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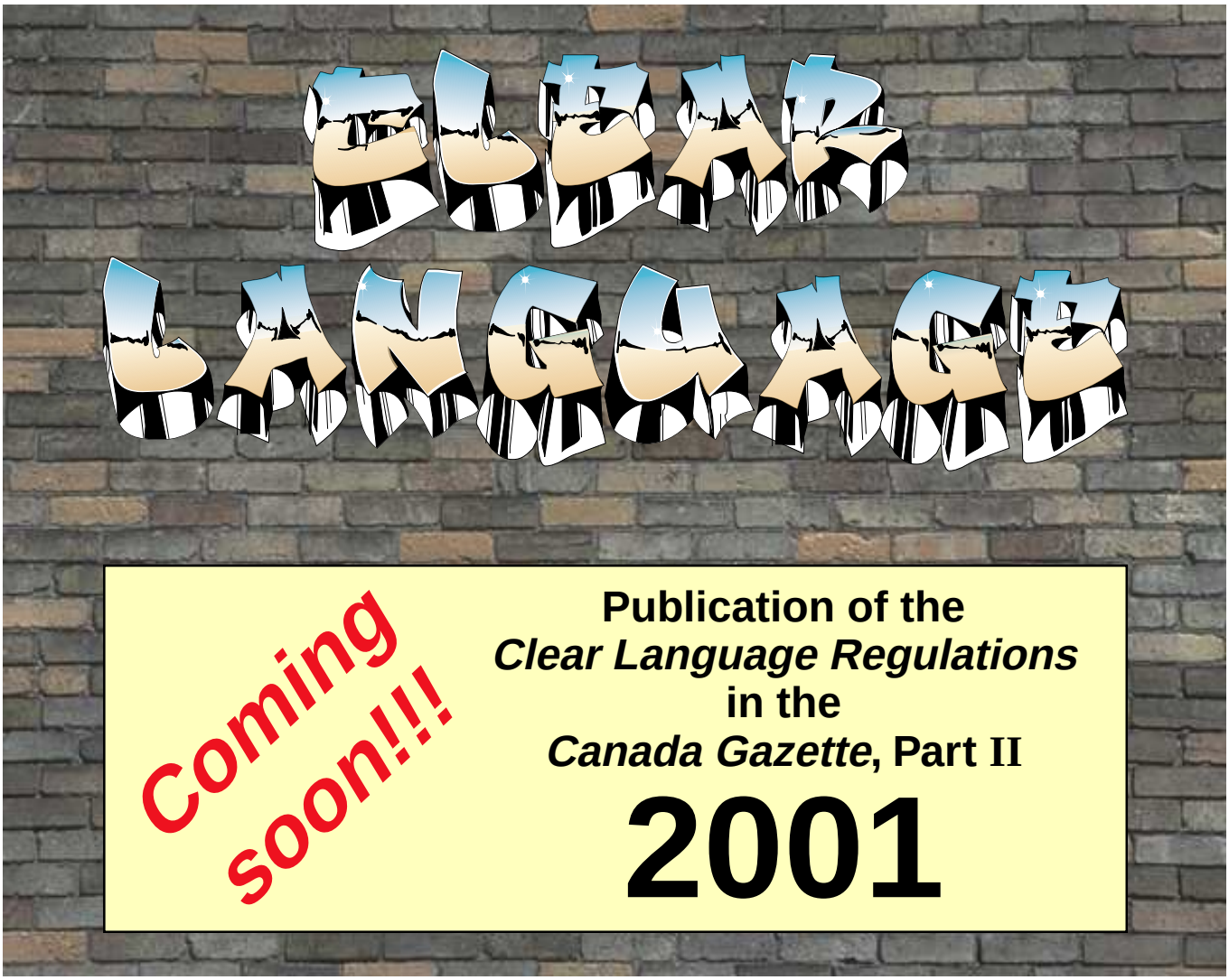

Transport Canada
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Dangerous Goods

Transports Canada
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Content

The **Dangerous Goods Newsletter** is published quarterly in both official languages by the Transport Dangerous Goods Directorate, Transport Canada, and is distributed to government and industry organizations in the dangerous goods related fields. Subscriptions are free of charge and available to anyone on request by calling (613) 990-1151. This newsletter is also available on our web site at: **http://www.tc.gc.ca/tdg/info/news_e.htm**. Please address inquiries regarding additional information, publication and/or comments to:

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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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Editorial

Welcome to the first edition of the newsletter for the year 2001. May I extend to all our readers my very best wishes for the new year!

I hope you will enjoy reading the articles we have included in this issue. There are many interesting topics which I hope you will find informative.

As we approach the anticipated date of publication of the Clear Language Regulations in the *Canada Gazette*, Part II (senior officials inform me that due to a decision by the Department of Justice to conduct a further review, May appears as the probable month for the publication), many articles and advisory notices will be published to increase public awareness on these new regulations coming.

I invite you to read the following article prepared by Ray Clark in which he gives you a brief outlook of the expected changes to our Web site.

As you may realize, this year will bring us new challenges but we are confident we can accomplish all tasks.

As always, your letters, ideas and comments are most welcome. Enjoy your reading and until next time for more TDG news!

Renée Major

Your Clear Language Talisman - The TDG Web Site

(http://www.tc.gc.ca/tdg/en/menu.htm)

by Ray Clark

The Clear Language Regulations will come into effect in 2002. The TDG Directorate will be making changes to its Web site so that people will be able to readily access the new regulations. Some of the new Web site features will be:

- Downloadable Regulations - in addition to an html version of the new regulations, we will also provide a zipped MS Word file for download.
- Searchable List of Dangerous Goods - Schedule 1 will be in a database format and allow searching by shipping name and UN number (see the current draft version "Friday Postings" at: **http://www.tc.gc.ca/tdg/en/consult/friday/html/listform.asp**).
- Sophisticated search features will be available for the complete text of the new regulations.
- An "Interpretations File" will be maintained which will be a listing of questions and answers, developed as people submit questions to the TDG Directorate in Ottawa, to Regional Offices or to dangerous goods inspectors. If we are successful with this, (and we will be) the file will act as a source of answers as well as a collection of precedents. The file will be available for consultation using simple or complex searches over the Web.

Once the Clear Language Regulations are published in the *Canada Gazette*, Part II, these features will be introduced in due course on our Web site. For the present time, please visit the "Friday Postings" Web site for the draft regulations at: **http://www.tc.gc.ca/tdg/en/consult/friday/intro_e.htm**.

For anyone without access to the Web site, we will establish a toll-free number (1-888-758-9999) for receiving messages. This line will become active following Gazette II publication.

In addition to the information we already have on our Web site, Clear Language provides another reason for logging on to: **http://www.tc.gc.ca/tdg/en/menu.htm**

FEATURE

Clear Language Regulations and the Class Photograph

by John A. Read

The town photographer, T. Sea, was finally convinced. For several years T. Sea had taken the school photographs with his trusty durable old camera but this year T. Sea would 'go modern'. T. Sea decided a lot could be accomplished by switching to the latest model digital camera which had a higher resolution than the Leicable old camera that had been used for so long. After all, that old model had several switches and adjustments with many cross checks that made life difficult.

So, T. Sea talked with parents and explained how T. Sea could take individual photographs of the students and amalgamate them into one large integrated photograph covering all the schools. Not only would this include the old school in the South End near the railway station, the Technical High School that trained teenagers in auto repair, the school at the airport and the new school in the refurbished waterfront, but it would also include the technical schools such as the Fire Training school, the Merchants Academy and the Manufacturing College.

The new layout would make it easy to find the right portrait. Once found, it would be a clear portrait and there could be no mistaking the portrait of a student for the fuzzy image of a school's statue.

T. Sea approached the work of an all encompassing integrated photograph by first noting the problems with the current photographs. Some schools used 8 x 10 while others used 5 x 7. Some used matte finish and some used high gloss. It was difficult to buy a single frame that would fit each school's photo. When the photos of the sports team taken at one school were sent to another school the frame had to be changed.

For the larger photos the frame was a problem, but with a sufficiently sized frame most of the various schools' photos could be mounted without cropping. Of course, there was that fuss at that one Modal High School when they hosted the annual Photography Contest and insisted that all schools must follow their school's procedure for all photos taken that year because some of the photos might make it to the finals in the Contest and, hence, be on display in THEIR auditorium.

