Transport Canada | Transports Canada

TRANSPORTATION OF DANGEROUS GOODS

NEWSLETTER

We invite you to read the 2023 edition of the Transportation of Dangerous Goods (TDG) Newsletter. This issue includes articles on some of the topics that have kept the TDG Program busy during the last few months as well as a commemoration of the 10th anniversary of the Lac-Mégantic tragedy.

INSIDE

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Canada

WORD FROM THE DIRECTORATE

We are pleased to introduce this edition of the Transportation of Dangerous Goods (TDG) Newsletter. This edition will highlight some of TDG's latest achievements.

New TDG Vision and Mission Statements

As the TDG Program has matured, evolved, and has undertaken numerous modernization efforts, both the mission and vision statements warranted review to better reflect our mandate.

Mission

The TDG Program maintains a modern regulatory framework, conducts oversight, research, analysis and supports emergency response to dangerous goods incidents for the protection of Canadians and the environment.

Vision

An agile, forward-looking organization that advances the safe transportation of dangerous goods by making decisions and taking action based on data and risk.

It is important to mention that each of you plays a vital role in fulfilling the mandate of the TDG Program, embodying dedication, integrity, and a sincere desire to make a positive difference.

Cette publication est aussi disponible en français sous le titre *Transport des marchandises dangereuses – Nouvelles*.

Diversity and Inclusion

TC continues to be a leader and innovator when it comes to diversity and inclusion by ensuring employment equity, multiculturalism, accessibility for persons with disabilities, and aboriginal learning, awareness, recruitment, and reconciliation. TC encourages you to integrate and apply a Gender-Based Analysis Plus (GBA+) framework into your current practices to provide more informed and responsive policies and programs that systematically consider the varying obstacles, barriers and conditions faced by different groups of people, in all their diversity.

As for the TDG Program, we have placed tremendous focus on applying a disciplined GBA+ framework to review plans and proposals for policies, programs, projects, legislation, and regulations. Specifically, TDG applies a GBA+ lens by:

- adopting and promoting the broad use of gender-neutral terms through various domestic and international events and forums
- raising awareness on the importance of inclusive language by including gender neutral language in speaking points, documents, presentations and working papers wherever possible
- designing information materials with gender, age, and ethnic diversity in mind by using neutral or inclusive imagery, text and visuals, as well as
- assessing the social and economic impacts of legislative, regulatory, policy and program plans and developments on diverse groups of Canadians

The TDG Program also participated in the development of an Indigenous Engagement Framework for initiatives related to transportation of dangerous goods, with a specific focus on rail operations and safety.

Highlights of recent efforts to improve the Transportation of Dangerous Goods Program

The TDG Program recently worked on the following projects:

- updating, amending and implementing various standards, regulations and acts to promote safety for Canadians and of the environment
- enhancing national consistency in oversight procedures by improving the TDG Inspectors' Manual and by developing and delivering a more robust and comprehensive inspector training program
- making improvements to the data collection and record keeping for inspections, mainly to ensure proper measures can be taken when there are violations
- collaborating with Canadian and U.S. partners on scientific, engineering, risk and socio-economic research related to the transportation of dangerous goods
- improving support and engagement with stakeholders, first responders, communities on emergency response and dangerous goods classification
- Transport Canada published the *Regulations Amending the Transportation of Dangerous Goods Regulations* (Site Registration Requirements) in Part II of the *Canada Gazette* on October 25, 2023
- promoting Canadian innovation, such as with the Regulatory Sandbox on Electronic Shipping Documents
- publishing results of a recent study evaluating and analyzing substandard lithium-ion batteries by UN 38.3 testing
- helping develop the Emergency Response Guidebook (ERG) 2024, which will be available in the spring,
- maintaining open channels with external and international groups to keep improving the transportation of dangerous goods in Canada

We hope you find some valuable information in this edition and wish to thank you for your continued support as we work together to promote the safe transportation of dangerous goods.

RECENT CHANGES IN LEADERSHIP AT TRANSPORT CANADA

Minister of Transport

On July 26th, 2023, the Honourable Pablo Rodriguez was appointed as Canada's new Minister of Transport. He was most recently Minister of Canadian Heritage and Multiculturalism, and before he was first elected in 2004, Minister Rodriguez began his career in the field of international development. He is known for his work to support the fight against climate change, protect and promote culture, and promote official languages and minority rights.

