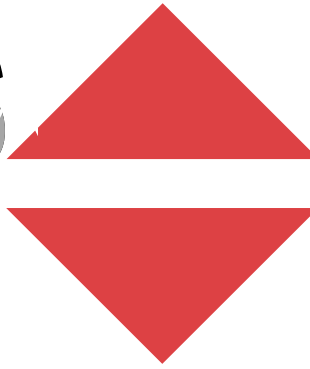


Dangerous Goods



Newsletter

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The Clear Language Regulations



2001: Publication of the Regulations
in the *Canada Gazette, Part II*

2002: Clear Language Regulations
come into force



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We welcome news, comments or highlights on transportation of dangerous goods activities, announcements of meetings, conferences or workshops. The **Newsletter** carries signed articles from various sources. Such articles do not necessarily represent the views of the Directorate, nor does publishing them imply any endorsement. Material from the **Newsletter** may be used freely with customary credit.

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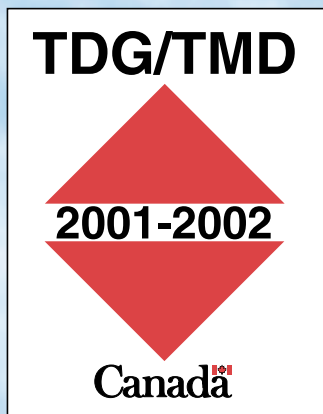
Transport Canada Dangerous Goods Directorate

Internet address – www.tc.gc.ca/tdg/en/menu.htm



Transport Canada Transports Canada

The *Transportation of Dangerous Goods Regulations* are changing.



The new regulations come into force on
August 15, 2002.

Some of the changes include:

- clearer language
- new requirements for means of containment
- updated procedures for shipping documents

For more information:

- www.tc.gc.ca/tdg/en/menu.htm
- 1-888-758-9999

or write: Director General
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Canada

Editorial

So, what happens now that the Clear Language Regulations have been published in the *Canada Gazette*, Part II?

Some of you are well aware of the regulations and of their coming into force date (12 months after *Canada Gazette*, Part II publication) but there are people who gave up waiting, or never knew of the project, who we would like to reach in the coming months.

We plan to begin our basic awareness campaign by contacting as many shippers and carriers as possible and providing each of these with the basic leaflet (shown on the left). At the same time, we will attempt to complete a census of potential shipment sites in Canada for dangerous goods.

Along with the leaflet, we will explain how to obtain copies of the new regulations and we will make available a list of trainers.

A free copy of the regulations in electronic form is available from our Web site at www.tc.gc.ca/tdg/en/menu.htm. Copies in printed annotated form will be available from commercial sources. Transport Canada will maintain a list of such sources as well as a list of trainers.

If you wish to be identified as a commercial source of printed versions of the regulations, or as a trainer, please contact Louis Trépanier, Chief, Inspector Training and Public Awareness, at (613) 998-6545 or email: trepanl@tc.gc.ca. The list of suppliers and trainers will be provided to the general public without any recommendation or endorsement by Transport Canada.

A FINAL WORD: As outstanding as they are, in a set of regulations as complex as these, covering all modes, an item or two may have been left out, or not been completely covered. If you identify an example of this, please send comments to Linda Hume-Sastre, Director, Legislation and Regulations Branch, 330 Sparks St, 9th floor, Ottawa, ON, K1A 0N5 or by email: hume@tc.gc.ca noting the problem you foresee and the change you would propose to the text.

FEATURE

The TDG Inspector's Virtual Bookshelf

by Jean-Stéfane Bergeron

This year, Transport Canada's Transportation of Dangerous Goods Inspectors are using the newest tool available to assist them in ensuring the safe transportation of dangerous goods. While our newest tool is technology at its finest, it is not a new digital imaging system, a global positioning system or laser based measurement system.

The Transportation of Dangerous Goods Inspector Virtual Bookshelf is a CD-ROM (Compact Disk Read Only Memory) developed specifically for Transport Canada. The CD-ROM provides inspectors with easy electronic access to reference documents such as legislation, standards, and policy documents used in the course of their day-to-day work. This ensures that the most accurate and current information is communicated to clients and available to inspectors, assisting them in making sometimes difficult technical safety decisions.

The development of the virtual bookshelf was one of Transport Canada's Government On-Line initiatives.

Transport Canada's Ontario Region, Surface Group, has been working on this project for nearly two years. As each inspector is equipped with a laptop computer, and most inspectors with portable printers, the objective was simple. Maximize the use of the laptop computers by making available to our inspectors all documents, forms and other tools electronically, on their portable computers; replacing several thousand pages with one single compact disk. While we are not quite there yet, much has been done.

All legislative and regulatory text used by our inspectors, including the *Transportation of Dangerous Goods*

Act and Regulations, the *Packaging and Transport of Nuclear Substances Regulations*, the *Explosives Regulations*, the *American Transportation of Hazardous Materials Regulations (Title 49 CFR)*, the *International Maritime Dangerous Goods Code* and the *International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air* are available on the CD-ROM. Essential to our inspector's work are the standards referred to by

the regulations, whether published by the CSA International (CSA), the Canadian General Standards Board (CGSB) or the Compressed Gas Association (CGA), which are also available electronically. To complete the CD-ROM, a collection of other documents to support our inspectors is also included. Transport Canada Permits of Equivalent Level of Safety, Advisory Notices, General Information documents along with U.S. Department of Transport documents such as Letters of Clarification, not to mention

every issue of the TDG Newsletter since 1995, are all available.

The TDG Inspector's Virtual Bookshelf is accessed through a standard Web browser interface allowing the inspector to navigate the large collection of documents easily and quickly. A very capable search engine powers the TDG Inspector's Virtual Bookshelf, allowing the user to locate pertinent information quickly. Since the information is maintained on a CD-ROM, the information is available wherever our inspectors' duties take them, ranging from warehouses and manufacturing facilities to rail yards, ports, and highway inspection stations.



Our inspectors will also be able to assist the public and other government agencies using this tool. Since the documents are in electronic form, inspectors will be able to find and provide accurate and complete information quickly and in many cases will be able to fax or e-mail the pertinent document to the client, directly from their computer, whether in the office or in the field.

As part of our longer-term goals, we developed what we hope will become an important part of our knowledge management strategy. We plan to continue the development of this collection, to ensure the required knowledge is available to each of our employees whenever or wherever the needs arise. The TDG Inspector's Virtual Bookshelf was also developed to allow its integration into Transport Canada's Intranet and to be shared with other federal and provincial agencies, our partners in ensuring the safe transportation of dangerous goods; allowing them to make available to their inspectors this valuable tool.

