

UNIVERSITY OF OTTAWA

Transportation of Dangerous Goods Guide



Office of Risk Management

November 10, 2010 – Version 1

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1.0 SCOPE

The purpose of this document is to set guidelines and procedures for the safe handling and transportation of dangerous goods to and from the University of Ottawa.

2.0 APPLICABILITY

This procedure applies to products that are defined as dangerous goods under the Transportation of Dangerous Goods (TDG) Regulations. Dangerous goods may be products, substances or organisms; their by-products or waste that meets the specific criteria set out in the regulation.

These regulations may impact the purchase, importation, transfer, receipt, handling and disposing of this material. As a result key personnel who will be impacted by the standards and requirements set out in these regulations are: researchers & their staff/students, faculty staff (technicians, purchasing agents, individuals in shipping & receiving depts.), and service personnel (PRS, ORM).

3.0 APPLICABLE LEGISLATION & RESOURCES:

The following legislation either controls the packaging and transport of dangerous goods, or controls the ability to import, transfer or export this material. Ensure the current legislative document is referenced; note amendments to the regulations may be put in force in advance of the actual regulation being modified. As well some "dated" regulations may still be in force due to their inclusion into current regulation, ie, IAEA TS-R-1 1996.

TC - Transportation of Dangerous Goods Act,
 TC - Transportation of Dangerous Goods Regulations (TDGR)
 ICAO - Technical Instructions for the Safe Transport of Dangerous Goods by Air.
 IATA - Dangerous Goods Regulations, International Air Transport Association,
 CNSC - Transport Packaging of Radioactive Materials Regulation
 IAEA - Regulations for the Safe Transport of Radioactive Material TS-R-1 1996
 PHAC – Human Pathogen and Toxin Act
 PHAC – Human Pathogen Importation Regulation
 CFIA – Health of Animal Act
 DFAIT- Export and Import Control Act
 DFAIT – Export Control List
 PWGS – Defense Protection Act
 PWGS- Control Good Regulations
 EC - Environmental Protection Act
 ON-MOE -Ontario General Waste Management Regulation, Reg. 347 and 558/00
 ON-MOL – Occupational Health and Safety Act
 ON-MOL– Control of Exposure to Biological or Chemical Agent Reg. 833

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(TC – Transport Canada, ICAO – International Civil Aviation Organization, IATA- International Air Transport Association, CNSC- Canadian Nuclear Safety Commission, IAEA – International Atomic Energy Association, PHAC – Public Health Agency of Canada, CFIA – Canadian Food Inspection Agency, DFAIT – Department of Foreign Affairs and International Trade, PWGS- Public Works and Government Services, EC- Environment Canada, ON-MOE – Ontario Ministry of the Environment, ON-MOL – Ontario Ministry of Labour)

Transport Canada – TDG

- *Home page* <http://tdg.tc.gc.ca>
- *Regulation* www.tc.gc.ca/tdg/menu.htm
- *Advisory Notices (Vol. 1-8)* <http://www.tc.gc.ca/eng/tdg/publications-advisory-344.htm>

4.0 DEFINITIONS

NOTE:

*To avoid confusion the terminology used in the TDG Regulations will be used in this document. Thus the common term of “receive/ship” will be replaced with “**handle, offer to transport**”.*

Carrier: means a person who has possession of dangerous goods while they are in transport

Consignee: initial person who receives a consignment of dangerous goods

Consignor: means a **person** in Canada who

(a) is named in a **shipping document** as the consignor;

(b) **imports** or who will **import dangerous goods** into Canada; or

(c) if paragraphs (a) and (b) do not apply, has possession of **dangerous goods** immediately before they are **in transport**.

A person may be both a consignor and a carrier of the same consignment, for example, a manufacturer who also transports the dangerous goods he or she produces.

Dangerous Good: A product, substance or organism included by its nature or by the TDG regulations in any of the classes listed in the schedule of the act.

ERAP: Emergency Response Assistance Plan is required for quantities exceeding those listed in column 7 of schedule 1 of the TDG Clear Language Regulations

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DGNA Dangerous Good Advisory Notice published by TC to assist in being compliant with the TDGR,

Handling: means loading, unloading, packing or unpacking dangerous goods in a means of containment for the purposes of, in the course of or following transportation and includes storing them in the course of transportation.