Deputy Minister, Transport Canada

On February 20th, 2023, Arun Thangaraj was appointed the new Deputy Minister for Transport Canada. He was previously TC's Associate Deputy Minister from 2020 to 2022. Under Arun's leadership, TC achieved great strides keeping the transportation system safe during the COVID-19 pandemic, planning Canada's recovery from the pandemic, and managing so many other priorities for our organization and the transportation system.

For additional information about Arun's previous experience and achievements, refer to his biography (pm.gc.ca).

Assistant Deputy Minister, Safety and Security

On December 5th, 2022, Lisa Setlakwe was appointed as the new Assistant Deputy Minister of Safety and Security (S&S). She joins us from the Privy Council Office where she was the Assistant Secretary for Social Development Policy. Lisa has had a diverse work experience including working in Nova Scotia with the Atlantic Canada Opportunities Agency. She subsequently came to Ottawa to join Innovation, Science and Economic Development Canada and has led several files including strategic innovation policy, telecom and marketplace framework policy, aerospace, and defence programs (funding and procurement) and regional coordination and economic development.

Former Director General of Transportation of Dangerous Goods Directorate

On March 13th, 2023, TDG's former Director General, Benoit Turcotte, took on a new position to advance S&S' service and modernization initiatives. Under Benoit's leadership, TDG has made significant progress in making our transportation system more safe, secure, efficient, and innovative. His digital transformation objective for the Program (TDG Core) brought us ahead of the pack in S&S and TDG will continue to build on his contribution and initiatives. TDG thanks Benoit for his nine (9) years of service and dedication to the TDG Program and wishes him every success in his next endeavors within the S&S family as the new Director General of the Service and Oversight Modernization Directorate (SOMD).

TEN YEARS AFTER THE LAC-MÉGANTIC TRAGEDY

On July 6, 2013, a freight train carrying 72 tank cars derailed, releasing approximately 7,000,000 liters of crude oil and resulting in a fiery explosion in downtown Lac-Mégantic, Québec. This community of 5,600, tragically lost 47 people.

Since then, Transport Canada has taken numerous measures to strengthen railway safety and the transportation of dangerous goods by rail. Among those are:

- **hiring of more inspectors** – Since the incident, TC has more than tripled the number of inspectors conducting dangerous goods inspections and significantly increased the number of inspections
- **reducing operating speeds** – Rules Respecting Key Trains and Key Routes: require railway companies carrying large volumes of dangerous goods to reduce the speed of their trains
- **key route and key train risk assessment** – Rules Respecting Key Trains and Key Routes: require railway companies carrying large volumes of dangerous goods to reduce the speed of their trains
- **enhanced standards for tank cars** – In May 2015, Transport Canada, along with the U.S., brought forward a new tank car specifically designed for the transport of all flammable liquids. The TC/DOT 117 tank car is a much more robust jacketed tank car

More information shared with municipalities

In April 2016, the Minister of Transport issued Protective Direction No. 36, which provides registered communities access to comprehensive information on dangerous goods being transported by rail. Communities with a railway operating through them can use this information to assess risks, plan for emergencies and guide first responders training.

Resources for first responders

The resources available to first responders in the community now include:

- Competency Guidelines for Responders to Incidents of Flammable Liquids in Transport, High-Hazard Flammable Trains, a guidebook and an online training tool for first responders
- a Transport Canada publication, You're Not Alone! and the accompanying Practical Tools, helps first responders in planning and responding to potential rail incidents involving the transportation of dangerous goods such as crude oil, diesel fuel or gasoline (flammable liquids). This is a quick reference guide for first responders coping with a major rail accident
- an online video on the topic of Responding to Railcar Incidents Involving Flammable Liquids
- first responders also have around-the-clock support from scientists at CANUTEC, Transport Canada's emergency response centre

