. One of the challenges in classifying anhydrous ammonia is remembering that we are also dealing with a fertilizer that contains nitrogen, a nutrient essential for the growth of crops.

Classifying anhydrous ammonia as a toxic gas and displaying on field applicators a placard that depicts skull and crossbones has the potential of presenting a negative image for a product that becomes inert when it is applied to the earth. Consequently, a new subsection 4.18(5) introduces a new Anhydrous Ammonia placard that does not bear the skull and crossbones and that may be displayed on large means of containment.

The new subsection 4.18(5) requires that one of the following placards must be displayed:

- Until August 31, 2008, the Class 2.2, Class 2.3 or the new Anhydrous Ammonia placard;
- After August 31, 2008, the Class 2.3 placard or the new Anhydrous Ammonia placard.

The large means of containment must also have displayed on it on at least two sides the words “Anhydrous Ammonia, Inhalation Hazard” when the anhydrous ammonia placard is displayed.

Infectious Substances

Key changes affecting the transport of infectious substances include the move from classifying infectious substances into risk groups to classifying them into two categories and the clarification of instructions for packaging infectious substances. These changes align the TDG Regulations with recent changes to the UN Recommendations and to the ICAO Technical Instructions.

The criteria for classifying micro-organisms into four risk groups were originally developed by the World Health Organization. The criteria are based on the risks that micro-organisms pose in the laboratory environment and do not appropriately reflect the lesser risks they pose in transport. The risk group criteria are designed to establish containment levels for specimens in a laboratory that would protect employees who directly handle and manipulate specimens. The risk group criteria are still used in laboratories.

The two new categories for transport are defined as:

Category A: means an infectious substance that is transported in a form such that, when it is released outside of its means of containment and there is physical contact with humans or animals, it is capable of causing permanent disability or life-threatening or fatal disease to humans or animals.

Category B: means an infectious substance that does not meet the criteria for inclusion in Category A.

Category B infectious substances present less risk because they are not easily transmissible and basic precautions and hygienic practices will serve to prevent infection in the event of an incident.

The key to efficient control and minimization of risk during transport of infectious substances lies in the use of appropriate packaging. Appropriate packaging provides the necessary and sufficient barriers to prevent leakage of the substance from the package. Triple packaging, required for both Category A and Category B substances, comprises a leak proof primary packaging which is packed in a leak proof secondary packaging in such a way that it cannot break, be punctured or leak the contents into the secondary packaging. The leak proof secondary packaging is secured in a strong outer packaging. Absorbent materials are placed between the primary packaging and the secondary packaging in a quantity sufficient to absorb the entire contents of the primary packaging. The use of triple packaging has over the years provided effective containment of infectious substances.

The packaging requirements for Category A and Category B infectious substances are in the table to section 5.16. Type 1A means of containment is a UN standardized means of containment and is basically equivalent to packing instruction P620 in the UN Recommendations and to packing instruction PI602 in the ICAO Technical Instructions. Type 1B means of containment is a Canadian standardized means of containment (CGSB-43.125) and is basically similar to packing instruction P650 in the UN Recommendations and to packing instruction PI650 in the ICAO Technical Instructions with the additional requirements in the new section 5.16.1.

Changes affecting Category B infectious substances in section 1.39 reflect similar exemptions in the UN Recommendations and the ICAO Technical Instructions. The means of containment now requires the display on it of a mark, shipping name and a 24-hour telephone number. Section 1.39 also requires compliance with Part 6, Training.

Section 1.40 that provided an exemption for Risk Group 3 substances is repealed.

Sections 1.41 and 1.42 introduce additional words to be marked on the means of containment used to transport biological products or human or animal specimens believed not to contain infectious substances. In the case of human or animal specimens believed not to contain infectious substances, the marking reflects recent changes to the UN Recommendations and the ICAO Technical Instructions.

Sections 1.42.1 and 1.42.2 are added to deal with tissues or organs for transplant and blood or blood components exemptions and reflect recent changes to the UN Recommendations and the ICAO Technical Instructions.

Section 2.36 and Appendix 3 to Part 2, Classification, classifies infectious substances in two new categories, A and B. Experts at the Public Health Agency of Canada and the Canadian Food Inspection Agency developed and revised Appendix 3.

A new mark is introduced in the Appendix to Part 4, Dangerous Goods Safety Marks, for Category B infectious substances. This harmonizes the TDG Regulations with recent changes to the UN Recommendations and the ICAO Technical Instructions.

Category B infectious substances are required to be in Type 1B or Type 1C means of containment. Some infectious substances that were classified in Risk Group 2 under the old system, and that are now in Category B, were allowed to be contained in a non-standardized means of containment. This type of packaging remains an option for biological products, human or animal specimens believed not to contain infectious substances and for blood or blood components. The new section 5.16.1 introduces additional requirements for Type 1B means of containment such as internal pressure and drop test, which aligns the TDG Regulations with recent changes to the UN Recommendations and the ICAO Technical Instructions.

Special Provision 42

Special provision 42 was deleted from Schedule 2 and is now in new section 1.32.3, **Class 2, Gases, In Small Means of Containment Exemption**. The list of dangerous goods eligible for this exemption has been expanded to include UN1013, CARBON DIOXIDE and UN1066, NITROGEN, COMPRESSED.