More importantly, as part of the Government of Canada's efforts to improve service delivery, we plan to enhance our Web site with much of the information developed for our inspectors. While we feel that the TDG Web site (<http://www.tc.gc.ca/tdg/en/menu.htm>) is a valuable resource, we are always looking for ways to improve the information it provides. Additionally, the Canadian Centre for Occupational Health and Safety (CCOHS) is currently developing a version of the TDG Inspector's Virtual Bookshelf that will be made available to the public. While some of the information contained on the CD-ROM used by our inspectors will not be available to the public because of copyright restrictions or other reasons, most of the information will be. Most people involved in the transportation of dangerous goods, whether they be manufacturers, shippers, carriers, importers, or others will have access to complete and accurate information through a user-friendly interface.

If you would like more information about the TDG Inspector's Virtual Bookshelf, please send an e-mail to TMD-TDGCDFROM@TC.GC.CA. The TDG Inspector's Virtual Bookshelf is also another reason to look forward to your next visit with one of our TDG inspectors.

How Was the CD-ROM Developed? The Technical "Stuff"

The Canadian Centre for Occupational Health and Safety (CCOHS) (<http://www.ccohs.ca>) developed the TDG Inspector's Virtual Bookshelf CD-ROM for Transport Canada. CCOHS enjoys a well-established reputation world-wide as an innovative, expert OH&S resource. As a corporation governed by a Council with representatives from employers, labour and government, CCOHS is committed to providing impartial, accurate, useful information to all parties in the workplace. Having developed similar solutions for industry and government around the world, they were the ideal partners.

We also had to identify a software application to allow us to develop what is essentially a Web site on a CD-ROM. The application chosen would also have to allow the CD-ROM to be updated regularly, publishing a new CD periodically and having more frequent updates electronically. We believe we found the ideal application for this in Verity's Publisher application (<http://www.verity.com>). The application assists the development of a traditional Web site, preparing the site to be deployed onto a CD-ROM and in the creation of an index of all the documents. The application also acts as a virtual Web server on the user's computer, allowing the user to search the CD in the same way as any Web site. Verity also eases navigation of the search results by highlighting in each document the found words and providing quick navigation keys. This application also allows regular updates to be provided electronically or by the release of a new CD.

Content is certainly the most important component of a solution of this type. Inspectors from each area of the country worked to identify documents they felt should be available on the CD-ROM and how the virtual bookshelf should function. Many of the documents that were identified as necessary for our inspectors are published by other organizations and as such are copyright restricted. To allow us to include those publications on the CD-ROM, Transport Canada and CCOHS had to negotiate agreements with the publishers. CCOHS already had such agreements in place for many publications while Transport Canada had to enter into specific agreements for other publications. We were fortunate to be able to enter into

agreements with several organizations that publish important documents for our inspectors. In some cases, Transport Canada was the first to obtain permission to reproduce documents electronically.

As with any technology-based tool, the key to the CD-ROM's success was the people participating in its development. The CCOHS specialists managed to leverage a complex blend of HTML authoring tools, the Verity application and other applications to convert paper documents into electronic form, accessible in an intuitive and pleasant interface answering the needs of our inspectors.

The TDG Inspector's Virtual Bookshelf is a "living document", as the documents that are part of the virtual bookshelf are ever changing. Additionally, as with any computer application, the next year or two will allow us to improve the CD-ROM thanks to the input of our inspectors.

We are looking forward to the CD-ROM's first year. We hope to use this experience to improve this tool and to share our results with other groups of Transport Canada and other agencies of the federal government; all in an effort to improve service delivery to Canadians through initiatives like Government On-Line.



This article is the third and last in a series of newsletter articles regarding CSA Standard B620-98. The first two articles, in the Fall 2000 and the Winter 2000-2001 editions respectively, described the steps that manufacturers of pressure highway tanks and manufacturers of non-pressure highway tanks must follow. This article describes other important changes in B620-98, and how the transition from the current requirements in B620-87 will be applied.

Highway Tank Requirements: Transition from CSA B620-87 to CAN/CSA B620-98

by Kevin Green

National Standard of Canada CAN/CSA B620-98 *Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods* will be brought into force with the Clear Language amendment to the *Transportation of Dangerous Goods (TDG) Regulations*. These regulations are now published and will become mandatory one year after publication.

CAN/CSA B620-98 introduces a number of important changes from the 1987 edition that is currently in force, which will affect tank owners and all registered facilities. These changes include:

- New TC 400-series tank specifications and revisions to existing specifications;
- New and more frequent periodic inspections and tests;
- Revised quality control requirements for registered facilities;

- Retrofitting of some equipment on certain in-service tanks; and
- Transition from the current registration and test requirements.

The transition provisions in Appendix A of B620-98 are the main focus of this article. They describe how some of the changes mentioned above will be implemented. These changes and the transition provisions can be summarized as follows:

Registration of Manufacturers to B620-98

Tanks constructed to any of the tank specifications in B620-98 may only be constructed and certified by facilities registered under B620-98 requirements. This means that even manufacturers currently registered under B620-87 will have to upgrade their registration to B620-98 requirements. An upgrade typically in-

volves improvements to the facility's B620 quality control manual to include more complete procedures, documentation samples and revised inspection and test procedures and reports. If you are a manufacturer, begin yours now to avoid a potential backlog and delays as the enforcement date of B620-98 approaches. About 18% of currently registered manufacturers have already completed this task and obtained their B620-98 registration.

Sunset on Certification of Tanks to B620-87 Specifications

Once B620-98 comes into force, new tanks and tanks not previously certified may no longer be certified to B620-87 specifications except by permit. Tanks certified after that date must instead meet the specification requirements in B620-98. Those tanks certified to B620-87 specifications prior to the enforcement date of B620-98 may nevertheless continue in service as prescribed by the appropriate selection and use standard (CAN/CSA B621-98 or CAN/CSA B622-98).

Several tank specifications have been discontinued in B620-98. These include:

- The TC56 and TC57 portable tank specifications, and the TC350 vacuum tank specification. The TC56 and TC57 specifications have been replaced by the UNIBC specifications in CAN/CGSB 43.146. The TC350 vacuum tank specification has been replaced by vacuum tank provisions in the TC407 and TC412 specifications; and
- The TC306, TC307 and TC312 specifications that have been superseded by the new TC406, TC407 and TC412 specifications respectively.

New and More Frequent Inspections and Tests

The new inspections and test requirements in B620-98 harmonize closely with cargo tank regulations already in place in the U.S. For example, a TC306 petroleum tanker that required an external visual inspection every 2 years under B620-87, will require an annual visual inspection and leak test, and a 5-year internal inspection, upper coupler inspection, and pressure test under B620-98.