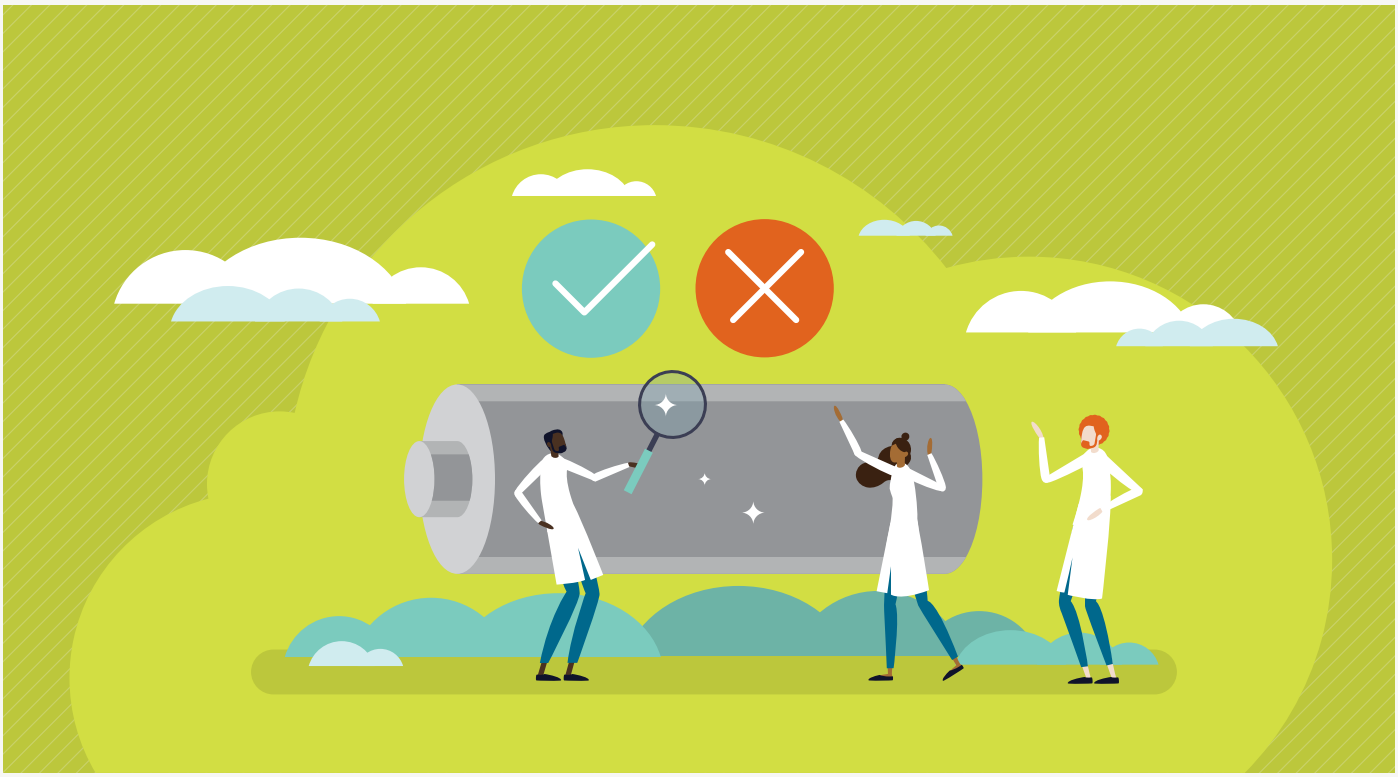
And will continue to do more.

Ten years after the tragedy, we remember the heroic efforts of the emergency crews who responded to the incident as well as those from the community.

Statement by the Prime Minister to mark 10 years since the Lac-Mégantic tragedy | Prime Minister of Canada (pm.gc.ca)

EVALUATION AND ANALYSIS OF SUBSTANDARD LITHIUM-ION BATTERIES BY UN 38.3 TESTING

Author: Henry Lu



Lithium-ion batteries are a class 9 dangerous good and can start a fire if they're damaged, mishandled, or defective. To minimize this hazard, lithium-ion batteries shipped in Canada must pass United Nations (UN) Manual of Tests and Criteria Part III, Subsection 38.3 (UN 38.3) before they are transported.

There are concerns that some sellers may be shipping substandard lithium-ion batteries (ones that fail UN 38.3). This study tried to find out if substandard batteries are being transported, and if they pose a greater risk to the transportation system and public safety.

We chose replacement batteries for three (3) models of power tools and one (1) smartphone to test. We chose these models by looking at the bestselling or highest selling lithium-ion battery products on major online stores.

For each model, we bought:

- one (1) set from the original equipment manufacturer
- five (5) sets from third-party battery manufacturers

In all, we tested 24 sets to the UN 38.3 criteria.

All packaging and labels were documented and compared to the appropriate regulations for dangerous goods transportation. We did this to determine if there were any trends between packaging, labelling, and the battery being substandard.

We opened and examined batteries we found to be substandard to determine what the issues were (teardown analysis). We also removed and examined the cells inside these batteries separately.