Subsections 5.10(6) and 5.14(2)

Subsections 5.10(6) and 5.14(2) are added to ensure that when dangerous goods are offered for transport in Canada in **highway tanks and certain portable tanks** selected in accordance with CSA B621 or CSA B622 standards, the means of containment are:

- manufactured in accordance with CSA B620 if the means of containment was manufactured in on or after August 31, 2008; and
- tested and inspected in accordance with CSA B620 when the most recent periodic re-test or periodic inspection is performed in on or after August 31, 2008.

CSA B621 and CSA B622 standards recognize tanks manufactured to corresponding specifications in the U.S. 49 CFR as equivalent to those manufactured to the Canadian standard CSA B620. Subsections 5.10(6) and 5.14(2) require a means of containment prescribed under CSA B621 and CSA B622 that is manufactured in Canada after August 31, 2008 and used in Canada to offer dangerous goods for transport, be manufactured to the Canadian standard CSA B620. Highway tanks manufactured to 49 CFR, for example, that were manufactured in Canada before August 31, 2008 remain suitable for use in Canada. Corresponding tanks manufactured outside Canada to 49 CFR continue to be recognized as equivalent. In addition, the amendments do not restrict the use of highway tanks that are certified by both Canada and the United States nor do they restrict the export of highway tanks manufactured to 49 CFR that were manufactured in Canada.

These subsections also require a means of containment prescribed under CSA B621 and CSA B622, where the most recent periodic re-test or periodic inspection was performed in Canada on or after August 31, 2008 and the means of containment is used in Canada to offer dangerous goods for transport, that the most recent periodic testing or periodic inspection of the means of containment comply with the Canadian standard CSA B620, regardless of where the means of containment was manufactured. A highway tank tested in the United States to CSA B620 or to 49 CFR can be used in Canada on or after August 31, 2008.

Other Notable Changes

Some existing **definitions** in section 1.4 are changed to clarify the text or to reflect changes: biological product, classification, consignment, gross mass, infectious substance, large means of containment, net explosives quantity, person, road vehicle and small means of containment.

Some new definitions are added: capacity, which replaces “water capacity”, Category A, Category B, culture, drum, farmer, farming, Type 1A means of containment, Type 1B means of containment and Type 1C means of containment.

Some definitions are deleted including diagnostic specimen, risk group and water capacity.

The **exemptions** in Part 1, from sections 1.15 to 1.48, have been re-written to clearly indicate which parts of the Regulations do not apply.

Section **1.15** has changed to apply to dangerous goods whether or not they are for personal use, resale, commercial or industrial use. This exemption does not apply to all dangerous goods.

New subsection **1.17(4)** allows the use of the mark in the UN Recommendations for limited quantities, that is, a diamond-shaped mark with the UN number inside that mark of each of the dangerous goods in limited quantities contained in the means of containment.

Subparagraph **1.18(a)(iii)**, which addressed the transport of medical cylinders for personal use, is deleted since these cylinders may be transported under the exemption in the revised section 1.15.

New section **1.19.1** addresses samples of goods transported for the purposes of classifying, analyzing or testing.

Samples that are used in demonstrations are addressed in the new section **1.19.2**. These samples must be in the custody of an agent of the manufacturer or distributor, who is acting in the course of employment, must not be for sale and must not be transported in a passenger carrying road vehicle, railway vehicle, aircraft or ship other than a short-run ferry. A modified document no longer applies. However, Part 6, Training, Part 7, Emergency Response Assistance Plan and Part 8, Accidental Release and Imminent Accidental Release Report Requirements will now apply.

The farm vehicle agriculture exemption in section **1.21** now requires compliance with Part 7, Emergency Response Assistance Plan and Part 8, Accidental Release and Imminent Accidental Release Reporting Requirements.

The retail agriculture exemption in section **1.22** requires compliance with Part 6, Training, Part 7, Emergency Response Assistance Plan and Part 8, Accidental Release and Imminent Accidental Release Reporting Requirements.

Subsections **1.21(2)** and **1.22(2)** introduce the requirement to have a shipping document when an emergency response assistance plan is required.

Section **1.27**, regarding the operation of a means of transport or means of containment, is revised to provide more clarity to the exemption.

The table in section **1.28** listing the authorities that must be advised of the nature of the dangerous goods in advance of their transport between two properties is replaced with simpler text to notify the local police.

The revised section **1.29**, which provides an exemption for dangerous goods in an instrument or in equipment, requires compliance with Part 6, Training, Part 7, Emergency Response Assistance Plan and Part 8, Accidental Release and Imminent Accidental Release Reporting Requirements.

Section **1.32.1** is added to deal with gases that may be identified as UN1075, liquefied petroleum gas. This new section includes former special provision 29 that is deleted from Schedule 2.

Section **1.32.2** deals with gases that have an absolute pressure between 101.3 kPa and 280 kPa at 20°C, other than gases included in Class 2.1 or Class 2.3, and establishes requirements for their transport as Class 2.2 gases.

New section **1.34.1** introduces an exemption for up to 200 litres of gasoline when in a fuel tank permanently attached to a machine operated by fuel from that tank.

Section **1.47** now addresses an exemption for fire extinguishers.