HWIN: (Hazardous Waste Information Network), a web based waste management program administered by the Ministry of the Environment (MOE).

IAEA: International Atomic Energy Agency

IATA: International Air Transportation Association

Offer for Transport: means, for **dangerous goods not in transport**, to select or allow the selection of a **carrier** to transport the **dangerous goods**, to prepare or allow the preparation of the **dangerous goods** so that a **carrier** can take possession of them for transport or to allow a **carrier** to take possession of the **dangerous goods** for transport

5.0 RESPONSIBILITIES

Supervisor/department head/director is responsible for ensuring that their employee(s) who have been designated to handle/offer to transport/transport dangerous goods comply with the TDGR and other relevant regulations; including having a current training certificate. Training must be applicable to the task and mode of transport engaged. As required, the supervisor may choose to develop and implement site specific standard operating practices, which supports the University's TDG Guide.

Persons involved in the handling, offer for transport, or transport must be trained or under the direct supervision of a trained person whose certification is active and available on request. These individuals are responsible for ensuring they are recertified prior to the expiration date listed on their certificate.

Office of Risk Management to ensure the appropriate training is available, the uO TDG Guide is reviewed and revised as required, and act as the University's contact for the TDG and other regulatory issues pertaining to authorizations and compliance.

6.0 TRAINING

Each person whose position requires them to handle, offer for transport, or transport must receive the appropriate TDG training and be knowledgeable of their requirements under the regulations. Upon demonstrating the appropriate level of training, a certificate will be issued and is valid for three years under the TDGR and two years under IATA; after which the individual must undergo

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re-certification. An un-trained individual may handle dangerous goods provided the goods are handled in the presence and under the direct supervision of an individual who holds a training certificate. The Training Certificate (issued by ORM) must be available upon request.

The Office of Risk Management (x 5892) offers the following training courses:

- TDG – General Awareness
(Designed for individuals who although are involved in the handling/offer for transport of dangerous goods, but are not involved in the classification, packaging and completion of shipping documents; ie shipping/receiving departments.)
- TDG – Advanced
(Designed to build on the training provided in the general awareness, and provide more detailed instruction on the classification, packaging, and documentation requirements associated with dangerous goods.)
- TDG – Class 6 & 9
(In recognition many individuals routinely prepare biological samples for transfer, a dedicated course is offered which outlines TDG requirements. Exemption criteria (“Special Cases”) will be outlined as well as their associated requirements.
- TDG – Driver
(Designed to address the need to transfer dangerous goods, between campus’ or to field stations.)

7.0 HANDLING, OFFERING FOR TRANSPORT OR TRANSPORTING

Prior to importing, exporting or transferring materials all other authorizations must be obtained, ie. Controlled goods, biological, radioactive materials.... Contact ORM to determine if your shipment is bound by other legislative requirements.

Dangerous goods must be handled, offered for transport or transported only by TDG and/or IATA trained employees; or an employee working in the presence and under the direct supervision of an individual who holds a valid training certificate.

Damaged Packages should be accepted by University receivers. Under the Packaging and Transport of Nuclear Substances Regulation, a consignee cannot refuse a shipment that is damaged, or allow it to be transported from their possession if the shipment is knowingly not in compliance. This will apply to all shipments of dangerous goods. If you receive a damaged package immediately inform: the carrier, your supervisor, ORM (or delegate) and after hours Protection Services 5411.

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Determine if there is any loss of containment or damage to the contents. If able, undertake the appropriate measures to ensure the material does not result in exposure to individuals or release to the environment. Individuals able to assist may be the: consignor, consignee, faculty staff, ORM.

Damaged goods will be assessed by trained personnel, if deemed to be unusable they shall be returned or disposed of in an appropriate fashion (consult ORM).

7.1 Classification, Containment and Safety Marks (*refer to DGAN vol. 5,6 & 7*)

Appendix 2 lists the classes of dangerous goods. If after consulting the regulations, the MSDS, the manufacturer, or the original shipping documentation you are still unsure of the class or the type of package required contact ORM.

ORM must be contacted when proposing to send packages containing infectious material (class 6.2), radioactive substances (class 7) or controlled goods, as other authorization is required prior to proceeding.