Results

- All (4 of 4) sets of batteries from the original equipment manufacturers (OEM) passed UN 38.3 testing
- Third-party (non-OEM) replacement batteries are more likely to be non-compliant with UN 38.3 tests (10 of 20), and thus can present a higher safety risk during transportation than their OEM counterparts:
  - seven (7) sets failed in the vibration test because their voltage dropped below the test limit
  - five (5) sets failed in short circuit and/or overcharge tests because they caused a fire and explosion
  - three (3) sets that failed were also transported by air, at a state of charge greater than 30% (which is not allowed)
- Third-party replacement batteries with a high voltage (e.g., 20V) are more likely to be non-compliant with UN 38.3 tests than third-party replacement batteries with a lower voltage
- Most suppliers couldn't produce a UN 38.3 Test Summary when asked
- More than half of the packages had missing or incorrect labels, including from original equipment and third-party manufacturers
- We found no trend between UN 38.3 test failures and package weight, handling, marketplace, seller, courier, packaging & labelling compliance, or mode of transport
  - however the sets that caused fire and explosion, we observed the substandard batteries were cheaper, lighter, and had typos on the labels compared to OEM batteries
- Our teardown analysis revealed issues in cells used in substandard batteries made them more likely to seriously fail in UN 38.3 testing

To help address the safety risks identified by this study, Transport Canada is developing strategies to increase awareness and compliance with safety requirements.

Learn more

Read a summary of the report: Evaluation and analysis of substandard lithium-ion batteries by UN 38.3 testing

Consumer awareness on lithium batteries: Lithium batteries – Be aware of what you buy.

CANUTEC AND EMERGENCY RESPONSE GUIDEBOOK 2020 (ERG 2020) SATISFACTION SURVEY

Author: Fady Al Zarka

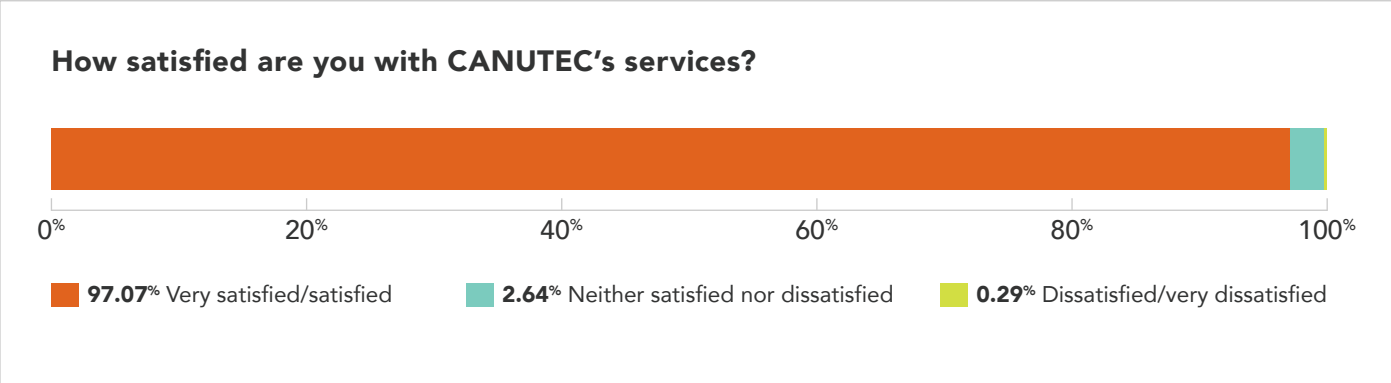
During the fall of 2022, a satisfaction survey was distributed to CANUTEC stakeholders. Answers were collected about three (3) main topics: satisfaction with CANUTEC services, satisfaction regarding the ERG 2020, and gathering comments and suggestions to improve the next iteration of the guidebook, the ERG 2024.