Paragraph **2.18(1)(a)** is revised to change the flash point for classifying flammable liquids from 60.5°C to 60°C. This revision harmonizes the TDG Regulations with recent changes to the UN Recommendations and to the GHS (Globally Harmonized System of Classification and Labelling of Chemicals) of the UN.

Subparagraphs **2.43(b)(iv) and (v)**, that dealt with Class 9, Miscellaneous Products, Substances or Organisms that are intended for disposal, and Appendices 4, Leachate Extraction: Substances and Concentrations, and 5, Environmentally Hazardous Substances Intended for Disposal are repealed. Environment Canada assumes responsibility for these products, as they are not dangerous goods by TDG definition.

By means of a single amending clause that replaces the entire section, subsection **4.5(2)** is repealed and subsection 4.5(1) is re-numbered as section 4.5.

Subsection **4.8(2)** is revised to require a minimum size when displaying UN numbers. This change responds to requests from stakeholders.

The **table** to subsection **4.15(1)** is revised primarily to enhance clarity of the text. However, paragraph (b) in column 3 of Item 1 in the table is revised to make the display of a UN number permissive if dangerous goods are in a quantity exceeding 4,000 kg and are offered for transport by one consignor.

Subsection **4.15(4)** is revised to re-instate the requirement to display the subsidiary class number on placards.

Subsections **4.18(1) and (2)** are clarified to ensure that a gas placard is always displayed when gases are present. Subsection 4.18(3) is revised to require that an oxidizing gas placard is displayed when specific gases are transported.

A new label is added to the **Appendix to Part 4, Dangerous Goods Safety Marks**, for fissile radioactive material. This addition harmonizes the TDG Regulations with recent changes to the International Atomic Energy Agency regulations.

Section **7.1** clarifies the requirement for an Emergency Response Assistance Plan (ERAP). Subsection 7.1(2) deals with an accumulation of dangerous goods in means of containment. Paragraph 7.1(4)(c) now addresses an accumulation of gases in means of containment that have a capacity greater than 100 L.

New subsection **7.1(5)** requires an ERAP for 34 or more rail tank cars containing diesel fuel, gasoline or aviation fuel, in a single train.

New subsection **7.1(6)** lists the infectious substances that require an ERAP. Subsection **7.1(7)** is revised to clarify when a person may use another person's ERAP. Subsection **7.1(8)** is added to clarify that the person who offers for transport or imports dangerous goods is responsible for emergency response assistance even when that person uses another person's ERAP number.

Subsection **7.1(9)** is added to clarify that any dangerous goods that would require an ERAP when they are classified in accordance with the TDG Regulations, require an ERAP when classification from the ICAO Technical Instructions, the IMDG Code or the UN Recommendations is used.

Subparagraphs **9.1(1)(a)(iii)** and **10.1(1)(a)(iii)** are changed to require on a shipping document related to dangerous goods coming from the United States, the classification in Schedule 1 or the UN Recommendations for dangerous goods that have a “D” assigned to them in column 1 of the table to section 172.101 of 49 CFR, other than a consumer commodity. In the TDG Regulations, the word “classification” is defined in Part 1 as shipping name, primary class, compatibility group, subsidiary class, UN number and packing group or category for infectious substances. In the current TDG Regulations, the shipping name is required.

Paragraphs **9.1(2)(d)** and **10.1(2)(d)** are added and reflect a similar statement in 49 CFR. These new paragraphs exclude from reciprocity dangerous goods that are given safety mark or packaging exceptions in 49 CFR, but that do not have the same relaxations in the TDG Regulations.

Subsections **9.2(3)**, **9.3(3)**, **10.2(3)** and **10.3(3)** are revised to provide a clearer text regarding the placarding requirements for dangerous goods being transported to or from an aircraft, an aerodrome, air cargo facility, a ship, a port facility or a marine terminal by road or railway vehicle.

Subsection **10.7(3)** introduces a new table that addresses relative coupling speeds between rail tank cars and other railway vehicles. The table differentiates between railway vehicles with a combined gross mass above 150,000 kilograms and railway vehicles at or below 150,000 kilograms. Relative coupling speeds for railway vehicles at or below 150,000 kilograms have increased to 12.9 or 15.3 kilometres per hour depending on the ambient temperature. The impact severity is less when coupling railway vehicles at or below 150,000 kilograms.

Changes to **Part 12, Air**, clarify requirements and reflect changes to the ICAO Technical Instructions.

Three sections have been added to **Part 16, Inspectors**, that deal with the issuance or review of detention notices, notifications of non-compliance and notifications not to import or to return to place of origin.

Numerous changes to the **Legend to Schedule 1** clarify the text or reflect changes to other parts of the TDG Regulations.

In **Schedule 2, Special Provisions**, a number of special provisions related to explosives are deleted, changed or added to reflect the changes in other parts of the TDG Regulations.

New **special provision 89** provides an exemption, until January 1, 2010, from subsection 5.12(1) for small means of containment that are welded metal tanks used to apply liquid tar to pavement, concrete or metallic structures. They must be fitted with appropriate application equipment and must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger the public.

ALTERNATIVES

The TDG program is committed to the principles that contribute to domestic, transborder and international harmonization in the regulatory requirements for the transportation of dangerous goods while providing the flexibility required for specific conditions in Canada and for particular needs of Canadian industry.