The means of transport determines the type of packaging that is required. Packages shipped only by ground must meet the packaging instructions as stated in the TDGR Part 5. The DGAN Vol 6 (Means of Containments) provides a convenient table outlining the classes of dangerous goods, means of containment, mode of transport and the applicable standard or regulation. If your package will at any point be transported by air, it must meet the packaging requirements set out in the IATA Regulation. The outer package of dangerous goods must meet test criteria to ensure the containment and integrity of the sample. Use of a UN certified box ensures you meet these criteria; as well as those set out by IATA. The appropriate Safety Marks (TDGR-Part 4) must also be applied to the outer package such as:

- The **Shipping Name** listed in upper case letters
- Hazard class label(s)
- Identification number (UN number)
- Packing group
- Orientation label (for liquids only)
- Standardized UN certification mark (Automatically appears on UN certified packaging)

Shipping class labels and advice on classification and packaging can be obtained from your faculty representative or ORM.

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Example of Dangerous Goods Safety Marks: Small Means of Containment



- ① Orientation label (optional) ② Primary class label ③ Standardized UN certification (according to standard)
 ④ Shipping name ⑤ UN number ⑥ Subsidiary class label

According to the TDGR some dangerous goods cannot be transported above certain specified quantities unless an Emergency Response Assistance Plan (ERAP) has been developed. To see if your shipment falls under the amount specified, consult the TDG Regulation (column 7 of schedule 1). If an ERAP is required for your shipment, consult ORM for additional direction.

7.2 Documentation

The person who is offering for transport is responsible for filling out the proper shipping documentation that can only be signed by a trained employee, or an untrained employee working in the presence and under the direct supervision of an individual who holds a training certificate. See Appendix 3 for sample shipping documentation. Depending on the mode of transport and the type of goods being shipped the following shipping documents may be needed:

- Straight Bill of Lading Form
- uO Ground Shipping Document
- Shippers Declaration of Dangerous Goods Form- for shipments by air under IATA
- Waste Manifest- for shipments of hazardous waste Under TDG & Reg. 347/558

The consignor is responsible for maintaining shipping documentation on record for two years following the date of shipment. A copy must be sent to ORM fax. 613-789-5711.

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8.0 SHIPMENTS BETWEEN CAMPUS' OR INSTITUTES

Shipments between campus' or institutions must be compliant with TDGR. This is addressed by 2 special case clauses in TDG

Transportation within a Facility (TDGR S1.25, SOR/2008-34)

TDG regulations do not apply to dangerous goods that are transported solely within a facility to which public access is controlled. This means transfer between buildings on the same campus is permitted as long as public access is controlled. The question of control must be considered, crossing public roads which are not controlled by the University (ie King Edward, Laurier would rule out the ability to apply this clause).

Transportation between Two Properties (TDGR S-1.28 SOR/2008-34)

Should the outlined conditions (below) be met, the remaining of the TDG regulations do not apply to the transport of dangerous goods between two properties. This section **is not applicable** to Class 1, Explosives, or Class 7, Radioactive Materials.

- The properties must be owned or leased by the manufacturer, producer or user of the dangerous goods.
- The dangerous goods are transported a distance less than or equal to 3 km on a public road; and
- the road vehicle has displayed on it
 - (i) the placard for the primary class of each of the dangerous goods, or
 - (ii) the DANGER placard; and
- the dangerous goods are in one or more 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; and
- the local police are advised, in writing, of the nature of the dangerous goods no more than 12 months in advance of the transport.

(Note: Distance between Smyth Rd and the main campus is 6.6 km, so this clause can not be used.)

ORM must be contacted in advance of any proposed transfer in order to ensure the local police are notified.

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Transporting Dangerous Goods to or from an Aircraft, an Aerodrome or an Air Cargo Facility
(TDGR S9.2)

The TDGR recognize that for a shipment to be transported by air it must first travel by ground from the facility. For simplicity sake, the regulations allow for the application of the ICAO Technical Standard to be used on conditions that a number of specific requirements are met. These are outlined in Section 9.2 of the TDGR.

9.0 INTERNATIONAL SHIPMENTS

International shipments, can vary significantly in their degree of complexity. Some are straight forward, while others can require a significant amount of preparation in not only characterizing the dangerous good but in obtaining the appropriate approvals. For this reason it is always best to provide ORM as much lead time as possible.

To facilitate the release of the package through customs, the University has contracted with the custom broker Livingston International. Inherently, all licences, permits and approval must be provided to Livingston in advance to ensure there are no delays.