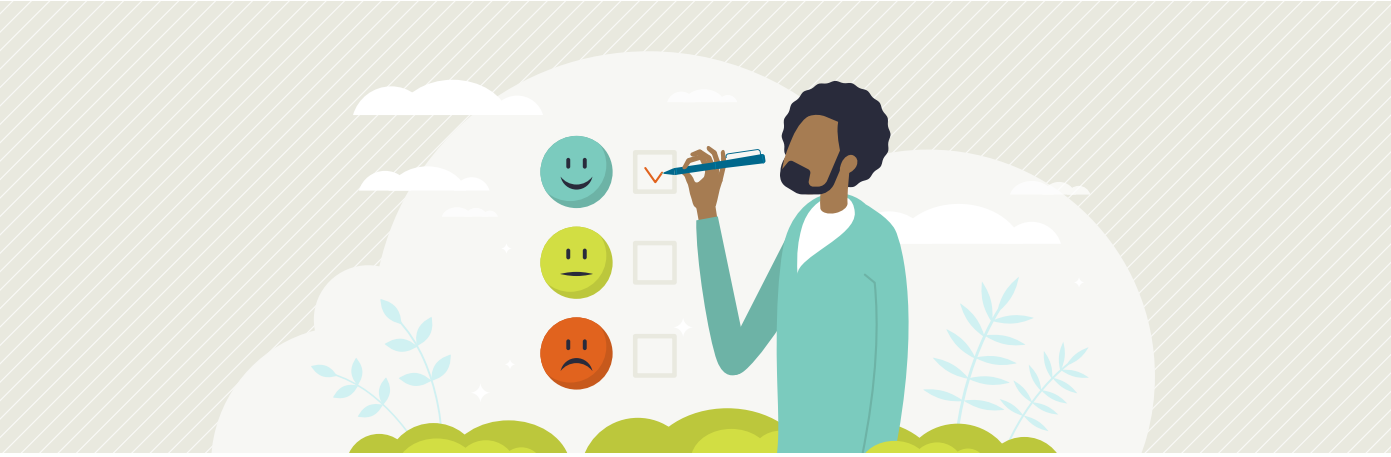
CANUTEC awareness and usage

Almost every survey respondent (97%) knew that CANUTEC existed. About 2/3 had contacted CANUTEC before. The majority of those who had never called before did not because they had never been involved in a dangerous goods incident. The main reasons for calling CANUTEC was to obtain information on emergency response measures to take during an incident, or for assistance during a simulation/training exercise. However, almost half of the respondents did not know that first responders, training schools, other public organizations and private industry can contact CANUTEC during training exercises and simulations.

Emergency centre service satisfaction

CANUTEC is proud that almost all calls (99%) have been handled politely, professionally, and in a timely matter. 99% of the responders stated that the information provided was helpful, and 97% were either very satisfied or satisfied with CANUTEC's overall services.



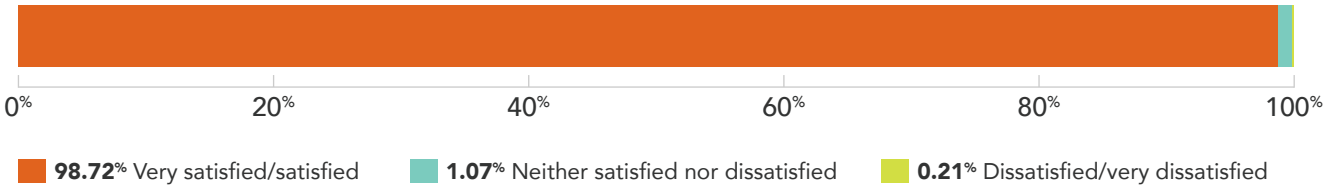


Emergency response guidebook satisfaction

Before starting the survey, 97% of the respondents knew of the emergency response guidebook and had access to it, with the large majority using paper copies and/or the mobile app. The main reason respondent used the ERG is during training and simulations, followed by usage while responding to an actual emergency and to prepare an emergency response plan. Almost every emergency vehicle of surveyed first responders (police cruisers, ambulances, fire trucks, etc.) has a paper copy of the ERG on board.

More than 93% said they were either very likely or likely to use the ERG during a transportation emergency involving dangerous goods. More than 99% could find the information they were looking for easily in the ERG 2020. More than 97% did not find any conflicting or unclear information and almost all respondents found the various sections of the ERG 2020 easy to use. Almost 97% found the recommendations in the orange pages appropriate for the materials assigned to them. Overall, close to 99% of the survey respondents were either very satisfied or satisfied with the ERG 2020.

Overall, how satisfied are you with the ERG 2020?