Then there were the small candid shots. There were many variations on these as a result of many parents and family members being involved and using so many different model cameras. There were even parents who wanted confirmation, in writing, that they could use disposable cameras and still have their photos accepted as being 'as good as' photos taken with the high quality cameras. In some instances, special instructions had to be prepared to explain what was expected of these equivalent cameras.

Photographer T. Sea pondered the question of candid shots for a long time and then had what appeared to be a brilliant idea. Forget about guidelines or standards for small candid shots. These could all be collected on a single page that would be reproduced with a neutral tone. Since the key words were "Limited" size, same printing "Tone" and same "Collage", T. Sea began referring to these small candid shots as the LTC collection. As there would be no restrictions, taking these shots would go a lot smoother because many of T. Sea's problems were from individual parents who insisted on doing things just a little different from everyone else.

As promised, T. Sea provided each parent and each school with copies of the photos that were to make up the wonderful new unified city schools photo. T. Sea expected some disagreement. After all, a unified photo would force some parents to accept a photo style and means of display that they would not adopt on their own. But T. Sea was surprised at the response to the LTC proposal.

Many parents thought it would be a great idea to remove the small candid shots from the formal photo. Others thought it was the worst idea anyone ever had. In fact, although notes on the small candid shots only made up 0.02% of the Instruction to Schools on Class Photo-

graphs, comments on these notes accounted for 36% of the time T. Sea spent on the phone. In the end, T. Sea realized that an LTC collection would have to wait until a lot more people became comfortable with the idea.

This introduced a very big delay in preparing the wonderful new unified city schools photo. With the idea of an LTC collection set aside there was the need to revisit the vexing candid shots question. How and where would all these candid shots be added back in? As well, a lot of parents and schools didn't really want any changes unless the changes were to have everyone use the colours of just one school, as long as it was their school.

In the end, T. Sea pretty much ran out of time. The publication of a Year 2001 wonderful new unified city schools photo had to happen soon. He accepted that little Bobby or Susan might not look too great in last spring's fashions or that Robert's braces would be coming off in only two weeks and that, yes, it would be pretty easy to change the one candid shot of Ann but every time that happens someone else is affected. T. Sea recalled how John's photo was replaced by one with him wearing the new school tie (after all wouldn't that be so easy to do, pleaded John's mother) and immediately all the other schools wanted to change their ties or have John's photo removed as it clashed with their children's clothes.

So T. Sea had an idea, a perfectly wonderful and a perfectly useful idea. T. Sea would publish the Year 2001 wonderful new unified city schools photo but it would not be the Official Year 2001 wonderful new unified city schools photo for twelve months and during that time really essential touch-ups to the photos would be made. In fact, T. Sea could even change the colour scheme for each school when its colours were changed, which happened every two years.

So, T. Sea sighed and said: "It's better than it's ever been before, it looked at more than ever before and it will make more people more comfortable than ever before, but it will be awhile before I will take on such a large task again. Perhaps I will do some work on a school by school basis for awhile."

And then T. Sea went off to learn all about the Global Harmonization System which left him feeling very, very, very uncomfortable. But that's another story.

Proposed Regulations for Mobile Intermediate Bulk Containers

(Portable Re-fueling Tanks or Slip Tanks)

by Dave Westman

Transport Canada is proposing changes to the Transportation of Dangerous Goods (TDG) Regulations that would affect the type of portable container that can be used to transport fuel.

The TDG Regulations refer to the Canadian General Standards Board standard CAN/CGSB 43.146 "*Intermediate Bulk Containers for the Transportation of Dangerous Goods*" for the design and use of large portable containers for transporting flammable liquids. This standard is currently being revised to require the use of certain specification containers for mobile Intermediate Bulk Containers (IBCs) carrying gasoline or diesel fuel. The new requirements would be phased in over several years.

Gasoline

Here are the proposed requirements for gasoline in mobile IBCs:

- **Gasoline shipped before 2003**: a specification container is not required if the quantity of gasoline is 450 L or less, or if the container was built before July 1996.
- **Beginning 2003**: any quantity of gasoline over 1 L must be transported in a specification IBC unless exempt under the TDG Regulations.

Diesel Fuel

Here are the proposed requirements for diesel fuel in mobile IBCs:

- **Diesel shipped before 2003**: a specification container is not required.
- **Beginning 2003**: any quantity of diesel fuel over 450 L must be transported in a specification IBC unless exempt under the TDG Regulations.

Specification IBCs

- These are the requirements being proposed in the standard CAN/CGSB 43.146 for gasoline or diesel fuel transported in IBCs:

Authorized Specification	Maintenance
UN 31A; UN 31B[1] TC-57[2] ULC ORD142.13[3] (only until 2010 and the tank must have been built before 2003)	Visual inspection every 5 years at a Transport Canada registered facility

[1]Container certified to CAN/CGSB 43.146
[2] Container certified to CSA B620-87 or the U.S. - Department of Transportation (DOT-57)
[3] Container certified by Underwriters Laboratories of Canada

What to Do

Subject to approval by CGSB, the revised standard CAN/CGSB 43.146 is expected to be published early in 2001. Copies may be obtained at that time from CGSB at 1-800-665-2472. An announcement of the publication date of the revised standard and its adoption in the TDG Regulations will appear in the TDG Newsletter.

A final note: These are proposed national regulations. **Provincial transport regulations should be consulted regarding current provincial requirements for portable re-fueling tanks**.

For more information, please contact Dave Westman at (613) 990-1169 or e-mail: westmad@tc.gc.ca

This article is the second in a series of articles to be published regarding CSA Standard B620-98. The first, in the Fall 2000 newsletter, was entitled "Manufacture of Highway Pressure Tanks Under B620-98". That article described five steps for manufacturers to follow before constructing highway pressure tanks. The purpose of this article is to describe the new TC 400-series non-pressure tank specifications and to give some steps for manufacturers of these tanks to follow.

Manufacture of Non-Pressure TC400-Series Highway Tanks Under 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 expected to be published early in 2001 and to become mandatory one year after publication. After that date, certification of tanks to B620-87 specifications will no longer be permitted, and only facilities registered under B620-98 will be authorized to manufacture TC 400-series tanks

CAN/CSA B620-98 introduces a number of changes from the 1987 edition that is currently in force, and harmonizes closely with US DOT requirements. These changes include new TC 400-series tank specifications, more frequent periodic inspections and tests, revised quality control requirements for registered facilities, and design reviews for pressure and non-pressure highway tanks.

The new TC 400-series tank specifications in CAN/CSA B620-98 feature improvements in structural integrity, venting devices, and welding control. The non-pressure vessel highway tanks include tank specifications TC 406, TC 406 Crude, TC 407 with design pressures less than or equal to 35 psig, TC 412 with design pressures less than or equal to 15 psig, and all

TC 406, TC 407, and TC 412 tanks manufactured of fibre reinforced plastics (frp).

The improved structural integrity of these non-pressure highway tanks is achieved in part through adoption of selected portions of the ASME Code. Welders, for example, and the procedures they follow must be qualified in accordance with Section IX of the ASME Code, by a Transport Canada (TC) registered facility. Manufacturers must have and adhere to a quality control manual that is very similar to that required by the ASME Code, but they are not required to have ASME U-stamp authorization.

CAN/CSA B620-98 also introduces Design Reviews and the Manufacturer's Design Identification Number (MDIN). The MDIN is a number issued by a highway tank manufacturer to identify a particular tank design, and to indicate that it has been reviewed for compliance with B620-98. For non-pressure highway tanks, design reviews are performed by a Design Engineer registered with Transport Canada. When the design is approved, the manufacturer or final assembler of the tank marks the MDIN on the name plate and certificate of compliance of every tank manufactured to that design.

Five Steps for Manufacturers to Follow Before Constructing Non-Pressure TC 400-Series Highway Tanks Under B620-98

1 - B620-98 Facility Registration

A manufacturer must register with the TDG Directorate in accordance with B620-98. This could be a new registration, or an upgrade of a currently valid B620-87 registration. An upgrade from a B620-87 to a B620-98 registration often requires improvements to the facility's B620 quality control manual to include more complete procedures, documentation samples and revised inspection and test procedures and reports. Clause 9 and Appendix B of B620-98 describe the registration and quality control requirements. You should begin preparation of your B620-98 quality control manual now to avoid the registration rush in year 2002.

