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> Regulations Amending the Transportation of Dangerous Goods Regulations (Lithium Metal Batteries, ERAPs and Updates to Schedules)

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TRANSPORTATION OF DANGEROUS GOODS ACT, 1992

Regulations Amending the Transportation of Dangerous Goods Regulations (Lithium Metal Batteries, ERAPs and Updates to Schedules)

P.C. 2014-1461 December 12, 2014

His Excellency the Governor General in Council, on the recommendation of the Minister of Transport, pursuant to section 27 ([see footnote a](#)) of the *Transportation of Dangerous Goods Act, 1992* ([see footnote b](#)), makes the annexed *Regulations Amending the Transportation of Dangerous Goods Regulations (Lithium Metal Batteries, ERAPs and Updates to Schedules)*.

REGULATIONS AMENDING THE TRANSPORTATION OF DANGEROUS GOODS REGULATIONS (LITHIUM METAL BATTERIES, ERAPS AND UPDATES TO SCHEDULES)

AMENDMENTS

1. (1) The Table of Contents of Part 1 of the *Transportation of Dangerous Goods Regulations* ([see footnote 1](#)) is amended by adding the following after the entry for section 1.17:

Excepted Quantities Exemption 1.17.1

(2) The Table of Contents of Part 1 of the Regulations is amended by adding the following after the entry for section 1.42.2:

Medical or Clinical Waste 1.42.3

(3) The Table of Contents of Part 1 of the Regulations is amended by adding the following after the entry for section 1.48:

Cylinder Exemption 1.49

2. The table to section 1.3.1 of the Regulations is replaced by the following:

TABLE

Item	Column 1 Short Form	Column 2 Safety Standard or Safety Requirement
1 (1)	ASTM D 1200	ASTM D 1200-94, "Standard Test Method for Viscosity by Ford Viscosity Cup", August 15, 1994, published by the American Society for Testing and Materials (ASTM)
2 (2)	ASTM D 4359	ASTM D 4359-90, "Standard Test Method for Determining Whether a Material Is a Liquid or a Solid", July 1990, published by the American Society for Testing and Materials (ASTM)
3 (3)	ASTM F 852	ASTM F 852-86, "Standard Specification for Portable Gasoline Containers for Consumer Use", June 1986, published by the American Society for Testing and Materials (ASTM)
4 (4)	CGA P-20	"Standard for Classification of Toxic Gas Mixtures", Fourth Edition, 2009, published by the Compressed Gas Association, Inc. (CGA)
5 (5)	CGSB-32.301	National Standard of Canada CAN/CGSB-32.301-M87, "Canola Meal", April 1987, published by the Canadian General Standards Board (CGSB)
6 (6)	CGSB-43.123	Canadian General Standards Board, CGSB-43.123-2010, "Aerosol Containers and Gas Cartridges for Transport of Dangerous Goods", June 2010, published by the Canadian General Standards Board (CGSB)

7 (7)	CGSB-43.125	National Standard of Canada CAN/CGSB-43.125-99, "Packaging of Infectious Substances, Diagnostic Specimens, Biological Products and Biomedical Waste for Transport", May 1999, published by the Canadian General Standards Board (CGSB)
8 (8)	CGSB-43.126	Canadian General Standards Board, CGSB-43.126-2008, "Reconditioning, Remanufacturing and Repair of Drums for the Transportation of Dangerous Goods", September 2008, published by the Canadian General Standards Board (CGSB)
9 (9)	CGSB-43.146	National Standard of Canada CAN/CGSB-43.146-2002, "Design, Manufacture and Use of Intermediate Bulk Containers for the Transportation of Dangerous Goods", January 2002, published by the Canadian General Standards Board (CGSB)
10 (10)	CGSB-43.151	National Standard of Canada CAN/CGSB-43.151-2012, "Packing, handling, offering for transport and transport of Explosives (Class 1)", October 2012, published by the Canadian General Standards Board (CGSB)
11 (12)	CSA B339	CSA Standard B339-08, "Cylinders, spheres, and tubes for the transportation of dangerous goods", March 2008, published by the Canadian Standards Association (CSA)
12 (13)	CSA B340	CSA Standard B340-08, "Selection and use of cylinders, spheres, tubes, and other containers for the transportation of dangerous goods, Class 2", March 2008, published by the Canadian Standards Association (CSA)
13 (14)	CSA B341	CSA Standard B341-09, "UN pressure receptacles and multiple-element gas containers for the transport of dangerous goods", March 2009, published by the Canadian Standards Association (CSA)
14 (15)	CSA B342	CSA Standard B342-09, "Selection and use of UN pressure receptacles and multiple-element gas containers for the transport of dangerous goods, Class 2", March 2009, published by the Canadian Standards Association (CSA)
15 (16)	CSA B620	CSA Standard B620-09, "Highway tanks and TC portable tanks for the transportation of dangerous goods", January 2009, published by the Canadian Standards Association (CSA)
16 (17)	CSA B621	CSA Standard B621-09, "Selection and use of highway tanks, TC portable tanks, and other large containers for the transportation of dangerous goods, Classes 3, 4, 5, 6.1, 8, and 9", January 2009, published by the Canadian Standards Association (CSA)
17 (18)	CSA B622	CSA Standard B622-09, "Selection and use of highway tanks, TC portable tanks, and ton containers for the transportation of dangerous goods, Class 2", January 2009, published by the Canadian Standards Association (CSA)
18 (19)	CSA B625	CSA Standard B625-08, "Portable tanks for the transport of dangerous goods", July 2008, published by the Canadian Standards Association (CSA)
19 (20)	CSA B626	CSA Standard B626-09, "Portable tank specification TC 44", February 2009, published by the Canadian Standards Association (CSA)
20 (34)	49 CFR	Parts 171 to 180 of Title 49 of the "Code of Federal Regulations" of the United States, 2010, but does not include Subpart B of Part 107 when that subpart is referenced in Parts 171 to 180
21 (21)	ICAO Technical Instructions	"Technical Instructions for the Safe Transport of Dangerous Goods by Air", 2011-2012 Edition, published by the International Civil Aviation Organization (ICAO)
22 (11)	IMDG Code	Volumes 1 and 2 of the "International Maritime Dangerous Goods Code", 2010 Edition, including Amendment 35-10, published by the International Maritime Organization (IMO)
23 (22)	ISO 2431	International Standard ISO 2431, "Paints and varnishes — Determination of flow time by use of flow cups", Fourth Edition, February 15, 1993, including Technical Corrigendum 1, 1994, published by the International Organization for Standardization (ISO)
24 (23)	ISO 2592	International Standard ISO 2592:2000(E), "Determination of flash and fire points — Cleveland open cup method", Second Edition, September 15, 2000, published by the International Organization for Standardization (ISO)
25 (24)	ISO 9328-2	International Standard ISO 9328-2, "Steel plates and strips for pressure purposes — Technical delivery conditions — Part 2: Unalloyed and low-alloyed steels with specified room temperature and elevated temperature properties", First Edition, December 1, 1991, published by the International Organization for Standardization (ISO)
26 (25)	ISO 10156	International Standard ISO 10156, "Gases and gas mixtures — Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets", Second Edition, February 15, 1996, published by the International Organization for Standardization (ISO)

27 (26)	ISO 10298	International Standard ISO 10298, "Determination of toxicity of a gas or gas mixture", First Edition, December 15, 1995, published by the International Organization for Standardization (ISO)
28 (31)	Manual of Tests and Criteria	"Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria", Fifth Revised Edition, 2009, published by the United Nations (UN)
29 (32)	MIL-D-23119G	MIL-D-23119G, "Military Specification: Drums, Fabric, Collapsible, Liquid Fuel, Cylindrical, 500-Gallon Capacity", July 15, 1992, published by the United States Department of Defense
30 (33)	MIL-T-52983G	MIL-T-52983G, "Military Specification: Tanks, Fabric, Collapsible: 3,000, 10,000, 20,000 and 50,000 Gallon, Fuel", May 11, 1994, published by the United States Department of Defense
31 (27)	OECD Guidelines 404	OECD Guidelines for the Testing of Chemicals No. 404, "Acute Dermal Irritation/Corrosion", April 24, 2002, published by the Organization for Economic Co-operation and Development (OECD)
32 (28)	OECD Guidelines 430	OECD Guidelines for the Testing of Chemicals No. 430, " <i>In Vitro</i> Skin Corrosion: Transcutaneous Electrical Resistance Test Method", July 26, 2013, published by the Organization for Economic Co-operation and Development (OECD)
33 (29)	OECD Guidelines 431	OECD Guidelines for the Testing of Chemicals No. 431, " <i>In vitro</i> skin corrosion: reconstructed human epidermis (RHE) test method", July 26, 2013, published by the Organization for Economic Co-operation and Development (OECD)
34 (30)	OECD Guidelines 435	OECD Guideline for the Testing of Chemicals No. 435, "In Vitro Membrane Barrier Test Method for Skin Corrosion", July 19, 2006, published by the Organization for Economic Co-operation and Development (OECD)
35 (36)	Supplement to the ICAO Technical Instructions	Supplement to the "Technical Instructions for the Safe Transport of Dangerous Goods by Air", 2011-2012 Edition, published by the International Civil Aviation Organization (ICAO)
36 (37)	TP14850	Transport Canada Standard TP14850E, "Small Containers for Transport of Dangerous Goods, Classes 3, 4, 5, 6.1, 8 and, 9, a Transport Canada Standard", 2 nd Edition, October 2010, published by the Department of Transport
37 (38)	TP14877	Transport Canada Standard TP14877E, "Containers for Transport of Dangerous Goods by Rail, a Transport Canada Standard", December 2013, published by the Department of Transport
38 (39)	ULC Standard S504	National Standard of Canada CAN/ULC-S504-02, "Standard for Dry Chemical Fire Extinguishers", Second Edition, August 14, 2002, as amended January 2007, August 2007 and April 2009, published by Underwriters' Laboratories of Canada
39 (40)	ULC Standard S507	National Standard of Canada CAN/ULC-S507-05, "Standard for Water Fire Extinguishers", Fourth Edition, February 28, 2005, as amended January 2007, published by Underwriters' Laboratories of Canada
40 (41)	ULC Standard S512	National Standard of Canada CAN/ULC-S512-M87, "Standard for Halogenated Agent Hand and Wheeled Fire Extinguishers", April 1987, as amended March 1989, March 1990, April 1993, September 1996, September 1997 and April 1999, and reaffirmed February 2007, published by Underwriters' Laboratories of Canada
41 (42)	ULC Standard S554	National Standard of Canada CAN/ULC-S554-05, "Standard for Water Based Agent Fire Extinguishers", Second Edition, February 28, 2005, and reaffirmed 2010, published by Underwriters' Laboratories of Canada
42 (35)	UN Recommendations	"Recommendations on the Transport of Dangerous Goods", Seventeenth Revised Edition, 2011, published by the United Nations (UN)

3. (1) The definition "genetically modified micro-organism" in section 1.4 of the Regulations is repealed.

(2) The definition "ship" in section 1.4 of the Regulations is replaced by the following:

ship

has the meaning assigned by the definition of "vessel" in section 2 of the "Canada Shipping Act, 2001". **(navire)**

(3) Section 1.4 of the Regulations is amended by adding the following in alphabetical order:

fuel cell

means an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products. **(pile à combustible)**

fuel cell cartridge

means an article that stores fuel for discharge into a fuel cell through one or more valves that control the discharge of the fuel into the fuel cell. **(cartouche pour pile à combustible)**

fuel cell engine

means a device that is used to power equipment and that consists of a fuel cell and its fuel supply, whether integrated with or separate from the fuel cell, and includes all appurtenances necessary to fulfil its function. **(moteur pile à combustible)**

lithium content

means the mass of lithium in the anode of a lithium metal or lithium alloy cell. **(quantité de lithium)**

watt-hour or Wh

the electrical energy developed by a power of 1 watt (W) during 1 hour (h) and expressed as watt-hour (Wh). **(wattheure ou Wh)**

4. Subsection 1.5.2(1) of the Regulations is replaced by the following:

(1) When the word "Forbidden" is shown for dangerous goods in column 3 of Schedule 1 or column 2 of Schedule 3, a person must not handle, offer for transport or transport the dangerous goods.

5. (1) The portion of subsection 1.6(1) of the Regulations before paragraph (a) is replaced by the following:

(1) When there is a number shown in column 8 of Schedule 1, that number is a quantity limit per means of containment for the corresponding dangerous goods in column 2. A person must not load onto a passenger carrying ship, or transport on a road vehicle or a railway vehicle on board a passenger carrying ship, dangerous goods that exceed the quantity limit. Dangerous goods exceed the quantity limit if

(2) The portion of subsection 1.6(2) of the Regulations before paragraph (a) is replaced by the following:

(2) When there is a number shown in column 9 of Schedule 1, that number is a quantity limit per means of containment for the corresponding dangerous goods in column 2. A person must not offer for transport or transport by passenger carrying road vehicle or passenger carrying railway vehicle dangerous goods that exceed the quantity limit. Dangerous goods exceed the quantity limit if

6. (1) Paragraph 1.15(2)(c) of the Regulations is replaced by the following:

(c) are included in Class 1, Explosives, except for UN numbers UN0044, UN0105, UN0131, UN0161, UN0173, UN0186, UN0191, UN0197, UN0276, UN0312, UN0323, UN0335 if classified as a consumer firework, UN0336, UN0337, UN0351, UN0373, UN0404, UN0405, UN0431, UN0432, UN0454, UN0499, UN0503, UN0505 to UN0507 and UN0509;

(2) Paragraph 1.15(2)(g) of the Regulations is replaced by the following:

(g) are included in Class 5.2, Organic Peroxides, unless they are allowed to be transported as limited quantities in accordance with section 1.17 and column 6(a) of Schedule 1;

7. Paragraph 1.16(2)(g) of the Regulations is replaced by the following:

(g) are included in Class 5.2, Organic Peroxides, unless they are allowed to be transported as limited quantities in accordance with section 1.17 and column 6(a) of Schedule 1;

8. Subparagraphs 1.17(1)(b)(i) to (iii) of the Regulations are replaced by the following:

(i) if solids, have a mass that is less than or equal to the number shown in column 6(a) of Schedule 1, when that number is expressed in kilograms,

(ii) if liquids, have a volume that is less than or equal to the number shown in column 6(a) of Schedule 1, when that number is expressed in litres, or

(iii) if gases, including a gas in a liquefied form, are contained in one or more means of containment each of which has a capacity less than or equal to the number shown in column 6(a) of Schedule 1, when that number is expressed in litres.

9. Part 1 of the Regulations is amended by adding the following after section 1.17:**1.17.1 Excepted Quantities Exemption**

(1) A quantity of dangerous goods, other than explosives, is an excepted quantity if

(a) the dangerous goods are in an inner means of containment and an outer means of containment that are 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 public safety;

(b) any of the dangerous goods in the inner means of containment,

(i) if solids, have a mass that is less than or equal to the number shown in column 1 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is

expressed in grams,

(ii) if liquids, have a volume that is less than or equal to the number shown in column 1 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is expressed in millilitres, or

(iii) if gases, including a gas in a liquefied form, are contained in one or more means of containment each of which has a capacity less than or equal to the number shown in column 1 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is expressed in millilitres; and

(c) any of the dangerous goods in the outer means of containment,

(i) if solids, have a mass that is less than or equal to the number shown in column 2 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is expressed in grams,

(ii) if liquids, have a volume that is less than or equal to the number shown in column 2 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is expressed in millilitres, or

(iii) if gases, including a gas in a liquefied form, are contained in one or more means of containment each of which has a capacity less than or equal to the number shown in column 2 of the table to subsection (2) for the corresponding alphanumeric code in column 6(b) of Schedule 1, when that number is expressed in millilitres.

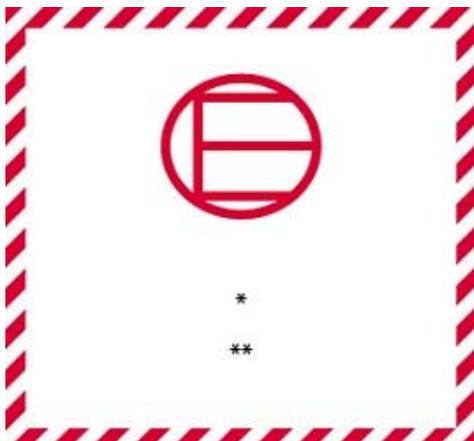
(2) When dangerous goods in excepted quantities for which different alphanumeric codes are assigned are together in an outer means of containment, the total quantity of dangerous goods must not exceed the lowest maximum net quantity per outer means of containment that is set out in column 2 of the table to this subsection for any of the dangerous goods.

TABLE EXCEPTED QUANTITIES

Alphanumeric Code	Column 1	Column 2
	Maximum net quantity per inner means of containment (in g for solids and mL for liquids and gases)	Maximum net quantity per outer means of containment (in g for solids and mL for liquids and gases, or sum of g and mL in the case of mixed packing)
E0	Not permitted as Excepted Quantity	
E1	30	1000
E2	30	500
E3	30	300
E4	1	500
E5	1	300

(3) Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Assistance Plan) and Part 8 (Accidental Release and Imminent Accidental Release Report Requirements) do not apply to the handling, offering for transport or transporting of dangerous goods in excepted quantities if each means of containment is marked on one side, other than a side on which it is intended to rest or to be stacked during transport, with the excepted quantities mark illustrated below.

EXCEPTED QUANTITIES MARK



Black or red: Hatching around edge of square and symbol

White (or a colour that contrasts, as applicable, with black or red): Background

Size: Square, and each side must be at least 100 mm

The symbol is a stylized capital E enclosed in a circle and all three cross bars of the letter E must touch the perimeter of the circle

Replace * with the primary class

Replace ** with the name of the consignor or the consignee

(4) When dangerous goods in excepted quantities are in a means of containment that is inside an overpack, the following information must be displayed on the overpack, unless that information is on the means of containment and is visible through the overpack:

- (a)** the word "Overpack" or "Suremballage"; and
- (b)** the mark illustrated in subsection (3).