10.0 SHIPMENTS OF HAZARDOUS WASTE

10.1 Produced by University Activities

Hazardous waste must be sent for disposal as a dangerous good. For this reason each waste product must be characterized, labelled, and its generator identified prior to it being transferred to the chemical waste room or other secure storage area. Material lacking this information will be denied.

In addition to the TDG shipping documents required, a Waste Manifest must also be completed and signed by ORM personnel or their delegates. All waste generating sites must be registered with the Ministry of the Environment HWIN system. To ensure your site has been included under the control of the University contact ORM.

10.2 Produced by Independent Contractors or other Third Parties

The contractor as the generator of waste, is responsible for the disposal and shipment of all hazardous waste and dangerous goods to and from Queen's University, and must comply with all relevant legislative requirements. For hazardous waste shipments, the contractors are to provide their own *Ontario Waste Generator*.

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11.0 EXEMPTIONS UNDER TDG

Under specific cases there is the possibility that exemptions may be made as far as the scope of the TDG Regulation that will be applied to your shipment. For a complete list of “special cases” reference Part 2 of the Regulation. The most frequently applied special cases are summarized below.

NOTE :

Rarely is your dangerous good totally exempt from all TDG requirements,
so it is important to read the regulation carefully!

If it is to be transported by air you must meet IATA standards.

11.1 Dry Ice or Carbon Dioxide, Solid Used as Refrigerant UN 1845

Note:

- All TDG requirements apply if it is to be sent by air transport.
- For domestic shipments by ground, rail or ship; Schedule 2 identifies 2 special provisions (18, & 81), which provide instructions on how it may be exempt.

Special Provision - 18

To apply this special provision the dry ice (UN1845, Carbon dioxide, solid) must be:

- (i) transported by a road vehicle, a railway vehicle or a ship on a domestic voyage (no international shipments), and
- (ii) be used as a refrigerant in a small means of containment, and
- (iii) the consignor includes, on a document that accompanies the small means of containment, the words “Dry ice as refrigerant” and
- (iv) the small means of containment in which the dry ice is used as a refrigerant is designed and constructed to permit the release of carbon dioxide to prevent the build-up of pressure that could rupture the small means of containment. (ie not air tight).

Special Provision 81

Section 5.12 of Part 5, Means of Containment, does not apply to these dangerous goods if, they are handled, offered for transport or transported in a means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including

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handling, there will be no accidental release of the dangerous goods that could endanger public safety.

11.2 Limited Quantities

Note:

- *Limited quantities exemptions are outlined in TDGR Section 1.17.*
- *It applies to ground, rail and ship only.*
- *Exemptions CAN NOT be applied to Class 1 Explosives or class 6.2 infectious substances.*
- *Not all TDG requirements are exempted, so refer to TDGR S1.17 for the complete requirements of this section.*

To be exempted, the overall package of goods must have a gross mass less than or equal to 30 kg and the package must be designed, constructed, filled, closed, secured and maintained to avoid any accidental release. Individually, a solid must have a mass expressed in kilograms, a gas or a liquid a volume expressed in litres that is less than or equal to the number shown for them in column 6 of Schedule 1 of the TDG regulations, or must meet the requirements as stated in section 2.8 of the IATA Regulations. The package and documentation must be marked with the words "Limited Quantity" or "Ltd. Qty." Consult the regulations to determine if your goods fall under this exemption.

11.3 Test Samples (TDG Ground Only)

TDG Regulations do not apply to samples of goods (except explosives, infectious substances or radioactive materials) if the gross mass is less than or equal to 10 kg and the consignor has reason to believe that they are dangerous goods, in transport for the purposes of classifying, analysing, testing or demonstrating. The samples must be accompanied by a shipping document that includes the name and address of the consignor and the words "test samples". The package must be designed, constructed, filled, closed, secured and maintained to prevent any accidental release. The package must have marked on it the words "test samples". Consult TDGR S1.19.1 to determine if your goods fall under this exemption.

11.4 Dangerous Goods in an Instrument or in Equipment (TDG Ground Only)

TDG Regulations do not apply to goods that are contained in, and are not intended to be discharged from instruments or equipment that is designed to perform a function other than to solely contain dangerous goods. The instrument must not be listed as a dangerous good in schedule 1. A solid must have a mass expressed in kilograms, a gas or a liquid, a volume expressed in litres that is less than or equal to the number shown for them in column 6 of Schedule 1 of the TDG regulations.

