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Transportation of **Dangerous Goods**



Training in the Transportation of Dangerous Goods: A White Paper

CONTENTS

TRAINING IN THE TRANSPORTATION OF DANGEROUS GOODS:	1
1. INTRODUCTION	2
2. INITIAL CONSULTATIONS	3
2.2 <i>Stakeholder Consultation Process</i>	3
2.2.1 Paper 1 - Developing a Framework to Modernize TDG Training	3
2.2.2 Paper 2 - Competency-Based Training and Assessment	4
2.2.3 Paper 3 - Standardized Curriculum and Standardized Tests	4
2.2.4 Paper 4 - Certification and Accreditation of Training Institutions	4
2.3 <i>Stakeholder Feedback</i>	5
3. PROPOSED OPTIONS MOVING FORWARD	6
3.1 <i>Overview of TC's Proposed Approach</i>	6
3.2 <i>Adequately Trained</i>	7
3.3 <i>Competency-based Training and Assessment</i>	8
3.3.1 CBTA Framework Developed by TC	8
3.4 <i>TDG 101 Testing</i>	10
3.5 <i>Accreditation and Certification</i>	11
3.6 <i>"Common look and feel" for training certificates, and the contents of a training certificate</i>	11
3.7 <i>Self-employed Persons</i>	12
3.8 <i>Exemptions</i>	13
4. CONCLUSION	13
APPENDIX A – STAKEHOLDER FEEDBACK	15
APPENDIX B - DRAFT SAMPLE OF A DANGEROUS GOODS COMPETENCY FRAMEWORK	24
TABLE 1: <i>Competency Unit 1 – Classify dangerous goods</i>	24
TABLE 2: <i>Competency Unit 2 – Preparing dangerous goods shipment</i>	25
APPENDIX C – SAMPLE TRANSPORT CANADA TDG 101 COURSE	26

1. Introduction

The Transportation of Dangerous Goods (TDG) Directorate at Transport Canada (TC) is reviewing Part 6 of the Transportation of Dangerous Goods Regulations (TDGR) to determine how to strengthen training requirements and enhance the safe transport of dangerous goods. Options include carefully developed regulations, standards, and guidelines.

At the end of 2014, TC worked with provincial and territorial government officials to suggest potential changes to Part 6 of the TDGR. We asked officials to identify common training issues and challenges inspectors face in verifying compliance, and to propose solutions that could form the basis for improving Part 6 of the TDGR.

It was identified that the current regulations do not:

- Allow an inspector to assess if a person (an employee) has sound knowledge of all the relevant topics in Part 6 of the TDGR that directly relates to their job functions, and confirm whether or not he or she is adequately trained;
- Specify how to assess training;
- Require a specific training curriculum;
- Require training institutions to be accredited by TC;
- Allow TC to assess trainer's knowledge and teaching methods/materials; and,
- Allow a person to use the same training certificate for multiple employers.

TABLE 1: Key challenges and proposed solutions from the 2014 Officials' meeting.

Challenge	Proposed solution
<u>The term “adequately trained” is not properly defined.</u> There is no clear understanding of what it means to be “adequately trained”. Currently, all a person needs to demonstrate that he or she is trained, is a valid training certificate. The training certificate demonstrates that the person has received training. It does not indicate their level of knowledge or skill. Inspectors cannot assess whether people are adequately trained because they lack the tools, standards or guidelines to do so.	<u>Better define what it means for someone to be “adequately trained.”</u> Developing a competency-based framework could provide clarity and definition to the term “adequately trained”. This framework would also give inspectors necessary guidance and support their enforcement actions.
<u>Lack of assurance that a person is fully trained.</u>	<u>Develop a national standard or guideline for</u>

<p>Some employers do not have a way to truly know whether their employees are trained to do their jobs safely, regardless of how or where they were trained.</p> <p>Trainers also do not have a standard to guide them in developing their training materials. This results in a wide variation of the duration, content, and quality of training in the marketplace.</p>	<p><u>related curricula, training materials and tests.</u></p> <p>The scope and structure of a national standard or guideline could allow trainers to develop training materials and tests based on modules or units that cover either:</p> <ul style="list-style-type: none"> • basic aspects of the regulations or • specialized aspects related to specific job functions
<p><u>No consistent quality of training nationwide.</u></p> <p>There is support for additional oversight to ensure that trainers and/or training institutions provide quality training consistently across the country.</p> <p>Although TC’s website lists training institutions that provide TDG training, it does not endorse them or certify their courses.</p>	<p><u>Certify trainers and accredit training institutions</u> (i.e., private training institution or an in-house training unit within a company).</p>

2. Initial Consultations

2.2 Stakeholder Consultation Process

TC held stakeholder¹ consultations from fall 2015 to winter 2016. Stakeholders received four discussion papers on the proposed solutions, and a related online questionnaire. These documents communicated our interest in amending Part 6 of the TDGR, and helped participants to:

- Discuss the potential policy options; and,
- Put forward other options or best practices for consideration.