(5) The number of outer means of containment containing dangerous goods in excepted quantities on a road vehicle, a railway vehicle or an intermodal container must not exceed 1 000.

(6) When dangerous goods in excepted quantities are in an inner means of containment that is inside an outer means of containment, the inner means of containment is not required to be marked in accordance with subsection (3) if

- (a)** the outer means of containment is not intended to be opened during transport; and
- (b)** the outer means of containment is marked, legibly and visibly on a contrasting background, with the mark illustrated in that subsection.

(7) If a shipping document or any other document accompanies dangerous goods in excepted quantities, the document must include the words "dangerous goods in excepted quantities" or "marchandises dangereuses en quantités exceptées" and must indicate the number of outer means of containment.

(8) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2, (Classification), do not apply to the handling, offering for transport or transporting of dangerous goods in excepted quantities that are assigned to alphanumeric codes E1, E2, E4 and E5 in column 6(b) of Schedule 1 if

- (a)** the net quantity of the dangerous goods per inner means of containment is less than or equal to 1 g for solids or 1 mL for liquids and gases; and
- (b)** the net quantity of the dangerous goods per outer means of containment is less than or equal to 100 g for solids or 100 mL for liquids and gases.

10. The portion of paragraph 1.29(b) of the Regulations before subparagraph (i) is replaced by the following:

- (b)** the dangerous goods have a number in column 6(a) of Schedule 1 and

11. Paragraph 1.31(a) of the Regulations and the italicized text after it are replaced by the following:

- (a)** the quantity of all the explosives in the road vehicle or railway vehicle that are not subject to special provision 85 or 86, expressed in net explosives quantity, is less than or equal to the number shown in column 6(a) of Schedule 1 for each of the explosives;

For the purpose of this explanation, suppose the explosives have net explosives quantities NEQ1, NEQ2, NEQ3, etc. and have UN numbers NUM1, NUM2, NUM3, etc. The requirements of this section are met if the total net explosives quantity of all the explosives taken together (NEQ1+NEQ2+ NEQ3+etc.) is less than or equal to the number in column 6(a) of Schedule 1 for NUM1, and is also less than or equal to the number in column 6(a) of Schedule 1 for NUM2 and is also less than or equal to the number in column 6(a) of Schedule 1 for NUM3, etc.

12. Part 1 of the Regulations is amended by adding the following after section 1.42.2:

1.42.3 Medical or Clinical Waste

This exemption does not apply to medical waste containing infectious substances included in Category A.

Part 3 (Documentation), sections 4.7 to 4.12 of Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Assistance Plan) and Part 8 (Accidental Release and Imminent Accidental Release Report Requirements) do not apply to the handling, offering for transport or transporting of dangerous goods that are medical waste or clinical waste if

- (a)** the dangerous goods are UN3291, (BIO) MEDICAL WASTE, N.O.S.;

- (b) the dangerous goods are in a means of containment that is in compliance with CGSB-43.125; and
- (c) the following information is displayed on the means of containment:

- (i) the biohazard symbol; and
- (ii) the word "BIOHAZARD" or "BIORISQUE".

13. The portion of section 1.47 of the Regulations after the title and before paragraph (a) is replaced by the following:

Subsections 5.10(1) and (2) of Part 5 (Means of Containment) do not apply to the handling, offering for transport or transporting of UN1044, FIRE EXTINGUISHERS, if the fire extinguishers

14. Part 1 of the Regulations is amended by adding the following after section 1.48:

1.49 Cylinder Exemption

(1) Subsection 5.1(1) and Section 5.10 of Part 5 (Means of Containment) do not apply to the handling, offering for transport or transporting of dangerous goods in a cylinder on a road vehicle or an aircraft if

- (a) the cylinder is from or for a ship or an aircraft;
- (b) the cylinder is transported solely for the purpose of refilling, exchanging or requalification;
- (c) the cylinder is accompanied by a shipping document that includes the words "Cylinder in transport for purpose of refilling, exchanging or requalification in compliance with section 1.49 of the TDGR" or "Bouteille à gaz en transport aux fins de remplissage, d'échange ou de requalification en conformité avec l'article 1.49 du RTMD";
- (d) the cylinder is closed and secured so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- (e) in the case of a cylinder from or for a ship that is a Canadian vessel as defined in section 2 of the "Canada Shipping Act, 2001", the cylinder conforms, as applicable, to
 - (i) the "Fire Detection and Extinguishing Equipment Regulations",
 - (ii) the "Life Saving Equipment Regulations",
 - (iii) the "Large Fishing Vessel Inspection Regulations",
 - (iv) the "Small Fishing Vessel Inspection Regulations", and
 - (v) the "Small Vessel Regulations";
- (f) in the case of a cylinder from or for a ship that is a foreign vessel as defined in section 2 of the "Canada Shipping Act, 2001" and that is a Safety Convention vessel as defined in that section, the cylinder is used for a purpose related to the operation or navigation of the ship, including a life-saving or emergency purpose; and
- (g) in the case of a cylinder from or for an aircraft, the aircraft has a flight authority issued under the "Canadian Aviation Regulations" and the cylinder serves an aeronautical purpose, including a life-saving or emergency purpose.

(2) When the cylinder has been requalified or filled, the exemption set out in subsection (1) applies only if the cylinder was requalified in accordance with clause 6.5.1(b) of CSA B340 and filled in compliance with clause 6.5.1(c) of CSA B340.

15. (1) The Table of Contents of Part 2 of the Regulations is amended by adding the following after the entry for section 2.14:

Aerosols 2.14.1

Exemption 2.14.2

(2) The Table of Contents of Part 2 of the Regulations is amended by adding the following after the entry for section 2.36:

Medical or Clinical Waste 2.36.1

(3) The Table of Contents of Part 2 of the Regulations is amended by adding the following after the entry for section 2.43:

Lithium Cells and Batteries 2.43.1

(4) The entry for APPENDIX 1 in the Table of Contents of Part 2 of the Regulations is repealed.

16. (1) The term "genetically modified micro-organism" in the italicized list after the heading "Definitions" in Part 2 of the Regulations is struck out.

(2) The italicized list after the heading "Definitions" in Part 2 of the Regulations is amended by adding the

following in alphabetical order:

lithium content

watt hour or Wh

17. Subsection 2.2(3) of the Regulation is replaced by the following:

(3) A consignor must use the following classifications:

- (a)** for substances included in Class 1, Explosives, the classification determined in accordance with the “Explosives Act”; and
- (b)** for radioactive materials, the classification determined in accordance with the “Packaging and Transport of Nuclear Substances Regulations”.

(3.1) For substances included in Class 6.2, Infectious Substances, a consignor may use a classification determined by the Public Health Agency of Canada or the Canadian Food Inspection Agency.

18. The portion of section 2.7 of the Regulations after the title is replaced by the following:

A substance is a marine pollutant if

- (a)** the letter “P” (marine pollutant) is set out in column 4 of Schedule 3 for the substance; or
- (b)** the substance meets the criteria for classification as a marine pollutant in accordance with section 2.9.3 or chapter 2.10 of the IMDG Code.

Marine pollutants are required to be identified on a shipping document referred to in Part 3 (Documentation) and on a means of containment referred to in Part 4 (Dangerous Goods Safety Marks).

19. Part 2 of the Regulations is amended by adding the following after section 2.14:

2.14.1 Aerosols

(1) Dangerous goods contained in an aerosol container must be transported under UN1950, AEROSOLS.

(2) The dangerous goods are included

- (a)** in Class 2.1, Flammable Gases, if the dangerous goods contain at least 85 per cent by mass of flammable components and the chemical heat of combustion is greater than or equal to 30 kJ/g; or
- (b)** in Class 2.2, Non-flammable and Non-toxic Gases, if the dangerous goods contain not more than 1 per cent by mass of flammable components and the heat of combustion is less than 20 kJ/g.

(3) The dangerous goods must be classified in accordance with section 31 of Part III of the Manual of Tests and Criteria.

(4) The dangerous goods must not contain gases included in Class 2.3, Toxic Gases.

(5) The dangerous goods must have a subsidiary class of 6.1, Toxic Substances, or Class 8, Corrosive Substances, if the dangerous goods – other than the propellant to be ejected from the aerosol container – are included in Class 6.1, Toxic Substances, Packing Groups II or III, or Class 8, Corrosive Substances, Packing Groups II or III.

(6) The dangerous goods are forbidden for transport when they are included in Packing Group I for toxicity or corrosiveness.

2.14.2 Exemption

(1) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2, (Classification), do not apply to gases included in Class 2.2, Non-flammable and Non-toxic Gases that are contained

- (a)** in foodstuffs, including carbonated beverages other than UN1950;
- (b)** in balls intended for use in sports;
- (c)** in tires; or
- (d)** in light bulbs.

(2) The exemption set out in paragraph (1)(d) applies only if the light bulbs are packaged so that any pieces of a ruptured bulb are contained by the packaging.

20. Part 2 of the Regulations is amended by adding the following after section 2.36:

2.36.1 Medical or Clinical Waste

Dangerous goods that are medical or clinical waste must be classified

- (a) under UN2814 or, as applicable, under UN2900, if they contain Category A infectious substances;
- (b) under UN3291, if they contain Category B infectious substances; or
- (c) under UN3291, if it the shipper has reasonable grounds to believe that they have a low probability of containing infectious substances.

For the classification of medical or clinical wastes, international, national or provincial reference catalogues may be taken into account.

Note: The shipping name for UN3291 is "CLINICAL WASTE, UNSPECIFIED, N.O.S." or "(BIO)MEDICAL WASTE, N.O.S." or "REGULATED MEDICAL WASTE, N.O.S."

21. Paragraph 2.40(b) of the Regulations is replaced by the following:

- (b) cause full thickness skin destruction, as determined in accordance with OECD Guidelines 430 or OECD Guidelines 431; or

22. (1) Subparagraph 2.42(2)(a)(ii) of the Regulations is replaced by the following:

- (ii) full thickness destruction of intact skin tissue occurs within an observation period of 60 minutes after an exposure time of 3 minutes or less, as determined in accordance with OECD Guidelines 404 or OECD Guidelines 435;

(2) Paragraph 2.42(2)(b) of the Regulations is replaced by the following:

- (b) Packing Group II, if full thickness destruction of skin occurs within an observation period of 14 days after an exposure time of more than 3 minutes but not more than 60 minutes, as determined in accordance with OECD Guidelines 404 or OECD Guidelines 435; or

(3) Subparagraphs 2.42(2)(c)(i) and (ii) of the Regulations are replaced by the following:

- (i) full thickness destruction of intact skin tissue occurs within an observation period of 14 days after an exposure time of more than 60 minutes but not more than 4 hours, as determined in accordance with OECD Guidelines 404 or OECD Guidelines 435, or
- (ii) they exhibit a corrosion rate that exceeds 6.25 mm per year at a test temperature of 55°C on steel or aluminum surfaces as determined in accordance with subparagraph 2.8.2.5(c)(ii) of the UN Recommendations.

(4) Section 2.42 of the Regulations is amended by adding the following after subsection (2):

TABLE

<i>Packing Group</i>	<i>Exposure Time</i>	<i>Observation Period</i>	<i>Effect</i>
<i>I</i>	<i>≤ 3 minutes</i>	<i>≤ 60 minutes</i>	<i>Full thickness destruction of intact skin</i>
<i>II</i>	<i>> 3 minutes ≤ 1 h</i>	<i>≤ 14 days</i>	<i>Full thickness destruction of intact skin</i>
<i>III</i>	<i>> 1 h ≤ 4 h</i>	<i>≤ 14 days</i>	<i>Full thickness destruction of intact skin</i>
<i>III</i>	<i>-</i>	<i>-</i>	<i>Corrosion rate that exceeds 6.25 mm a year on either steel or aluminum surfaces at a test temperature of 55°C when tested on both materials</i>

23. Subparagraphs 2.43(b)(i) and (ii) of the Regulations are replaced by the following:

- (ii) is a marine pollutant under section 2.7 of Part 2 (Classification), or

24. Part 2 of the Regulations is amended by adding the following after section 2.43:

2.43.1 Lithium Cells and Batteries

(1) A person must not handle, offer for transport or transport lithium cells and batteries under any of the following shipping names unless the cells and batteries meet the conditions set out in subsection (2):

- (a) UN3090, LITHIUM METAL BATTERIES;
- (b) UN3091, LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT;
- (c) UN3480, LITHIUM ION BATTERIES; or
- (d) UN3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT.

Lithium cells and batteries are classified under

- (a) UN3090, *LITHIUM METAL BATTERIES*, if they contain lithium metal or lithium alloy;
- (b) UN3091, *LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT* or *LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT*, if they contain lithium metal or lithium alloy and are contained in or packed with equipment;
- (c) UN3480, *LITHIUM ION BATTERIES*, if they contain any type of lithium ion; and
- (d) UN3481, *LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT* or *LITHIUM ION BATTERIES PACKED WITH EQUIPMENT*, if they contain any type of lithium ion and are contained in or packed with equipment.

(2) The conditions are as follows:

- (a) the cell or battery type passes each test set out in subsection 38.3 of Part III of the Manual of Tests and Criteria;
- (b) each cell or battery has a safety venting device or is designed to prevent a violent rupture under normal conditions of transport;
- (c) each cell or battery is equipped to prevent external short circuits; and
- (d) each battery containing cells or a series of cells connected in parallel is equipped with diodes, fuses or other devices that prevent reverse current flow.

25. Appendix 1 to Part 2 of the Regulations is repealed.

26. (1) Subparagraphs 3.5(1)(c)(i) to (vi) of the Regulations are replaced by the following:

- (i) the UN number,
- (ii) the shipping name and, immediately after the shipping name unless it is already part of it,
 - (A) for dangerous goods that are subject to special provision 16, the technical name, in parentheses, of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods, and
 - (B) for a liquefied petroleum gas that has not been odorized, the words "Not Odourized" or "Not Odorized" or "Sans odorisant",
- (iii) the primary class, which may be shown as a number only or under the heading "Class" or "Classe" or following the word "Class" or "Classe",
- (iv) for dangerous goods with a primary class of Class 1, Explosives, the compatibility group letter following the primary class,
- (v) the subsidiary class or classes, in parentheses, which may be shown as a number only or under the heading "subsidiary class" or "classe subsidiaire" or following the words "subsidiary class" or "classe subsidiaire", except that, for transport by aircraft or by ship, the subsidiary class or classes may be shown after the information required by this paragraph,
- (vi) the packing group roman numeral, which may be shown under the heading "PG" or "GE" or following the letters "PG" or "GE" or following the words "Packing Group" or "Groupe d'emballage", and
- (vii) for dangerous goods that are subject to special provision 23, the words "toxic by inhalation" or "toxic – inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation";

(2) The italicized text after paragraph 3.5(1)(c) of the Regulations is replaced by the following:

Examples of descriptions of dangerous goods are:

UN1203, GASOLINE, 3, II

UN1203, GASOLINE, Class 3, PG II

UN1214, ISOBUTYLAMINE, Class 3, Subsidiary Class (8), II

UN1214, ISOBUTYLAMINE, Class 3(8), Packing Group II

(3) Subsections 3.5(4) and (5) of the Regulations is replaced by the following:

(4) Despite paragraph (1)(d), if the quantity of dangerous goods in a means of containment is less than 10 per cent of the maximum fill limit of the means of containment, the words "Residue — Last Contained" or "Résidu — dernier contenu" may be added before or after the description of the dangerous goods. These words must not, however, be used for dangerous goods included in Class 2, Gases, that are in a small means of containment or for dangerous goods included in Class 7, Radioactive Materials.

For example:

Residue — Last Contained, UN1203, GASOLINE, 3, II

UN1203, GASOLINE, 3, II, Residue — Last Contained

(5) If the quantity of dangerous goods required on a shipping document under paragraph (1)(d) or the number of small means of containment required under paragraph (1)(e) changes during transport, the carrier must show those changes on the shipping document or on a document attached to the shipping document.

(4) Section 3.5 of the Regulations is amended by adding the following after the italicized text after subsection (5):

The quantity of dangerous goods is expressed in kilograms for solids, in litres for liquids and in kilograms or litres for gases. It may also be expressed as a number of items.

(5) Subsection 3.5(7) of the Regulations is repealed.

(6) The italicized text after subsection 3.5(7) of the Regulations is struck out.

27. Subsection 4.11(2) of the Regulations is replaced by the following:

(2) When dangerous goods in transport are subject to special provision 16 and are in a small means of containment on which the shipping name is displayed, the technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be displayed, in parentheses, following the shipping name.

28. The portion of section 4.20 of the Regulations after the title is replaced by the following:

(1) In addition to the requirements for placards and UN numbers in section 4.15, the elevated temperature sign must be displayed for dangerous goods that are contained in a large means of containment and that are offered for transport or transported at a temperature greater than or equal to

- (a)** 100°C if the dangerous goods are in a liquid state; and
- (b)** 240°C if the dangerous goods are in a solid state.

(2) The elevated temperature sign must be displayed on each side and on each end of the large means of containment next to each primary class placard for the dangerous goods or, if there is a subsidiary class placard, next to the subsidiary class placard.

29. Subparagraph 4.22(2)(b)(i) of the Regulations is replaced by the following:

- (i)** a small means of containment and are in a quantity that is less than or equal to 5 L for a liquid marine pollutant or 5 kg for a solid marine pollutant, or

30. The Table of Contents of Part 5 of the Regulations is amended by adding the following after the entry for section 5.16.1:

Medical or Clinical Waste 5.16.2

31. The portion of section 5.8 of the Regulations after the title is replaced by the following:

A person must not handle, offer for transport or transport dangerous goods included in Class 1, Explosives, unless they are in a means of containment that is selected and used in accordance with CGSB-43.151.