The committees responsible for developing and maintaining the technical standards for the manufacture, selection and use of highway and portable tanks, cylinders and railway vehicles and other means of containment have a balanced representation of manufacturers, users, carriers and regulatory authorities. The committees consider safety issues, cost and practical alternatives, including different time periods for phasing-in requirements.

These committees are aware of the north-south movement of dangerous goods and the need for compatibility with the U.S. Regulations. The committees are also aware of essential international transport of dangerous goods and trade with countries other than the United States. The establishment of divergent Canadian requirements could hinder the free flow of dangerous goods into and out of Canada and place restrictions on Canadian industry.

The development of international recommendations and modal requirements is accomplished by UN committees or specialized agencies of the UN. Canada, as well as other national authorities and modal bodies, base regulatory requirements on the UN Recommendations. These groups are also aware of the need to harmonize international recommendations and modal requirements. The TDG Directorate heads the Canadian delegation to the UN Sub-Committee of Experts on the Transport of Dangerous Goods, which is responsible for the UN Recommendations and the Manual of Tests and Criteria, and acts as technical advisor to the members on the ICAO Dangerous Goods Panel, which is responsible for the Technical Instructions, and the IMO's Sub-Committee on Dangerous Goods, Solid Cargoes and Containers, which is responsible for the IMDG Code. In addition, the TDG Directorate heads the Canadian Delegation to the Joint Meeting of the European road and rail regulators.

The amendments, for example, enhance harmonization between NRCan Explosives Regulations and TDG Regulations that could not be done differently as far as EVCs are concerned. On the issue of placards at lower quantities, an amount of 25 kg NEQ was considered. The evacuation distance for 25 kg in a suitcase bomb is given as 564 meters by the U.S. national forum that identifies, prioritizes and coordinates interagency and international research and development. The tables of distances from ERD of NRCan show vulnerable buildings are at risk 400 meters from the blast. Consequently, 25 kg NEQ was deemed too high from a safety point of view.

These amendments enhance the functioning of the transportation of dangerous goods regulatory program. They reflect what has been considered to be the best alternative based on safety and economic grounds. For example, in the case of errors or undue restrictions in the TDG Regulations, there is no alternative but to modify the existing regulatory text.

Consequently, no other alternatives were considered.

BENEFITS AND COSTS

The amendments clarify requirements, address safety issues, continue to improve safety in the transportation of dangerous goods and align the TDG Regulations with international recommendations and modal requirements and the U.S. dangerous goods regulations.

In general, the amendments will not adversely affect the way consignors and carriers of dangerous goods do business. Most will conduct their activities as currently performed and will use the optional changes that may help them to increase efficiency. However, costs will be incurred as companies review their operations to determine if immediate adjustments are required, to what extent adjustments are required, and how best to implement the adjustments.

The amendments are expected to enhance the functioning of the transportation of dangerous goods regulatory program. In the long run, the benefits to be realized are estimated to equal or exceed any associated costs.

For example, **re-training** employees will represent a financial expenditure and an effort in time. For employees whose work is not affected by the amendments, no supplementary training is anticipated. Awareness material alone may be sufficient to inform employees of the changes. However, companies may have to use resources to determine whether or not employees require supplementary training. The complexity of a company's operation and the number of dangerous goods the company handles will affect the cost of this determination. For some industries, there will be a need to modify training programs or to revise training materials, to re-train trainers or to re-train key employees. This could require an investment in the tens of thousands of dollars per organization or industry sector.

Re-training employees is expected to require a few hours at an estimated cost of \$50 to \$100 per person, depending on travel or overtime required, or what training aids may be needed. Two provinces estimate that the cost to re-train their inspectors will range from \$10,000 to \$20,000 dollars. The effort to re-train employees will be mitigated given that certificates of training must be renewed every three years. One third of these employees would, therefore, receive re-training within the first year of implementation of these amendments. This would not represent a new cost. And some companies even schedule regular training sessions on an annual basis.

The following are some specific benefit and cost issues that were raised during consultation.

The fertilizer industry agrees that the **5-year (maximum) requalification period** in the revised standard CGSB-43.147 is more appropriate for **pressure relief valves that are subject to anhydrous ammonia use**. A high number of releases involving anhydrous ammonia pressure relief valves and spring defects have been identified through accident reports. Recent facility visits show that a majority of tank car facilities have implemented the 5-year (maximum) requalification practice.

Class 1, Explosives, changes requiring placards on vehicles will represent a cost to the explosives industry. It will have a greater impact on the transporters of small quantities of explosives. The cost of a placard is approximately \$3.35. Putting placards on a vehicle in Canada then costs close to \$14 (four placards, one on each side). This is considered the minimum amount as different products might be transported, requiring different placards. If, for example, eight different placards are required, the cost would be $32 \times \$3.35 = \107.20 for a vehicle. Alternately, the cost of four flip-style metal placards would be between \$117 and \$189. However, most companies already display placards on their vehicles for quantities lower than 75 kg NEQ and many have indicated that the cost of placards is negligible.

The new section 9.5 restricting the maximum net explosives quantity in a road vehicle replaces the Explosives Vehicle Certificate (EVC). From a safety point of view, there is no change as the EVC was available for most vehicles. As of September 2004, there were some 1,500 active EVCs registered with TDG. As each one represents a \$30 cost to the industry, the abolition of EVCs represents a saving to the industry of approximately \$45,000 per year.