2 - Weld Procedure and Welder Qualification

A manufacturer must document and qualify all weld procedures to be used in the construction of the highway tank in accordance with Section IX of the ASME Code. Each welder must then be qualified to the procedures he will perform. Registered facilities may perform their own welder qualification tests, but records will be subject to an audit by Transport Canada.

3 - Highway Tank Design Package

A manufacturer must then prepare a complete design package for the highway tank design and its accessories. The design should include all drawings, calculations, and accessory specifications for the highway tank vehicle as prescribed in CSA B620, including vents, relief devices, bumpers, accident damage protection, piping, etc. The manufacturer must also assign a unique MDIN to the design package. Each document in the package must be marked with this MDIN, or listed on a separate record that is marked with the MDIN.

4 - Design Review by a Registered Design Engineer

The design package should then be forwarded to a Design Engineer registered with Transport Canada. The calculations and drawings relating to the design must be reviewed and approved by the Design Engineer, who will mark them with his or her name, signature, and TC registration number. The Design Engineer may be a member of the manufacturer's staff, or retained specifically for the design preparation, review and approval. The requirements for Design Engineer registration can be found in Clause 9 of B620-98. The TDG Directorate may be contacted at (613) 998-5270 for a list of registered Design Engineers.

5 - Application of the MDIN

Once the Design Engineer has approved the design as complying with B620-98, the manufacturer or final assembler of the tank will mark the MDIN for the design on the name plate and certificate of compliance of every tank manufactured to that design.

A copy of the B620-98 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.

A Day in the Life of a TC Inspector

by Jean-Stéfane Bergeron

Danger? Poison? Corro-sive? Toxic?

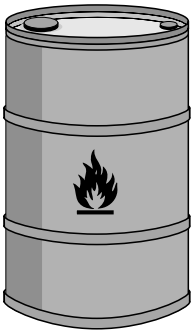
As part of our every day lives, we have come to rely on a variety of chemicals. We use gasoline, fuel, propane to power our cars, and to heat our homes. Most of us use municipal water treated with chlorine. Whether it is the paint on your filing cabinet, the all-purpose bathroom cleaner at home, the safety flares aboard your boat, it is likely that a shipment of dangerous goods was required for its manufacture. Every year, there are over 27 million shipments of dangerous goods in Canada.

But when was the last time you noticed a shipment of dangerous goods? Every day, while we drive, take the train or fly, we share the Canadian transportation system with thousands of shipments of dangerous goods. Yet few of us give them a second thought.

However, for a small group of Transport Canada employees, the safe transportation of dangerous goods is an every day concern. Nearly forty Transportation of Dangerous Goods Inspectors working for the Surface group located in a dozen offices across the country, work to ensure the safe transportation of dangerous goods by road or rail. In addition, there are Marine and Air Dangerous Goods Inspectors for Transport Canada. There are also other dangerous goods inspectors in other federal government departments and in all provincial govenment departments.

So, what do these inspectors do? Every day, TC inspectors visit persons and facilities that: prepare dangerous goods for transport, fill containers to transport dangerous goods, transport and receive dangerous goods.

One inspector's day may include a morning visit to a facility that prepares, fills and ships cylinders of propane gas that many of us use for our barbecues. Our inspector reviews the training received by employees at the facility, the documents prepared to accompany each shipment, and the use of appropriate cylinders.



The morning would be followed by an afternoon at a petroleum distribution terminal. Our inspector would examine tank trucks entering the facility before loading, to ensure they meet the requirements prescribed by the regulations. Inspecting a tank truck would involve verifying that it is not leaking, does not show signs of structural damage, and that each safety device-such as remote shut off mechanism or heat activated safety device-is present and functions as required.

On another day, an inspector might find herself in a rail yard inspecting dozens of rail cars transporting a variety of products travelling across North America. There, she might find rail cars from Texas, Eastern Canada, or California transporting quite a variety of products. The day would certainly include the inspection of each car's securement, ensuring that it will not leak on its long journey. The inspection of each structural component of the rail car would be essential, to ensure it does not show signs of damage that might weaken its integrity.

A rail tank car of Butanol being cooled by a fire department during an emergency response.

There could also be an interesting visit to alcohol distillers that ship tens of thousands of litres of alcohol in tank trucks, rail cars and intermodal containers. Another day could be spent inspecting loads of hazard-

ous waste ensuring they were classified properly, prepared for transport in containers that would be compatible with the product, and documented in accordance with the three or four different sets of regulatory requirements.

There are also stressful days, which can continue over a week, where our inspectors attend a road accident or train derailment involving dangerous goods. They would oversee the response of the emergency team, the industry response, provide technical assistance to the various responders, and examine the performance of the containers.

TC employee Bill Suddard (right) with a member of the U.S. Coast Guard inspecting a sea container of explosives (fireworks).

They would also think about answers to: Could a release from a container have been avoided and should we review the design requirements to prevent such releases in the future? Were all the regulatory requirements met? Was the required emergency response information available to police officers, fire fighters, emergency medical services arriving at the scene?

TC employee Bill Suddard inspecting a sea container of explosives (fireworks).

Last, but certainly not least, there are those important days when our inspectors educate themselves by attending classes, conferences, seminars, training exercises and simulations offered by our own training unit, other training organizations, other government agencies, or industry groups. It also allows each inspector to present and offer peer training to his co-workers to continually develop our knowledge base and our ability to provide guidance and leadership to our clients and our partners.

Next time you are following a truck displaying placards indicating a load of dangerous goods, or waiting at a rail crossing counting rail cars with your kids, don't forget about the work of TC's transportation of dangerous goods inspectors in ensuring safety.

We are proud of the work we do for the safety of all Canadians and our environment.

If you would like to find out more about TC's transportation of dangerous goods program, please visit our Web site at http://**www.tc.gc.ca/tdg/en/menu.htm**.

ERRATUM:

NORTH AMERICAN INSPECTORS' CHAMPIONSHIP

In the last issue of the newsletter, it was stated that representatives from four Canadian provinces participated in the event. In fact, there were five provinces participating. The province of Saskatchewan has sent a representative to the competition every year since the event began in 1993 and sent a representative to this year's event. We apologize for this oversight.

CROP PROTECTION INSTITUTE
INSTITUT POUR LA PROTECTION DES CULTURES

Obsolete Pesticide Collection Program: A Good Deed Well Done

by Cam Davreux

Enthusiastic participation and impressive numbers underscored the success of a stewardship initiative operated this fall by the Crop Protection Institute of Canada.

The Obsolete Pesticides Collection & Disposal program was devised as part of a cross-Canada plan to safely clear out "outdated, unusable and/or no longer registered" agricultural crop protection products from farms and warehouses, with the combined goals of care for the environment and human health.

Offered in Saskatchewan (October 24-26, 2000) and Ontario (November 1-3, 2000), the program attracted keen participation from growers as well as commercial landscape firms who delivered unexpected volumes of obsolete pesticides to the collection sites.

"More than 110 metric tons were collected in Ontario - an incredible amount," said Cam Davreux, vice-president of the Crop Protection Institute of Canada (CPIC). "In Saskatchewan, about 60 metric tons were collected, so it was obviously a good program and well-communicated. We were very pleased to get that amount of product off the farm and out of storage. It certainly is a positive indication of the need for this rural environmental safety program."

The program is just one of many CPIC *stewardshipFirst* initiatives encompassing development to disposal, from manufacturing, warehousing and marketing through training and certification as well as integrated pest management and grower safety to container management and obsolete product collection and disposal. CPIC's industry members work with government and dedicated partners to plan and deliver the *stewardshipFirst* programs; Saskatchewan's collection event received 50% sponsorship from Canadian Adaptation and Rural Development in Saskatchewan (CARDS) through Agriculture and Agri-Food Canada and was supported by Saskatchewan Agriculture and Food and the Canadian Association of Agricultural Retailers.

A western collection site.