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11.5 Dangerous Goods in Excepted Quantities (IATA by Air)

TDG regulations by aircraft do not apply to goods in quantities below those specified in appendix 4 of this document. Packages that qualify for the exemption must be marked with an Excepted Quantities Label (see below). A *Shippers Declaration of Dangerous Goods* form is not required. Consult the regulations to ensure your goods fall under this exemption.

Excepted Quantities Label (2.7.6)

DANGEROUS GOODS IN EXCEPTED QUANTITIES

This package contains dangerous goods in excepted small quantities and is in all respects in compliance with the applicable international and national government regulations and the IATA Dangerous Goods Regulations

Signature of Shipper

Title _____ Date _____

Name and address of Shipper

This package contains substance(s) in Class(es)
(check applicable boxes)

Class: 2 3 4 5 6 8 9

and the applicable UN Numbers are:

11.6 Infectious or Biological Samples

TDG provides for a variety of special cases to be made with regards to infectious or biological materials. These are found in Part 1 of the TDGR, and include:

- Class 6.2, infectious substances, category B
- Tissues or organs for the transplant
- Biological products
- Human or animal specimens believed not to contain infectious substances
- Tissues or organs for transplant
- Blood or blood components

As the University has a specific Standard Operating Procedure for this type of material, including non-exempt infectious material; details will not be provided within the scope of this document. Additional information can also be found within TDGR.

11.7 Radioactive Material

Radioactive material is regulated by the Canadian Nuclear Safety Commission, which also regulates the packaging and transport of this material; as does the International Association for Nuclear Material. For this reason a SOP has been developed to provide the specific details.

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12.0 AUDITING

ORM reserves the right to select a department at random to audit their compliance with the TDG requirements.

13.0 CONTACT INFORMATION

Office of Risk Management

1 Nicholas St.
Suite 840 Ottawa, ON
K2N 7B7

General telephone # 613-562-5692

Dangerous Goods Shipments:	Lois Sowden-Plunkett	x 3058	lsowden@uottawa.ca
Radioactive Shipments:	Ali Shoushtarian	x 3057	ashousht@uottawa.ca
Infectious/Biological Shipments:	Tina Preseau	x 3153	tpreseau@uottawa.ca
Controlled Goods & Hazardous Waste Shipments	Renee Grandbois	x 2487	rgrandbo@uOttawa.ca

For contact information of personnel in your department/faculty who are trained and can assist you, contact one of the named individuals above whose expertise best addresses your specific needs.

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APPENDIX 1

TDG REGULATIONS - TABLE OF CONTENTS

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<u>Part 2</u>	<u>Classification</u>
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<u>Part 4</u>	<u>Dangerous Goods Safety Marks</u>
<u>Part 5</u>	<u>Means of Containment</u>
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<u>Part 15</u>	<u>Court Order</u>
<u>Part 16</u>	<u>Inspectors</u>
<u>Schedule 1</u>	<u>Classes 1 to 9</u>
<u>Schedule 2</u>	<u>Special Provisions</u>
<u>Schedule 3</u>	<u>Alphabetical Index</u>

APPENDIX 2

Classification of Dangerous Goods

NINE CLASSES OF DANGEROUS GOODS (Summary)

Class 1 Explosives

- Class 1.1 Mass explosion hazard
- Class 1.2 Projection hazard but not a mass explosion hazard
- Class 1.3 Fire hazard and either a minor blast hazard or a minor projection hazard or both but not a mass explosion hazard
- Class 1.4 No significant hazard beyond the package in the event of ignition or initiation during transport
- Class 1.5 Very insensitive substances with a mass explosion hazard; and
- Class 1.6 Extremely insensitive articles with no mass explosion hazard

Class 2 Gases

- Class 2.1 Flammable gases
- Class 2.2 Non-flammable and non-toxic gases
- Class 2.3 Toxic gases

Class 3 Flammable Liquids

Class 4 Flammable Solids; Substances Liable to Spontaneous Combustion; Substances That on Contact with Water Emit Flammable Gases (Water-reactive: Substances)

- Class 4.1 Flammable Solids
- Class 4.2 Substances liable to spontaneous combustion
- Class 4.3 Water-reactive substances