The **re-class of anhydrous ammonia** to Class 2.3, toxic gas, will have an economic impact on consignors and users of anhydrous ammonia. For example, the Canadian Association of Agri-Retailers is expected to spend approximately \$145,000 to update training materials, industry reference guides and other initiatives to educate over 6,600 persons on the new class and the new placard and marking requirements. This includes amending agri-retail and farmer anhydrous ammonia presentations, emergency response training brochure and agri-retailer and farmer certificates of training as well as educating handlers on the new class and requirements. The manufacturing sector is also expected to commit significant resources to update materials and retrain emergency responders on the new requirements. One stakeholder estimates that to generate new delivery tickets and documentation books for their nine locations will easily exceed \$1,500.

There are approximately 12,000 anhydrous ammonia tanks (otherwise known as nurse tanks) in service. Replacing placards (from the current Class 2.2 placard to either Class 2.3 or the Anhydrous Ammonia placard) and adding the words “Anhydrous Ammonia, Inhalation Hazard” (when the anhydrous ammonia placard is displayed) on these tanks is expected to cost \$516,000 to \$600,000, based on each tank requiring two placards at \$3 to \$5 per tank and decals (to display the required words) at \$40 to \$45 per tank. The cost to replace placards will be reduced as a certain percentage of placards are regularly changed due to wear and tear. Removing the adhesive placards and old decals involves a heat gun, scraping, sandblasting and repainting damaged areas. This is estimated to cost between \$720,000 and \$900,000 based on 3 hours of labour at \$15 to \$20 per hour and \$15 for supplies. However, it is recognized that the cost to remove adhesive placards or old decals can be reduced for companies who apply new placards over existing placards or apply new decals (used to display the words “Anhydrous Ammonia, Inhalation Hazard”) over existing wording on the tank.

There are also approximately 1,200 trucks and highway trailers that transport anhydrous ammonia. They require four placards per vehicle. The replacement cost for the placards and the addition of the words “Anhydrous Ammonia, Inhalation Hazard” is estimated to be from \$7,500 to \$12,500 for the placards and from \$48,000 to \$54,000 for the words. Again, the placard cost is expected to be less because a certain percentage of the placards are regularly changed due to wear and tear. The labour cost to remove and replace adhesive placards and old decals is estimated to be between \$72,000 and \$90,000. It is recognized, again, that the cost to remove the adhesive placards or old decals is less for those companies who apply new placards or new decals over existing placards or wording.

Industry recommends that the replacement of placards and decals take place in concert with the 5-year rigorous external inspection schedule for nurse and highway tanks. It is recognized that the major benefits will accrue to the first responders.

There are approximately 5,000 cylinders that are used to transport anhydrous ammonia. Labels on these cylinders will also have to be replaced at an estimated cost of \$11,150 to \$21,550, based on \$0.15 per label (a label that meets TDG and WHIMS requirements), 5 to 10 minutes to scrape the old label off and re-apply the new label, and a labour cost of \$25 per hour. It is also recognized that the cost to remove the adhesive labels will be less for those companies who apply new labels over existing labels.

The re-class of anhydrous ammonia to a toxic gas will also have an impact on companies involved in refrigeration. The exemption in section 1.16 does not apply to dangerous goods in Class 2.3. The cost to upgrade the training for persons employed by these companies is estimated to cost \$47,000, based on 1,000 companies, an average of 2.5 persons to retrain, 30 minutes to retrain at \$25 per hour plus trainers costs.

The stakeholders generally see the **new classification criteria for infectious substances** that is moving from four risk groups to two categories as an improvement. These criteria are considered simpler and more sensible from a risk transportation perspective. The movement to unifying packaging, marking and labelling for surface and air transport is seen as a positive change.

For the health community involved in the transport of infectious substances, the changes required for the training of personnel are not seen as having much impact monetarily as the simplicity of the new system would make the changes represent only a small portion of the training budget.

The transportation and packaging costs depend very much on the substances handled by each organisation/laboratory. For some, exemptions such as the one in section 1.42 for Human or Animal Specimens will constitute a benefit as there is no need for special packaging and no additional cost for courier services, as the substances are not regulated. For others, the additional requirements placed on the type 1B packaging, the labelling and courier transportation associated with Category B infectious substances would represent a cost.

One provincial Society of Medical Laboratory Science believes replacing the four risk groups with Category A and Category B will impact the exemption status for the majority of the former risk group 2 organisms and some risk group 3 organisms. This provincial society also believes that moving infectious specimens to Category B, UN3373, will identify them as dangerous goods and will require more consignors, receivers and carriers to be trained in accordance with the TDG Regulations. This may increase shipments being contracted at a greater cost to their laboratory system, with the potential to increase transportation costs by an order of magnitude. Furthermore, modifications to the type 1B packaging may have significant financial implications to their laboratory system. If a system wide replacement of their means of containment were necessary, the cost could be \$60,000.

The rationale for requiring an ERAP for the Category A infectious substances listed in subsection 7.1(6) is that these infectious substances pose not only a high individual risk (i.e., person exposed to a spill) but also a high risk to the community (i.e. Canadian population). Spills involving these infectious substances should be cleaned up by specialized ERAP teams who are not only trained in decontamination procedures but also in the Canadian Contingency Plan for Viral Hemorrhagic Fevers and Other Related Diseases.