In Ontario, the Obsolete Pesticides Collection & Disposal program received 50% funding from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) through the "Healthy Futures for Ontario Agriculture" program. The initiative also involved participation by the Ontario Ministry of the Environment (MOE), AGCare and a network of certified agricultural retailers.

"Ministry staff will certainly participate again next year," said Doug Morrow, Supervisor of the Air, Pesticides and Environmental Planning Unit with MOE, southwestern region. "It was just excellent. We appreciate the funding from CPIC and OMAFRA, but this success was really based on all the volunteers who pitched in and did extra duty - all of the vendors at the [collection] sites provided staff to work in the program, plus we had various CPIC representatives from various companies also participating over the three days. That's certainly part of the success story of the whole program."

"It was very successful," said Jim Fox, Location Manager, Agricultural Division at Maple Farm Supply Ltd. in Bolton, Ontario. "We brought in about three times the amount of product that we expected - a lot of it very old products that were no longer registered, plus products that were still registered but no longer needed. The best thing we accomplished was that we removed a lot of old pesticides from the environment, out of improper storage and off to a place where they could be properly disposed of.

"I think the program is an excellent idea," Fox added. "I'd like to see it run every two to five years."

Partnership with Transport Canada Pivotal to Program Success

Mr. George Gamble, with Environmental and Regulatory Services, United Agri-Products in Dorchester, stated that cooperation from Transport Canada was pivotal to the successful execution of the program. "Because of the unknown descriptions of the products we might have received - some of which could have been classified as dangerous goods - the CPIC Transportation Committee applied for and obtained a permit to use two shipping names: Pesticides, Solid N.O.S. [Not Otherwise Specified] and Pesticides, Liquid N.O.S. That made the process a lot easier and a lot less time-consuming."

"Our normal way of business is to follow a method of general applicability; in this case we would not want to do something of general applicability for unknown chemicals," explained Dr. John Read, Director General, Transport Dangerous Goods Directorate, Transport Canada. "Instead, we used an ability within our Act to allow for an equivalent level of safety for a very specific application. We said: "We can achieve our level of safety a different way. We can make it work."

Dr. Read commented on CPIC's conscientious attitude toward taking full responsibility for their products, from manufacture and sale to disposal. "They [committed] money, effort, organization and they saw it through. It's very good; my hat's off to them."

The process of collection and disposal was systematic and thoroughly monitored. "The industry-certified sites were manned by a representative from the site and a CPIC industry official," said George Gamble. "We recorded the pesticides as they were delivered. Some product came in that was not classified as a pesticide and was turned away. Pesticides that were accepted were separated into solids and liquids and put into tri-wall or Wrangler packs, a cubic yard in size, then tied and secured for pick-up in proper containment. Products that were leaking or susceptible to leakage were separated into solids and liquids and put into drums containing an absorbent material. All of the sites were cleared out within a week of the last day of collection

A grower delivering obsolete pesticides to the collection site.

by the licensed waste haul carrier Philip Services Ltd."

Plans are to follow the same procedure during 2001, when the Obsolete Pesticide Return program will be operated in eastern and northern Ontario and northern Saskatchewan. CPIC has delivered the collection and disposal program in British Columbia and the Maritimes and is currently in discussions to expand the initiative into Alberta, Manitoba and Quebec.

"We'd like to say 'thank you' to all the growers, commercial firms and retailers who participated," said Mr. Davreux. "It truly goes to show what a lot of people at all levels - growers, retailers, industry and government - can accomplish by working together."

Dr. Lorne Hepworth, CPIC president, summed up the experience as "embracing the very essence of the word 'stewardship'. One of the most gratifying things about this program is that so many stakeholders came together with a common purpose and a common goal. They went far beyond just 'doing the job'. Everyone pitched in and made it work - because we do want to be good stewards of air, water and land.

"There are many ways you could measure the success of this program. It's a win for the environment, because we're eliminating a potential hazard. It's a win for the farm and the farm family for the same reason: reducing the risk of having unwanted, obsolete products on the premises. It's a win for the municipalities, because now they have less risk of those products finding their way into landfill sites. When you put all that together, it's obviously a win-win-win on every count, for public safety and the environment, thanks to the great collective effort made by everyone involved."

Transportation of Dangerous Goods Training Requirements for Shipment of Dangerous Goods by Air

by Roger Lessard

In Canada, legislation governing the training of those involved in the transportation of dangerous goods by air is contained in the *Transportation of Dangerous Goods Act, 1992* (TDG Act, 1992) and the *Transportation of Dangerous Goods Regulations* (TDGR), and by reference the *International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air* (ICAO TIs).

Who Must be Trained

The seven categories of personnel requiring training in the transportation of dangerous goods by air are:

1. Operator's Cargo Acceptance Staff
2. Persons engaged in the ground handling, storage and loading of dangerous goods
3. Passenger Handling Staff and Security Staff who deal with the screening of passengers and their baggage
4. Flight Crew Members
5. Crew Members (Other than Flight Crew)
6. Shippers and Shippers' Agents
7. Specialty and Seasonal Operators

When Must They be Trained

Part IX of the TDGR, specifies that no person shall handle, offer for transport or transport dangerous goods unless this person is trained or is performing the duties under the direct supervision of a trained person. The employer must issue a training certificate to a trained person when they are satisfied that the person has received adequate training.

Duration of Training Certificate

When shipping dangerous goods by air, the training certificate is valid for 12 months after the date of issuance. Subsequent training must start one month prior to expiration of the certificate and be completed no later than one month after expiration of the training certificate. Permits for Equivalent Level of Safety have been issued to specific organizations to extend the validity of the certificate up to 24 months. Contact the Regional Civil Aviation Dangerous Goods Office for further details.

Transport Canada Approval of Air Operator Transportation of Dangerous Goods Training Programs

The transportation of dangerous goods training programs of Air Operators must be submitted to the appropriate Regional Civil Aviation Dangerous Goods Office of Transport Canada for review and approval. Such submissions will be evaluated in accordance with Transport Canada's, "Guidelines and References for the Development and Standardization of Dangerous Goods Training Programs for Air Transport in Canada", TP 12208 which can be obtained by contacting one of our Regional Offices.

Training Requirements for Other Persons

Transport Canada does not review and approve Transportation of Dangerous Goods training programs for air shipment given to Organizations other than Air Operators. However, the training provided to other persons must cover specific requirements according to ICAO requirements for each category, as shown in the following table.

In addition to the table, section 9.7 of the TDG Regulations must be complied with.

Please consult your appropriate Regional Office, if you wish to receive specific information on your category.

Please remember, training should relate to the assigned duties of the employee.

Training Certificate Inspection

A trained person must provide a training certificate to a Transport Canada Dangerous Goods Inspector upon request.

Civil Aviation Dangerous Goods Standards Regional Offices

Headquarter	(613) 990-1130
Atlantic Region	(506) 851-7247
Quebec Region	(514) 633-2838
Ontario Region	(416) 952-0000
Prairie and Northern Region	(780) 495-5278
Pacific Region	(604) 666-5655
Airline Inspection	(613) 990-1068

ICAO Requirements	Operator's Cargo Acceptance Staff or Acting on Behalf	Personnel Engaged in the Ground Handling Storage and Loading of Dangerous Goods	Passenger Handling Staff and Security Staff Who Deal With the Screening of Passengers and their Baggage	Flight Crew Members	Crew Members (Other than Flight Crew)	Shippers and Shippers' Agents
General Philosophy	X	X	X	X	X	X
Limitations	X		X	X	X	X
General require-ments for Shippers	X					X
Classification	X					X
List of Dangerous Goods	X			X		X
General Packing Requirements	X					X
Packing Instruction	X					X
Labelling and Markings	X	X	X	X	X	X
Shipper's Responsibilities	X					X
Documentation	X					X
Acceptance Procedures	X					
Storage and Loading Procedures	X	X		X		
Pilot's Notification	X	X		X		
Provisions for Passengers and Crew		X	X	X	X	
Emergency Procedures	X	X	X	X	X	
Compatibility	X	X		X		X
Operator's Responsibility	X					

Confined Spaces

by Walter Chivers

Editor's note: This article was originally written by a TDG Inspector for other TDG Inspectors. However, due to its clarity and possible application to others, it is reproduced here.