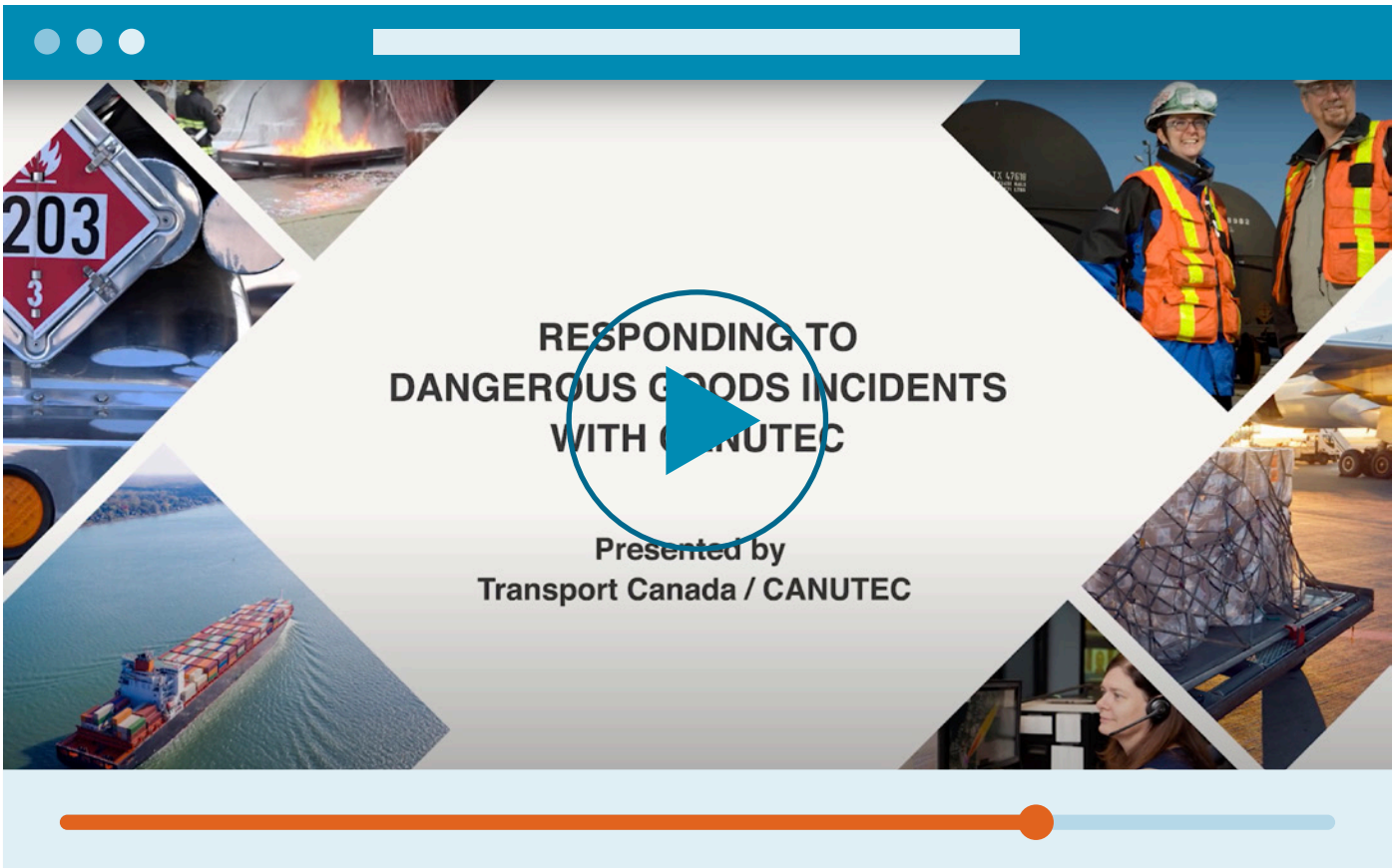
CANUTEC also took the opportunity to solicit feedback on how to improve the next iteration of the ERG. Many comments and improvements were submitted, which have been considered for the ERG 2024.

Survey population

In gauging stakeholders' satisfaction and opinion, CANUTEC distributed the survey to members of various types of organizations, governments of all levels, and municipalities of varying population sizes across Canada. The majority of responding organization were volunteer Fire Departments, at the provincial level, and based in small communities (population less than 20,000). Regrettably, CANUTEC was not able to obtain significant responses from territories.

NEW VIDEO: RESPONDING TO DANGEROUS GOODS INCIDENTS WITH CANUTEC

Have you ever wondered how CANUTEC advisors handle emergency calls? The following video shows the services CANUTEC offers and how Emergency Response Advisors provide immediate technical advice during emergencies.