Class 5 Oxidizing Substances and Organic Peroxides

- Class 5.1 Oxidizing substances
- Class 5.2 Organic peroxides

Class 6 Toxic and Infectious Substances

- Class 6.1 Toxic substances
- Class 6.2 Infectious substances

Class 7 Radioactive Materials

Class 8 Corrosives

Class 9 Miscellaneous Products, Substances or Organisms

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CLASS 1 - Explosives

Explosives may be capable, by chemical reaction, of producing gas at a temperature, pressure and speed that would damage the surroundings. Alternatively, they may produce an explosive or pyrotechnic effect by heat, light, sound, gas or smoke, or a combination of those means as a result of non-detonative, self-sustaining exothermic chemical reactions.

Class 1 has six divisions:

- Class 1.1** mass explosion hazard
TNT;TETRYL
- Class 1.2** projection hazard but not a mass explosion hazard
GRENADES; BOMBS
- Class 1.3** fire hazard and either a minor blast hazard or a minor projection hazard or both but not a mass explosion hazard
FIREWORKS
- Class 1.4** no significant hazard beyond the package in the event of ignition or initiation during transport
FLARES, AERIAL
- Class 1.5** very insensitive substances with a mass explosion hazard
EXPLOSIVE, BLASTING, TYPE B
- Class 1.6** extremely insensitive articles with no mass explosion hazard
ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE

Explosives are divided into 13 compatibility groups as described in Appendix 2 of the TDG Regulations. Compatibility groups are used to determine which explosives may be transported together. See table on page 57.

- ❖ All explosives are included in packing group ii.

CLASS 2 - Gases

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Generally a substance is included in Class 2, Gases, if it is a gas, a mixture of gases, an article charged with a gas, or an aerosol.

Class 2, Gases has three divisions:

Class 2.1 flammable gases
PROPANE; ACETYLENE, DISSOLVED

Class 2.2 non-flammable and non-toxic gases
NITROGEN, REFRIGERATED LIQUID;
AIR, COMPRESSED

Class 2.3 toxic gases
CHLORINE; CYANOGEN

Class 2.2 oxidizing gases
(5.1) (UN1072, UN1073, UN3156 and UN3157 only)
OXYGEN COMPRESSED; COMPRESSED GAS, OXIDIZING

❖ There are no packing groups for gases.

CLASS 3 - Flammable Liquids

Flammable Liquids have a flash point less than or equal to 60.50C, or are intended to be transported at a temperature not less than their flashpoint.

Class 3 flammable liquids
ACETONE; PAINT; ADHESIVES

DETERMINATION OF THE PACKING GROUP

Packing Group	Flash Point	Initial boiling point
PG I	60.5 C or less	35 C or less
PG II	Less than 23 C	Greater than 35 C
PG III	23 C or more	Greater than 35 C

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CLASS 4 - Flammable Solids; Substances Liable to Spontaneous Combustion; Substances That on Contact with Water Emit Flammable Gases (Water-reactive Substances)

Class 4 has three divisions:

- Class 4.1** flammable solids(substances which are readily combustible, liable to cause fire through friction, desensitised explosives or self-reactive substances) SAFETY MATCHES; NITROCELLULOSE WITH ALCOHOL
- Class 4.2** substances liable to spontaneous combustion (substances which are pyrophoric or self-heating) PHOSPHORUS, WHITE, MOLTEN; SODIUM SULFIDE
- Class 4.3** water-reactive substances (substances which emit a flammable gas or spontaneously ignite in contact with water) SODIUM; LITHIUM

❖ Classes 4.1, 4.2 and 4.3 products are assigned packing groups.

CLASS 5 - Oxidizing Substances and Organic Peroxides

Class 5 has two divisions:

- Class 5.1** oxidizing substances (substance which yield oxygen. Thereby causing or contributing to the combustion of other material) CALCIUM HYPOCHLORITE; ZINC PEROXIDE
- ❖ Oxidizing substances are assigned packing groups
- Class 5.2** organic peroxides (substances which contain the '-0-02' chemical structure and may be unstable) ORGANIC PEROXIDE TYPE D, SOLID (type B to F)
- ❖ Organic peroxides (type b to f) are included in packing group h.