32. Part 5 of the Regulations is amended by adding the following after section 5.16.1:

5.16.2 Medical or Clinical Waste

A person must not handle, offer for transport or transport dangerous goods that are UN3291, (BIO) MEDICAL WASTE, N.O.S. of Class 6.2, Infectious Substances, unless the dangerous goods are in a type 1C means of containment that is in compliance with CGSB-43.125.

33. (1) The italicized text after subsection 7.1(5) of the Regulations is struck out.

(2) Subsection 7.1(6) of the Regulations is replaced by the following:

(6) A person who offers for transport or imports any of the following dangerous goods on a railway vehicle must have an approved ERAP if the quantity exceeds the ERAP index set out for those dangerous goods in Col. 7 of Schedule 1:

- (a)** UN1170, ETHANOL with more than 24% ethanol, by volume, ETHANOL SOLUTION with more than 24% ethanol, by volume, ETHYL ALCOHOL with more than 24% ethanol, by volume, or ETHYL ALCOHOL SOLUTION with more than 24% ethanol, by volume;
- (b)** UN1202, DIESEL FUEL, GAS OIL or HEATING OIL, LIGHT;
- (c)** UN1203, GASOLINE, MOTOR SPIRIT or PETROL;

- (d) UN1267, PETROLEUM CRUDE OIL;
- (e) UN1268, PETROLEUM DISTILLATES, N.O.S., or PETROLEUM PRODUCTS, N.O.S.;
- (f) UN1863, FUEL, AVIATION, TURBINE ENGINE;
- (g) UN1987, ALCOHOLS, N.O.S.;
- (h) UN1993, FLAMMABLE LIQUID, N.O.S.;
- (i) UN3295, HYDROCARBONS, LIQUID, N.O.S.;
- (j) UN3475, ETHANOL AND GASOLINE MIXTURE, with more than 10% ethanol, ETHANOL AND MOTOR SPIRIT MIXTURE, with more than 10% ethanol, or ETHANOL AND PETROL MIXTURE, with more than 10% ethanol; and
- (k) UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC.

34. Schedule 1 to the Regulations is replaced by the Schedule 1 set out in Schedule 1 to these Regulations.

35. (1) Special provision 3 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 3 of Schedule 2 to the Regulations is struck out.

36. The italicized text after special provision 10 of Schedule 2 to the Regulations is replaced by the following:

UN0154, UN0155, UN0214, UN0215, UN0234, UN0401, UN1344, UN1354, UN1355, UN3364 to UN3368

37. (1) Special provision 11 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 11 of Schedule 2 to the Regulations is struck out.

38. (1) Special provision 12 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 12 of Schedule 2 to the Regulations is struck out.

39. (1) Special provision 13 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 13 of Schedule 2 to the Regulations is struck out.

40. (1) Special provision 14 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 14 of Schedule 2 to the Regulations is struck out.

41. (1) Subsection (1) of special provision 16 of Schedule 2 to the Regulations is replaced by the following:

(1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks).

(2) Special provision 16 of Schedule 2 to the Regulations is amended by adding the following after the italicized text after subsection (2):

(3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment:

(a) UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or

(b) UN2900, INFECTIOUS SUBSTANCE, AFFECTING ANIMALS.

UN0020, UN0021, UN0190, UN0248, UN0249, UN0349 to UN0359, UN0382 to UN0384, UN0461 to UN0482, UN0485, UN1078, UN1224, UN1228, UN1325, UN1378, UN1383, UN1409, UN1450, UN1461, UN1462, UN1479, UN1482, UN1544, UN1549, UN1556, UN1557, UN1564, UN1566, UN1583, UN1588, UN1601, UN1602, UN1655, UN1693, UN1707, UN1719, UN1759, UN1760, UN1851, UN1903, UN1935, UN1953 to UN1956, UN1964, UN1965, UN1967, UN1968, UN1986 to UN1989, UN1992, UN1993, UN2006, UN2024 to UN2026, UN2206, UN2478, UN2570, UN2588, UN2627, UN2630, UN2693, UN2733 to UN2735, UN2757 to UN2764, UN2771, UN2772, UN2775 to UN2784, UN2786 to UN2788, UN2801, UN2810, UN2811, UN2813, UN2814, UN2845, UN2846, UN2856, UN2881, UN2900, UN2902, UN2903, UN2920 to UN2930, UN2991 to UN2998, UN3005, UN3006, UN3009 to UN3021, UN3024 to UN3027, UN3071, UN3077, UN3080, UN3082, UN3084 to UN3088, UN3093 to UN3096, UN3098, UN3099, UN3101 to UN3120, UN3122 to UN3126, UN3128 to UN3132, UN3134, UN3135, UN3139 to UN3144, UN3146 to UN3148, UN3156 to UN3158, UN3160 to UN3163, UN3172, UN3175, UN3176, UN3178 to UN3192, UN3194, UN3200, UN3205 to UN3210, UN3212 to UN3214, UN3219, UN3221 to UN3240, UN3243, UN3244, UN3248, UN3249, UN3256 to UN3267, UN3271 to UN3290, UN3301, UN3303 to UN3312, UN3334 to UN3336, UN3345 to UN3352, UN3354, UN3355, UN3361, UN3362, UN3379 to UN3400, UN3439, UN3440, UN3448, UN3462,

42. Special provision 18 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

18 These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to UN1845, CARBON DIOXIDE, SOLID, or DRY ICE that is in a means of containment that is transported by a road vehicle or a railway vehicle if the means of containment is designed and constructed to permit the release of carbon dioxide in order to prevent the build-up of pressure that could rupture the means of containment.

UN1845

43. Special provision 21 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

21

(1) This shipping name has the UN number

(a) UN2990, if it is a life-saving appliance that is self-inflating and that includes as equipment one or more of the dangerous goods set out in subsection (2); or

(b) UN3072, if it is a life saving appliance that is not self-inflating and that includes as equipment one or more of the dangerous goods set out in subsection (2).

(2) The dangerous goods are

(a) signal devices included in Class 1 that are contained in a means of containment designed, constructed, filled, closed, secured and maintained to prevent them from being inadvertently activated under normal conditions of transport;

(b) non-flammable, non-toxic gases included in Class 2.2;

(c) first aid kits or repair kits that contain dangerous goods included in Classes 3, 4.1, 5.2, 8 or 9 that are in quantities that are less than or equal to the limited quantities set out for them in column 6(a) of Schedule 1;

(d) electric storage batteries included in Class 8 and lithium metal or lithium ion batteries included in Class 9;

(e) "strike anywhere" matches contained in one or more means of containment designed, constructed, filled, closed, secured and maintained to prevent them from being inadvertently activated under normal conditions of transport; and

(f) for UN2990 only, cartridges, power devices, included in Class 1.4S, to activate the self-inflating appliance if the net explosive quantity in an appliance is less than or equal to 3 200 mg.

(3) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transport of a lifesaving appliance on a road vehicle or a railway vehicle if

(a) the life-saving appliance is contained in a means of containment that is designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no release of the dangerous goods that could endanger public safety;

(b) the means of containment has a gross mass less than or equal to 40 kg;

(c) the life-saving appliance contains only dangerous goods included in Class 2.2 with no subsidiary class;

(d) the dangerous goods are contained in a cylinder with a capacity less than or equal to 120 mL; and

(e) the cylinder is installed in the life-saving appliance for the purpose of activating the appliance.

UN2990, UN3072

44. Special provision 23 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

23

(1) A consignor of these dangerous goods must include, except for UN1005, ANHYDROUS AMMONIA, the words "toxic by inhalation" or "toxic — inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation" in the following places, unless the words are already part of the shipping name:

(a) on a shipping document, immediately after the description of the dangerous goods;

(b) on a small means of containment, next to the shipping name of the dangerous goods; and

(c) on a large means of containment, next to the placard for the primary class of the dangerous goods or the placard for the subsidiary class, if any.

For example, the notation on a shipping document would be "UN1935, CYANIDE SOLUTION, N.O.S., Class 6.1, PG I, toxic by inhalation".

(2) This special provision does not apply to a person who transports these dangerous goods in accordance with an exemption set out in sections 1.15, 1.17 or 1.17.1 of Part 1 (Coming Into Force, Repeal, Interpretation, General Provisions and Special Cases).

(3) A consignor of UN1005, ANHYDROUS AMMONIA, must include the words "inhalation hazard" or "dangereux par inhalation":

- (a) on a shipping document, immediately after the shipping name of the dangerous goods; and
- (b) on a small means of containment, next to the shipping name of the dangerous goods.

When UN1005, ANHYDROUS AMMONIA, is contained in a large means of containment on which is affixed the anhydrous ammonia placard, the words "Anhydrous Ammonia, Inhalation Hazard" or "Ammoniac anhydre, dangereux par inhalation" must be displayed next to the placard in accordance with paragraph 4.18.2(b).

UN1005, UN1008, UN1016, UN1017, UN1023, UN1026, UN1040, UN1045, UN1048, UN1050 to UN1053, UN1062, UN1064, UN1067, UN1069, UN1071, UN1076, UN1079, UN1082, UN1092, UN1098, UN1135, UN1143, UN1163, UN1182, UN1185, UN1238, UN1239, UN1244, UN1251, UN1259, UN1380, UN1510, UN1541, UN1560, UN1569, UN1580 to UN1583, UN1589, UN1595, UN1605, UN1612 to UN1614, UN1647, UN1660, UN1670, UN1672, UN1695, UN1722, UN1741, UN1744 to UN1746, UN1749, UN1752, UN1754, UN1809, UN1810, UN1828, UN1829, UN1831, UN1834, UN1838, UN1859, UN1892, UN1911, UN1953, UN1955, UN1967, UN1975, UN1994, UN2032, UN2186, UN2188 to UN2192, UN2194 to UN2199, UN2202, UN2204, UN2232, UN2285, UN2334, UN2337, UN2382, UN2407, UN2417, UN2418, UN2420, UN2421, UN2438, UN2442, UN2474, UN2477, UN2478, UN2480 to UN2488, UN2521, UN2534, UN2548, UN2605, UN2606, UN2644, UN2646, UN2668, UN2676, UN2692, UN2740, UN2742, UN2743, UN2826, UN2901, UN2983, UN3023, UN3057, UN3079, UN3083, UN3160, UN3162, UN3168, UN3169, UN3246, UN3275, UN3276, UN3278 to UN3281, UN3294, UN3300, UN3303 to UN3310, UN3318, UN3355, UN3381 to UN3390, UN3488 to UN3491, UN3512, UN3514 to UN3526

45. Subsection (2) of special provision 25 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to safety devices, electrically initiated, or safety devices, pyrotechnic, installed in road vehicles, ships or aircraft or in completed components such as steering columns, door panels and seats.

UN0503, UN3268

46. Special provision 31 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

31 These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to dangerous goods transported under this shipping name if the dangerous goods contain 10 per cent or less ammonium nitrate and at least 12 per cent water.

UN1454

47. The portion of special provision 32 of Schedule 2 to the Regulations before paragraph (a) is replaced by the following:

32 These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases), Part 2 (Classification) and Part 3 (Documentation), do not apply to these dangerous goods if they are transported by road vehicle or railway vehicle in a large means of containment and

48. The portion of special provision 33 of Schedule 2 to the Regulations before paragraph (a) is replaced by the following:

33 These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to these dangerous goods if the dangerous goods

49. Special provision 34 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

34

(1) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of lithium cells and batteries on a road vehicle, a railway vehicle or a ship on a domestic voyage if

- (a) for a lithium metal or lithium alloy cell, the lithium content is not more than 1 g, and, for a lithium-ion cell, the watt-hour rating is not more than 20 Wh;
- (b) for a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g, and for a

lithium-ion battery, the watt-hour rating is not more than 100 Wh;

(c) lithium ion batteries are marked with the watt-hour rating on the outside case, except for those manufactured before January 1, 2009;

(d) each cell and battery type passes each of the tests set out in subsection 2.43.1(2) of Part 2 (Classification);

(e) the cells and batteries are afforded protection against short circuit, including protection against contact with conductive materials within the same packaging that could lead to a short circuit;

(f) the cells and batteries are packed in a means of containment that completely encloses the cells and batteries;

(g) the gross mass of the cells and batteries does not exceed 30 kg, except when the cells and batteries are installed in or packed with equipment; and

(h) the cells and batteries are packed in a means of containment capable of withstanding a 1.2 m drop test in any orientation without damage to the cells or batteries contained inside the means of containment, without the contents shifting so as to allow battery-to-battery or cell-to-cell, contact, and without release of contents.

(2) Cells and batteries referred to in subsection (1) that are installed in equipment must, unless they are afforded equivalent protection by the equipment in which they are contained,

(a) be afforded protection against damage and short circuit, including protection against contact with conductive materials within the same packaging that could lead to a short circuit;

(b) subject to subsection (3), be fitted to prevent accidental activation; and

(c) be packed in a means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no release of the dangerous goods that could endanger public safety.

(3) Paragraph (2)(b) does not apply to cells and batteries installed in devices that are intentionally active during transport such as radio frequency identification transmitters, watches and sensors, and that are not capable of generating a dangerous evolution of heat.

(4) Except for means of containment containing button cell batteries installed in equipment (including circuit boards), or no more than four cells installed in equipment or no more than two batteries installed in equipment, each means of containment must be marked with the following:

(a) "lithium metal", "lithium métal", "lithium ion" or "lithium ionique", as appropriate;

(b) an indication that the means of containment must be handled with care and that a flammability hazard exists if the means of containment is damaged;

(c) an indication that special procedures must be followed in the event the package is damaged, including inspection and repacking, if necessary; and

(d) a telephone number to call for additional information.

(5) Each means of containment must be accompanied by a document that includes the information marked on the means of containment in accordance with subsection (4).

UN3090, UN3091, UN3480, UN3481

50. Special provision 36 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

36 These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of these dangerous goods by road vehicle or railway vehicle if they are in the form of pellets or dry bulk mash meeting the requirements of CGSB-32.301.

UN1386, UN2217

51. The italicized text after special provision 37 of Schedule 2 to the Regulations is replaced by the following:

UN1942, UN2067

52. The italicized text after special provision 38 of Schedule 2 to the Regulations is replaced by the following:

UN1001, UN1045, UN1050, UN1058, UN1081, UN1194, UN1204, UN1222, UN1259, UN1261, UN1308, UN1310, UN1320 to UN1322, UN1324, UN1336, UN1337, UN1344, UN1347 to UN1349, UN1354 to UN1357, UN1360, UN1364, UN1378, UN1380, UN1383, UN1389, UN1391, UN1392, UN1396, UN1404, UN1407, UN1409 to UN1411, UN1413 to UN1415, UN1418, UN1419, UN1421, UN1426, UN1427, UN1432, UN1433, UN1436, UN1472, UN1491, UN1504, UN1510, UN1517, UN1556, UN1557, UN1569, UN1571, UN1575, UN1582, UN1589, UN1612, UN1614, UN1660, UN1693, UN1697 to UN1701, UN1714, UN1748, UN1749, UN1854, UN1855, UN1859, UN1865, UN1868, UN1870, UN1889, UN1911, UN1913, UN1953, UN1955, UN1957, UN1959, UN1967, UN1970, UN1975, UN1982, UN1994, UN2006, UN2008, UN2010 to UN2013, UN2036, UN2186, UN2188 to UN2190, UN2192, UN2194 to UN2199, UN2202 to UN2204, UN2417, UN2418, UN2420, UN2421, UN2451, UN2463, UN2466, UN2471, UN2480, UN2545 to UN2548, UN2555 to UN2557, UN2591, UN2626, UN2627, UN2676, UN2741, UN2806, UN2813,

UN2814, UN2846, UN2852, UN2870, UN2881, UN2900, UN2901, UN2907, UN2956, UN2988, UN3048, UN3064, UN3083, UN3094 to UN3096, UN3101 to UN3108, UN3111 to UN3118, UN3124, UN3125, UN3129 to UN3132, UN3134, UN3135, UN3148, UN3160, UN3162, UN3221 to UN3241, UN3248, UN3249, UN3303 to UN3310, UN3317, UN3355, UN3364 to UN3370, UN3373, UN3376, UN3379, UN3380, UN3401, UN3402, UN3417, UN3448, UN3450, UN3474, UN3482, UN3485, UN3512, UN3514 to UN3518, UN3521 to UN3526

53. The portion of subsection (2) of special provision 39 of Schedule 2 to the Regulations before paragraph (a) is replaced by the following:

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to UN2800, BATTERIES, WET, NON-SPILLABLE, electric storage, that are not intended for disposal, if

54. The portion of special provision 40 of Schedule 2 to the Regulations before paragraph (a) is replaced by the following:

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to these articles if each article

55. (1) Special provision 50 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 50 of Schedule 2 to the Regulations is struck out.

56. (1) Special provision 51 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 51 of Schedule 2 to the Regulations is struck out.

57. (1) Special provision 52 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 52 of Schedule 2 to the Regulations is struck out.

58. (1) Special provision 53 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 53 of Schedule 2 to the Regulations is struck out.

59. Special provision 56 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

56

(1) When solids that are not dangerous goods, and liquids included in Class 3, Flammable Liquids, are in a mixture, the mixture may be handled, offered for transport or transported under this shipping name without the tests and criteria for including substances in Class 4.1, Flammable Solids, first being applied to them, if

(a) there is no visible liquid at the time the mixture is loaded into a means of containment or at the time the means of containment is closed; and

(b) each means of containment is leakproof.

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to a sealed packet or article containing less than 10 mL of dangerous goods included in Class 3, Flammable Liquids, packing group II or III, if there is no free liquid in the packet or article.