Anyone who has had experience with ships, electrical vaults, mines and tanks knows first hand the meaning of the term "confined space". However, there are some of us who have experienced "confined space" without realizing it.

The term "confined space" as defined by Part XI of the Canada Occupational Safety and Health Regulations is;

an enclosed or partially enclosed space that:

a) is not designed or intended for human occupancy except for the purpose of performing work;
b) has restricted means of access and egress; and
c) may become hazardous to any person entering it owing to
    i. its design, construction, location or atmosphere;
    ii. the materials or substances in it; or
    iii. any other conditions relating to it.

All Provinces and Territories have copied this Federal Act into their respective provincial legislation and most have added requirements for an increased level of safety when workers are required to enter these areas.

A common perception of a confined space is that it is a difficult area to get into and out of. This is true most often, however, there are other factors which are equally or more important to consider in terms of safety. These factors include environmental conditions such as air quality, (oxygen-deficient, flammable or toxic atmospheres) contents of the space (liquid or solid material) and the possible shifting of the contents.

Confined spaces may be common areas such as underground vaults, rail cars, road trailers, portable tanks, manholes, sewers, boilers, fuel tanks, silos, grain elevators, areas aboard ships and many others. As these areas become known to us, safety precautions can be taken to ensure the safety of anyone entering these premises, anyone located in the immediate area and anyone who may be affected by the safety measures we have undertaken. These safety measures could include shutting-off electricity, water, or closing valves that could cause problems in other parts of a plant, workplace or community.

There are many aspects to be considered and procedures to be followed prior to entering a confined space. The procedures should include recording the name of the person entering the confined space, the date and time of entry, the anticipated time of exit, the location, who may be affected by the entry and in what ways. Communication with anyone in the confined space is very important.

Once potential confined spaces have been identified, the proper procedures can be implemented to include identification of the risks, the entry procedures and the proper training. Areas that are clearly recognized as confined spaces allow for relatively easy identification of the risks involved and establishment of proper procedures. However, there are other areas where the risks are not as easily recognizable, and all too often, they are the areas where our work is performed regularly. Areas such as hopper cars, loaded rail box cars, trailers, sea containers, walkways, grain elevators silos, ventilation and exhaust housings may not often be referred to as "confined spaces" but they may pose significant risks depending on the conditions at the time of entry. Conditions affecting safety include the type of load, the amount of space available for inspection of the contents and whether the unit had been previously fumigated and the vents taped closed, the presence of flammable or toxic gases, an oxygen-deficient atmosphere or an insecure load. These potential risks may not be as apparent or as easily recognizable.

Statistics provided by the Labour Canada Program of Human Resources Development Canada indicate that there are four main hazards related to confined spaces which are responsible for most of the injuries that have occurred over the past 10 years:

- oxygen deficiency and oxygen enrichment;
- fire and/or explosion;
- toxicity;
- drowning in liquids and/or entrapment in free flowing solids.

As Inspectors of the transportation of dangerous goods, our daily work places us in areas that may fall within the definition of "confined space". These areas may be very similar to those in which routine inspections are conducted. Rail cars, trailers, sea containers and grain elevators may be a "confined space" depending on the conditions at the time and may present hazards.

What do we need to protect ourselves from injury and possible harm? Being aware of what hazards a person is exposed to in confined spaces and knowing his/her working environment. A basic level 1 course entitled "Confined Space Entry Course" will provide the necessary knowledge to be able to recognize confined spaces and take the necessary defensive measures to ensure personal protection.

Be Safe

Be Aware of Your Environment

Be Vigilant of the Effects of your Actions

The 3rd North American Chemical Transportation and Distribution Conference

by Renée Major

The Canadian Chemical Producers' Association hosted the 3rd North American Chemical Transportation and Distribution Conference which was held from September 26 - 28, 2000 at the Château Laurier in Ottawa. The first conference was held in 1996 in San Antonio, Texas and this event has been held every second year since then. The last conference was held in 1998 in Puerto Vallarta, Mexico.

The theme was "Three Nations: Common Goals" and looked at how the United States, Mexico, and Canada are preparing and dealing with their complex and ever changing roles in the chemical industry in the context of Responsible Care® and the Transportation Code of Practice.

Over 175 delegates from the three countries participated in the event and joined speakers from associations, industries and governments in sharing their views on the changing nature of the chemical distribution and transportation industry across North America. Some of the guest speakers included: Linda Morgan, U.S. Government, Chairman of the Surface Transportation Board; Frits Wybenga, U.S. Department of Transport; Dr. Sergio Benassai, United Nations; Dr. John Read, Transport Canada; Michel Cloutier, Transport Canada; Fred Webber and Kevin Swift, both from the American Chemistry Council; and Terry Park, Canadian Resource Shippers' Corporation.

Mr. Louis Laferrière, CCPA's Senior Manager-Logistics welcomed the participants and invited guest speakers. The agenda included plenary sessions and workshops. The topics provided a platform for discussion as well as a forum for sharing points of view from all over North America. Topics such as Rail Mergers, Rail Industry and the Transportation of Chemicals, the Responsible Care Program and its Partners, Supply Chain Relationships, the North American Regulatory Update and International Regulatory Issues were all discussed.

A series of eight workshops were also offered to the participants. Some of the topics discussed included TransCAER and Emergency Planning, Preparedness and Response; the current issues affecting the trucking industry; the impact of E-Commerce on the chemical industry and the management of Responsible Care®. The presentations gave insight into the amount of work being done throughout North America to improve the chemical industry.

The conference ended with an optimistic outlook for the future of this industry as it continues to improve its competitiveness and global harmonization. The participants were pleased with the three-day event and are looking forward to the next conference.

In Search of Better Inspection Tools - Tank Car Insulation and Thermal Protection System Verification

by Gerry McPhee

Effective standards for means of containment are a key element in ensuring the engineering, performance and manufacturing integrity of dangerous goods tanks used in transportation. Equally important is ensuring that effective compliance and enforcement tools are readily available and functional.

On January 22, 1979, regulations were implemented to mandate the use of thermal protection on specific railway tank cars in dangerous goods service. Thermal protection has been proven to delay or eliminate failure of the tank and provide emergency response personnel with more time to properly assess accidents and take appropriate action in situations involving fire. Thermal protection was also a means to significantly reduce the possibility of a Boiling Liquid Expanding Vapour Explosion (BLEVE).

These regulations now form part of the standard 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 requires that thermal protection and/or insulation systems adhere to a performance and/or material standard when transporting specific temperature sensitive dangerous goods and Class 2 compressed gases in accordance with section 73.31(b)(4).

Most insulated and thermally protected tank cars transported today are equipped with a 3mm outer steel jacket designed to protect the insulation and thermal protection from the effects of weather. The jacket has also been shown to provide a degree of protection to the tank from mechanical damage of impacts, sideswipes and derailment forces. Unfortunately, from an inspector's point of view, this steel outer cover also masks the condition of the insulation and thermal protection from visual inspection.

Compliance with this standard is currently monitored by visually observing tank markings and the physical condition of tank jackets. If the integrity of the thermal protection system or insulation of a tank car is suspect, inspectors can further examine for tank jacket seam separation, noting signs of protruding insulation, jacket shift, evidence of product loss or drainage through manway area and other indicators which may provide additional evidence of lost, damaged or contaminated insulation or thermal protection. This level of inspection, however, is rarely effective in finding defects and is usually inconclusive.

Regulations require tank car builders to install only approved or successfully tested thermal protection systems. Over the life of the tank car however, in-train forces, weather, product spillage, jacket shift, physical damage and other circumstances have been known to cause this thermal protection and insulation to detach, sag, compress, or become product contaminated. Inspectors are currently unable to verify fully the condition of thermal protection and insulation systems and rely on owners to correct non-compliant tanks. Tank owner verification involves such techniques as drilling holes in the jacket or using a fiberscope.

