



Transportation of Dangerous Goods



TRANSPORTATION OF DANGEROUS GOODS – A PRIMER

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Each day, dangerous goods that are necessary for maintaining Canadians' quality of life are shipped throughout the country. They arrive on highways, at airports, train yards and harbours and depart from Canada on the same highways, and at the same airports, train yards and harbours. These shipments are far too numerous to accurately record but number in the multi-millions each year. With this amount of movement, there is great potential for endangering human life and damaging the environment should incidents occur in the course of transportation. It is essential for manufacturers, shippers, carriers, terminals, users and governments to continually work towards minimizing the risk of incidents in the transportation of dangerous goods and to keep damages at a minimum. To this end, governments have developed statutes and regulations that apply to all stages of transportation of dangerous goods, as well as inspection and enforcement programs to ensure compliance with the legislation. In Canada, the federal, provincial and territorial governments have enacted legislation to regulate the transportation of dangerous goods. While the jurisdictional coverage of these pieces of legislation varies, their intent is consistent and each piece of legislation has adopted the *Transportation of Dangerous Goods Regulations* made under the federal statute.

What is a Dangerous Good?

Many products pose some danger while being transported, but dangerous goods are generally products that are inherently dangerous whether or not they are in transport. Special precautions are called for to ensure their safe transportation. The Transportation of Dangerous Goods (TDG) Act, 1992, defines the term "dangerous goods" as:

...a product, substance or organism included by its nature or by the regulations in any of the classes listed in the schedule.

The Schedule to the TDG Act identifies nine classes of dangerous goods.

Classes of Dangerous Goods

Class 1	Explosives, including explosives within the meaning of the Explosives Act
Class 2	Gases; compressed, deeply refrigerated, liquefied or dissolved under pressure
Class 3	Flammable and combustible liquids
Class 4	Flammable solids; substances liable to spontaneous

	combustion; substances that on contact with water emit flammable gases
Class 5	Oxidizing substances; organic peroxides
Class 6	Poisonous (toxic) and infectious substances
Class 7	Radioactive materials and radioactive prescribed substances within the meaning of the Atomic Energy Control Act
Class 8	Corrosives
Class 9	Miscellaneous products, substances or organisms considered by the Governor-in-Council to be dangerous to life, health, property or the environment when handled, offered for transport or transported and prescribed to be included in this class

How are Dangerous Goods Classified?

Classification of dangerous goods is detailed in Part 2 (Classification) of the TDG Regulations. Manufacturers of dangerous goods cannot offer them for transport unless they have properly classified them. Each dangerous good falls within one of the nine classes of the Schedule to the TDG Act (first digit) and is, in some cases, further identified by divisions within the class (second digit).

For example, Class 2, Gases has three divisions:

- 2.1: Flammable Gases
- 2.2: Non-flammable and Non-toxic Gases
- 2.3: Toxic Gases

The division is a more precise identification of the danger associated with the particular good within the general class. The division may have reference to the flashpoint of flammable liquids, the sensitivity of explosives or the danger associated with compressed gasses. There is also a packing group (PG) that is a part of the classification of some dangerous goods and is noted as PG I, II or III. The packing group indicates the level of hazard within a classification, with PG I representing the greatest risk of danger and PG III the lowest risk.

Handling Dangerous Goods

The TDG Act defines the term "handling" as the "loading, unloading, packing or unpacking of dangerous goods in a means of containment or transport for the purposes of, in the course of or following transportation and includes storing them in the course of transportation".

Perhaps the most important aspect of handling is the packing of dangerous goods into a means of containment. It is generally believed that if the packaging is appropriate, the risks of a serious incident occurring are greatly reduced. To this end, representative committees from industry, government, environmental groups, and others develop standardized designs and methods of manufacturing packaging or means of containment for particular types of dangerous goods. These standards in containment are referred to as safety standards and are adopted by the TDG Regulations.

A general requirement in the TDG Regulations stipulates that when no standard packaging is prescribed, the dangerous goods must be packaged in a way that ensures no discharge, emission or escape of the dangerous goods that could result in danger to life, health, property or the environment.

Consignment inspections at distribution points for manufacturers, carriers, or purchasers focus on the type of packaging used in the shipment of dangerous goods.

Identification of Dangerous Goods and Communication of Hazards

Part 4 (Dangerous Goods Safety Marks) of the TDG Regulations prescribes labels and placards to be used for each class of dangerous goods. Part 3 (Documentation) of the TDG Regulations describes the information to be included in the documents that must accompany the shipment of dangerous goods and how these documents should be stored and be made readily accessible during transportation.

The prescribed safety marks and documents are intended to convey the nature of the danger to handlers and First Responders in case of an incident. Generally, smaller packages (small means of containment of 450 L or less) are required to be labelled while larger shipments that are shipped in bulk containers (large means of containment of more than 450 L) must be placarded. Transport units (e.g., highway tank) that are used to ship dangerous goods must also be placarded in accordance with the TDG Regulations.

Placards are a clear indication that a transport unit contains dangerous goods that otherwise might not be identified as such immediately. When an incident involving a transport unit occurs, these placards alert First Responders to the presence of dangerous goods so they may take the necessary precautions to avoid injury and damage. If circumstances allow for it, First Responders may examine the contents of the transport unit to locate the particular consignment of dangerous goods and/or examine the documentation accompanying the consignment to obtain more precise information about the dangerous goods being transported.

Training

Part 6 (Training) of the TDG Regulations requires that, with few exceptions, every person engaged in the handling, offering for transport or transporting of dangerous goods be trained in the aspects applicable to their assigned duties. This is an important concern in managing the shipments of dangerous goods. Without adequate training, workers may not be able to select the proper packaging for a consignment or properly label and document it.

Oversight

Effective enforcement requires that knowledgeable persons monitor the flow of dangerous goods shipments to ensure compliance with the TDG Act and Regulations. For that purpose, inspectors are designated under the TDG Act to cover the many facets of packaging and transportation of dangerous goods and given them various powers to ensure public safety. When inspectors have reasonable grounds to believe that dangerous goods are being handled or transported, they are entitled to inspect the consignment and use the powers given to them under the TDG Act to ensure that any movement of the dangerous goods is made in compliance with the TDG Act and Regulations. On occasion, it may be necessary to prosecute offenders and the TDG Act provides for this type of enforcement action.

Prosecutions

Prosecutions are undertaken for violations of specific sections of the TDG Act. The penalty provisions provide for fines of up to \$50,000.00 for a first offence and of up to \$100,000.00 for subsequent offences in summary conviction proceedings, and up to two years imprisonment for indictable offences. The TDG Act also contains special provisions with respect to orders made by the convicting Court. The orders may be made in addition to any other penalty imposed and they cover such matters as prohibiting a person from engaging in an activity regulated by the TDG Act, requiring a person to compensate others, repair damage to the environment or contribute to research in respect of the transportation of dangerous goods.

Conclusion

While regulating an industry or activity may be regarded by some as an obstacle to commerce, this enactment is supported by industry and the general public. They recognize that the primary purpose of regulation is to ensure the safety of all affected by the transportation of dangerous goods and the preservation of our environment.