UN3175

60. (1) Special provision 60 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 60 of Schedule 2 to the Regulations is struck out.

61. The italicized text after special provision 62 of Schedule 2 to the Regulations is replaced by the following:

UN1310, UN1320 to UN1322, UN1336, UN1337, UN1344, UN1347 to UN1349, UN1354 to UN1357, UN1517, UN1571, UN3317, UN3364 to UN3370, UN3376, UN3474

62. The italicized text after special provision 63 of Schedule 2 to the Regulations is replaced by the following:

UN1910, UN2807, UN2812, UN3334, UN3335

63. The italicized text after special provision 64 of Schedule 2 to the Regulations is replaced by the following:

UN1327

64. Special provision 65 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

(1) A chemical kit or first aid kit must be included in the packing group that is the most stringent packing group assigned to any one of the dangerous goods in the kit, and the kit must not contain

- (a)** dangerous goods that are not allowed to be transported as limited quantities or that are forbidden for transport in Schedule 1 or Schedule 3;
- (b)** dangerous goods that react dangerously with each other; or
- (c)** a total quantity of dangerous goods that is greater than 1 L or 1 kg.

(2) A chemical kit or first aid kit containing dangerous goods in inner packagings that do not exceed the quantity limits for limited quantities applicable to individual substances as specified in column 6(a) of Schedule 1 may be transported in accordance with section 1.17 of Part 1 (Coming into force, Repeal, Interpretation, General Provisions and Special Cases).

The shipping name CHEMICAL KIT or FIRST AID KIT is intended for boxes and cases containing small quantities of various dangerous goods that are used, for example, for medical, analytical, or testing or repair purposes.

Kits that are carried on board road vehicles, railway vehicles, ships or aircraft for first-aid or operating purposes are not subject to these Regulations.

UN3316

65. Special provisions 67 and 68 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

67

(1) This shipping name applies to

- (a)** vehicles that are powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and that are transported with these batteries installed, and

Electrically-powered cars, motorcycles, scooters, e-bikes, wheelchairs and lawn tractors are examples of the vehicles.

- (b)** equipment that is powered by wet batteries or sodium batteries and that is transported with these batteries installed.

Lawnmowers, cleaning machines, model boats and model aircraft are examples of the equipment.

(2) Equipment powered by lithium metal batteries or lithium ion batteries must be handled, offered for transport or transported under the UN number and shipping name

- (a)** UN3091, LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT;
- (b)** UN 3091, LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT;
- (c)** UN3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT; or
- (d)** UN3481, LITHIUM ION BATTERIES PACKED WITH EQUIPMENT.

(3) A hybrid electric vehicle that is powered by an internal combustion engine and by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, and that is transported with the batteries installed, must be handled, offered for transport or transported under the UN number and shipping name

- (a)** UN3166, VEHICLE, FLAMMABLE GAS POWERED; or
- (b)** UN3166, VEHICLE, FLAMMABLE LIQUID POWERED.

(4) A road vehicle that contains a fuel cell must be handled, offered for transport or transported under the UN number and shipping name

- (a)** UN3166, VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED; or
- (b)** UN3166, VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED.

(5) A road vehicle powered only by lithium metal batteries or lithium ion batteries must be handled, offered for transport or transported under the UN number and shipping name UN3171, BATTERY POWERED VEHICLE.

UN3166, UN3171

68

These dangerous goods are forbidden for transport by ship if they contain one or more of the following substances:

- (a) AMMONIUM HYPOCHLORITE;
- (b) AMMONIUM NITRATE liable to self-heating sufficient to initiate decomposition;
- (c) AMMONIUM NITRITES and mixtures of an inorganic nitrite with an ammonium salt;
- (d) CHLORIC ACID, AQUEOUS SOLUTION, with more than 10 per cent chloric acid;
- (e) ETHYL NITRITE, pure;
- (f) HYDROCYANIC ACID, AQUEOUS SOLUTION (HYDROGEN CYANIDE, AQUEOUS SOLUTION) with more than 20% hydrogen cyanide;
- (g) HYDROGEN CHLORIDE, REFRIGERATED LIQUID;
- (h) HYDROGEN CYANIDE, SOLUTION IN ALCOHOL with more than 45% hydrogen cyanide;
- (i) MERCURY OXYCYANIDE, pure;
- (j) METHYL NITRITE;
- (k) PERCHLORIC ACID with more than 72% acid, by mass;
- (l) SILVER PICRATE, dry or wetted with less than 30% water, by mass; or
- (m) ZINC AMMONIUM NITRITE.

UN1194, UN1347, UN1479, UN1512, UN1613, UN1642, UN1873, UN2067, UN2186, UN2455, UN2626, UN2627, UN3212, UN3219, UN3294

66. The portion of subsection (2) of special provision 70 of Schedule 2 to the Regulations before paragraph (a) is replaced by the following:

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to formulations of these dangerous goods when they have a low nitrocellulose content and

67. Special provision 74 of Schedule 2 to the Regulations is amended by adding the following after subsection (3) and before the italicized text:

(4) The name of the constituents which predominantly contribute to the subsidiary class or classes must be shown in parentheses, after the shipping name on the shipping document.

68. (1) Special provision 82 of Schedule 2 to the Regulations is repealed.

(2) The italicized text after special provision 82 of Schedule 2 to the Regulations is struck out.

69. Special provisions 85 and 86 of Schedule 2 to the Regulations and any italicized text are replaced by the following:

85

Despite the index number in column 6(a) of Schedule 1, these dangerous goods may be handled, offered for transport or transported in accordance with section 1.31 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) when they are in a quantity that is less than or equal to 15 000 articles.

UN0044

86

Despite the index number in column 6(a) of Schedule 1, these dangerous goods may be handled, offered for transport or transported in accordance with section 1.31 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) when they are in a quantity that is less than or equal to 100 articles.

UN0029, UN0030, UN0121, UN0131, UN0255, UN0267, UN0315, UN0325, UN0349, UN0360, UN0361, UN0367, UN0368, UN0454 to UN0456, UN0500

70. Schedule 2 to the Regulations is amended by adding the following after special provision 92:

93

A vehicle that contains an internal combustion engine must be transported under UN3166, VEHICLE, FLAMMABLE GAS POWERED, or UN3166, VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. This shipping name applies to hybrid electric vehicles that are powered by an internal combustion engine and by wet batteries, sodium batteries or lithium metal or ion batteries and that are transported with the battery installed.

UN3166

94

When these dangerous goods are in transport, they must be kept out of direct sunlight and away from all sources of heat, and must be placed in adequately ventilated areas.

These dangerous goods are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities such as powdered metals like iron, manganese, cobalt, magnesium and their compounds.

Calcium hypochlorite is a self-heating substance that decomposes rapidly and releases toxic chlorine gas when heated or exposed to sunlight.

UN1748, UN2208, UN2880, UN3485 to UN3487

95

For the purposes of this shipping name, "FUMIGATED UNIT" is a large means of containment and includes a road vehicle, a railway vehicle, a freight container and a portable tank. These Regulations, except for subsection 3.5(3) of Part 3 (Documentation) and section 4.21 of Part 4 (Dangerous Goods Safety Marks), do not apply to fumigated units containing no other dangerous goods.

UN3359

96

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to these dangerous goods unless they are transported by aircraft or by ship.

UN3166, UN3171

97

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to these dangerous goods unless they are transported by ship.

UN1372, UN1387, UN1856, UN1857, UN2216, UN3360, UN3496

98

If these dangerous goods are composed of more than 10 per cent ethanol, they must be transported under UN3475, ETHANOL AND GASOLINE MIXTURE.

UN1203

99

(1) Mixtures of solids that are not dangerous goods and liquids or solids that are UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., or UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., may be handled, offered for transport or transported as UN3077 if there is no visible liquid when the dangerous goods are loaded into a means of containment and during transport.

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of less than 450 kg of UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., or less than 450 L of UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., on a road vehicle or a railway vehicle. The dangerous goods must be contained in one or more small means of containment 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 public safety.

UN3077, UN3082

100

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to magnesium nitrate hexahydrate.

UN1474

101

(1) This shipping name applies to fuel cell cartridges, including fuel cell cartridges contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are considered as contained in equipment. Fuel cell

cartridges, including fuel cell cartridges contained in equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transport.

(2) Fuel cell cartridge design types must pass the following tests:

- (a)** an internal pressure test at a pressure of 100 kPa (gauge) without leakage, if the fuel cell cartridge design type uses liquids as fuels; and
- (b)** a 1.2 m drop test onto an unyielding surface, in the orientation most likely to result in failure of the containment system, with no loss of contents.

(3) When lithium metal or lithium ion batteries are contained in the fuel cell system, the following UN number and shipping name must be assigned, as appropriate:

- (a)** UN3091, LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT; or
- (b)** UN3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT.
UN3476 to UN3479

102

(1) Fuel cell cartridges that contain hydrogen in a metal hydride and that are transported under this shipping name must have a capacity less than or equal to 120 mL. The fuel cell cartridges must be designed and constructed to prevent fuel leakage under normal conditions of transport.

(2) The pressure in the fuel cell cartridge must not exceed 5 MPa at 55°C. The design type must be capable of withstanding, without leakage or bursting, a pressure of at least two times the design pressure of the cartridge at 55°C or 200 kPa more than the design pressure of the cartridge at 55°C, whichever is greater.

The pressure at which this test is conducted is referred to as the "minimum shell burst pressure" in paragraph 4(c) in relation to the drop test and in subsection (7) in relation to the hydrogen cycling test.

(3) Fuel cell cartridges must be filled in accordance with procedures specified by the manufacturer and the manufacturer must provide, with each fuel cell cartridge, the following information:

- (a)** inspection procedures to be carried out before initial filling and before refilling of the fuel cell cartridge;
- (b)** safety precautions and potential hazards;
- (c)** method for determining when the rated capacity has been achieved;
- (d)** minimum and maximum pressure range;
- (e)** minimum and maximum temperature range; and
- (f)** any other requirements to be met for initial filling and refilling, including the type of equipment to be used for these operations.

(4) Each cartridge design type, including cartridges integral to a fuel cell, must

(a) withstand a 1.8 m drop test onto an unyielding surface in the four following orientations:

- (i)** vertically, on the end containing the shut-off valve,
- (ii)** vertically, on the end opposite to the shut-off valve,
- (iii)** horizontally, onto a steel apex with a diameter of 38 mm, with the steel apex in the upward position; and
- (iv)** at a 45° angle on the end containing the shut-off valve;

(b) show no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations, when the cartridge is charged to its rated charging pressure; and

(c) be hydrostatically pressurized to destruction with a recorded burst pressure that exceeds 85 per cent of the minimum shell burst pressure.

(5) Each cartridge design type, including the design types for cartridges integral to a fuel cell, must pass a fire engulfment test using a fuel cell cartridge filled to rated capacity with hydrogen. The cartridge design type, which may have a vent feature integral to it, is deemed to have passed the fire engulfment test if

- (a)** the internal pressure vents to zero pressure without rupture of the cartridge; or
- (b)** the cartridge withstands the fire for a minimum of 20 minutes without rupture.

(6) Each cartridge design type, including the design types for cartridges integral to a fuel cell, must pass a hydrogen cycling test in which the fuel cell cartridge is cycled, for at least 100 cycles, from not more than 5 per cent rated hydrogen capacity to not less than 95 per cent rated hydrogen capacity and then back to not more than 5 per cent rated hydrogen capacity. The rated charging pressure must be used for charging, and temperatures must be held within the operating temperature range.

(7) Following the hydrogen cycling test, the fuel cell cartridge must be charged, and the water volume displaced by the

cartridge must be measured. The cartridge design type is deemed to have passed the hydrogen cycling test if the water volume displaced by the cycled cartridge does not exceed the water volume displaced by an uncycled cartridge charged to 95 per cent rated capacity and pressurized to 75 per cent of its minimum shell burst pressure.

(8) Each cartridge design type, including the design types for cartridges integral to a fuel cell, must pass a production leak test in which the fuel cell cartridge is tested for leaks at $15^{\circ}\text{C} \pm 5^{\circ}\text{C}$ while pressurized to its rated charging pressure. There must be no leakage, determined by using a soap bubble solution or other equivalent means on all possible leak locations.

(9) Each fuel cell cartridge must be permanently marked with the following information:

- (a)** the rated charging pressure, in megapascals (MPa);
- (b)** the manufacturer's serial number or the unique identification number of the fuel cell cartridge; and
- (c)** the date of expiry, based on the maximum service life (four digits for the year, two digits for the month).

UN3479

103

Each fuel cell designed to contain a liquefied flammable gas and transported under this shipping name must

- (a)** be capable of withstanding, without leakage or bursting, a pressure of at least two times the equilibrium pressure of the contents at 55°C ;
- (b)** contain a liquefied flammable gas that is in a quantity less than or equal to 200 mL and that has a vapour pressure less than or equal to 1 000 kPa at 55°C ; and
- (c)** pass the hot water bath test described in section 6.2.4.1 of the UN Recommendations.

UN3478

104

(1) Flammable liquefied gases must be contained within refrigerating-machine components. These components must be designed to withstand at least three times the working pressure of the machinery and must be tested to ensure they meet that requirement. The refrigerating machines must be designed and constructed to contain the liquefied gas and to preclude the risk of the pressure-retaining components bursting or cracking during normal conditions of transport.

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting, on a road vehicle, a railway vehicle or a ship on a domestic voyage, of refrigerating machines and refrigerating-machine components transported that contain less than 12 kg of gas.

UN3358

105

This shipping name must not be used unless the results of Test series 6(d) in Part I of the Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the means of containment.

UN0323, UN0366, UN0441, UN0445, UN0455, UN0456, UN0460, UN0500

106

When petroleum crude oil contains hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard, the words "toxic by inhalation" or "toxic — inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation" must be included

- (a)** on a large means of containment, next to the placard for the primary class; and
- (b)** on the shipping document, after the description required under section 3.5(1)(c) of Part 3 (Documentation).

UN1267

107

(1) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2, (Classification), do not apply to the handling, offering for transport or transporting of UN1950, AEROSOLS, and UN2037, GAS CARTRIDGES, that contain dangerous goods included in Class 2.1 or Class 2.2 and that are transported on a road vehicle, a railway vehicle or a ship on a domestic voyage, if the aerosols or gas cartridges have a capacity less than or equal to 50 mL.

(2) Subsection (1) does not apply to self-defence spray.

UN1950, UN2037

108

These dangerous goods must, at the time the containment system is closed, be at a pressure that corresponds to atmospheric pressure and that does not exceed 105 kPa absolute.

UN3167 to UN3169

109

The following fire extinguishers may be equipped with actuating cartridges included in Class 1.4C or 1.4S, without changing the classification of Class 2.2, if the total quantity of deflagrating (propellant) explosives in each fire extinguisher does not exceed 3.2 g:

- (a) portable fire extinguishers for manual handling and operation;
- (b) fire extinguishers for installation on board aircraft;
- (c) fire extinguishers mounted on wheels for manual handling;
- (d) fire extinguishing equipment or machinery mounted on wheels, on wheeled platforms or on units of transport similar to trailers; and
- (e) fire extinguishers composed of a pressure drum and of equipment without wheels, and handled by fork lift or crane, for example, whether loaded or unloaded.

UN1044

110

(1) If these dangerous goods contain at least 90 per cent, by mass, of phlegmatizer, then lactose, glucose or similar substances may be used as a phlegmatizer. The mixture of the dangerous goods and the phlegmatizer may be classified in Class 4.1 in accordance with Test Series 6(c) of Section 16 of Part I of the Manual of Tests and Criteria. The tests in the Test Series 6(c) must be performed on at least three means of containment prepared as if for transport.

(2) A person is not required to display a class 6.1 label on a means of containment that contains a mixture of the dangerous goods and the phlegmatizer if the mixture contains not less than 90 per cent, by mass, of phlegmatizer.

(3) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to a mixture of the dangerous goods and the phlegmatizer if the mixture contains not less than 98 per cent, by mass, of phlegmatizer.

UN0143

111

This shipping name must not be used for the transport of non-activated batteries unless they contain dry potassium hydroxide and are intended to be activated prior to use by the addition of an appropriate amount of water to each cell.

UN3028

112

To determine the content of ammonium nitrate in substances that are mixtures and that are transported under UN2067, AMMONIUM NITRATE BASED FERTILIZER, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture must be calculated as a mass of ammonium nitrate.

UN2067, UN2071

113

The shipping name UN 2067, AMMONIUM NITRATE BASED FERTILIZER, must not be used for mixtures containing ammonium nitrate as the main constituent unless the mixtures are within the following limits:

- (a) at least 90 per cent ammonium nitrate with 0.2 per cent or less of total combustible or organic material calculated as carbon and with material, if any, that is inorganic and inert towards ammonium nitrate;
- (b) less than 90 per cent but more than 70 per cent ammonium nitrate with other inorganic materials, or more than 80 per cent but less than 90 per cent ammonium nitrate mixed with calcium carbonate, dolomite or mineral calcium sulphate and not more than 0.4 per cent total combustible or organic material calculated as carbon; or
- (c) nitrogen-type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45 per cent but less than 70 per cent ammonium nitrate and not more than 0.4 per cent total combustible or organic material calculated as carbon such that the sum of the percentage compositions of ammonium nitrate and ammonium sulphate exceeds 70 per cent.

UN2067

114

(1) The shipping name UN2071, AMMONIUM NITRATE BASED FERTILIZER, and the data in columns 3 to 9 of Schedule 1 must not be used for uniform ammonium nitrate based fertilizer mixtures of the nitrogen, phosphate or potash type unless the mixtures are within the following composition limits:

- (a)** 70 per cent or less of ammonium nitrate and 0.4 per cent or less of total combustible or organic material calculated as carbon; or
- (b)** 45 per cent or less of ammonium nitrate and unrestricted combustible material.