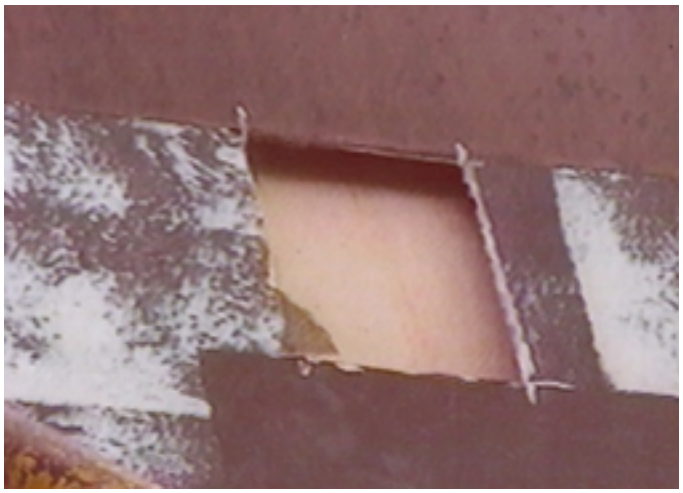
Between January and March 1993, a Tank Car Thermal Protection and Jacketing Survey was conducted by Transport Canada. The results identified some problem areas with jackets and thermal protection. Subsequent to the results of the survey, a project to verify thermal protection and insulation was identified as high priority and work began on defining the needs of this research.

A "Request for Proposals" was issued and a contract for "Field Detection of Tank Car Insulation Deficiencies" was awarded to A.M. Birk Engineering to determine the feasibility of using some form of non-destructive technique or procedure to verify the condition of insulation and/or thermal protection. Following an extensive literature search and technology evaluation, thermography was chosen as the most promising method for both tank car and tank truck applications. Thermography is based on the detection of non-visible thermal radiation. The thermographic imager camera was chosen as a potential detection device to identify and isolate non-visible sources of thermal gradients between tank contents and ambient air. Laboratory testing was followed by field exercises at shippers' facilities and in railway yards using resources

from the TDG Office in the Quebec Region.

On a field validation exercise, the test tank car, when viewed using the thermographic camera, appeared to be missing a certain amount of insulation. The locations of the suspect defects were recorded and the tank was brought to a repair shop. Those suspect locations on the tank were cut out (Figure 1) revealing voids in thermal protection and validating those original camera images.

Figure 1

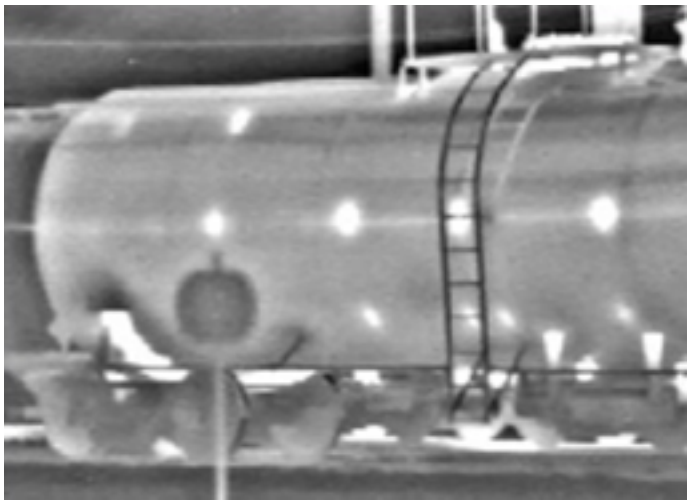


Missing insulation.

This one validation test demonstrated that the technique was feasible. In order to collect more data on the feasibility of the technique, additional field work was subsequently conducted .

The Figure 2 infrared image illustrates a jacketed tank car in good condition. The white (spacer) spots shown are the jacket fasteners welded to the tank.

Figure 2



Spacer spots.

In March 1998, a final report[1] was issued. The next step was to establish damage assessment criteria in order to accurately gauge the effect of reduced capacity to insulate or thermally protect a given tank car or tank truck and provide inspectors with guidelines to follow when evaluating the infrared images.

A further (Phase 2) study entitled "Damage Assessment Criteria For Tank Insulation Defects" was awarded in the summer of 1998 to the same contractor to continue research in this area. This portion of the work involved computer simulations. The contractor, using some criteria from a previously established thermal analysis model AFFTAC (Analysis of Fire Effects on Tank Cars) and his own model TMID (Tank Model with Insulation Defects) predicted the probable consequences of loss of thermal protection and insulation to a tank transporting dangerous goods under fire conditions. The final report[2] recommended that additional field data be gathered and validation undertaken.

In January 2000, TDG inspectors in Transport Canada's Ontario Region agreed to participate in the collection of the additional field data. In October 2000, at the conclusion of these field inspections, tank car owners and repair facility representatives were consulted with respect to conducting additional validation exercises at their facilities. On that occasion, the preliminary defect criteria assessment procedure was distributed. Transport Canada proposed that these validation exercises be divided among participant companies with the objective of imaging at least 20 tank cars which have already been selected by owners to undergo requalification testing in accordance with the section 80.509 of the CAN/CGSB 43.147-97 standard.

At the conclusion of these validation exercises, and following further development of the defect assessment criteria, Transport Canada expects to be in a better position to begin inspecting insulation and thermal protection systems using the thermographic imager.

[1] ***"Thermographic Inspection of Tank-Car Thermal Insulation"*** *for Transport Canada, Transportation Development Centre by A.M. Birk Engineering, Kingston, Ontario, March 1998 (TP 13203E)*

[2] ***"Tank-Car Insulation Defect Assessment Criteria: Thermal Analysis of Defects"*** *for Transport Canada, Transportation Development Centre by A.M. Birk Engineering, Kingston, Ontario, October 1999 (TP 13518E)*

ACCIDENT SUMMARY REPORT

As many of you are aware, the TDG Directorate allocates resources to pursue the collection of outstanding dangerous occurrence reports. Initial telephone calls precede request letters sent out to companies suspected of having control, charge or management of dangerous goods consignments at the times of occurrences. Several letters were redirected to the responsible individuals through the assistance of other parties involved in the transportation of the consignment. The patience and cooperation exhibited were appreciated in assisting the Directorate to obtain many of the outstanding dangerous occurrence reports.

On a trial basis for the first time, the Ontario Regional Office conducted follow-up investigations for 1999 accidents when the request letters were unsuccessful in producing a dangerous occurrence report. As a result, the occurrence reporting will improve significantly (on-going follow-up investigations). It is the intention of the Directorate to have other regional offices adopt this procedure across the country in an attempt to bring dangerous occurrence reporting to new levels for the year 2000 incidents.

As of December 2000, 260 Dangerous Occurrence Reports (DORs) have been submitted this year. Almost 87% of these reports were classified as reportable under the reporting threshold described in section 9.14 of the Transportation of Dangerous Goods Regulations. The remaining 13% represents DORs which were filed as voluntary accident reports falling outside the accident reporting threshold requirements. These voluntary reports provided valuable information.

An additional 190 reportable accidents between January and September 2000 were identified from inspector reports, newspaper clippings, etc . The final annual figures will also include accidents identified from the above sources for the remaining months October to December 2000 and DOR's received for accidents until January 31, 2001 allowing for the 30 days reporting grace period. These efforts must be pursued to more realistically reflect transport of dangerous goods accident levels across the country and inevitably help estimate the actual number of reportable dangerous goods accidents. Combining the DOR's received from these various sources and improved occurrence reporting compliance rates across the country, estimates suggest there will likely be in excess of 500 occurrences for the year 2000 surpassing the 478 occurrences recorded during 1999.

For your information, below is a very short selection of these accidents for the year 2000. Every effort was made to vary this sample of accidents, as much as possible, by choosing different provinces/territories, classes of dangerous goods, modes of transport and means of containment as well as taking into account the accident severity.