Check the text and tables of clause 8 of B620-98 carefully for the tests and frequencies that will apply to your tank.

Transition to B620-98 Inspection Test and Registration Requirements

To ensure a smooth transition to the inspection and test requirements of B620-98, some phase-in provisions have been included in Appendix A of the standard:

- New tests, or tests that were not previously required, become due when prescribed by B620-98, or 1 year **after** the enforcement date of B620-98 (whichever is last).
- A B620-87 test whose frequency has changed, will be valid until the B620-87 retest date, or until 1 year **after** the enforcement date of B620-98 (whichever is first).
- A facility registered under B620-87 to perform pressure tests of TC306 tanks may perform all of the B620-98 tests and inspections required on TC306 tanks until that registration expires. That facility may not, however, inspect and test TC406 tanks until their B620-98 registration has been completed.
- Similarly, B620-87 repair shops may perform repairs to B620-98 requirements on those tank types shown on their current registration until it expires.

Retrofitting - Manhole Assemblies & Self-Closing Shut-off Valves

Within three years of the enforcement date of B620-98, manhole assemblies on TC306, and low pressure TC312 tanks must comply with the requirements for 400-series manhole assemblies, and withstand a pressure of 36psi without permanent deformation. Manhole assemblies on many tanks will already meet this requirement due to their design, or due to the influence of a similar retrofit program in the U.S. in the early 1990s. Individual testing, or certification by the manufacturer can satisfy this requirement.

Also, within three years of the enforcement date of B620-98, TC350 tanks must be equipped with remote and thermally activated self-closing shut-off valves. This requirement does not apply to tanks in dedicated crude oil service and marked "TC350 Crude".

Consult the B620-98 standard for all the details on transition from B620-87 requirements. A copy of the standard may be obtained by contacting the Canadian Standards Association at 1-800-463-6727. Other questions may be addressed to the Transport Dangerous Goods office in your region or by contacting the TDG Directorate in Ottawa at (613) 998-5270.

Cylinder Issues

by Amy Park

Cylinders Installed in Systems

The *Transportation of Dangerous Goods (TDG) Regulations* specify requirements for cylinders used to contain compressed gas. While these cylinders are designed for use in transporting gas, they are also often installed in systems and used in non-transportation applications. Examples include cylinders installed as part of fire suppression systems and breathing air cascade systems.

Cylinders of gas must be handled, offered for transport, and transported in accordance with the TDG Regulations. Cylinders manufactured and marked as prescribed in the TDG Regulations remain standardised means of containment under the *TDG Act*. However, other regulations must also be complied with, when these cylinders are used in non-transportation applications. For example, when cylinders are installed as part of a compressed air cascade system, the entire system, including the fittings, piping, and relief devices, must comply with the applicable boiler, pressure vessel and pressure piping legislation. Similarly, when cylinders are part of a fire suppression system, the entire system must comply with applicable fire codes.

In many cases, these other regulations require that the installed cylinders be filled and requalified in accordance with the TDG Regulations. In any case, proper filling and requalification of these cylinders are necessary to ensure safety. Under the TDG Regulations, requalification requirements are specified in National Standard of Canada CAN/CSA-B339-96, *Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*, and filling requirements are specified in National Standard of Canada CAN/CSA-B340-97, *Selection and Use of Cylinders, Spheres, Tubes, and Other Containers for the Transportation of Dangerous Goods, Class 2*.

Training for Hydrostatic Requalifiers

In the near future, Transport Canada will no longer register requalifiers of cylinders by hydrostatic retest and visual inspection, in accordance with clause 25.3 of CAN/CSA-B339-96, unless evidence of training is submitted with the application. Each person desig-

nated in the application to perform requalifications will be required to have periodic training. Written requalification and quality control procedures will also be required to be submitted with the application.

Transport Canada is currently working with several companies to ensure that appropriate training courses are developed. Once the training courses are available, notices will be sent to all registered hydrostatic requalifiers.

The development of other training courses on hydrostatic requalification is welcome; if you are interested in developing such a course, or if you already have a similar course available, please contact Amy Park at (613) 990-1137 or Pascal Verville at (613) 990-1167.

International Issues

This summer, the 12th revised edition of the *United Nations (UN) Model Regulations on the Transport of Dangerous Goods* will be published. The 12th revised edition will reflect the decisions made by the UN Committee of Experts on the Transport of Dangerous Goods in December 2000. For the first time, these *UN Model Regulations* will include requirements for the international transport of gases in cylinders and other pressure receptacles.

Likely in the next few years, international modal regulations (such as the *ICAO Technical Instructions* and the *IMDG Code*) and national regulations (including the Canadian TDG Regulations) will include provisions for the transport of “international cylinders”. Such cylinders will bear a UN mark and will be manufactured and used according to ISO (International Organization for Standardization) standards.

The 12th revised edition of the *UN Model Regulations* addresses only some aspects of transporting gases in cylinders and other pressure receptacles. The UN Committee of Experts on the Transport of Dangerous Goods and the ISO Technical Committee on Gas Cylinders (ISO/TC58) continue to develop requirements and to discuss issues which have not yet been addressed, including welded cylinders, composite cylinders, cryogenic receptacles, and pressure relief devices.

Transport of Radioactive Materials New IAEA Regulations – ST-1 (TS-R-1)

by Ray Clark and Marisa Devine

In December 1996, the International Atomic Energy Agency (IAEA) published the 1996 Edition of the *Regulations for the Safe Transport of Radioactive Material* (which replace Safety Series No. 6) in a document called ST-1 (ST-1 was later revised and is now known as TS-R-1).

For **marine** shipments under the IMO/IMDG Code, the new TS-R-1 regulations came into effect January 1, 2001 with a transition period of 12 months (i.e. mandatory compliance as of January 1, 2002). For **air** shipments under the ICAO Technical Instructions, the new *radioactive transport regulations* took effect July 1, 2001, with no transition period.

Both the Transport Canada *Transportation of Dangerous Goods Regulations* (TDG) and the Canadian Nuclear Safety Commission's (CNSC) *Packaging and Transport of Nuclear Substances Regulations* (PTNS) adopt applicable IAEA regulations for the transport of radioactive materials in Canada. The new Clear Language version of the TDG Regulations will reference the PTNS Regulations. The current PTNS Regulations are based on the IAEA Safety Series No. 6, *Regulations for the Safe Transport of Radioactive Material* 1985 Edition (as amended 1990) (SS6-85). The Canadian Nuclear Safety Commission has not yet implemented TS-R-1, but will in the near future with some interim arrangements to accommodate the introduction of

TS-R-1 in the air and sea modes of transport. The CNSC intends to amend the PTNS Regulations to permit shipments to be conducted in accordance with TS-R-1 or SS6-85. Eventually, the CNSC will completely adopt TS-R-1.