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to fertilizers within the composition limits if the fertilizers are shown not to be liable to self-sustaining decomposition by the Trough Test referred to subsection 38.2 of Part III of the Manual of Tests and Criteria.

UN2071

115

This shipping name must not be used for dangerous goods included in Class 6.1 that meet the inhalation toxicity criteria for Packing Group I set out in paragraph 2.29(2)(d) of Part 2 (Classification).

Dangerous goods that are toxic by inhalation must be assigned to one of the following UN numbers: UN3381 to UN3390 or UN3488 to UN3491. One must choose the appropriate shipping name, which will depend on the primary class and, if applicable, the subsidiary classes.

UN1583, UN2810, UN2927, UN2929, UN3122, UN3123, UN3275, UN3276, UN3278 to UN3281, UN3287, UN3289

116

This shipping name applies only to calcium hypochlorite, dry, when transported in non-friable tablet form.

UN1748 (PG III)

117

When transported in non-friable tablet form, these dangerous goods are included in Packing Group III.

UN2880, UN3487

118

Mixtures of a hypochlorite with an ammonium salt are forbidden for transport.

UN3212

119

Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are forbidden for transport.

UN1450, UN3213

120

Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are forbidden for transport.

UN1461, UN3210

121

Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are forbidden for transport.

UN1462

122

Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are forbidden for transport.

UN1482, UN3214

123

(1) The testing requirements in subsection 38.3 of Part III of the Manual of Tests and Criteria do not apply to production runs consisting of not more than 100 cells and batteries or to pre-production prototypes of cells and batteries that are transported

on a road vehicle, a railway vehicle or a ship on a domestic voyage if

- (a) each cell or battery is individually packed in an inner means of containment inside an outer means of containment and is surrounded by cushioning material that is non-combustible and non-conductive;
- (b) the cells and batteries are transported in an outer means of containment that is a metal, plastic or plywood drum, or a metal, plastic or wooden box, that meets the criteria for Packing Group I means of containment in accordance with Chapter 6.1 of the UN Recommendations; and
- (c) the cells and batteries are in transport for the purpose of testing.

(2) Despite paragraph (1)(b), batteries that have a total mass of 12 kg or more and that have a strong, impact-resistant outer casing, or assemblies of them, may be packed in an outer means of containment or protective enclosure designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no release of the dangerous goods that could endanger public safety. The batteries or battery assemblies must be protected from short-circuit.

UN3090, UN3480

124

(1) This shipping name applies to electric double layer capacitors if the energy storage capacity of each capacitor, calculated using the nominal voltage and capacitance, is greater than 0.3 Wh.

(2) A capacitor must

- (a) be transported in an uncharged state, if it is not installed in equipment;
- (b) be transported in an uncharged state or be protected against short circuit, if it is installed in equipment; and
- (c) be marked with the energy storage capacity in Wh, if it was manufactured after December 31, 2013.

(3) When the energy storage capacity of a capacitor is less than or equal to 10 Wh, the capacitor must, when it is in transport and when it is in a module in transport, be protected against short circuit or fitted with a metal strap connecting the terminals.

(4) When the energy storage capacity of a capacitor is greater than 10 Wh, the capacitor must, when it is in transport and when it is in a module in transport, be fitted with a metal strap connecting the terminals.

(5) A capacitor containing dangerous goods must be designed to withstand a 95 kPa pressure differential.

(6) A capacitor must be designed and constructed so that any pressure that may build up in use may be safely relieved through a vent or a weak point in the capacitor casing. Any liquid that is released upon venting must be contained by the means of containment containing the capacitor or by the equipment in which the capacitor is installed.

(7) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to

- (a) a capacitor that contains an electrolyte that does not meet the criteria for inclusion in any class of dangerous goods;
- (b) a capacitor that contains an electrolyte that meets the criteria for inclusion in a class of dangerous goods, that has an energy storage capacity of 10 Wh or less, and that is capable of withstanding a 1.2 m drop test on an unyielding surface, unpackaged, without loss of contents; or
- (c) a capacitor that is installed in equipment and contains an electrolyte that meets the criteria for inclusion in a class of dangerous goods, if the equipment is in a means of containment that is designed, constructed, filled, closed and secured so that under normal conditions of transport, including handling, there will be no accidental functioning of the capacitor or release of the dangerous goods that could endanger public safety.

(8) Large equipment containing a capacitor may be transported without a means of containment or on pallets, if the capacitor is afforded equivalent protection by the equipment in which it is contained.

UN3499

125

These dangerous goods may be handled, offered for transport or transported in accordance with subsections 1.17 (2) to (4) of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) on a road vehicle, a railway vehicle or a ship on a domestic voyage if

- (a) the dangerous goods are classified and authorized in accordance with the "Explosives Regulations, 2013";
- (b) the dangerous goods are contained in inner means of containment that are placed in a strong outer means of containment 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 public safety;

- (c) each inner means of containment has a gross mass less than or equal to 5 kg;
- (d) the outer means of containment has a gross mass less than or equal to 30 kg; and
- (e) the outer means of containment, as presented for transport, is capable of passing a test in accordance with Test Series 6(d) of Part I of the Manual of Tests and Criteria.

UN0012, UN0014, UN0055

126

Manufactured instruments and articles containing mercury may be handled, offered for transport or transported under the UN number and shipping name UN3506, MERCURY CONTAINED IN MANUFACTURED ARTICLES.

UN2809

127

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to the handling, offering for transport or transporting of articles containing a quantity of mercury that is less than or equal to 1 kg that are transported on a road vehicle, a railway vehicle or a ship on a domestic voyage.

UN3506

128

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to decontaminated medical or clinical wastes that previously contained infectious substances, unless the decontaminated medical or clinical wastes meet the criteria for inclusion in another class.

UN3291

129

These dangerous goods must be in a means of containment that is in compliance with Packing Instruction P621, IBC620 or LP621 of the UN Recommendations.

UN3291

130

(1) This shipping name applies to chemicals under pressure, including liquids, pastes or powders that are pressurized with a propellant that meets the criteria set out in section 2.2.1.2 of the UN Recommendation for a compressed gas or a liquefied gas.

(2) These dangerous goods must be assigned to

- (a) primary Class 2.1, Flammable Gases, if one of the components, which can be a pure substance or a mixture, is classified as a flammable component under subsection (3); and
- (b) subsidiary Class 6.1, Toxic Substances, or Class 8, Corrosives, if one of the liquid or solid components is included in Class 6.1, Toxic Substances, Packing Group II or III, or Class 8, Corrosives, Packing Group II or III.

(3) A flammable component is

- (a) a liquid that has a flashpoint of 60°C or less;
- (b) a solid that meets the criterion set out in subparagraph 2.21(a)(i) of Part 2 (Classification); and
- (c) a gas that meets the criteria set out in paragraph 2.14(a) of Part 2 (Classification).

(4) This shipping name must not be used to transport

- (a) gases included in both primary Class 2.3, Toxic Gases, and subsidiary Class 5.1, Oxidizing Substances;
- (b) substances included in Packing Group I of Class 6.1, Toxic Substances, or Class 8, Corrosives;
- (c) liquid desensitized explosives included in Class 3, Flammable Liquids;
- (d) self-reactive substances and solid desensitized explosives included in Class 4.1, Flammable Solids; or
- (e) dangerous good included in
 - (i) Class 4.2, Substances Liable to Spontaneous Combustion;
 - (ii) Class 4.3, Water-reactive Substances;
 - (iii) Class 5.1, Oxidizing Substances;

- (iv) Class 5.2, Organic Peroxides;
- (v) Class 6.2, Infectious Substances; or
- (vi) Class 7, Radioactive Materials.

(5) Dangerous goods to which special packing provision PP86 or TP7 is assigned in Column 9 and Column 11 of the Dangerous Goods List in Chapter 3.2 of the UN Recommendations, and that therefore require air to be eliminated from the vapour space, must not be transported under this shipping name, but must be transported under their respective shipping names as listed in the Dangerous Goods List of Chapter 3.2 of the UN Recommendations.

A chemical under pressure contained in an aerosol container must be transported under UN1950, AEROSOLS.

UN3500 to UN3505

131

These dangerous goods must not be transported if the temperature of the dangerous goods at the time of loading exceeds the higher of 35°C or 5°C above the ambient temperature.

UN2216, UN3497

132

These dangerous goods must not be transported by ship if they contain less than 100 ppm of an antioxidant (ethoxyquin).

UN2216

133

This shipping name must not be used to transport UN3155, PENTACHLOROPHENOL.

UN2020

134

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to nitrocellulose membrane filters, each with a mass not exceeding 0.5 g, if they are contained individually in an article or a sealed packet.

UN3270

135

This shipping name applies to articles that contain dangerous goods included in Class 1, Explosives, and that may also contain dangerous goods included in other classes.

These articles are used to enhance safety in vehicles, vessels or aircraft. They include air bag inflators, air bag modules, seat-belt pretensioners, and pyromechanical devices.

UN0503

136

This shipping name applies to safety devices for road vehicles, railway vehicles, ships or aircraft, such as air bag inflators, air bag modules, seat-belt pretensioners and pyromechanical devices, that are transported as component parts and that, before being presented for transport, have been tested in accordance with the Series 6 type (c) test in Section 16 of Part I of the Manual of Tests and Criteria, with no explosion of the device tested, no fragmentation of the device casing or pressure vessel, and no projection hazard or thermal effect that could hinder fire fighting or other emergency response.

UN3268

137

(1) This shipping name applies to lithium ion cells or batteries, and lithium metal cells or batteries, that are damaged or defective and do not conform to subsection 2.43.1(2) of Part 2 (Classification).

(2) Lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective, include, but are not limited to, cells or batteries that have leaked or vented, or have sustained physical or mechanical damage, and cannot be diagnosed prior to transport, or that have been identified as being defective for safety reasons.

(3) Lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective must be packed in accordance with Packing Instructions P908 or LP904 of the UN Recommendations, as applicable.

(4) As applicable, the outer means of containment or the overpack must be marked legibly and visibly on a contrasting background, with the words "Damaged Lithium Ion Batteries", "piles au lithium-ionique endommagées", "Damaged Lithium Metal Batteries", "piles au lithium métal endommagées", "Defective Lithium Ion Batteries", "piles au lithium-ionique défectueuses", "Defective Lithium Metal Batteries" or "piles au lithium métal défectueuses".

(5) It is forbidden to transport lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective and that, under normal conditions of transport, are liable to disassemble rapidly, react dangerously, produce a flame or a dangerous evolution of heat, or produce a dangerous emission of toxic, corrosive or flammable gases or vapours.

(6) It is forbidden to transport by aircraft lithium ion cells or batteries and lithium metal cells or batteries that are damaged or defective.

UN3090, UN3091, UN3480, UN3481

138

(1) When transported for disposal or recycling, lithium ion cells or batteries and lithium metal cells or batteries, or equipment containing those cells or batteries,

(a) are not subject to subsection 2.43.1(2) of Part 2 (Classification);

(b) must be packed in accordance with Packing Instructions P909 or LP904 of the UN Recommendations, as applicable, whether packed with or without non-lithium cells or batteries or equipment containing those cells or batteries;

(c) must be in a means of containment or an overpack that is marked legibly and visibly on a contrasting background with the words "Lithium batteries for disposal", "Piles au lithium destinées à l'élimination", "Lithium batteries for recycling" or "Piles au lithium destinées au recyclage ", as appropriate; and

(d) are forbidden for transport by aircraft.

(2) Damaged or defective cells and batteries must be offered for transport or transported under special provision 137.

UN3090, UN3091, UN3480, UN3481

139

(1) Asbestos that is immersed or fixed in a natural or artificial binder in such a way that no release of hazardous quantities of respirable asbestos fibres can occur during transport is not subject to these Regulations.

Minerals are examples of natural binders; cement, asphalt, resins and plastics are examples of artificial binders.

(2) Manufactured articles containing asbestos that is not immersed or fixed in accordance with subsection (1) are not subject to these Regulations when packed so that no release of hazardous quantities of respirable asbestos fibres can occur during transport.

UN2212, UN2590

140 This shipping name applies to

(a) ammonium nitrate with more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance; and

(b) ammonium nitrate that contains not more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance, and that gives a positive result for acceptance into Class 1, Explosives, when tested in accordance with Test Series 2 of Part 1 of the Manual of Tests and Criteria, Part I.

UN0222

141

(1) Any dangerous goods may be transported under any of these shipping names if

(a) the dangerous goods are contained in a chemical kit, first aid kit or polyester resin kit; and

(b) the quantities do not exceed the limits that apply to the dangerous goods as determined in accordance with column 6(b) of Schedule 1 and the table to subsection 1.17.1(2).

(2) Despite paragraph (1)(b), in the case of dangerous goods that are included in Class 5.2, Organic Peroxides, the quantity limits must be determined using the alphanumeric code E2.

UN3269, UN3316

142

The following shipping names may be used to meet the requirements of Part 3 (Documentation) and Part 4 (Dangerous Goods Safety Marks) when these dangerous goods are offered for transport in the same means of containment:

- (a) "PAINT RELATED MATERIAL" may be used for a means of containment containing both paint and paint related material;
- (b) "PAINT RELATED MATERIAL, CORROSIVE, FLAMMABLE" may be used for a means of containment containing both paint, corrosive, flammable, and paint related material, corrosive, flammable;
- (c) "PAINT RELATED MATERIAL, FLAMMABLE, CORROSIVE" may be used for a means of containment containing both paint, flammable, corrosive, and paint related material, flammable, corrosive; and
- (d) "PRINTING INK RELATED MATERIAL" may be used for a means of containment containing both printing ink and printing ink related material.

UN1210, UN1263, UN3066, UN3469, UN3470

143

(1) This shipping name also applies to articles containing a small pressure receptacle with a release device if

- (a) the water capacity of the pressure receptacle does not exceed 0.5 L and the working pressure does not exceed 2 500 KPa at 15°C;
- (b) the minimum burst pressure of the pressure receptacle is at least four times the pressure of the gas at 15°C;
- (c) each article is manufactured in such a way that unintentional firing or release is avoided under normal conditions of handling, packing, transport and use;
This requirement may be met by mounting an additional locking device linked to the activator.
- (d) each article is manufactured in such a way as to prevent hazardous projections of the pressure receptacle or its parts;
- (e) each pressure receptacle is manufactured from material that will not fragment upon rupture;
- (f) the design type of each article is subjected to a fire test; and
- (g) the design type of each article must be subjected to a single package test.

(2) For the purposes of the fire test referred to in paragraph (1)(f), the provisions of section 16.6.1.2, with the exception of paragraph (g), and sections 16.6.1.3.1 to 16.6.1.3.6, 16.6.1.3.7 (b) and section 16.6.1.3.8 of the Manual of Tests and Criteria must be applied. It must be demonstrated that the article relieves its pressure by means of a fire degradable seal or other pressure relief device in such a way that the pressure receptacle will not fragment and that the article or fragments of the article do not rocket more than 10 m.

(3) For the purposes of the single package test referred to in paragraph (1)(g), a stimulating mechanism must be used to initiate one article in the middle of the means of containment. There must be no hazardous effects outside the means of containment, such as bursting of the means of containment, or projection of metal fragments or the receptacle itself through the means of containment.

(4) The manufacturer must keep technical documentation on the design type and its manufacture, as well as on the tests and their results, and must apply procedures to ensure that articles manufactured in series conform to the design type and meet the conditions set out in subsection (1).

UN3164

144

(1) All asymmetric capacitors assigned to this shipping name must meet the following conditions:

- (a) capacitors or modules are protected against short circuit;
- (b) capacitors are designed and constructed so that any pressure that may build up in use may be safely relieved through a vent or a weak point in the capacitor casing, and any liquid that is released upon venting is contained by packaging or by the equipment in which the capacitors are installed;
- (c) capacitors manufactured after December 31, 2015 are marked with the energy storage capacity in Wh; and
- (d) capacitors that contain an electrolyte meeting the classification criteria of any class of dangerous goods are designed to withstand a 95 kPa pressure differential.

Energy storage capacity means the energy stored in a capacitor, as calculated according to the following equation:

$$Wh = 1/2C_N(U_R^2 - U_L^2) \times (1/3600),$$

where (C_N) is the nominal capacitance, (U_R) is the rated voltage, and (U_L) is the rated lower limit voltage

(2) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to

- (a) capacitors with an energy storage capacity less than or equal to 0.3 Wh;

(b) capacitors that contain an electrolyte not included in at least one of the 9 classes of dangerous goods, including when configured in a module or when installed in equipment;

(c) capacitors that contain an electrolyte not included in at least one of the 9 classes of dangerous goods, with an energy storage capacity less than or equal to 20 Wh, including when configured in a module if the capacitors are capable of withstanding a 1.2 m drop test on an unyielding surface, unpackaged, without loss of contents; and

(d) capacitors that are installed in equipment and contain an electrolyte included in at least one of the 9 classes of dangerous goods, if the equipment is contained in a strong outer means of containment that is 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 or accidental functioning of capacitors that could endanger public safety.

Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets if the capacitors are afforded equivalent protection by the equipment in which they are contained.

(3) Despite subsections (1) and (2), nickel-carbon asymmetric capacitors containing Class 8 alkaline electrolytes must be transported as UN2795, BATTERIES, WET, FILLED WITH ALKALI, electric storage.

UN3508

145

(1) Neutron radiation detectors containing non-pressurized boron trifluoride gas may be transported under this shipping name if

(a) the absolute pressure in each detector does not exceed 105 kPa at 20°C;

(b) the amount of gas does not exceed 13 g per detector;

(c) each detector is manufactured under a quality assurance program;

ISO 9001:2008 is an example of a quality assurance program.