CLASS 6 - Toxic and Infectious Substances

Class 6 has two divisions:

- Class 6.1** Toxic Substances (substances which pose a serious

threat to human health or life if absorbed through the skin, swallowed, or inhaled)

PHENOL; CARBON TETRACHLORIDE, STRYCHNINE, ARSENIC)

Toxins from plant, animal or bacterial sources which do not contain any infectious substances, or toxins that are not contained in substances which are infectious substances should be considered for classification in Class 6.1 and assigned to UN 3172.

❖ Toxic substances are assigned packing groups.

Class 6.2 Infectious Substances - organisms (e.g. bacteria, viruses, fungi) or substances that contain organisms that are infectious or that are reasonably believed to be infectious to humans or to animals.

Infectious Substance, Category A –

Infectious Substance, Category B -

❖

CLASS 7 - Radioactive Materials

Substances with a specific activity greater than 70 kBq/kg are included in Class 7, Radioactive Materials. Radioactive materials are represented by categories (activity groups) from I to III, category III being the most dangerous one. The transport index must be calculated and identified on the package using the proper label. Radioactives are also regulated according to the 'Packaging and Transport of Nuclear Substances Regulations.'

Class 7 includes:

Category I -White the contents and activity must be displayed

Category II –Yellow the contents, activity and transport index must be displayed

Category III –Yellow the contents, activity and transport index must be displayed

❖

CLASS 8 - Corrosives

Corrosives are known to cause permanent damage of human skin and/or cause corrosion of other substances. They can violently react with other substances to create an explosion, toxic vapours,

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etc. It is important to separate acids and bases (caustics, alkaline products) that are generally incompatible.

Class 8 corrosives
SODIUM HYDROXIDE,
SOLUTION; SULFURIC ACID

- ❖ Corrosives are assigned packing groups.

CLASS 9 - Miscellaneous Products, Substances or Organisms

A substance is included in Class 9, Miscellaneous Products, Substances or Organisms, if it does not meet the criteria for inclusion in any of Classes 1 to 8 and;

- is included in Class 9 in Schedule 1 of the TDG Regulations;
- contains a genetically modified micro-organism or organism that does not meet the definition of infectious substances but which are capable of altering animals, plants or microbiological substances in a way which is not normally the result of natural reproduction. They must be assigned to UN 3245, unless authorised for use by the appropriate national authorities of the states of origin, transit and destination.
- is listed in Appendix 1, Marine Pollutants, of the TDG Regulations, and is intended for marine transport;
- is offered for transport or transported at a temperature greater than or equal to 100C (liquid) or 240C (solid) - except for asphalt or tar
 - UN3257, elevated temperature liquid, n.o.s.
 - UN3258, elevated temperature solid n.o.s
- Is intended for disposal and
 - Is a leachate toxic according to the leachate concentrations listed in, Part 2; or
 - contains a chemical at or above the concentration listed Part 2.
 - UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.
 - UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.

Class 9 miscellaneous products, substances or organisms
DRY ICE; LITHIUM BATTERIES

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❖ MISCELLANEOUS PRODUCTS are usually included in packing group III.

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APPENDIX 3.

SHIPPING DOCUMENTATION

Figure 1. Straight Bill Of Lading For Shipments By Ground Transport

TO REGISTER STOCK #FMA-ESBE CALL ACC THE COMPLIANCE CENTER INC.
CANADA 1-888-977-6536

**STRAIGHT BILL OF LADING
CONNAISSEMENT**
ORIGINAL
NOT NEGOTIABLE / NON NEGOCIABLE

Shopper No /
N° de l'expéditeur: **197919**

Carrier No /
N° du transporteur:

(Name of Carrier / Nom du transporteur) _____ Date: _____

TO: Consignee / Consignataire: **Company X**
 Collect on Delivery of goods, the words "COD" must appear before consignee's name
 The consignee must pay duties & charges, indicated by letters "CCD" and to remit to consignee

FROM: Shipper / Expéditeur: **Queen's University**

Street / Rue: **207 Stuart St.**

City / Ville: **Kingston ON**

City / Ville: **X** Postal Code / Code Postal: **K7L 2V6**

Réviser: No of Units & Consignee Code (N° des unités & N° de l'expéditeur)	GS NO	DESCRIPTION AND / ET CLASSIFICATION	TOTAL QUANTITY (N° de unités, litres, kg, etc.) QUANTITÉ TOTALE (N° des unités, litres, kg, etc.)	Weight (Kilograms or Pounds) (Kilogrammes ou livres)	Vehicle No (N° du véhicule)	CHANGES (If Carrier Uses Only Trucks) (à compléter au besoin)
1		Liquefied gas, n.o.s. w. w. class 2.2	5 lb			
2		Ammonium Persulfate 1444 class 5.1 pg II	10 kg			