The adoption of TS-R-1 may affect the requirements applicable to certain shipments of radioactive materials. Some of the significant changes in the IAEA regulations (TS-R-1) that may impact current practices with respect to the transportation of radioactive materials within Canada are:

Materials

- The definition of radioactive material will change to mean any material containing radionuclides where both the activity concentration and the total activity in the consignment are greater than the exemption limits for the radionuclide. (para 236)
- Revised A_1 and A_2 values for many radionuclides. (para 401)
- LSA-III materials will specifically exclude powders. (para 226a)
- New specifications for Low Dispersible Radioactive Material (LDM), which are solids of limited dispersibility, limited solubility and emit a low external radiation field when unshielded. LDM will be subject to approval and certification by the corresponding competent

authority. (paras 712, 806(b) and 828(c))

- Pu_{238} (Plutonium - 238) is no longer considered fissile for the purposes of TS-R-1. (para 222)

Packaging

- New release limits for Type B and Type C packages as a result of revised "A" values for packages. (paras 408 and 410)
- Alternative Type IP-2 packages must meet UN packing group I or II requirements. (para 624)
- Freight containers used as Type IP-2 or IP-3 packages must only carry solid radioactive material. (para 627)
- Metal intermediate bulk containers may be used as IP-2 or IP-3 packages providing they are drop tested in the most damaging attitude. (para 628)
- An operating temperature range of -40°C to $+38^{\circ}\text{C}$ is required for all fissile packages. (para 676)
- New provisions for packages containing fissile material. (paras 671 to 682)
- New provisions for packages containing Uranium Hexafluoride. These packages will require CNSC Type H certification. (paras 629 to 632, 805 and 828(c))
- New Type C package specifications which will apply to the transport of large quantities

(greater than $3000A_2$ or $3000A_1$) of radioactive material by air. The introduction of the Type C package places content limits on Type B(U) and Type B(M) packages travelling by air. These packages will also require CNSC approval. (paras 806 and 809)

Loading and Segregation

- A criticality safety index (CSI), which will be used to limit the accumulation of packages containing fissile material. The transport index has been simplified to apply only for radiation protection purposes and continues to be based on the radiation level at 1 metre. (paras 530, 566-569 and Tables IX and X)

Labelling and Marking

- Expanded list of UN numbers, proper shipping names and descriptions which have an improved relationship with the IAEA schedules and will facilitate the further development and improvement of emergency response schedules and procedures. (para 535)
- For fissile packages, a criticality safety index (CSI) label, which shows the CSI (formerly the transport index for nuclear criticality control) for the package is required. (paras 544 and 545)
- Excepted packages must be marked with the appropriate UN number. (para 535)
- IP-2 and IP-3 packages must be marked on the surface with the word “Type” together with the appropriate industrial package description. (para 537)

- IP-2, IP-3 and Type A packages must be marked with the vehicle registration identification code of design and manufacturer. (para 537)

Placarding

- Smaller placards (minimum side dimension of 100mm) may be used where vehicles have insufficient area to allow the display of larger placards, and the trefoil symbol on placards may be slightly smaller than under Safety Series No. 6. (paras 546 and 570 and Figure 6)

Carriage

- The competent authority for containment (i.e. in Canada, the Canadian Nuclear Safety Commission - CNSC) must be notified of shipments of Type C packages containing more than $3000 A_1$ or $3000 A_2$, or 1000 TBq, whichever is lower. (para 558)
- Shipment documents for LSA-II, LSA-III, SCO-I and SCO-II must show the total activity of the consignment as a multiple of A_2 . (para 549(m))
- The surface contamination limit for excepted packages will now be the same as for other package types.
- A mass limit per consignment for fissile-excepted radioactive material (para 672)

The IAEA has produced a technical document (IAEA-TECDOC-1194) as a detailed guide to the changes in the *Regulations for the Safe Transport of Radioactive Material* (TS-R-1).

Interpretations

The Directorate encourages questions on the text of the new regulations. If you cannot find a meaning in the block of text you are reading, or you can find more than one meaning, we would like to hear from you. Questions can be asked of any inspector or can be submitted by mail to Edgar Ladouceur, Director, Compliance and Response Branch, 330 Sparks, 9th floor, Ottawa, ON, K1A 0N5 or by e-mail: ladouce@tc.gc.ca.

Questions of general interest for which the answer may not be obvious will be added to an Interpretation File which will be accessible for viewing on the TDG website at: www.tc.gc.ca/tdg/en/menu.htm. If your question is added to the list, we will send you a TDG/TMD pin as shown on the left. If your question is the best of the month, we will send you a TDG/TMD T-shirt!

Questions on the applicability of the regulations in specific cases, such as “Given my situation as I describe it, does Section 1.25 apply to me?” will also be answered but will only be added to the Interpretation File if they appear likely to be of general interest.



International Civil Aviation Organization

Technical Instructions 2001/2002

by Judith Code

The transportation of dangerous goods by air to, from and within Canada is subject to the *Transportation of Dangerous Goods Regulations* which in turn adopts the *International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TI's)*. The 2001/2002 edition of the *ICAO TI's* introduces a number of changes which come into effect July 1, 2001. Many of the changes align the *ICAO TI's* with the *UN Recommendations on the Transport of Dangerous Goods (UN Recommendations)* including the format and classification and consignment procedures.

The 2001/2002 edition also incorporates revised provisions for radioactive materials (RAM) from the International Atomic Energy Agency, *Regulations for the Safe Transport of Radioactive Material*, No. ST-1, 1996. The major changes in respect to RAM include:

- Change in definition based on activity;
- Revised Proper Shipping Names and UN Numbers (e.g. Radioactive Material, Type A Package, Special Form, UN3332);
- Introduction of Type C packages for high activity materials transported by air; and
- Packages of fissile radioactive material (other than fissile excepted) to have label showing criticality safety index (CSI).

Other changes affect:

- ⇒ List of Dangerous Goods
- ⇒ Special Provisions
- ⇒ Packing Instructions
- ⇒ Labelling
- ⇒ Dangerous Goods Transport Document
- ⇒ Packaging
- ⇒ Operator's Responsibilities
- ⇒ Passenger's Provisions

How to Identify Changes to Your 2001/2002 ICAO TI's

- ≠ This symbol indicates that changes have been made to the requirements.
- + This symbol indicates that new text has been added to the requirements. If the symbol appears against a heading, all the text, which appears under that heading, is new.
- > This symbol indicates a deletion.