(d) each detector is of welded metal construction with brazed metal to ceramic feed through assemblies;

(e) each detector has a minimum burst pressure of 1 800 kPa, demonstrated by design type qualification testing; and

(f) each detector is tested to a 1×10^{-10} cm³/s leaktightness standard before being filled.

(2) Neutron radiation detectors containing non-pressurized boron trifluoride gas transported as individual components must be offered for transport and transported as follows:

(a) they must be packed in a sealed intermediate plastics liner with sufficient absorbent material to absorb the entire gas contents;

(b) they must be packed in a strong outer means of containment;

(c) in their outer means of containment, they must be capable of withstanding a 1.8 m drop test without any leakage of the gas contained in the detectors; and

(d) the total amount of gas contained in all the detectors in each outer means of containment must not exceed 52 g.

(3) Completed neutron radiation detection systems containing detectors that meet the requirements of subsection (1) must be offered for transport and transported as follows:

(a) the detectors must be housed in a strong sealed outer casing;

(b) the casing must contain sufficient absorbent material to absorb the entire gas contents of the detectors; and

(c) unless the outer casing affords equivalent protection, the completed systems must be packed in a strong outer means of containment capable of withstanding a 1.8 m drop test without any leakage of the gas contained in the detectors.

(4) The shipping document must include the statement "Transported in accordance with special provision 145" or "Transporté conformément à la disposition special 145".

(5) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to

(a) neutron radiation detectors, including those with solder glass joints, containing not more than 1 g of boron trifluoride gas, if they may be transported under this shipping name under subsection (1) and are packed in accordance with subsection (2); and

(b) radiation detection systems containing detectors described in paragraph (a) if the systems are packed in accordance with subsection (3).

UN1008

146

This shipping name must not be used for small means of containment, large means of containments or intermediate bulk containers (IBC), or parts of them, unless they

- (a) have contained dangerous goods other than radioactive materials;
- (b) are transported for disposal, recycling, or recovery of their material other than for the purpose of reconditioning, repair, routine maintenance, remanufacturing or reuse; and
- (c) have, when offered for transport, been emptied to the extent that only residues of dangerous goods adhering to parts of the means of containment are present.

UN3509

147

Despite explosives packing instruction EP 17 of CGSB-43.151, a person must not handle, offer for transport or transport these dangerous goods in a UN portable tank or a highway tank.

UN0331

148

(1) Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles if

- (a) the working pressure in each receptacle is less than 5 000 KPa;
- (b) the capacity of each receptacle is less than 12 L;
- (c) each receptacle has a minimum burst pressure of
 - (i) at least 3 times the working pressure, when the receptacle is fitted with a relief device, or
 - (ii) at least 4 times the working pressure, when the receptacle is not fitted with a relief device;

(d) each receptacle is manufactured from material that will not fragment upon rupture;

(e) each detector is manufactured under a quality assurance program;

ISO 9001:2008 is an example of a quality assurance program.

(f) the detectors are transported in strong outer means of containment; and

(g) a detector in its outer means of containment is capable of withstanding a 1.2 m drop test without breakage of the detector or rupture of the outer means of containment.

(2) Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles and that are included in equipment, if

- (a) the conditions set out in paragraphs (1)(a) to (e) are met; and
- (b) the equipment is contained in a strong outer means of containment or the equipment affords the detectors with protection that is equivalent to that provided by a strong outer means of containment.

(3) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles, including detectors in radiation detection systems, if the detectors meet the requirements of subsection (1) or (2), as applicable, and the capacity of the receptacles that contain the detectors is less than 50 mL.

UN1006, UN1013, UN1046, UN1056, UN1065, UN1066, UN1956, UN2036

149

These dangerous goods are forbidden for transport as cargo on a passenger aircraft.

UN3090

71. Schedule 3 to the Regulations is replaced by the Schedule 3 set out in Schedule 2 to these Regulations.

TRANSITIONAL PROVISIONS

72. (1) Subject to subsections (2) to (4), a person may, for a period of six months that begins on the day on which these Regulations are published in the *Canada Gazette*, Part II, comply with the *Transportation of Dangerous Goods Regulations* as they read immediately before that day.

(2) Subsection (1) does not apply in respect of paragraphs 7.1(6)(a) to (f) and (h) to (j) of the *Transportation of Dangerous Goods Regulations*, as enacted by section 33. A person must comply with paragraphs 7.1(6)(a) to (f) and (h) to (j) starting on the day on which these Regulations are published in *the Canada Gazette*, Part II

(3) Subsection (1) does not apply in respect of paragraphs 7.1(6)(g) and (k) of the *Transportation of Dangerous Goods Regulations*, as enacted by section 33. A person must comply with paragraphs 7.1(6)(g) and (k) starting on the day that is 150 days after the day on which these Regulations are published in the *Canada Gazette*, Part II.

(4) Subsection (1) does not apply in respect of special provision 149 of the *Transportation of Dangerous Goods Regulations*, as enacted by section 70. A person must comply with special provision 149 starting on January 1, 2015.

COMING INTO FORCE

73. (1) Subject to subsections (2) and (3), these Regulations come into force on the day on which they are published in the *Canada Gazette*, Part II.

(2) Paragraphs 7.1(6)(g) and (k) of the *Transportation of Dangerous Goods Regulations*, as enacted by section 33, come into force 150 days after the day on which these Regulations are published in the *Canada Gazette*, Part II.

(3) Special provision 149 of the *Transportation of Dangerous Goods Regulations*, as enacted by section 70, comes into force on January 1, 2015.

SCHEDULE 1 (Section 34)

SCHEDULE 1

CLASSES 1 TO 9

LEGEND

Col. 1

UN Number. This column gives the UN numbers for the shipping names of the dangerous goods. The shipping names are listed in alphabetical order in Schedule 3.

Col. 2

Shipping Name and Description. This column gives the shipping names for the dangerous goods. Each shipping name is written in upper case letters (capitals) and any descriptive text is written in lower case letters. The word "or" between shipping names indicates that there is more than one shipping name for the dangerous goods and that each shipping name is correct. Any one of the shipping names may be used, for example, to complete a shipping document.

See paragraph 1.3(2)(d) of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) for additional information about shipping names and how they may be written to complete, for example, a shipping document.

The abbreviation N.O.S. means "Not Otherwise Specified".

Col. 3

Class. This column gives the primary class for the dangerous goods. Any subsidiary class is shown in parentheses under the primary class. There is no priority between or among subsidiary classes.

The word "Forbidden" in this column means that the dangerous goods must not be transported. Schedule 3 includes dangerous goods that are forbidden for transport but that do not have a UN number. *A person may apply for a Permit for Equivalent Level of Safety to transport these dangerous goods (see Part 14 (Permit for Equivalent Level of Safety)).*

Col. 4

Packing Group/Category. This column gives the packing group or category for the dangerous goods.

All dangerous goods included in Class 1, Explosives, are assigned to packing group II. Dangerous goods included in Class 2, Gases, and Class 7, Radioactive Materials, do not have packing groups. Dangerous goods included in Class 6.2, Infectious Substances, are assigned to category A or B rather than to packing groups.

Col. 5

Special Provisions. This column gives the numbers of the special provisions that apply to the dangerous goods. The special provisions are set out in Schedule 2.

Col. 6(a)

Explosive Limit and Limited Quantity Index. This column gives the maximum quantity of dangerous goods that may be handled, offered for transport or transported either in accordance with section 1.17 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) in the case of dangerous goods included in any of Classes 2 to 9, or in accordance with section 1.31 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) in the case of dangerous goods included in Class 1, Explosives.

Section 1.17 applies to dangerous goods included in Classes 2 to 9. Section 1.17 may also apply to ammunition included in Class 1.4S and assigned to UN0012, UN0014 or UN0055.

Section 1.31 applies to dangerous goods included in Class 1.

Ammunition included in Class 1.4S and assigned to UN0012, UN0014 or UN0055 may be offered for transport with the Limited Quantity marking under special provision 125 of Schedule 2.

Col. 6(b)

Excepted Quantity Index. This column provides an alphanumeric code, set out in the table to subsection 1.17.1(2) of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases), that indicates the maximum quantity of dangerous goods that may be handled, offered for transport or transported in accordance with section 1.17.1 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) in the case of dangerous goods included in any of Classes 2 to 9.

Col. 7

ERAP Index. This column gives the ERAP (emergency response assistance plan) quantity limit above which an approved ERAP is required for the dangerous goods in accordance with section 7.1 of Part 7 (Emergency Response Assistance Plan).

The quantity limit is expressed in kilograms for solids, in litres for liquids, and, for gases, as the capacity in litres of the means of containment. For Class 1, Explosives, the quantity is expressed either in kilograms of net explosives quantity or, if the explosives are subject to special provision 85 or 86, number of articles.

For dangerous goods included in Class 3, Flammable Liquids, with the UN number UN1202, UN1203 or UN1863, see subsection 7.1(6) of Part 7 (Emergency Response Assistance Plan), which sets out ERAP requirements for those dangerous goods. For Class 6.2, Infectious Substances, see subsection 7.1(7) of Part 7 (Emergency Response Assistance Plan), which sets out the ERAP requirements for certain infectious substances.

The ERAP quantity limit applies to the row in this Schedule on which it appears. For example, UN1986 may require an ERAP for Packing Group I but not for Packing Group II or III.

If no index number is shown, an ERAP is not required unless the dangerous goods are subject to special provision 84 (see subsection 7.1(7) of Part 7 (Emergency Response Assistance Plan)).

In column 7 of the schedule, "SP" means "special provision".

Col. 8

Passenger Carrying Ship Index. This column gives the maximum quantity of dangerous goods that may be transported, per means of containment, on board a passenger carrying ship (see section 1.6 of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases)). The quantity limit is expressed in kilograms for solids, in litres for liquids, and, for gases, as the capacity in litres of the means of containment. For Class 1, Explosives, the quantity is expressed either in kilograms of net explosives quantity or, if the explosives are subject to special provision 85 or 86, in number of articles. There may be special stowage requirements or restrictions for some of these dangerous goods, and the consignor should contact the marine carrier for more information.

The word "Forbidden" in this column means that the dangerous goods must not be transported in any quantity on board a passenger carrying ship. *A person may apply for a Permit for Equivalent Level of Safety to transport these dangerous goods (see Part 14 (Permit for Equivalent Level of Safety)).*

If no index number is shown, there is no quantity limit.

Col. 9

Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index. This column gives the maximum quantity of dangerous goods that may be transported, per means of containment, on board a passenger carrying road vehicle or a passenger carrying railway vehicle (see section 1.6 of Part 1, (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases)). The quantity limit is expressed in kilograms for solids, in litres for liquids, and, for gases, as the capacity in litres of the means of containment. For Class 1, Explosives, the quantity is expressed either in kilograms of net

explosives quantity or, if the explosives are subject to special provision 85 or 86, in number of articles.

The word "Forbidden" in this column means that the dangerous goods must not be transported in any quantity on board a passenger carrying road vehicle or a passenger carrying railway vehicle. *A person may apply for a permit for Equivalent Level of Safety to transport these dangerous goods (see Part 14 (Permit for Equivalent Level of Safety)).*

If no index number is shown, there is no quantity limit.

HOW TO USE SCHEDULE 1

Important Principles

There are two important principles to follow:

- 1. The data in each row must be used exactly as it is presented to meet, for example, the requirements for completing a shipping document.*
- 2. When one row has more than one sub-row in columns 4 to 9 (e.g., there is more than one packing group), the data used for that UN number must be taken entirely from the same row and the same sub-row.*

This explanation describes how to use this Schedule. If a UN number is not known, one must refer to Schedule 3 to select the most appropriate UN number for the substance. In some cases, one UN number is used for several different products (generic entries or N.O.S.).

Four entries are used in the following three examples to illustrate four separate but similar ways of presenting data. The first example is described in detail. The entries are: UN1660, UN1664 and UN3446, and UN2024.

Example 1: UN1660

Col. 1/Col. 2

UN1660 is the UN number (see column 1) for the shipping name NITRIC OXIDE, COMPRESSED (see column 2). Note that subparagraph 1.3(2)(d)(iii) of Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) allows shipping names in English to be written in a different order from the order in Schedule 1, as long as the full shipping name is used and the word order is a commonly used one. For example, this substance may be referred to in English as either NITRIC OXIDE, COMPRESSED, or COMPRESSED NITRIC OXIDE.

Col. 3

The primary class is Class 2.3 and the two subsidiary classes are Class 5.1 and Class 8 (see column 3). Please note that no priority is to be assumed between or among subsidiary classes.

Col. 4

There is no packing group, which is true for all gases (see column 4).

Col. 5

There are two special provisions that apply (see column 5). They are Special Provisions 23 and 38, the text of which is in Schedule 2.

Col. 6 (a)

NITRIC OXIDE, COMPRESSED, cannot be transported as a limited quantity because a "0" is set out for this substance in column 6 (a).

Col. 6 (b)

NITRIC OXIDE, COMPRESSED, cannot be transported as an excepted quantity because the code "E0" is set out for this substance in column 6 (b).

Col. 7

NITRIC OXIDE, COMPRESSED, in a means of containment whose capacity exceeds 25 L requires an emergency response assistance plan because a "25" is set out for this substance in column 7.

Col. 8/Col. 9

NITRIC OXIDE, COMPRESSED, is forbidden for transport on a passenger carrying ship, a passenger carrying road vehicle or a passenger carrying railway vehicle, because the word "Forbidden" is set out for that substance in columns 8 and 9.

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6		Col. 7	Col. 8	Col. 9
UN Number	Shipping Name and Description	Class	Packing Group/Category	Special Provisions	6(a)	6(b)	ERAP Index	Passenger-Carrying Ship Index	Passenger-Carrying Road Vehicle or Passenger-Carrying Railway Vehicle Index
					Explosive Limit and Limited Quantity Index	Excepted Quantities			
UN1660	NITRIC OXIDE, COMPRESSED	2.3 (5.1) 8		23, 38	0	E0	25	Forbidden	Forbidden

Example 2: UN1664 and UN3446

These dangerous goods can be transported under two different UN numbers: UN1664, NITROTOLUENES, LIQUID, for the liquid form of the substance and UN3446, NITROTOLUENES, SOLID, for the solid form of the substance. Once the correct UN number is chosen, i.e., the UN number for the liquid or the UN number for the solid, the information is read in the same fashion as Example 1, UN1660, NITRIC OXIDE, COMPRESSED.

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6		Col. 7	Col. 8	Col. 9
UN Number	Shipping Name and Description	Class	Packing Group/Category	Special Provisions	6(a)	6(b)	ERAP Index	Passenger-Carrying Ship Index	Passenger-Carrying Road Vehicle or Passenger-Carrying Railway Vehicle Index
					Explosive Limit and Limited Quantity Index	Excepted Quantities			
UN1664	NITROTOLUENES, LIQUID	6.1	II		0.1 L	E4			5 L
UN3446	NITROTOLUENES, SOLID	6.1	II		0.5 kg	E4			25 kg

Example 3: UN2024

This UN number appears only once for the shipping name MERCURY COMPOUND, LIQUID, N.O.S., but the entry contains three different sets of data, one for each of the three packing groups. The abbreviation N.O.S. means "Not Otherwise Specified".

The UN number, shipping name and class are the same for each packing group. However, the remaining data are taken from the applicable packing group sub-row in columns 4 to 9, and are read in the same fashion as Example 1, UN1660, NITRIC OXIDE, COMPRESSED.

Note that all the data used to complete a shipping document, for example, must be from the same row (columns 1 to 3) and the same sub-row (columns 4 to 9).

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6		Col. 7	Col. 8	Col. 9
UN Number	Shipping Name and Description	Class	Packing Group/Category	Special Provisions	6(a)	6(b)	ERAP Index	Passenger-Carrying Ship Index	Passenger-Carrying Road Vehicle or Passenger-Carrying Railway Vehicle Index
					Explosive Limit and Limited Quantity Index	Excepted Quantities			
					UN2024	MERCURY COMPOUND, LIQUID, N.O.S., excluding mercurous chloride and cinnabar			
			II	16	0.1 L	E4			5 L
			III	16	5 L	E1			60 L

Due to the large size of this table, it was moved to a different page. Please follow this link to access the file ([Annex 1](#)).

**SCHEDULE 2
(Section 71)**

SCHEDULE 3

ALPHABETICAL INDEX

LEGEND

This Schedule contains the shipping or technical names of substances and articles set out in alphabetical order.

Substances that are forbidden for transport, whether or not they have a UN number, are also included in this Schedule.

Col. 1A

Shipping or Technical Name. This column gives the substance name, article name or shipping name for the dangerous goods. The shipping name is written in upper case letters (capitals). The French name for each entry is given in Col. 1B.

The abbreviation N.O.S. means "NOT OTHERWISE SPECIFIED".

For the purpose of determining the alphabetical order, the following information has been ignored even when it forms part of the shipping name: numbers; Greek letters; the abbreviations "sec" and "tert"; and the letters "N" (Nitrogen), "n" (normal), "o" (ortho), "m" (meta) and "p" (para).

Col. 2

Primary Class. This column gives the primary class of the dangerous goods. It does not give the subsidiary classes, if any. The subsidiary classes are given in Schedule 1.

The word "Forbidden" in this column means that the substance must not be transported. A person may apply for a Permit for Equivalent Level of Safety to transport the substance (*see Part 14 (Permit for Equivalent Level of Safety)*).

Col. 3

UN Number. This column gives the UN number, if any, that corresponds to the shipping name in Col. 1A. The UN number is the reference point that can be used to identify in, Schedule 1, the classification elements for the substance.

Col. 4

Marine Pollutant. This column indicates whether the dangerous goods are marine pollutants. The letter "P" indicates a marine pollutant.