The severity level is based on the following 10 questions:

1. Was there a compressed gas or explosive involved
2. Was there a fire or explosion at the scene
3. Was there a dangerous goods release
4. Was there a death, serious or multiple injury
5. Was there an evacuation including a road closure
6. Was the accident reported in the press
7. Were TC personnel at the accident scene
8. Was site cleanup required
9. Was property/equipment damage greater than $65000
10. Was there mechanical failure of the vehicle

A point is assigned for each positive response to each of these questions. The sum of the points for the accidents is shown in the last column of the table to represent the accident severity level. For more information, please contact Jonathan Rose at (613) 990-1142, e-mail:rosej@tc.gc.ca

Date	Location	Substance	Incident Details	Code
01/15/ 2000	Oakville, Ontario	Hydrogen, compressed	During unloading operations from a tractor tank trailer containing compressed hydrogen, into a stationary tank at a plant, there was an overflow from a relief valve of approximately one hundred litres of product which caught fire. Emergency response personnel were on site and evacuated one hundred people from the plant and nearby businesses while they kept the fire under control until the excess product was released and burned off.	5
02/12/ 2000	Hickson, British Columbia	Hydrochloric Acid	During transport, a tractor tank trailer containing hydrochloric acid caught fire near the rear wheels of the vehicle. There was no release of product and no injuries. Emergency response personnel were on site to extinguish the fire, check for leaks and damage and to investigate the cause of the fire.	2

Date	Location	Substance	Incident Details	Code
02/17/ 2000	MacKay Lake, Northwest Territories	Ammonium Nitrate	During transport on a winter road, in a remote northern area, a pup hopper trailer of a tractor trailer and pup containing ammonium nitrate was punctured by a bar which broke off the lead trailer releasing twelve thousand kilograms of product along the road. There were no injuries. The driver was not aware of the leak until he reached the destination. Emergency response personnel travelled the route by helicopter but were unable to find any product on the road.	2
02/20/ 2000	Halifax, Nova Scotia	Poisonous Liquids, corrosive	During transport on a ship, a container containing boxes of aerosols, a drum of aromatic liquid extract and drums of creosol solution was discovered to have leaked approximately two hundred and five litres of creosol solution inside the container. There were no injuries. Emergency response personnel were on site when the ship docked to isolate and unload the container, locate the leaking drum, decontaminate the container and reload the remaining drums for shipment to destination.	3
03/08/ 20005	Mount Pearl, Newfoundland	Fuel Oil	During unloading operations from a tractor tank trailer containing fuel oil, into a bulk storage tank, five hundred litres of product was released from the hose transfer system. There were no injuries. Company emergency response personnel on site contained and cleaned up the spill.	2
03/21/ 2000	Hartland, New Brunswick	Sodium Hydroxide	During unloading operations from a tractor trailer, a carton containing sodium hydroxide solution was punctured and released twenty three litres of product inside the trailer. There were no injuries. Company personnel contained, neutralized, cleaned up the spill and removed the damaged carton from the shipment for proper disposal.	2
05/03/ 2000	Anjou, Quebec	Gasoline	During transport, a tractor tank trailer containing gasoline ran off the road, overturned and exploded, spilling and burning fifty two thousand litres of product; ten thousand litres of which entered the sewers. The driver was fatally injured. Emergency response personnel were on site and closed the highway and nearby roads and evacuated five hundred people from nearby office buildings while they extinguished the fire, contained and cleaned up the spilled product, flushed the sewer system and investigated the cause of the accident.	8
05/16/ 2000	Consort, Alberta	Hypochlorite solutions	During unloading operations from a tank truck containing hypochlorite solution down a well-head, two hundred litres of product was released from two corroded fittings at the bottom of the tank. One employee inhaled the fumes and was taken to hospital for observation and later released. Company emergency response personnel on site contained, neutralized and cleaned up the spill.	4
05/16/ 2000	Virden, Manitoba	Anhydrous Ammonia	During transport, a tractor nurse tank trailer with two bulk nurse tanks containing anhydrous ammonia ran off the road and overturned in a ditch. There was no release of product. The driver was taken to hospital for examination and later released. Emergency response personnel were on site and isolated the area while they checked for leaks and damage and uprighted the nurse tank trailer.	3
08/02/ 2000	High Prairie, Alberta	Fuel Oil	During transport, six rail tank cars containing fuel oil derailed. Two of these tank cars overturned and one of them released sixty one thousand litres of product from a sheared off bottom outlet valve. There were no injuries. One nearby residence was evacuated for a short time just after the derailment. Emergency response personnel were on site to contain and clean up the spill, upright and rerail the tank cars, transfer the remaining product from the leaking tank car and the other damaged tank car into tank trailers and investigate the cause of the derailment.	3
08/09/ 2000	Tompkins, Saskatchewan	Aerosols	During unloading operations from the cargo hold of an airplane, a tool box containing flammable aerosols was being placed on a baggage cart when it exploded and completely destroyed the box. There were no injuries. Airport police on site secured the area to investigate the cause of the incident.	2
08/11/ 2000	Montreal, Quebec	Corrosive solids, poisonous	During handling operations at a processing plant, a stainless steel bin containing corrosive toxic solids being loaded by winch onto a flatbed truck began leaking product from the bin door. There were no injuries. Emergency response personnel cleaned up the release from the surrounding asphalt.	2

LETTER TO THE EDITOR

The Fall 2000 issue of the Dangerous Goods Newsletter contains interesting and informative articles. However, I would urge you to advise your readers of a dangerously erroneous impression conveyed by the article on refrigerants. It states (p. 12) that "Refrigerant gases, whether they be CFCs, HCFCs or HFCs ... are non-toxic but the main danger is that they displace oxygen.", and "These gases are non toxic ...". In fact, all refrigerants, both old and new, are significantly more toxic than "simple"/inert asphyxiants, although this is how they were regarded when they were introduced in the 1940s. Whereas significant oxygen depletion would only begin at refrigerant vapour concentrations around 100,000 ppm, it is necessary to limit worker refrigerant exposures to less than 10 - 1000 ppm, depending on the specific materials in question, due to their toxic properties.

The CFCs were relatively non-toxic and occupational exposure limits (OELs, for example, the TLV® for CFC-12 or dichlorodifluoromethane) were typically set (and remain) at 1000 ppm. Nevertheless, common to many halocarbons is an acute toxic potential by virtue of their ability to "sensitize" the heart to endogenous adrenaline, leading to cardiac arrhythmia and death. This includes materials such as FC-113, which also has a TLV® of 1000 ppm, yet which has caused a number of workplace deaths by this mechanism (at airborne concentrations where oxygen depletion was not an issue). With CFC-11 (trichlorodifluoromethane - also with a TLV® of 1000 ppm - in this case set as a "ceiling"), for example, the cardiac sensitization effect occurs at an airborne concentration around 5000 ppm.

However, in looking at the newer (more "friendly" environmentally, but more hazardous to humans) refrigerants, a broader spectrum of toxicity emerges. Dichlorofluoromethane (HCFC-21) has a TLV® of only 10 ppm, because of chronic liver toxicity. The refrigerant HCFC-123 also has a relatively low OEL, a WEEL of 50 ppm. Such factors have led to changes in the codes governing refrigeration equipment, prescribing the installation of alarms, etc. This type of "danger", associated with these "goods", should be communicated to your readers. Of course, these issues also relate to compliance with occupational health statutory requirements.

Ugis Bickis MEng,PhD,CIH,ROH
Environmental Hygienist / Toxicologist
Phoenix OHC, Inc.
Kingston, Ontario

THE AUTHOR'S REPLY:

Short Form: We are each correct in our respective areas.

Long Form:

In reply to your comments, I must agree that the data you provided is accurate. However, my article was written for emergency responders involved in responding to leaks of refrigeration equipment. The article should not be taken as workplace information for occupational exposure. Most of the data for TLV® or PEL indicate ceilings and certain toxicity. However, this information is for occupational exposure. TLV® is defined as: a term used to express the airborne concentration to which nearly all workers can be exposed day after day. This is often defined for an 8-hour workday or a 40-hour week.

You gave some data on some refrigerants. For HCFC-123, you indicate a correct exposure limit of 50 ppm for continuous exposure. In contrast, thinking of emergency response exposure, the LC_{50} for HCFC-123 is 32,000 ppm. This is for a continuous exposure of 4 hours at that concentration. This equals a 3.2% concentration in air. This normally gives an oxygen deficient atmosphere. The cardiac sensitization for dogs is 20,900 ppm. Again, 2.1% concentration in air.

For HCFC-21, it is quite true that this refrigerant is toxic. However, it has not been used commercially in Canada as such since the early 1980s when it was used in fighter jets. It was eventually phased out due to concern for ozone depletion. The importation of the product into Canada is in the order of a few kilograms per year and it is used mainly in research laboratories.