Highlights

- **New Format**

Foreword

Part 1 - General

Part 2 - Classification of Dangerous Goods

Part 3 - List of Dangerous Goods and Limited Quantities Exemptions

Part 4 - Packing Instructions

Part 5 - Shipper's Responsibilities

Part 6 - Packaging Nomenclature, Marking, Requirements and Tests

Part 7 - Operator's Responsibilities

Part 8 - Provisions Concerning Passengers and Crews

Appendices

Specific Amendments 2001/2002

List of Dangerous Goods

Alignment with UN Recommendations:

- "Dangerous Goods in apparatus or machinery" now UN3363;
- "Nitrocellulose...(UN2555, UN2556, and UN2557) now not allowed in limited quantities.

From ICAO Dangerous Goods Panel (DGP) Members:

- “Bromine” and “Bromine solution” now forbidden on both passenger and cargo aircraft;
- “Fuel system components” now recognized and cross referred to UN3363;
- Added explanation for “Chemical oxygen generator” - to clarify when they are in equipment (e.g. PSUs and PBEs).

Special Provisions

From ICAO DGP Members:

- Extension to January 1, 2003 of transition period for Lithium batteries which meet the requirements of the 1993-1994 ICAO TI’s;
- Recognition that a smoke candle be part of the permanent equipment of a vehicle;
- Ability for an airbag inflator/seat belt pretensioner, classified as UN0503, to be retained on a vehicle;
- Ability to have up to 30 ml of Ethylene oxide in sterilization devices in excepted quantities.

Packing Instructions

Alignment with UN Recommendations:

- PI434 (for UN3241 - 2-Bromo-2-nitropropane-1,3-diol) extended to allow glass inner packaging and all possible UN specification outer and single packaging;
- PI911 (for e.g.: UN3077 - Environmentally hazardous substance, solid) extended to allow all possible UN specification single packaging;
- PI914 (for UN3082 - Environmentally hazardous substance, solid) extended to removable head single packaging.

From ICAO DGP Members:

- PI200 - deletion of “metal” so “other pressure vessels” can be of any material;
- PI501 - “Oxidizing liquid, nos” (UN3139) moved to PI501 and not allowed in metal inner packaging; also “Perchloric acid” (UN1873) now not allowed in plastic inner packaging;

- PI900 - added requirements to drain fuel from engines when shipped separately and to cap pipes; also to disable theft protection devices on cars;
- PI902 - ability to use measuring devices other than oversted meters.

Labelling

Alignment with UN Recommendations:

- All labels to have Class/Division number in bottom corner (no longer any distinction between primary and subsidiary risks);
- When possible, labels to be located on same surface as proper shipping name; primary and subsidiary risk labels to be next to each other.

From ICAO DGP Members:

- Location of labels on overpacks to conform to same requirements as for the packages in them.

Dangerous Goods Transport Document

Alignment with UN Recommendations:

- The four essential elements to be shown with no additional information interspersed;
- Deletion of requirement to show Class/Division for each item of “Dangerous goods in apparatus/machinery” (due to assignment of UN number, so total only now needed).

From ICAO DGP Members:

- For self-reactive substances, etc. - deletion from the statement, about protecting from heat, of the need to avoid overstuffing.

Packaging

Alignment with UN Recommendations:

- Specifications include for metal drums of other than steel or aluminium (1N1, 1N2).

Operator’s Responsibilities

- Segregation on aircraft to be based on both primary and subsidiary risks;
- Segregation table simplified;
- Packages and overpacks required to be accessible

and to be stowed so labels are visible;

- Deletion of requirement not to overstuff self-reactive substances and organic peroxides;
- Written information to commander to be accurate and legible;
- Copy of written information to be retained on the ground at readily accessible location;
- Information to staff can be in any appropriate manuals;
- In an emergency, ability for commander to give a telephone number in lieu of the details on the written information;
- Operators to address in contingency plans the notification to authorities in emergencies.

Passenger's Provisions

- Operator's responsibilities now in Part 7;
- Provisions for passengers and crews now in Part 8;
- Non-spillable batteries on wheelchairs no longer need to be disconnected but terminals must be protected from short circuits;
- A self-inflating life jacket can now have cylinders of other than carbon dioxide providing it is a Division 2.2 gas; clarification that the gas can only be for inflation purposes.

Further Information

Not all of the changes to the *ICAO TI's* have been identified here. For further information regarding the amendments to the *ICAO TI's* please contact your Regional Transportation of Dangerous Goods Civil Aviation Office:

Headquarters	(613) 990-1060
Atlantic	(506) 851-7247
Quebec	(514) 633-2838
Ontario	(416) 952-0000
Prairie & Northern or	(204) 983-1424 (403) 495-5278
Pacific	(604) 666-5655

The International Air Transport Association (IATA) publishes yearly the IATA Dangerous Goods Regulations. This constitutes a manual of industry carrier regulations to be followed by all IATA Member airlines. Please note that the IATA Dangerous Goods Regulations have no legislative authority except as provided for in the Transportation of Dangerous Goods Regulations.

IATA publishes Supplements, Amendments and Errata sheets to the IATA Dangerous Goods Regulations at the following Website: <http://www.iata.org/cargo/dg/index.htm>

Overload of Tank Cars

by Réjean Simard

Railway companies sometimes contact Transport Canada to obtain authorization to move railway cars whose weight may be in excess of the maximum allowable weight. The movement of cars exceeding the maximum allowable weight may have adverse effects on the railway infrastructure, such as bridges and track geometry, and may cause added wear. These overloaded cars may also be moved through a hump system when trains are assembled in the railway companies' classification yard and the added weight

may result in increased kinetic energy when the cars are coupled, possibly damaging the cars themselves. However, this excess weight may result from overfilling the tank cars resulting in possible serious and imminent hazards, as illustrated by the following accident.

In Saint John, New Brunswick, a railway tank car, initially reported as leaking in a railway yard, was later reported as secure by the dangerous goods officer of the railway company. Further review of the

reports found serious safety concerns and resulted in remedial actions being taken by Transport Canada. The apparent leak was described as a 10-meter high jet spray of propane which resulted from the activation of the pressure relief valve. The same valve further released pressure at least twice after being declared "secure" by the railway employee. It was almost a miracle that there was no source of ignition in the premises at that time. There could have been a flash fire which would have inflicted serious

casualties and injuries to the rail yard workers and the surrounding properties.