Note 1

Marine pollutants are identified only in this Schedule. Certain marine pollutants have not been classified in an N.O.S. or generic entry. If they meet the criteria of Classes 1 to 8, they must be classified in accordance with Part 2 (Classification). A substance that does not meet the criteria for inclusion in any of these classes must be included in Class 9, Miscellaneous Products Substances or Organisms, and be offered for transport and transported under

(a) for a solid, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S; or

(b) for a liquid, UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Note 2

The word "see" in column 3 means that the substance for which it is shown must be offered for transport and transported under the shipping name corresponding to the UN number indicated.

HOW TO USE SCHEDULE 3

This explanation describes how to use this Schedule.

Four entries are used in the following four examples to illustrate four separate situations pertaining to the classification of marine pollutants. The entries are: Chlorine, Cymol, Aldrin and Copper Metal Powder.

Example 1: Chlorine, UN1017

Chlorine is a substance listed in Schedule 1 under its shipping name with its corresponding UN number, UN1017. Chlorine must therefore be offered for transport and transported under UN1017, CHLORINE.

Col. 1A	Col. 1B	Col. 2	Col. 3	Col. 4
Shipping or Technical Name	Appellation réglementaire ou technique	Primary Class	UN Number	Marine Pollutant
CHLORINE	CHLORE	2.3	UN1017	P

Example 2: Cymol

Cymol is a synonym for cymene. Schedule 1 lists "CYMENES" as the shipping name, which includes the three isomers (ortho, meta and para) for cymene. Cymol must therefore be offered for transport and transported under UN2046, CYMENES, if it meets the criteria for inclusion in Class 3, Flammable Liquids.

Col. 1A	Col. 1B	Col. 2	Col. 3	Col. 4
Shipping or Technical Name	Appellation réglementaire ou technique	Primary Class	UN Number	Marine Pollutant
Cymol	Cymol	3	See UN2046	P

Example 3: Aldrin

Aldrin is a generic name for 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-dimethanonaphthalene. Col. 1A shows that Aldrin must be offered for transport and transported under the shipping name ORGANOCHLORINE PESTICIDE. Schedule 1 lists three possible UN Numbers for ORGANOCHLORINE PESTICIDE, depending on its properties: UN2762, UN2995 or UN2996.

Col. 1A	Col. 1B	Col. 2	Col. 3	Col. 4
Shipping or Technical Name	Appellation réglementaire or technique	Primary Class	UN Number	Marine Pollutant
Aldrin, see ORGANOCHLORINE PESTICIDE	Aldrine, voir PESTICIDES ORGANOCHLORÉS	-	-	-

Example 4: Copper Metal Powder

Copper Metal Powder is an example of dangerous goods that are identified only in this Schedule. Col. 3 shows "see Note 1" for this substance, which means that the substance must be assigned to Classes 1 to 8, if applicable, or to Class 9.

Col. 1A	Col. 1B	Col. 2	Col. 3	Col. 4
Shipping or Technical Name	Appellation réglementaire ou technique	Primary Class	UN Number	Marine Pollutant
Copper metal powder	Poudre métallique de cuivre	-	See Note 1	P

Due to the large size of this table, it was moved to a different page. Please follow this link to access the file ([Annex 3](#)).

REGULATORY IMPACT ANALYSIS STATEMENT

(This statement is not part of the Regulations.)

Issues

The last updates of the *Transportation of Dangerous Goods Regulations* (TDGR) following the United Nations Recommendations on the Transport of Dangerous Goods, Model Regulations (UN Recommendations), date back to the 11th edition published in 1999, about 15 years ago. As a result, outdated schedules and special provisions in the Regulations have caused confusion and delays for Canadian shippers and carriers as well as placing a compliance burden on industry. In particular, Canadian shippers have been adversely affected as they face additional transportation costs caused by the delay in adopting exemptions recognized in the United States and internationally, such as for "excepted quantities" (excepted quantities of dangerous goods are allowed to be transported in non-standardized packaging and under fewer regulatory obligations as they pose less risk in small quantities). Canadian shippers have also faced a regulatory burden due to outdated regulations and must often verify both regulations (the TDGR and the UN Recommendations) in order to transport their dangerous goods internationally. Therefore, the alignment of the TDGR with the UN Recommendations will facilitate the transport of dangerous goods and will make the process of importing and exporting dangerous goods more efficient and less time consuming.

In addition, over the last few years, the transport of lithium metal batteries as cargo on aircraft has been identified by the international community as an increasing risk in light of a number of incidents and "near incidents" that have occurred. The main safety concern is that once lithium metal batteries start to burn, fire suppression systems on board aircraft cannot extinguish them. As a result, in June 2014 the International Civil Aviation Organization (ICAO) decided that, effective January 1, 2015, member states will have the obligation to apply a ban prohibiting the transport of such batteries as cargo on passenger flights. Therefore, this amendment will implement ICAO's prohibition of lithium metal batteries on passenger

aircraft.

A further issue addressed with this proposal is the need to include in the TDGR Protective Direction (PD) 33, issued on April 23, 2014, which established Emergency Response Assistance Plan (ERAP) requirements for nine flammable liquids. This is being done to increase the transparency of the ERAP requirements under the TDGR and to avoid stakeholders having to consult two separate regulatory instruments to ensure proper compliance. As well, given that significant amounts of ethanol are exported from the United States into Canada, UN1987 (another number used to identify ethanol), which was not previously identified in PD 33 but is used frequently in the United States as a shipping name to classify ethanol, will now be subject to the ERAP requirements. To ensure proper coverage of petroleum products, UN3494 (SOUR CRUDE OIL) will now also be subject to these requirements given that it is a new classification for crude oil introduced with the updates related to the 18th edition of the UN Recommendations.

Background

In Canada, the transportation of dangerous goods is governed by legislation, regulations and standards in order to prevent accidents to persons, property and the environment. In most countries, dangerous goods are also subject to workplace safety, consumer protection, storage and environmental protection regulations.

In order to ensure consistency among all these regulatory systems, the United Nations (UN) develops Recommendations in the form of Model Regulations (UN Recommendations), with the input of member countries (including Canada), to harmonize the hazard classification criteria, hazard communication tools as well as the transport conditions of dangerous goods for all modes for transport.

Canada incorporates by reference portions of the UN Recommendations into the TDGR. In addition to the UN Recommendations, the TDGR also incorporate by reference other domestic and international safety standards including those contained in the International Maritime Dangerous Goods Code (IMDG Code), the International Civil Aviation Organization Technical Instructions (ICAO TIs) and the United States Code of Federal Regulations, Title 49 (49 CFR), which regulates dangerous goods in that country. The TDGR address the classification, packing requirements, testing procedures, marking, labelling/placarding and shipping documents for dangerous goods as well as the reporting of accidents/incidents. As well, the TDGR group dangerous goods into nine classes (flammable liquids, explosives, radioactive materials, etc.), which are then subdivided into one of three "packing groups" (PGs), depending on the risk factors associated with each dangerous good during transport (PG I being more dangerous than PG III). Each dangerous good is also assigned a unique UN number, a four-digit code that identifies it internationally (e.g. UN1203 for gasoline). This internationally harmonized system helps carriers, consignors and inspecting authorities by facilitating compliance and trade between countries and by enhancing the safety of the transportation of dangerous goods both domestically and internationally.

Objective

The main objective of this amendment is to align the schedules of the TDGR with the 18th edition of the UN Recommendations and other international norms (IMDG Code, ICAO TIs) and with 49 CFR, as applicable. This will be achieved by updating Schedules 1, 2 and 3 of the TDGR. Schedule 1 lists all dangerous goods by UN number. It contains more than 3 000 shipping names and includes information within its columns on quantity exemptions and limitations, special provisions for handling and emergency response assistance plan (ERAP) thresholds. Schedule 2 sets out the special provisions referenced in Schedule 1. Special provisions are special rules or conditions that apply to specific dangerous goods. Schedule 3 is an alphabetical list of all shipping names that cross references Schedule 1. Schedule 3 also includes dangerous goods that are forbidden in all modes of transport, marine pollutants and their classification. These updates are important for harmonization and the proper identification of dangerous goods and will reduce the regulatory burden on shippers and carriers by clarifying requirements.

Additionally, for the purposes of further improving public safety, two important amendments will implement the ICAO prohibition of lithium metal batteries on passenger aircraft and add ERAP requirements for the flammable liquids identified in PD 33 (i.e. ethanol, diesel, gasoline, crude oil, petroleum distillates, aviation fuel, ethanol gasoline mixtures, and two other liquids with generic shipping names for flammable and hydrocarbon liquids) in addition to UN1987, ETHANOL and UN3494 to Part 7, dealing with ERAP requirements under the TDGR.

Description

The following are the most noteworthy aspects of the amendments to the TDGR contained in this package.

Schedule 1: This schedule lists more than 3 000 shipping names by UN number, in numerical order. Any dangerous goods in transport must be listed on a shipping document under its shipping name. Schedule 1 is comprised of nine columns listing pertinent information for each entry such as class, packing group and applicable special provisions.

The proposed amendments will eliminate from Schedule 1 a series of UN numbers that were repealed in the UN Recommendations between 1999 and 2013. New UN numbers will be added to update Schedule 1 with Chapter 3 of the 18th edition of the UN Recommendations. These will include new UN numbers such as UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC and generic shipping names such as "organo metallic" compounds and "adsorbed gases."

Some changes will be made to specific columns. Column 5 (Special Provisions) will be updated to reflect the UN Recommendations, and 49 CFR, as applicable. Column 6 will be divided into two subcolumns, 6(a) and 6(b), to introduce the "Excepted Quantities Index" and retain the "Limited Quantity Index" listed in the UN Recommendations. The Excepted Quantities Index is based on an alphanumeric code that indicates the maximum quantities of dangerous goods allowed in the inner and outer means of containment (typically pharmaceutical products, an example being nitroglycerin tablets that are individually packaged and then placed in a box), as excepted quantities are transported in combination packaging. The Limited Quantity Exemption allows similar regulatory relaxations for larger quantities of dangerous goods to be offered for transport (e.g. one-litre bottles of acetone, most commonly used as a solvent for removing nail polish). Column 7 lists the ERAP Index, which indicates the quantity threshold for a shipment over which an emergency response assistance plan is required. Columns 8 and 9 will be updated. Column 10 will be repealed and the information contained therein will be moved to Schedule 3, since the information is now required to be listed using specific technical names, as presented in the 34th amendment of the IMDG Code (explained further below).

Many shipping names will also be repealed as they are assigned a new UN number. For example, UN1649, MOTOR FUEL ANTI-KNOCK MIXTURES with a flash point of 60.5°C or less will be renamed UN3483, MOTOR FUEL ANTI-KNOCK MIXTURES, FLAMMABLE.

Schedule 2: This schedule lists all the special provisions referred to in Column 5 of Schedule 1 in numerical order. While most special provisions come from the UN Recommendations, some special provisions are added to align with 49 CFR. Also, some of the provisions under Schedule 2 are unique to the TDGR, such as those dealing with the classification of explosives. For example, Special Provision 60, allowing explosives to be transported as flammable solids, is repealed to further restrict the transport of urea nitrate containing less than 20% water, which is more reactive and potentially more dangerous. This amendment is recommended by Natural Resources Canada to impose tighter restrictions on the transport of urea nitrate due to its potential terrorist uses.

Schedule 2 will also include new or updated special provisions related to fuel cells, chemicals under pressure and lithium batteries.

Schedule 3: This schedule is an alphabetical list of all shipping names under Schedule 1, but it also contains dangerous goods that are forbidden in all modes of transport. This amendment updates the dangerous goods list and adds a column that will add (column 10 from Schedule 1 mentioned above) the most common marine pollutants under their technical names to harmonize with the IMDG Code.

Lithium batteries: These batteries are common in electronic devices such as cameras, cell phones, hearing aids, laptop computers, medical equipment and power tools. The amendment aims to differentiate lithium "metal" batteries from lithium "ion" batteries as these have distinct properties. It clarifies the definitions for lithium content and "watt-hour." Watt-hour is defined as units of measurement to measure the energy contained in a lithium cell or battery to help predict the scope of an incident involving the batteries in transport. The amendment also proposes to introduce new markings to enhance safety in transport. With respect to watt-hour, adding a new definition will clarify the potential discharge of energy during an accident. Batteries (metal or ion) will also require a warning that the packaging must be handled with care, special inspection procedures (including re-packing) if the package is damaged and a contact number for emergency situations. A new special provision will ease the transportation of prototype lithium batteries by relaxing testing requirements prior to the prototype being transported if it is offered for transport in a sturdier means of containment that provides an equivalent level of safety.

Following a meeting of the International Civil Aviation Organization's Working Group on Lithium Batteries in 2014, ICAO adopted a ban on the shipment of lithium metal batteries as cargo aboard passenger aircraft. The transport of lithium metal batteries as cargo on aircraft has been an increasingly important issue for the international community for a number of years in light of the number of incidents and "near incidents" that have occurred. The main safety concern is that once lithium metal batteries start to burn, they create a "thermal runaway" that fire suppression systems onboard aircraft cannot extinguish.

The prohibition does not extend to batteries carried by passengers (subject to certain quantities) or batteries contained in equipment (i.e. defibrillators, pacemakers, hearing aids). The amendments will implement the ICAO ban effective January 1, 2015.

Fuel cells: These are devices that generate electricity through oxidation on an electrode of a reducing fuel (e.g. hydrogen) coupled with the reduction on the other electrode of an oxidant (e.g. oxygen in the air). Fuel cells are growing in popularity and undergoing rapid development. They are used in portable power systems, such as emergency power systems, and in the transportation industry. In this amendment, new definitions are introduced and UN numbers, special provisions and shipping names for fuel cells will be added to ensure consistency with the UN Model Recommendations. Transporting fuel cells under an appropriate shipping name in the proper means of containment will allow for more effective recognition of the danger they can pose when involved in a transportation incident. However, apart from some minor costs associated with the requirements for shipping documents and labels or placards identifying the fuel cells, no additional costs are expected from these amendments given that all industry stakeholders involved in the transport of fuel cells are believed to be using the appropriate means of containment for such items.

Excepted Quantities Exemption: This amendment will introduce a relaxation for the transport of small quantities of

dangerous goods under the Excepted Quantity Exemption. The UN Recommendations introduced this exemption in the 15th edition, published in 2007, to facilitate the transport of pharmaceutical products that are considered dangerous goods but are shipped in small quantities, such as perfume bottles and pharmaceutical drugs. Certain dangerous goods present less risk when small quantities are packaged in a combination packaging of both inner and outer means of containment. This exemption applies to quantities in individual packages that are smaller than those targeted by the exemption for limited quantities. A new column, 6(b), added to Schedule 1, will indicate the excepted quantity code applicable to the UN number. This amendment will also introduce a full exemption, under the excepted quantity exemption, for minute quantities of low-risk dangerous goods transported under 1 g (e.g. nitroglycerin tablets).

Aerosols and gas cartridges exemption: Prior to these amendments, Schedule 1 listed shipping names for aerosols but did not specify how to classify them. These amendments now adopt classification criteria contained in the 18th edition of the UN Recommendations to facilitate the classification of aerosols. A further exemption will permit aerosols and gas cartridges with a volume of 50 mL or less and containing non-toxic dangerous goods to be exempted from the Regulations since they present a low danger during their handling and transportation. Examples of small volumes of aerosols include consumer products such as household cleaning products and cosmetic products such as hair spray. This will harmonize with both 49 CFR and the UN Recommendations. These amendments will also exempt articles that could have been considered to be gases (included in Class 2.2), but that are not considered dangerous goods. Some examples include light bulbs and inflatable sporting balls that can reach or exceed 280 KPa.

Biomedical waste: A new UN number (UN3291) for the transport of biomedical waste with applicable provisions is introduced. This shipping name will allow hospitals, dental clinics, veterinary clinics and tattoo parlors to transport medical waste (used needles, bed sheets, etc.) presenting a low inherent risk under a more appropriate classification and in harmonized conditions. This harmonization with 49 CFR and the UN Recommendations will facilitate the transport of medical waste. Currently, biomedical waste is not recognized under the Canadian federal regime and Canadian shippers face difficulty transporting these dangerous goods because different provinces have their own guidelines and regulations. These amendments harmonize Canadian practices for the transportation of biomedical waste.

Petroleum sour crude oil: Petroleum crude oil is transported in large quantities in Canada. Its chemical composition is complex and varies widely depending on its origin. The oil typically contains large amounts of dissolved hydrogen sulphide, which emits toxic fumes in certain conditions during transport. When the petroleum crude oil contains hydrogen sulphide in a sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard, the oil must be transported under conditions that apply to substances that are toxic by inhalation. Therefore, a new shipping name (UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC) to differentiate the petroleum sour crude oil from regular crude oil is introduced. Shippers of sour crude oil will now have the possibility of identifying it as such with a placard indicating it as a toxic-by-inhalation substance, which will help first responders to take appropriate measures during a spill or incident.

Ethanol and gasoline mixtures: The addition of ethanol to gasoline is now a common practice in North America and such mixtures are transported in tanker trucks and rail tank cars on a daily basis. Gasoline and ethanol have very different physical properties and emergency responders need to be informed when ethanol is mixed with gasoline since the extinguishing method would be different if they were involved in a fire. This amendment will therefore introduce a special provision, already contained in the UN Recommendations, pertaining to UN1203, GASOLINE, which will define the percentages of ethanol required to differentiate between the use of UN1203, GASOLINE and UN3475, ETHANOL AND GASOLINE MIXTURE (i.e. more than 10% ethanol content) for the classification of ethanol-gasoline mixtures.