The ERAP lists provincial public health officers responsible for the management of persons potentially exposed to such infectious substances. There is a critical delineation between the infectious substances within Category A requiring or not requiring an ERAP. The infectious substances requiring an ERAP are not indigenous to Canada so our population is not immune, and our health care system is not “readily” prepared to deal with such emergencies. The consequences of an outbreak of such untreatable diseases in Canada would be severe.

Category A infectious substances not requiring an ERAP are infectious substances that do not present the same kind of risk to the Canadian population as do the viral hemorrhagic fevers and are not part of the Canadian Contingency Plan. Proper handling of a spill and decontamination procedures are still required to protect exposed individuals but invoking the Canadian Contingency Plan and inclusion of the provincial public health authorities in the response is not required.

CSA B621 and CSA B622 standards recognize tanks manufactured to corresponding specifications in 49 CFR as equivalent to those manufactured to the Canadian standard CSA B620. Subsections 5.10(6) and 5.14(2) are added to ensure that highway tanks and certain portable tanks used to offer dangerous goods for transport in Canada are manufactured, tested and inspected in accordance with CSA B620, if they are manufactured or tested in Canada beginning August 31, 2008. Generally speaking, the costs to manufacture these tanks to CSA B620 or 49 CFR specifications do not vary significantly. The primary exception is that CSA B620 calls for a third party design review for the manufacture of highway tanks that are pressure vessels. Design reviews vary in cost from \$1,500 to \$5,000 (less than 5 per cent of the overall cost of a highway tank) depending on the size and complexity of the highway tank. This cost will be amortized over the total number of tanks manufactured to that design over the ten-year life of the design review.

For example, it is believed that design oversight provisions in Canadian tank standards are more effective than those in 49 CFR. Design errors have been discovered before manufacture that results in a better tank being built with less liability being assumed by the owner in the event of a tank failure. Third party design review requirements will not impact all types of highway tanks such as highway tanks used to transport hydrocarbons are not pressure vessels.

Again, there are no significant differences between Canadian and U.S. test and inspection requirements. Registration of facilities requires quality control manuals that are more comprehensive than ASME manuals required by 49 CFR. Some U.S. manufacturers and test facilities are currently registered to manufacture and test highway tanks or portable tanks to the CSA standards. Requiring highway tanks manufactured in Canada and used to offer dangerous goods for transport in Canada to be manufactured to a Canadian standard rather than a foreign standard facilitates monitoring compliance with prescribed standards.

On May 3, 2007, the U.S. Department of Transportation issued a Final Rule, HM-215F, that grants full recognition to bulk packagings manufactured in accordance with Canadian standards. As a result, Canada and the United States now recognize each other's tanks to the extent that a tank manufactured according to 49 CFR and built in the United States will be accepted for use in Canada while a tank manufactured according to Canadian standards and built in Canada will be accepted for use in the United States. This change in the United States took effect October 1, 2007.

Previously, tanks manufactured to Canadian standards were prohibited from being loaded with dangerous goods in the United States. Canadian highway tanks transporting dangerous goods from Canada to the United States were required to return to Canada empty, residue only. Tanks manufactured to 49 CFR did not have a similar restriction in Canada.

CONSULTATION

Consultation included the identification of issues and concerns, and a major effort to obtain a wide consensus, involving groups and organizations responsible for public safety. Clarity and presentation of the text, costs and benefits, alternatives, enforcement policies and public safety initiatives were raised and discussed.

The TDG Directorate participates in the development of consensus standards relating to the manufacture, selection and use of means of containment for the transportation of dangerous goods. The safety standards are prepared and published by the CSA and CGSB and are incorporated by reference into the TDG Regulations. The committees developing these standards have members representing a balance of interests including manufacturers of containers, users, regulatory authorities, and members with a general interest and expertise. These amendments reflect the safety concerns raised, cost and alternatives discussed and adopted by these committees. The consensus process in standards development is, by its nature, one of consultation.

In addition, the amendments have benefited from discussions and consultations with interested parties including trucking firms and industry associations, explosive industry and Natural Resources Canada, the Transportation of Dangerous Goods General Policy Advisory Council (see footnote 2), the Federal-Provincial/Territorial TDG Task Force (see footnote 3). Consultation before publication in the Canada Gazette, Part I included three drafts of the amendments and the drafts were made available to stakeholders on Transport Canada's Web site and in hard copy if requested.

There was also consultation with the U.S. Department of Transportation. In addition, representatives of the Directorate are head of the Canadian delegation or participate at international meetings such as the UN Committee and Sub-Committee of Experts on the Transport of Dangerous Goods, the International Maritime Organization, the International Civil Aviation Organization, the International Atomic Energy Agency and the North American Free Trade Agreement's Land Transportation Standards Sub-Committee.

For example, consultation on Class 1 changes was first conducted internally and with ERD of Natural Resources Canada. The revisions that followed were presented on May 28, 2004 to the Canadian Explosives Industry Association in Kelowna, BC and to the TDG General Policy Advisory Council meeting of June 10, 2004 along with other changes. The comments that followed contributed to the addition of some UN numbers in the exemptions to the TDG Regulations.