As a more serious scenario, there could have been an uncontrolled fire with the possibility of a tank car BLEVE causing serious injuries to people and damage to properties in a radius greater than one kilometer. Transport Canada requested the activation of the applicable Emergency Response Assistance Plan, (required under section 7.16 of the TDG Regulations) and a Remedial Measures Advisor and Emergency Response Team responded on site. The response personnel determined, with the use of the gauging device located on the tank car, that the tank car had been overfilled, with no expansion space remaining. The inside pressure of the tank car was over 250 psi. The pressure for this type of substance and means of containment at that time and temperature should have been close to 40 psi. The Remedial Measures Advisor and the Emergency Response Team concluded, after completing the site assessment, that the situation was very serious and that the tank car should not have been moved without reducing the load. Following appropriate site safety precautions, they decided to immediately reduce the load.

The dangers associated with the overfilling of means of containment are well-recognized. Section 7.22 of the TDG Regulations prohibits overfilling of means of containment.

“No person shall handle or offer for transport dangerous goods that are contained in a means of containment if the volume or density of the dangerous goods exceeds the maximum mass, volume or density for the means of containment.”

The TDG Regulations further require that all tank cars used to transport dangerous goods meet the requirements of the National Standard of Canada CAN/CGSB 43.147-97, entitled “*Construction and Maintenance of Tank Car Tanks and Selection and Use of Tank Car Tanks, Portable Tanks and Rail Cars for the Transportation of Dangerous Goods by Rail.*”

This standard contains specific filling limits for tank cars to allow sufficient expansion space to ensure that no leakage or permanent distortion of the tank car occurs as a result of an expansion of the substance

caused by variations in temperature likely encountered during transportation. Similar regulations and standards also apply for shipments of dangerous goods made in highway tanks.

Railway companies operate weigh scales and submit reports to Transport Canada of tank cars exceeding the permissible maximum weight. Such an overweight may be an indication of an overloaded car. They may also request authorization to move these tank cars. Such requests are carefully reviewed by Transport Canada and each case is considered individually. In all cases, a safety inspection is required. The safety inspection will verify the mechanical condition of the tank car, the outage, and compliance with the TDG Regulations. The outage is that empty space at the top of the car that will allow expansion of the content without damaging the car and without leaking. Some cars reported as exceeding the maximum weight may, in fact, not be cases of overload. Increase in weight may have been caused through an increase in the weight of the empty car due to repairs or modifications to the car. It is possible that, in these situations, the car is not overfilled and after a safety inspection, the car may be allowed to proceed. However, if the tank car is found to be overloaded, and there is a safety concern, remedial action is taken immediately to reduce the possible danger to public safety. Such action may require the tank car to be unloaded on site rerouted to an alternate destination near the site to reduce the excess load, or returned to the shipper for load reduction, shippers may be prosecuted.

Transport Canada inspectors of dangerous goods from the regional offices will conduct follow-up investigations with the shippers of overloaded tank cars to ensure that corrective actions are being taken. If warranted, shippers may be prosecuted.

Railway tank cars and other means of containment should never be shipped overloaded, as it is very unsafe and dangerous and is prohibited by the TDG Act and Regulations.

Transport Dangerous Goods Inspectors' Workshop February 6-8, 2001

by Garth McLean



The workshop was structured around ten (10) break-out sessions that provided each participant with the opportunity to review technical topics, identify new issues, debate remedial options and suggest possible solutions. Topics covered during the workshop included: Compliance and Enforcement Strategies, Performance Measurements, Consistency, Multimodal Issues, Packaging and IBCs, Rail Tank Cars, and Highway and Portable Tanks.

The break-out sessions proved very productive as over forty (40) recommendations were made by the TDG Inspectors. These recommendations will now be used to guide and support many of the TDG Directorate's activities in the

In early February, forty-six (46) Transport Dangerous Goods (TDG) Inspectors met for three days in Beauré, Quebec, to learn of new departmental initiatives and hear from senior officials about the challenges facing the TDG Program in the coming years. Guest speakers included Mr. William Elliott, Assistant Deputy Minister, Safety and Security; Dr. John Read, Director General, TDG Directorate; Mr. Edgar Ladouceur, Director, Compliance and Response; Mr. Luc Bourdon, Director, Surface, Quebec Region and Mr. Lew Rogers, Director, Surface, Prairie and Northern Region.

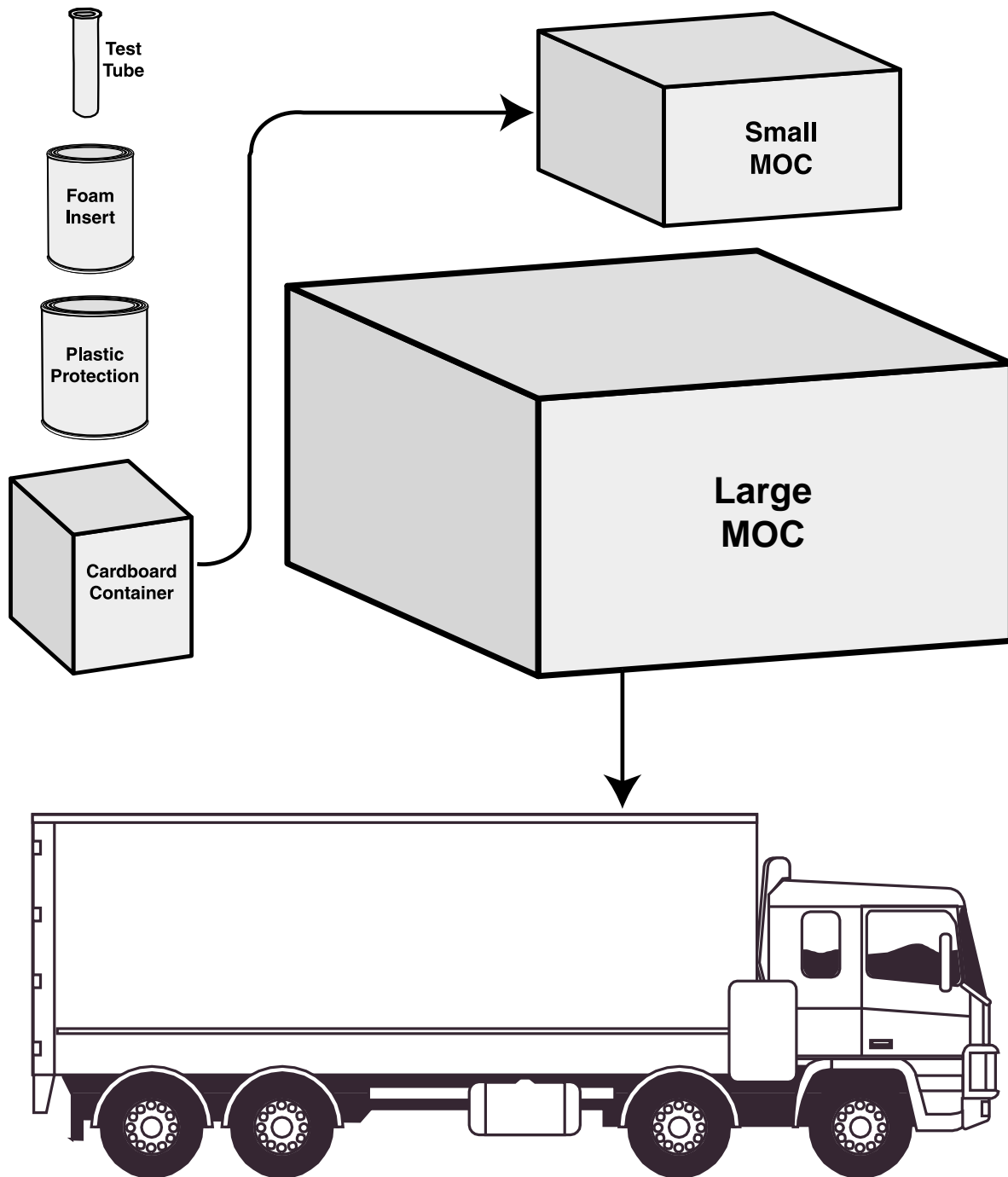
months and years to come.