You also mention CFC-113. This chlorofluorocarbon is hardly used as a refrigerant because of its boiling point of 47°C. It may, however, be found in a research laboratory. The sensitivity of the heart for adrenaline does occur at 5,000 ppm. This data has been assessed for dogs, which can be correlated for humans. The LC_{50} is 110,000 ppm for rats and 95,000 ppm for mice. This is an 11% and 9.5% concentration respectively.

It is clear that there is a difference between emergency response and occupational health requirements. Also, as indicated in the article, guidelines are not to be taken as absolute. Emergency responders should always obtain advice from qualified personnel with accurate data, whether it be CANUTEC, or industry or other certified personnel. I apologize if the article's intent of addressing potential impacts on emergency responders was not clear.

Editor's note: This press release was issued by Canada Post in December 2000 and is reproduced here.

Dangerous Goods Pose Risk When Sent Through the Mail

At a news conference today in Ottawa, Canada Post highlighted the potential risks to its employees and the public if dangerous goods are sent through the mail. Dangerous goods, as defined by the *Transportation of Dangerous Goods Act*, are non-mailable matter and as such cannot be accepted by Canada Post for delivery.

"We want to increase awareness among our customers and employees of what constitutes dangerous goods and the potential risk they pose if sent through the mail," said Michel Saulnier, Director of Canada Post's National Control Centre.

On average, Canada Post deals with some 800 reported incidents a year of dangerous goods that have been intercepted in the mail. Many of these products are everyday items that most people wouldn't consider dangerous. Items like hairspray, cigarette lighters, butane curlers, mercury thermometers and matches.

"When we talk about dangerous goods, most people are aware of the obvious ones like explosives, radioactive substances, flammable material, poisonous substances and corrosives," said Saulnier. "What they don't realize is that numerous household products can be dangerous to life, health, property or the environment when handled or transported."

Since much of the mail is transported by air, it is important that Canadians be aware of the potential for danger. There are over 750 planned domestic flights carrying mail every business day and more than 200 flights entering and leaving Canada daily with mail on board.

An aircraft is vulnerable to incidents that would be inconsequential for other modes of transportation. Conditions inherent to air transport including vibration, decreased pressure and temperature extremes increase the risk of an accident occurring if dangerous goods are on board.

Many products that may seem harmless can be extremely dangerous if not packaged and transported properly or if mixed with other products. Questions about dangerous goods in the mail can be directed to Canada Post Customer service at 1-800-267-1177.

For further information, contact:
Media Relations
Ottawa
(613) 734-7675

CANUTEC

October 1, 2000 to December 31, 2000

Number of Calls

Technical	2,118
Regulatory	800
Information	1,986
Other	1.191
Total	**6,095**
Emergency Calls	**217**

Source of Emergency Calls

Fire Dept.	51
Police Dept.	20
Hazmat Contractor	1
Carrier	93
End User	16
Manufacturer	1
Government	12
Private Citizen	8
ER Centre	1
Poison Control	4
Medical	9
Others	1

Emergency Calls by Class of Dangerous Goods

Class 1 - Explosives	1
Class 2 - Compressed Gas	71
Class 3 - Flammable Liquids	51
Class 4 - Flammable Solids	6
Class 5 - Oxidizers and Organic Peroxides	14
Class 6 - Poisonous and Infectious Substances	17
Class 7 - Radioactives	4
Class 8 - Corrosives	52
Class 9 - Miscellaneous	63
NR - Non-regulated	23
Mixed Load -	1
Unknown -	7

Emergency Calls by Province/Country

British Columbia	32
Alberta	40
Saskatchewan	4
Manitoba	7
Ontario	70
Quebec	42
New-Brunswick	6
Nova Scotia	4
Prince Edward Island	0
Newfoundland	0
Northwest Territories	0
Yukon	0
Nunavut	0
United States	11
International	1

Emergency Calls by Transport Mode

Road	50
Rail	75
Air	3
Marine	0
Pipeline	0
Non transport	89
Multimodal	0

Upcoming Events in TDG...

May 3, 2001

"Symposium on Railway Safety 2001"

Sainte-Foy, Quebec

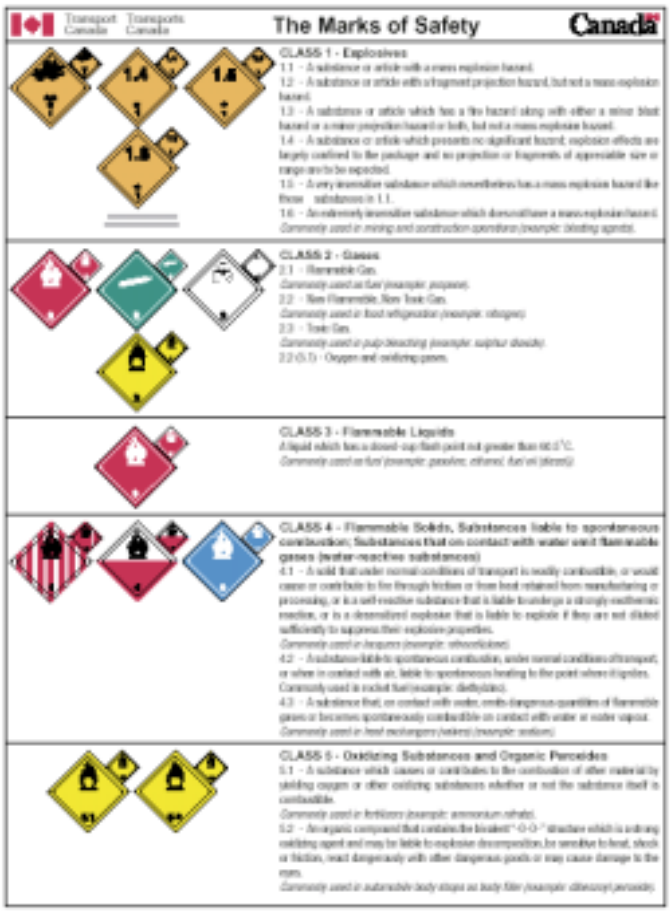
Organized by Le Groupe TRAQ (Transport sur Rail Au Québec)

For more information on how to register, please contact Louis-François Garceau at (418) 832-1502 or (418) 832-2114, fax (418) 832-2466 or E-mail: traq@total.net

June 13, 2001

36th Session of the Transportation Dangerous Goods General Policy Advisory Council

Ottawa, Ontario



New Placard and Label Poster Available Now

TP 11504E 2000 has been updated to reflect the changes in the Clear Language Regulations with regards to the use of placards and labels.

Also available is the French version, TP 11504F 2000.

If you are interested in receiving hard copies of this poster please contact: Arie Racicot at (613) 998-6539 or E-mail: racicoa@tc.gc.ca.

The poster is also posted on our TDG Web site at: **http://www.tc.gc.ca/tdg/en/publications.htm**.

Transitional Packagings for Infectious Substances

Resulting from changes agreed to by ICAO concerning the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air, certain packagings will no longer be acceptable for the transport by air of infectious substances effective January 1, 2001.

Part 1:

Infectious substances packaging can be divided into two groups.

Group A consists of packagings which were manufactured, tested and marked in accordance with The National Standard of Canada CAN/CGSB-43.125-M90. These packagings will be marked in the following form:

4G/CLASS 6.2/98
CAN/99-99 ABC-Pack

Note that the word “Class” is preceded by text (used to indicate the package type). Further, the line containing the word “Class” concludes with two digits which are 97 or higher (which refers to the year 1997).

Group B consists of packagings which were manufactured, tested and marked in accordance with the 1995-1996 edition of the Technical Instructions. These packagings will be marked in the following form:

CLASS 6.2/94
CAN/99-99 ABC-Pack

Note that the word “Class” is not preceded by any text. Further, the line containing the word “Class” concludes with two digits which are 96 or lower (which refers to the year 1996).

Part 2:

Effective January 1, 2001, no packagings in Group B may be used for the transport by air of international shipments of infectious substances. Group A packagings may continue to be used.

For domestic shipments of infectious substances by air both Group A and Group B packagings can continue to be used.

For additional information on this issue, please contact Judith Code at (613) 990-1060.

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