PRE-PUBLICATION

The amendments were published in the Canada Gazette, Part I on September 30, 2006 followed by a 75-day comment period. Fifty-three written submissions were received from companies, industry associations, government representatives and interested parties. Subsequent discussions and consultations were also held at TDG General Policy Advisory Council and the Federal-Provincial/Territorial TDG Task Force meetings, at meetings with industry representatives and following the posting of the latest draft of the amendments on the Transport Canada Web site.

The introduction of a new term "ROM container" to deal with the appropriate means of containment for dangerous goods was not supported as the majority of the stakeholders did not see the need. New paragraph 1.3(2)(i) clarifies the minimum required means of containment. All references in these amendments to ROM containers have been removed.

The amendments further update references to the documents listed in the Table to new section 1.3.1 and to the definitions in section 1.4 of the TDG Regulations to: the 3rd Edition of the Standard for Classification of Toxic Gas Mixtures, 2003, published by the Compressed Gas Association, Inc. (CGA), the 2006 edition of 49 CFR, the 2007-2008 Edition of the ICAO Technical Instructions and the Supplement, and the 2006 Edition, including Amendment 33-06 of IMDG Code.

The definition of "gross mass" in section 1.4 is further clarified and also includes consequential revisions to the regulatory text. The definition of a drum has been clarified by replacing the reference to "a maximum capacity of 19 litres" with a "means of containment of rectangular or polygonal cross-section" which is consistent with the UN Recommendations.

Paragraph 1.15(1)(d) has been deleted because stakeholders felt it was not necessary to limit the small quantities or concentrations of dangerous goods to those available to the general public and transported by the purchaser.

Two explosives UN0027 and UN0028 are removed from the list of exempted explosives in sub-paragraph 1.15(2)(c)(i) because they are grades of Black Powder, Class 1.1D that were inadvertently added to the list.

Paragraph (d) of subsection 1.16(2) is added to include Class 2.1 dangerous goods that are in a cylinder with a capacity greater than 46 L. This paragraph was inadvertently omitted from the dangerous goods that are excluded from the 500 kg Gross Mass Exemption.

Section 1.26, Emergency Response Exemption is added to clarify that the exemption only applies to an emergency where there is a danger to public safety. This new section also addresses emergency response for air transport replacing section 12.16 in Part 12.

The propane industry reiterated their concerns raised before pre-publication, and were supported by the forestry industry, with the proposal to remove Special Provision 42 that exempted five Class 2 gases under certain conditions (e.g., propane), from Part 3, Documentation, the placarding requirements in Part 4, Dangerous Goods Safety Marks, and Part 6, Training. Before pre-publication, fifty-four letters representing 49 propane companies expressing their concern with the deletion of this special provision were received from across Canada. For example, the propane industry cited the proposal to delete Special Provision 42 as a significant barrier to consumer transportation that would require training and documentation. The forestry industry cited increased fibre costs, training costs and the inability to transport acetylene cylinders under section 1.16. Both industries felt that there would be no real advantage to safety.

As a result, Special Provision 42 is now in new section 1.32.3, Class 2, Gases, In Small Means of Containment. In addition, the list of Class 2 gases eligible for this exemption has been extended to include UN1013, CARBON DIOXIDE and UN1066, NITROGEN, COMPRESSED. These dangerous goods have properties and characteristics similar to those gases already exempted.

Responding to concerns that the training exemptions in sections 1.34.1 and 1.35 are inconsistent, Part 6 (Training) has been added in new section 1.34.1 to the list of Parts in the TDG Regulations that do not apply.

The proposal to remove the diesel fuel or gasoline exemption in section 1.35 after December 31, 2007 has been withdrawn. The construction, forestry, agriculture, mining, and the oil and gas industries did not support the proposal. The impact to their industries would have been significant, including additional training costs, considerable increase in the amount of documentation that would have to be maintained, and industry's use of slip tanks. The requirement to comply fully with the TDG Regulations would have been onerous, difficult to implement and more difficult to enforce including on the general public. In addition, the reference to vehicle in section 1.35 has been clarified to mean a road vehicle.

New section 1.48, Air Ambulance Exemption, is aligned with the ICAO Technical Instructions. The requirements now follow a more streamlined approach for dangerous goods required for patient care on an aircraft. This change follows discussions with the civil aviation community.

Criteria for inclusion in Class 6.1, toxic substances and corresponding packing groups in sections 2.28 and 2.29 have been revised to align with the UN Recommendations and with the second revised edition of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Subsection 4.9(1) has been revised to include conditions that may require a change to the display of dangerous goods safety marks.

The compressed gas industry expressed concern with the labelling and placarding requirements for a combination of cylinders, each with a capacity greater than 225 L and having a combined capacity exceeding 450 L, and with tubes that are a single unit, interconnected through a piping arrangement, permanently mounted on a structural frame. This combination of cylinders or tubes can easily be placarded as a large means of containment without compromising safety. New paragraph 4.10(1)(d) and subsection 4.18(6) have been added to address this need.

The addition of the words “subsidiary class” to subsection 4.15(4) aligns the TDG Regulations with international requirements and 49 CFR.

The coming into force date for the display of the Class 2.3 or Anhydrous Ammonia placards in subsection 4.18(5) has been revised to August 31, 2008. This provides the agricultural community additional time to comply with these new requirements. They were aware of this extension, which was discussed at the last TDG General Policy Advisory Council meeting.