Social activities and interaction in an informal setting also proved to be highly successful in fostering the frank exchange of ideas and experiences, good and not so good, among the Inspectors.

The resounding success of the 2001 workshop has led to steps being taken to plan another national gathering of TDG Inspectors in the Fall of 2002.

Which “Surface” Should be Marked With a Label or With a Placard?

The dangerous goods are in the test tube. Six of the cardboard containers fit inside the small MOC (means of containment). Over sixteen of the small MOC fit inside the large MOC. Several of these fit inside the truck. Could you write a regulation to cover this, plus all other possible ways of packaging all other dangerous goods?



Upcoming Events in TDG...

November 5-6, 2001

TDG Congress

Ottawa, Ontario

Learn all about the New TDG Clear Language Regulations

The Canadian Chemical Producers' Association (CCPA) in cooperation with Transport Canada (TC), the Canadian Petroleum Products Institute (CPPI), the Canadian Association of Petroleum Producers (CAPP), the Crop Protection Institute of Canada (CPIC), the Canadian Fertilizer Institute (CFI), the Canadian Association of Chemical Distributors (CACD), and the Railway Association of Canada (RAC), is organizing a two-day workshop on the 5th and 6th of November 2001, in Ottawa. The purpose of the "TDG Congress" is to provide comprehensive

awareness information to a broad sector of the industry affected by the changes made to the *Transportation of Dangerous Goods Regulations*. Although details are still being finalized, it is known that the gathering will take place at a major hotel in downtown Ottawa and a reasonable registration fee will be charged to cover costs. Translation services will be provided. TC senior staff and technical experts will be present throughout the two days to make presentations and answer questions. Details regarding the TDG Congress will be posted on both CCPA's (www.ccpa.ca) and TC (www.tc.gc.ca) Web site as soon as they become available.

If you have any questions, please contact:
Louis Laferrière at CCPA (lferriere@ccpa.ca),
(613) 237-6215, extension 247.

September 20, 2001

Hazardous Materials/ Dangerous Goods Seminar

Sarnia, Ontario

The Emergency Response Training Center (ERTC) of the Transportation Technology Center Inc. (TTC Inc.), a wholly owned subsidiary of the AAR, is sponsoring a one-day Hazardous Materials/Dangerous Goods Seminar in Sarnia, Ontario, on September 20, 2001. The seminar will be held from 8:00 a.m. to 5:00 p.m. at the Holiday Inn, Sarnia, Ontario, tel.: (519) 336-4130.

Topics include: Tank Car/Highway/IM review
* Tank Car Damage Assessment
Grounding and Bonding
Transfer Techniques

The class will meet 8-hour refresher requirements.
* *Latest revised guidelines*

Cost: \$175.00 USD for pre-registration,
or \$200.00 USD at the door.

For more information on how to register, please contact:

Pam Ellingham at 1-800-933-4882
or (719) 584-0584 Fax: (719) 584-0790
E-mail: hazmat_services@aar.com

November 7, 2001

TDG General Policy Advisory Council Meeting

Ottawa

November 8, 2001

Federal-Provincial/Territorial TDG Task Force Meeting

Ottawa

Genetically Modified Organisms...

Do They Pose a Problem?

by Simon Dostaler

These days, we often hear the expression “genetically modified organism” or GMO. We know that this subject can lead to debates within different groups in our society and elsewhere in the world, but do we really know what are GMOs? What are biotechnology and genetic engineering? What products are derived from genetic modification and what are the advantages? Do using these products involve any risks? Are these organisms regulated in Canada? What about transportation? Many questions are asked when this topic is raised. Here are a few clarifications on the subject.

First of all, GMO means any living organism, plant, bacteria or animal, which has undergone a modification to its DNA.

What is biotechnology and how does it work?

Biotechnology is the use of biological techniques for the purpose of making products for agriculture, the environment, industry and medicine. This science puts into application various biological procedures ranging from fermentation (bread, wine, cheese) to genetic engineering, going from plant and animal reproduction to cell and tissue culture and to the production of human antibodies.

What is genetic engineering?

It is one of the most recent breakthroughs in biotechnology. This technique consists of transferring a part of the genetic material, or DNA, from one organism to another. DNA is organized into individual units called “genes”. Genetic modification is accomplished by changing the code or the organization of the genetic material of an organism. Through a transmission vector, which is a minuscule transport vehicle for DNA, we can introduce a portion of divided DNA, a particular gene, in another organism, thus giving it the desired characteristic. For example, it would be possible to insert one or more genes giving a plant species resistance to dryness in another species not containing this characteristic. This would allow it to be better

adapted to dry conditions and to produce a higher yield. Thus, this technique allows the introduction of new traits coming from other species. Traditional reproduction does not allow this type of addition, since crossbreeding is either not possible or provides sterile or nonviable organisms.

The range of products which are derived from biotechnology and which affect us more closely are food products and agriculture. Among those, we find new foods, vegetables with new characteristics (cultivated and horticultural species), biopesticides (for fighting off insects, illnesses and devastation), biofertilizers (to improve vegetable growth), livestock feed and food additives, veterinarian medications and biological products, and animal tissues derived from biotechnology.