TRANSPORTATION OF DANGEROUS GOODS CLIENT IDENTIFICATION DATABASE (CID)

Author: Maya Stewart

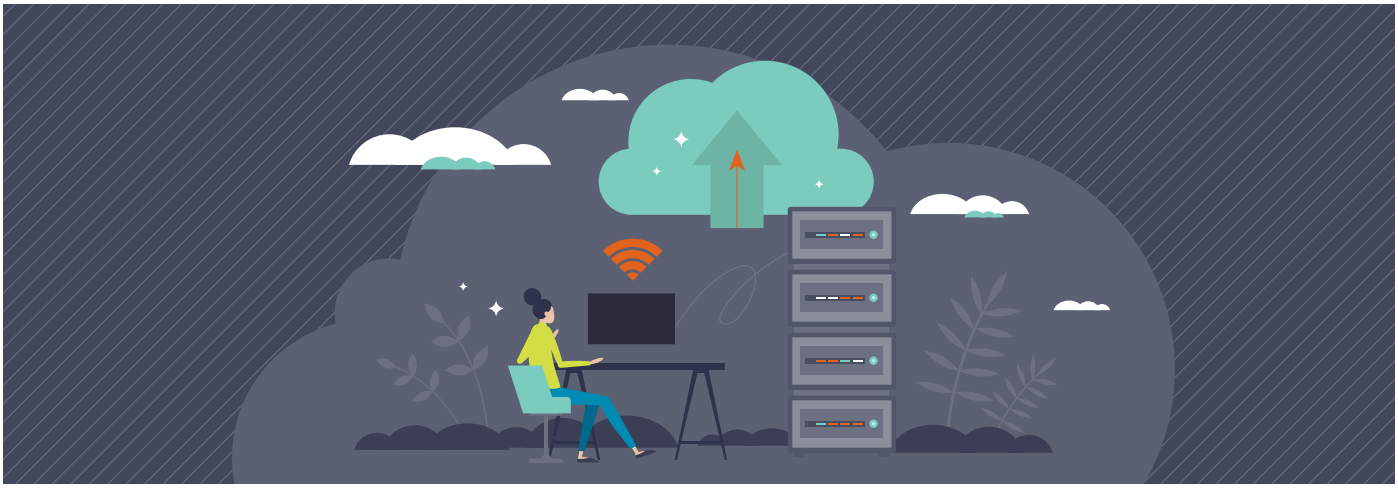
Data is a crucial tool for ensuring that governments implement effective public policies, such as by allowing us to measure the impacts of federal programs and services over time. In recent years, there has also been a growing public association between transparent and accountable governments and those that use data-based decision-making. Initiatives like the Open Government Partnership, which champion the proactive disclosure of government data, showcase this. For Transport Canada's (TC) Transportation of Dangerous Goods (TDG) Directorate, data is particularly important when developing policies on public safety.

Public safety is a concept at the core of many transportation operations and public policy developments. While difficult to define in precise terms, it is generally the absence of harm to people, property, and the environment. But more important than any specific definition is the ways in which we choose to measure our departure from perfect safety. For the TDG Directorate, such quantitative measures may include incident rates (e.g., injuries, property damage, or deaths) associated with TDG operations per year, per mode of transport, or per class of dangerous goods.

But it can also be far simpler than that. Identification data is the most basic kind of data needed to ensure that TC's regulated entities are compliant with the TDG Regulations. Such data could include the name of a business where regulated TDG activities occur, its location, and key contact information for that business. It could also include the class of dangerous goods involved in these operations. Ultimately, knowing the who, what, when, where, and why of transportation operations involving dangerous goods allows TDG inspectors to better plan when and where safety inspections of TDG sites should occur.

The TDG Client Identification Database (CID) Platform has been created to gather this information for that very purpose. It will serve as a central, comprehensive inventory of sites where the transportation of dangerous goods take place. Regulated entities will need to register themselves with TC by providing basic identifying information through an online CID platform registration portal. This will allow inspectors to better identify TDG sites and better plan risk-based inspections. It will also improve the TDG Directorate's ability to produce predictive analytics to identify emerging TDG issues. Lastly, it will allow the TDG Program to communicate with previously unidentified regulated entities; this will in turn help to create a more holistic picture of Canada's TDG landscape, and a more inclusive TDG Program for all stakeholders.

Registration is now possible on the online registration platform. More information about the Client Identification Database (CID).



UPDATE ON REGULATIONS AMENDING THE TRANSPORTATION OF DANGEROUS GOODS REGULATIONS (PART 6 – TRAINING)

We would like to express our gratitude to all of our stakeholders who provided comments, questions or feedback of any kind since the start of the regulatory project titled *Regulations Amending the Transportation of Dangerous Goods Regulations (Part 6 – Training)*. We have reached out to you at multiple times during the last few years and you have always been responding with valuable information every time and we thank you for that.

Your provided information, as well as further consultations with Transport Canada (TC) training experts, guided TC to propose some changes to the Cost Benefit Analysis (CBA) of the regulatory proposal. This revised costing model was presented in the latest informal consultation on June 1, 2023, during which you were given 30 days to submit your comments.