Subsection 4.22(3) has been added to clarify that a placard and UN number are not required to be displayed when the marine pollutant mark is not required to be displayed.

The words “in use in Canada before January 1, 1993” have been removed from paragraph 5.10(2)(b). These words were in the text of paragraphs 7.32(b) and 8.4.2(2)(b) of the TDG Regulations as it existed before August 2001. By repeating the words in 5.10(2)(b) of the current TDG Regulations, this condition would apply more broadly than intended i.e., to Canadian approved cylinders that were used outside Canada, making Canadian approved cylinders ineligible to be used in Canada.

The words “in Canada” have been introduced in the text in paragraphs 5.10(6)(a) and 5.14(2)(a). Therefore, means of containment prescribed under CSA B621 and CSA B622, that are manufactured in Canada and used in Canada to offer dangerous goods for transport must be manufactured to the Canadian Standard CSA B620 on or after August 31, 2008. The principle that highway tanks manufactured in Canada for use in Canada should be manufactured in accordance with the Canadian standard CSA B620 is maintained. This facilitates the appropriate inspection of these tanks during their manufacture in Canada. There is little or no monitoring by U.S. authorities of manufacturing requirements for tanks manufactured in Canada to 49 CFR for use in Canada.

A concern has been raised by a Canadian manufacturer of highway tanks who manufactures 407 tanks in Canada in accordance with 49 CFR for use in Canada. This company points to a difference in the weld inspection requirements between 49 CFR and the Canadian standard. The company believes that this difference leads to the Canadian standard being more stringent and the Canadian tanks more expensive to manufacture so that the two tanks are not truly equivalent.

The technical requirements applicable to tanks in CSA B620 are under continuous review by the CSA B620 Technical Committee. The Committee is aware of all relevant factors pertaining to the CSA B620 standard including safety, cost, alignment with U.S. requirements as well as any particular Canadian needs. Equivalence in safety is established after consideration of all applicable requirements rather than any one specific requirement. Nonetheless, there is agreement to delay the coming into force of this provision related to highway tanks to August 31, 2008 to allow the CSA standard committee to further consider this issue.

Subsection 7.1(2) deals with an accumulation of dangerous goods in means of containment each having a capacity that is greater than 10 percent of the ERAP limit in column 7 of Schedule 1. The initial proposal dealt with means of containment that had a capacity greater than 225 L. This excluded the accumulation of even smaller (less than or equal to 225 L) means of containment that should have an ERAP.

The coming into force date for the display of Class 2.3 or Class 6.1 labels and placards in paragraphs 9.1(1)(c) and 10.1(1)(c) has been revised to August 31, 2008. This provides the industry additional time to comply.

Law enforcement agencies expressed concern with the proposed deletion of section 1.47 that permitted officers to carry ammunition, or ammunition loaded in a firearm, while on duty on board an aircraft. One air carrier reported numerous cases where officers requested and received permission to carry firearms aboard an aircraft. The air industry supports retaining this authorization now in the new subsection 12.4(2).

Section 12.7 that dealt with general requirements for infectious substances transported by air within Canada has been deleted. Portions of section 12.7 became redundant with revisions to Class 6.2, Infectious Substances, and the development of Category B infectious substances.

UN1978, PROPANE, has been added to Special Provision 88. This allows small quantities of propane, for example, barbeque cylinders to be transported in a passenger carrying road vehicle.

A number of commentors requested a minimum lead time (six to twelve months) between publication in the Canada Gazette, Part II and the Coming into Force of these amendments to properly position themselves to implement the changes (i.e., allow for modifications to training programs, re-training, revision of governance documentation, and re-placard and mark means of containment). The Coming into Force date as the date these amendments are registered has been retained. The enforcement of these amendments will be gradual allowing the regulated community time to comply.

STRATEGIC ENVIRONMENTAL ASSESSMENT

In accordance with the 1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals, and the Transport Canada Policy Statement on Strategic Environmental Assessment, a strategic environmental assessment (SEA) of the amendments was conducted in the form of a Preliminary Scan. The SEA concluded that the amendments are not likely to have important environmental implications.

COMPLIANCE AND ENFORCEMENT

Compliance with the TDG Act, 1992, and the TDG Regulations is accomplished through the existing inspection network in Canada. The network includes both federal and provincial inspection forces that inspect all modes of transport and all consignors of dangerous goods. These inspectors ensure that the various safety standards, rules and requirements of the TDG Act, 1992, and the TDG Regulations are complied with.

CONTACTS

For further information on the Regulatory Impact Analysis Statement, please contact:

Mr. Kim O'Grady
Chief, Evaluation Division
Transport Dangerous Goods Directorate
Department of Transport
Place de Ville, Tower C, 9th Floor
330 Sparks Street
Ottawa, Ontario
K1A 0N5
Telephone: 613-990-1145
Fax: 613-993-5925
Email: ogradyk@tc.gc.ca

For further information on the amendments to the TDG Regulations, please contact:

Ms. Linda Hume-Sastre
Director, Legislation and Regulations Branch
Transport Dangerous Goods Directorate
Department of Transport
Place de Ville, Tower C, 9th Floor
330 Sparks Street
Ottawa, Ontario
K1A 0N5
Telephone: 613-998-0517
Fax: 613-993-5925
Email: humel@tc.gc.ca