These modifications have many advantages. They:

- Give a better resistance to plants against diseases, harmful insects and herbicides;
- Enhance certain selected characteristics in animals;
- Prolong fruit ripening;
- Add to the non-saturated fat content of corn or other grains;
- Remove lactose from milk or add to the lysine content of rice.

The use of biotechnology is being finalized for certain quick detection of animal diseases. Farmers, stock-breeders and consumers can thus expect to benefit from the use of these new products. They would again benefit at the economic level, since the new or improved product would bring in dividends from sales in Canada and abroad for farmers, the food-processing industry and distributors.

Thus, there seems to be many advantages to using these products. However, some individuals do not agree. They believe that these techniques are not accurate and that they can create unexpected long-term effects because they have only been in existence for a

short period and that long-term studies have not been conducted. They also fear the appearance of noxious organisms (bacteria, mushrooms, insects), well-adapted to our modified crops, which would destroy our genetic crop. The creation of herbicide-tolerant plants could also trigger an increase in the use of these chemical products. Indeed, since the main crop tolerates the chemical product; why not ensure that the weeds are wiped out by spraying them with more herbicides? Ecosystem disturbance is also a concern with GMOs. The impact of GMOs on food chains could also upset the local ecology.

Here are only a few from a long list of arguments provided by those opposed to GMOs.

Since there are possible risks, are GMOs regulated in Canada?

Health Canada is responsible for assessing the human health safety of products derived through biotechnology, including foods, cosmetics, drugs, medical devices and pest control products. The Canadian Food Inspection Agency (CFIA) plays an important role in the regulation of products such as plants, animal feeds and animal feed ingredients, fertilizers and veterinary biologics. Many laws cover these products : the *Meat Inspection Act*, the *Agricultural Products Act*, the *Feeds Act*, the *Fertilizers Act*, the *Seeds Act*, the *Plant Protection Act*, the *Health of Animals Act*, the *Food and Drugs Act* and the *Canadian Environmental Protection Act*, the latter under the aegis of Environ-

ment Canada. These regulations aim to establish safety and efficiency standards to protect individuals, animals and the environment.

What about transportation?

Apart from genetically modified micro-organisms classified as infectious material (UN 2814 or UN 2900) when they present risks, the current *Transportation of Dangerous Goods Regulations* do not provide for GMOs. (However, the clear language regulations do address these under UN3245: *Editor*). The problem with these new substances, given their diversity and that many of them do not present a risk, is that they cannot be systematically categorized by determining the danger associated with a particular category. Environment Canada is currently determining environmental risks by assessments made on a case-by-case basis. When the results of these analyses are published, a permit is granted which does include restrictions and conditions with respect to the use of substances deemed dangerous, but none with respect to transport.

This subject is relatively new for most people. Consequently, amendments will have to be drafted to include new substances such as GMOs, which present a potential risk in certain cases. An update is all the more important because in North America this field has taken an enormous lead and is very productive. Thus, our laws and regulations should continue to evolve to eliminate possible risks associated with the transportation of GMOs.

Joanne Seviour - New Manager Dangerous Goods Atlantic Region



The TDG Directorate is pleased to welcome Joanne Seviour as the new TDG Regional Manager for the Atlantic Region. Joanne Seviour was employed as a dangerous goods inspector for two years prior to her new appointment as manager dangerous goods Atlantic region. Prior to coming to Transport, Joanne was employed for six years as an environmental officer for the Department of National Defence in the Atlantic Region. Joanne served with the military, both the regular and reserve military, as an army logistics officer. She holds a degree in Chemistry from Memorial University in Newfoundland and is completing a thesis in Environmental Studies at Dalhousie, Halifax, NS.

The Titanic and Dangerous Goods – Want to Know More?

by Julia Cloutier

Did you know that the sinking of the Titanic prompted a clause on the transportation of dangerous goods? The world was forced to reevaluate marine safety, so in 1929 the International Safety of Life at Sea Convention (SOLAS) was created with a chapter on dangerous goods, calling on governments to regulate.

Legislation, transportation, and dangerous goods are areas that are constantly evolving to meet today's needs. Combining these three areas makes for an entangled account. Yet recounting the history of the legislation on the transportation of dangerous goods in a clear and concise form is exactly what will be attempted in a series of four articles that will appear in upcoming TDG Newsletters. Laws are created, but they do not always explain the whys and the hows of their conception and implementation. These articles will hopefully clear some of this up for our readers.

Transport of dangerous goods legislation can be traced through the history of the modes of transportation used to move the goods, namely, marine, rail, air and road. The articles will look at each mode separately.

Most of you reading this will be familiar with the 1992 TDG Act that replaced the 1980 Act. Not all will be aware why the changes were deemed necessary, and fewer as to why the previous Act (1980) was implemented. The succeeding related articles will narrate this history, going through events such as the 1979 Mississauga derailment that made Canadians attentive to the need for better regulation, and helped push through parliament the legislation experts had appealed for. Incidents of this nature (another well known dangerous goods disaster is the 1917 Halifax explosion) are notable reasons for change. Other venues exist as incentive for change as well. The perceived need for more safety has inspired new regulations in the transportation of dangerous goods.

The progression of laws that lead to what we have today is long and complicated, but hopefully, by the end of this series of articles, many of the questions you may have will have been answered.

So....stay tuned for the first article which will be published in the next issue of the Newsletter.

Number of Calls

Technical	5,103
Regulatory	2,016
Information	4,461
Other	2,423

Total 14,003

Emergency Calls 422

Source of Emergency Calls

Fire Dept.	108
Police Dept.	31
Hazmat Contractor	4
Carrier	152
End User	39
Manufacturer	7
Government	30
Private Citizen	14
ER Centre	7
Poison Control	6
Medical	15
Others	9



January 1, 2001 to June 30, 2001

Emergency Calls by Class of Dangerous Goods

Class 1 - Explosives	2
Class 2 - Compressed Gas	106
Class 3 - Flammable Liquids	104
Class 4 - Flammable Solids	9
Class 5 - Oxidizers and Organic Peroxides	28
Class 6 - Poisonous and Infectious Substances	25
Class 7 - Radioactives	3
Class 8 - Corrosives	125
Class 9 - Miscellaneous	141
NR - Non-regulated	50
Mixed Load -	2
Unknown -	24

Emergency Calls by Province/Country

British Columbia	64
Alberta	55
Saskatchewan	12
Manitoba	9
Ontario	143
Quebec	89
New-Brunswick	7
Nova Scotia	17
Prince Edward Island	0
Newfoundland	6
Northwest Territories	0
Yukon	0
Nunavut	0
United States	18
International	2

Emergency Calls by Transport Mode

Road	98
Rail	124
Air	12
Marine	12
Pipeline	0
Non transport	176
Multimodal	0