**PLACARDS / PLAQUES
IN CASE OF TRANSPORTATION EMERGENCY CALL
N° DE TEL. EN CAS D'URGENCE**

REMIT TO / À COMPLETER LES RÉGIMES D'IMPÔTS À LA LIVRAISON

PAYABLE À LA LIVRAISON
COD And / Montant: \$ _____

COSTS
Frais d'expédition, emballage, manutention, etc.

SHIPPER / EXPÉDITEUR

CARRIER / TRANSPORTEUR

CONSIGNEE / CONSIGNATAIRE

PER PAR

DATE DATE

ORIGINAL - NOT NEGOTIABLE / NON NEGOCIABLE

THE UNDERSIGNED hereby certifies that the information furnished by the shipper is true and correct and that the goods are properly classified and described in accordance with the provisions of the Regulations under the Act.

L'ÉMETTEUR certifie par la présente que les renseignements fournis par l'expéditeur sont vrais et exacts et que les marchandises sont correctement classées et décrites en vertu de la Loi.

0300

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Figure 2. Shippers Declaration of Dangerous Goods Form For Shipments By Air Transport

(currently being revised)

05398

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper Queen's University 207 Stuart St. Kingston ON K7L 3N6		Air Waybill No.					
Consignee Company X 3 Main St. Hamilton K7S 3T1		Page of Pages Shipper's Reference Number (optional)					
Two completed and signed copies of this Declaration must be handed to the operator.		WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.					
TRANSPORT DETAILS This shipment is within the limitations prescribed for: <input type="checkbox"/> PASSENGER AND PASSENGER AIRCRAFT <input checked="" type="checkbox"/> CARGO AIRCRAFT Airport of Departure: Airport of Destination:		Shipment type: (check non-applicable) <input checked="" type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE					
NATURE AND QUANTITY OF DANGEROUS GOODS							
Dangerous Goods Identification							
Proper Shipping Name	Class or Division	UN ID No.	Packing group	Subsidiary Risk	Quantity and type of packing	Packing Inst.	Authorisation
Carbon Dioxide, solid	9	1845	II		5 kg	104	
Radioactive material n.o.s.	7	2982			SR-90, metal solid 1.48 TBq		
Additional Handling Information			24 hr. Emergency Contact Tel. _____ shipment is made under the provisions of ICAO				
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					Name/Title of Signatory X Place and Date Queen's U May 9/08 Signature (see warning above) X		

FBI/USFBI, ICC International Compliance Center Ltd. Niagara Falls, NY - Houston, TX - Mississauga, Ontario Printed in Canada 05/05

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APPENDIX 4

TDG Guideline: Steps To Follow For Shipment Preparation

Determine mode of transport: which regulation applies (Air- ICAO/IATA, Ground- TDGR)

Ensure that you have verified if any new amendments have been posted that have not already been included into the regulation you are referencing.

Ground Transportation Steps:

1. Identify product in Schedule 1 (Classes 1 to 9); Schedule 3 list products alphabetically and their UN #). Determine primary and subsidiary classes for composite products.
2. If not listed by name in Schedule 1, determine if the product meets the criteria in Part 2 for inclusion in at least one of the 9 classes of dangerous goods.
3. Determine if a forbidden dangerous good (Schedule 1, Col. 3)
4. Determine if special provisions apply (Schedule 1 Col. 5)
5. Determine what the special provision is (Schedule 2)
6. Determine if any special cases apply (Part 1 S. 1.15-1.48)
7. Determine containments requirements (Part 5), and safety marks (Part 4),
8. Determine if a Emergency Response Plan must be prepared and filed with TDG Directorate.
 - Applies to all dg to be transported or imported in quantities greater than those specified in Schedule 1 Col. 7.
 - ERP requires are outlined in Part 7
9. Verify that all mode of transport and requirements have been met.
 - Part 9 – road
 - Part 10 – rail
 - Part 11 – marine
 - Part 12 – air
10. Consult TC web site to ensure not other Notices or Advisories have been posted.

Air Transportation Steps: (in development)