The latest comments analysis has shown that most stakeholders are not in agreement with the assumptions used to calculate the revised costs of the proposal. Based on what we heard from you through the latest informal consultation, new recommendations to the CBA assumptions were made. With the adjustment of the CBA assumptions, the new net cost of the proposed Regulations is estimated at approximately $400M as opposed to the $17M that was anticipated.

Based on the important difference between the CBA assumptions, the reality stemming from consultations, as well as the administrative burden reduction initiative and the current economic situation, options were presented to the Transportation of Dangerous Goods (TDG) Program Business Committee (PBC) which vetted and approved the recommendation to review the proposal and to go back to a publication on Part I of the *Canada Gazette*.

This option will benefit the TDG community by allowing TC to:

- increase alignment with other countries that require the General Awareness and Function-Specific training when feasible for persons engaged in any dangerous goods activities; and
- explore strategies to ease the burden on stakeholders while still promoting public safety at a time when the economy is recovering from the Covid-19 pandemic and inflation is high.

We are looking forward to working with you all to find the best approach to lessen the burden on industry, increase public safety and provide inspectors with the tools required to examine non-compliance.

Should you have questions or comments, please contact us at TC.TDGRegulatoryProposal-TMDPropositionReglementaire.TC@tc.gc.ca

RECENT REGULATORY CONSULTATIONS AND UPCOMING REGULATORY AMENDMENTS

To keep our stakeholders up to date regarding the *Transportation of Dangerous Goods Regulations* (TDGR), the Transportation of Dangerous Goods (TDG) Directorate has compiled a list of recent consultations and upcoming regulatory amendments along with details and relevant links.

Consult the "Recent regulatory consultations and upcoming regulatory amendments" table.

SCIENTIFIC RESEARCH PUBLICATIONS

Author: Barbara Di Bacco

Within the Transportation of Dangerous Goods (TDG) Directorate, the TDG Scientific Research Division plans, manages and delivers scientific and engineering research, to inform and contribute to the improvement of public safety during the transportation of dangerous goods. This research is done in accordance with section 25 of the *Transportation of Dangerous Goods Act, 1992*.

In an effort to disseminate our research to a wider audience, the Division publishes abstracts and technical research summaries for completed research projects on the TDG website.

Since the last TDG Newsletter research update, we have published abstracts and summaries for the following research reports:

TITLE	DESCRIPTION
Abstract – Evaluation and analysis of substandard lithium-ion batteries by UN 38.3 testing	This study tried to find out if substandard batteries are being transported, and if they pose a greater risk to the transportation system and public safety.
Abstract – Structural performance of TC-117 tank cars under derailment conditions	This project was developed to quantify the safety benefits of the TC-117 tank car design standard. Using computer modelling, a variety of derailment scenarios were run and compared to predict the difference in puncture performance of different designs.
Abstract – Validation of marshalling requirements for dangerous goods cars in a train: phases 1 and 2	The purpose of this research is to confirm whether Canada's dangerous goods train marshalling rules offer a similar level of safety compared to the placement rules from other countries and conduct a literature review of dangerous goods car placement.

TITLE	DESCRIPTION
Abstract – Chlorine reactivity with environmental materials in atmospheric dispersion models	The purpose of this research was to determine how fast and how much chlorine gas will react when exposed to bare soil and different plants during a large scale release. Results are used to improve dispersion model simulations.
Abstract – Calculating the inhalation toxicity of crude oil	This research summary describes a calculation method for determining the toxicity by inhalation of petroleum crude oil based on the composition of the vapour phase above a liquid sample of crude oil.
Abstract – Finite element analysis of tank car hard coupling	This report describes a study to evaluate whether speed limits help prevent damage during hard coupling.
Abstract – Evaluation of current tank car TC128B steel weld performance	This report describes a project to characterize and quantify the performance of the welds on non-pressure tank cars (TC128B steel) from -80 to 850 °C.
Assessment of Alternating Current Field Measurement Non-Destructive Testing (ACFM NDT) for use on tank cars	This report describes a study to evaluate the possibility of standardizing the use of alternating current field measurement test to inspect tank cars.
Abstract – Tank car fire failure assessment using combined models	This work updated and validated two new rail tank car fire models and compared the results of thirty-four scenarios from those two models to an industry model.

The abstracts listed here, along with other TDG research project abstracts and summaries, are available on the TDG Publications page.

If you would like a copy of any of the complete research reports, please contact the Scientific Research Division: TC.TDGScientificResearch-RecherchescientifiqueTMD.TC@tc.gc.ca