Marine pollutants: These amendments consolidate the information needed to properly classify marine pollutants in Schedule 3 of the TDGR. This updates the classification requirements for marine pollutants, which were modified by the International Convention for the Prevention of Pollution from Ships (2006) and adopted in the IMDG Code. In essence, this change will bring all the information needed to properly classify marine pollutants into Schedule 3 of the TDGR, thereby eliminating the need to consult the IMDG Code and the MARPOL Convention in addition to Schedule 1 and Appendix 1 of Part 2 of the TDGR. The distinction between a "marine pollutant" and a "severe marine pollutant" is no longer recognized internationally because the distinction did not lead to better or safer transportation practices. A shipper will now be able to refer exclusively to Schedule 3 instead of having to consult multiple regulatory instruments to determine the proper classification of a marine pollutant. This consolidation is expected to lead to time and costs savings for stakeholders.

Genetically modified micro-organisms: This amendment repeals the shipping name (UN3245) for genetically modified micro-organisms (GMOs) from Schedule 1. In Canada, a substance's genetic origin is not a valid criterion for assessing its harmfulness, since its toxicity is measured in the same way as for any other material. Since the same reasoning applies to micro-organisms, the TDGR do not distinguish between genetically modified micro-organisms and those of natural origin. Through consultations with Health Canada, the Canadian Food Inspection Agency and Agriculture and Agri-Food Canada, it was agreed that GMOs pose no imminent danger in transport; therefore, this shipping name will be repealed from the Regulations. In addition, Canada has no requirement to declare or identify a micro-organism's genetic origin. Therefore, the shipping name will be repealed to avoid confusion and any resulting unnecessary burden and cost. This amendment is consistent with the current practice under 49 CFR.

New OECD guidelines: These amendments adopt new versions of Organisation for Economic Co-operation and Development (OECD) criteria for the classification of corrosive substances. The new methods will provide alternatives to animal testing for

the classification of corrosive substances. For example, under these guidelines, one can now choose to test a corrosive substance using a sample of skin developed in vitro or using a synthetic membrane.

Cylinder exemption: An exemption is included for cylinders used as fire extinguishers, as life saving appliances and for medical purposes on board vessels and aircraft. Often, these cylinders meet the safety requirements and standards of other jurisdiction, and are quite safe, but do not necessarily meet Canadian requirements and are therefore are not compliant with the TDGR for transportation in Canada. The exemption will allow the transport of these cylinders to allow for their refilling, reclassification or exchange, provided they conform to the *Canadian Aviation Regulations* and the *International Convention for the Safety of Life at Sea* and are accompanied by a shipping document stating the exemption. This will eliminate confusion and allow those cylinders to be transported by aircraft or road vehicle with ease.

Shipping documents: This amendment will harmonize with the UN Recommendations and 49 CFR by requiring that the UN number / shipping name be presented first in a shipping document. This long-awaited change will facilitate trade by allowing a single shipping document to meet Canadian and international regulations. The amendment also amends clause 3.5(1c)i)A to allow for up to two dangerous goods on a shipping document when dangerous goods are transported under a shipping name subject to Special Provision 16. The previous Regulations only permitted the name of a single material to be indicated, which needlessly complicated the preparation of shipping documents for transborder consignments because there was no harmonization and only partial information on the nature of dangerous goods transported under generic shipping names was provided. These Regulations will allow for up to two substances to be shown on a shipping document under their technical name for the identification of a mixture of dangerous goods; the TDGR previously required that only one substance be named while 49 CFR allows for two.

Alignment with the Explosives Regulations, 2013: This amendment will allow explosives such as air bag inflators, air bag modules, distress signals, smoke signals and smokeless powder to be transported under the 150 kg exemption to harmonize with the *Explosives Regulations, 2013*, which are overseen by Natural Resources Canada.

Toxic by inhalation: This amendment will harmonize the list of dangerous goods presenting an inhalation risk with 49 CFR and update Special Provision 23 for prescribed dangerous goods safety marks to be affixed on a large means of containment. In this instance the list of substances identified as "toxic by inhalation" (e.g. UN1017, CHLORINE, UN1005, ANHYDROUS AMMONIA) is aligned with that of the United States rather than of the UN Recommendations as the UN does not recognize certain substances that are determined to be toxic by inhalation in North America based on experience in the handling and transport of these substances.

Emergency response assistance plan for petroleum products and ethanol: An ERAP is a plan that describes what is to be done in the event of a transportation accident involving certain higher risk dangerous goods. An ERAP is required under the TDGR for dangerous goods that require special expertise and equipment to respond to an incident. The plan is intended to assist local emergency responders by providing them with technical experts and specially trained and equipped emergency response personnel at the scene of an incident.

In light of the lessons learned from the events at Lac-Mégantic, and of subsequent Transportation Safety Board Recommendations, Transport Canada, under Protective Direction 33, has ordered shippers of petroleum crude oil, gasoline, diesel, aviation fuel, petroleum distillates, ethanol and other petroleum products to have an approved ERAP in place. As of September 20, 2014, over 70 ERAPs have been established and have been reviewed by Transport Canada. Arrangements for the provision of special equipment and expert teams have been made to ensure the proper emergency response in the event of an incident or release involving these flammable liquids while they are being transported by rail.

Given the continuing need to ensure that ERAPs are in place for the transport of flammable liquids such as crude oil and ethanol, these Regulations incorporate the requirements of Protective Direction 33 into the TDGR and include two additional flammable liquids to ensure that ERAPs are in place to further strengthen public safety. The two additional liquids are UN3494, PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC because of its addition to Schedule 1 (as mentioned above), and UN1987, ALCOHOLS, N.O.S., which is typically used to classify ethanol in the United States. Close to one billion litres of ethanol per year is imported into Canada (almost exclusively by rail) from the United States, not including shipments originating from the United States and that merely transit through Canada to another destination in the United States.

Regulatory and non-regulatory options considered

In the preparation for of this regulatory proposal, various options were considered to evaluate the most efficient way to address public safety and international harmonization issues. Overall, a regulatory approach is the only viable option to achieve the desired outcome in the present case. Updating to the 18th edition of the UN recommendations is the only way to maintain cohesion and harmonization with the international community. The addition of UN3494 and UN1987 to the requirement for an ERAP when transported by rail could have been implemented through a new Protective Direction; however, Transport Canada considers that incorporating PD 33 and the two aforementioned UN numbers into the TDGR is more transparent and less confusing for stakeholders. As for the lithium metal battery ban as cargo on passenger aircraft, Canada, as a member of ICAO, has undertaken to implement this decision and a regulatory amendment is considered the most transparent and effective way to ensure compliance.

"One-for-One" Rule

The new Regulations constitute an OUT under the "One-for-One" Rule. The updated provisions allowing for the transport of prototype lithium batteries along with the updated Schedule 1 will eliminate the need for stakeholders to apply for Equivalency Certificates. These new Regulations eliminate over 80 Equivalency Certificates (permits) currently in place. Since certificates are valid for 2 years, this equates to a reduction in administrative burden of \$20,500 over 10 years, resulting in an annualized reduction of approximately \$2,920. The cost of applying for an Equivalency Certificate is based on an average requirement of three hours at an estimated rate of \$43.14 per hour.

Small business lens

The small business lens does not apply to this amendment as there are no disproportionate costs to small businesses.

Consultation

These amendments were developed in consultation with members from industry, regulatory bodies and subject matter experts and they represent the consensus point of view of stakeholders. In this consultation period, issues of misalignment of the regulatory framework, new Canadian policies and general issues of how efficiency and safety in the transportation of dangerous goods could be optimized were discussed. In addition, other issues dealing with clarity and presentation of the texts, costs and benefits, alternatives, and enforcement policies were also considered and discussed. These extensive consultations were held with the following stakeholders:

- members of the Federal/Provincial/Territorial TDG Task Force, spring and fall 2012;
- members of the Transportation of Dangerous Goods General Policy Advisory Council, spring and fall 2012;
- members of the Multi-Association Committee on Transportation of Dangerous Goods (MACTDG), spring and fall 2012; and
- Web consultation through the Transport Dangerous Goods Web site, spring 2013.

Seven of the comments received were supportive of the amendments. The remaining 12 comments were neutral or did not apply to the amendments contained in this regulatory package.

Comments were received from provincial authorities, carriers, industry and enforcement personnel. A majority of stakeholders supported the changes, particularly for certain topics, such as Lithium Batteries, Excepted Quantities, New Schedules, Cylinder Exemptions, Shipping Document and Biomedical Waste. Many of the comments were positive about the benefits that will result from updating the TDGR and harmonizing with the transportation provisions of 49 CFR and UN Recommendations. Overall, they felt these amendments will help eliminate much regulatory burden associated with transporting dangerous goods in and out of Canada.

Stakeholders welcomed the introduction of the shipping name for the transport of biomedical waste. Many provinces have their own specific regulations or guidelines when transporting biomedical waste which can cause regulatory burden and confusion when transporting substances from one province to another.

One stakeholder suggested the creation of two versions of Schedule 1 (one alphabetical and one UN numbered in chronological order) in order to eliminate Schedule 3 from the TDG Regulations. They viewed having both Schedule 1 and 3 as a lot of "page flipping." However, Transport Canada does not support this suggestion as Schedule 1 and 3 are important in their respective ways. Schedule 1 is important to determine the UN Number for a certain dangerous good which helps determine the information for its classification, special provisions, quantity limits and emergency responses. Schedule 3 contains all of the "forbidden" dangerous goods that cannot be transported, that do not have UN numbers and that identify marine pollutants.

One commenter did not agree with the addition of the shipping name for Petroleum Sour Crude Oil, because there is no threshold for the classification of sour crude oil. However, the comment could not be supported since the addition of this shipping name has been the subject of an international consensus (UN Recommendations and 49 CFR) that UN3494, PETROLEUM SOUR CRUDE OIL should be the appropriate shipping name when petroleum crude oil contains hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard to individuals thereby acting as a warning of potential toxicity dangers related to this specific type of crude oil.

Another stakeholder was supportive of the updates of the provisions for lithium batteries that will harmonize with 49 CFR and UN Recommendations.

Two stakeholders were specifically supportive with the clarifications regarding the changes in Schedule 1. They believe it is overdue and will help Canadian shippers classify their dangerous goods better and interpret the Regulations more accurately.

Another stakeholder is supportive of the newly added Special Provision 111 regarding UN3028, BATTERIES, DRY, CONTAINING POTASSIUM HYDROXIDE SOLID for the transport of non-activated batteries which contain dry potassium hydroxide. They believe that consistency with the UN Recommendations will facilitate harmonization and seamless transport.

Originally, these Regulations were going to limit the number of substances that could be listed on a shipping document under their technical names. Based on a stakeholder comment noting that in the United States more than two technical names can be required under 49 CFR, Transport Canada has decided to allow listing more than two technical names (as

mentioned above) when necessary for U.S. compliance.

Separate consultations were held regarding the ban of lithium metal batteries on board passenger aircraft in May and September 2014. In total, three industry associations were consulted including air operators and shippers. Most will not be affected by this new prohibition as they have already adopted the ban on a voluntary basis for a number of years. All were in agreement with the ban as long as they could be granted Equivalency Certificates for the shipment of lithium metal batteries to remote locations if necessary. Equivalency Certificate will be granted to shippers of lithium metal batteries destined to remote locations (with no road access) where dangerous goods can sometimes be serviced only by aircraft carrying passengers. These stakeholders have also expressed the need for more public awareness to improve safety when lithium batteries are transported.

Protective Direction 33 and emergency response assistance plan (ERAP): Consultations related to the ERAP requirement for crude oil and ethanol and other flammable liquids were held between August 2013 and April 2014. During the GPAC meeting in November 2013, stakeholders discussed emergency response issues and formed the GPAC–ERAP Working Group. The Working Group has published a report which includes a recommendation to Transport Canada that an ERAP be required from shippers of petroleum products by tank car since fire departments are not equipped to respond to fires involving a large train of flammable liquids. In addition, the capacity to provide fire fighting foam was identified as a key limiting factor during derailments involving a large number of tank cars carrying flammable liquids. In March 2014, shippers and carriers of crude oil and ethanol by rail were informed and consulted with regards to Protective Direction 33, which was issued later in April. They did not communicate any concerns or objections.

Rationale

The last update of the TDGR incorporated the 11th edition of the UN Recommendations published in 1999, while the 18th edition of the UN Recommendations was published in 2013. Though stakeholders may use the UN numbers listed in the 18th edition of the UN Recommendations in Canada, the ICAO TIs, the IMDG Code, the outdated Schedules, and provisions in the TDGR can be confusing and cause delays to shippers and carriers of dangerous goods such as lithium batteries. These outdated provisions in the TDGR have been causing compliance burden on industry as stakeholders have to work with multiple or inconsistent safety requirements for the transportation of dangerous goods to and from Canada.

The lack of alignment to the UN Recommendations and 49 CFR causes regulatory burden on shippers who import dangerous goods into Canada and who transport dangerous goods within Canada since the outdated TDGR lack shipping names for new chemicals and articles such as lithium ion batteries. Including these new UN numbers in the TDGR will clarify regulatory requirements.

A few provisions pertaining to lithium batteries are expected to impose a cost on shippers. First, the new lithium battery markings will incur a minor labelling cost which will be mitigated by an increase in safety for first responders and for the public. Since the battery markings are already required internationally, this will not be an additional cost for companies exporting lithium batteries abroad.

Since ERAPs have been submitted and approved for many shippers under Protective Direction 33, no additional cost is foreseen for the development of further ERAPs for these shippers. The following describes the implementation costs of an ERAP requirement.

There are two distinct types of costs associated with an ERAP: development costs and the ongoing, or operational costs. Also, a distinction between shippers who are holders of a private ERAP plan and shippers who are covered under a “cooperative” ERAP plan is necessary to estimate the total cost for both the implementation and the ongoing costs based on a set fee per rail tank car offered for transport.

For individual plans, estimated development costs of an ERAP is between \$10,000 and \$15,000. Larger entities such as petroleum companies are stakeholders that tend to have individual ERAPs given that they have the personnel and equipment to respond to an incident. Therefore, the operational costs of an eventual emergency response would be covered under that company's ongoing operational costs.

For those entities covered under a cooperative plan, ongoing costs are estimated at \$500 to \$700 per rail tank car. The development costs (estimated between \$60,000 and \$100,000) for a cooperative plan is absorbed by the corporation or entity who owns the plan. The ERAP requirement under PD 33 was introduced for tank cars transporting ethanol, petroleum and other petroleum products which are estimated to represent at least 60% of all flammable liquid shipments in Canada.

Although precise data on the volume of all of the flammable liquids subject to PD 33, including UN1987 (ethanol) and UN3494 (sour crude oil) was not available at the time of developing this Regulatory Impact Analysis Statement, some useful data was available on crude oil ethanol shipments which allows for the quantification and monetization of the partial impacts of requiring ERAPs for these flammable liquids.

In 2013, domestic production and imports of ethanol amounted to approximately 2.8 billion litres. Of this amount, approximately 1 006 300 000 litres was transported by rail for a total of 8 905 car loads using a standard DOT 111 tank car (containing approximately 113 000 litres). If we assume the average ERAP costs under a cooperative plan to be an average of

\$600 per tank car, then total compliance costs of the ERAP requirement to the ethanol industry would have been \$5,343,000 in 2013. Transport Canada does not foresee any growth in shipments of ethanol by rail in future years.

An estimated 128 000 tank car loads of petroleum crude oil were shipped in North America in 2013. Based on the assumption that 40% of these movements were within or transited through Canada, 51 200 tank cars, representing 5.8 billion litres of crude oil, would have been subject to the ERAP requirement for an estimated compliance cost of \$30 million for crude oil shippers. In total, this would amount to estimated compliance costs of \$35.34 million for all shipments of crude and ethanol by rail in 2013.

With the exception of costs to be incurred with the addition UN1987 and UN3494 shipments by rail, these amendments are not introducing additional costs to the industry given that most of the flammable liquids identified above were the subject of PD 33 introduced in April 2014 and that ERAPs are currently in place for these substances. Shippers of UN1987 and UN3494 will have 150 days from the date these amendments are published to develop and obtain approval of their ERAPs by Transport Canada.

Implementation, enforcement and service standards

Proper implementation of regulatory amendments is a key aspect of the regulatory life cycle. As such, once regulatory amendments come into force, the Transport of Dangerous Goods Directorate of Transport Canada develops new training and awareness material for inspectors and stakeholders. New regulatory requirements are disseminated using a communication network that is already well established. Some of the main tools used to implement regulatory changes include

- The TDG Web pages on the Transport Canada Web site; the Directorate's Web pages are updated on a regular basis with various communication products, as well as a specific section for awareness material (FAQ, Alerts, Advisory Notices, Bulletins, and more), as part of its marketing strategy. For the changes to Schedules, notices will be placed on the relevant pages of the TDG Web pages, upon adoption of the amendment.
- The TDG General Policy Advisory Council; this group, composed of over 40 different industry associations, meets twice annually to discuss and advise the minister on issues affecting stakeholders. During these meetings, Transport Canada consults with and provides information/updates on regulatory changes that are proposed or that have been adopted.
- Multi-Association Committee on TDG; this committee provides a forum for industries to discuss questions of interest on the subject of dangerous goods. Transport Canada is invited to participate and provide clarification on regulatory and enforcement issues. This is also a good opportunity for distribution of information on compliance with new regulatory requirements. Up to date information on changes to the TDG Regulations will be provided to this committee during the meetings scheduled for 2015.
- TDG Newsletter; the Newsletter, published since 1980, is distributed twice a year to over 15 000 readers in Canada and abroad. It is free of charge and available in hard copy and electronically on the TDG Web site in HTML and PDF formats. Proposed regulatory changes and their updates are published regularly in its pages. A short information piece highlighting the changes will be prepared for the TDG Newsletter.

Monitoring 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. The implementation objective is to update and enhance inspector training tools to ensure that oversight is undertaken by properly trained staff.

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[Footnote a](#)

S.C. 2009, c. 9, s. 25

[Footnote b](#)

S.C. 1992, c. 34

[Footnote 1](#)