Note: You will find a summary of the issues and potential policy options from the four discussion papers below.

2.2.1 Paper 1 - Developing a Framework to Modernize TDG Training

The paper’s goal was to generate input on how TC could clarify the term “adequately trained.” It presented a number of proposed options for feedback. The main options included:

- Competency-based training and assessment;
- Standardized curriculum and tests;
- Certification of persons; and,
- Accreditation of training institutions.

TC informed stakeholders:

- We would not necessarily adopt all options; and,

¹ Stakeholders included representatives from industry, training institutions, and other levels of government.

- Final proposed amendments could be a combination of options that would help increase public safety, as well as improve the clarity of, and the compliance with, the regulations.

2.2.2 Paper 2 - Competency-Based Training and Assessment

The paper was a high level synopsis to support discussions on competency-based training and assessment (CBTA) and how it applies to TDG training.

The paper presented two models to stimulate discussion and solicit feedback.

1. The first is based on the *Australian Model Subordinate Law on the Transport of Dangerous Goods by Road or Rail, 2007* that requires persons wanting or renewing a dangerous goods driver's license to provide documentation that certifies they have the competency to do the task. The Australian Skills Quality Authority is mandated to work with all relevant stakeholders to accredit and deliver nationally consistent CBTA-based vocational training.
2. The second model is based on the International Civil Aviation Organization's (ICAO) ongoing effort to develop a fully functioning CBTA approach. The ICAO has developed a competency framework, a guidance document, and proposed amendments to the training provisions in its Technical Instructions.

The paper proposed to work with industry to develop a competency framework, based on the model the ICAO is working on, for stakeholder feedback. The framework would apply regardless of mode of transport (air, marine, rail and road) or job function, and would ensure that both training and assessment meet industry needs.

Note: Section 3.3.1 of this paper provides further information on TC's recommended CBTA framework.

2.2.3 Paper 3 - Standardized Curriculum and Standardized Tests

The paper's goal was to generate discussion on a standardized curriculum and standardized tests (both general and specialized) as potential options to ensure persons meet and maintain a high standard of training. No nation-wide standardized curriculum and test currently exist that allow employers, via institutions, to uniformly and consistently train and test their employees.

The paper proposed to develop a standardized curriculum and tests, which could be based on the CBTA framework. The curriculum and tests would provide a nationwide baseline against which to train and assess persons to ensure they have the knowledge and skills to safely perform their job functions. This would also increase the employer's confidence that the person meets national standards of training before he/she provides the person with a training certificate.

For standardized testing, the paper proposed developing a bank of pre-approved questions for each section of the regulations. The training institution could then draw upon the bank of questions to develop tests for persons.

2.2.4 Paper 4 - Certification and Accreditation of Training Institutions

No oversight of the quality of trainers or training institutions currently exists. This leads to many available training options, which can produce inconsistently trained persons.

The paper's goal was to present options for discussion that could increase the consistency of training through independent, neutral, arms-length organizations who monitor and endorse training quality.

The paper proposed three options:

1. A TDG Accreditation Program for private training institutions. TC would establish the criteria to assess the quality of the training institution. Once accredited, private training institutions could then award valid TDG certificates to persons.
2. A TDG Trainer Certification Program. Trainers would need to demonstrate, through TC-administered written tests and on-the-job evaluations, that they have the knowledge and skills. Once the trainers pass the evaluation, they would receive TC certification, allowing them to establish their own training institutions or work for existing institutions across Canada.
3. A TC-endorsed or operated TDG 101 certification program for non-trainers (i.e., employees and employers). The employer would be responsible for providing advanced training on specialized aspects of the TDGR.

At the end of discussion papers, TC asked stakeholders if they knew of any other options besides those presented (i.e., CBTA, standardized curriculum and tests, accreditation and certification) we should consider in amendments to Part 6 of the TDGR.

2.3 Stakeholder Feedback

TC sent the discussion papers via email to 131 organizations/persons, including large enterprises, small and medium sized enterprises, industry associations, large training institutions, self-employed trainers, all levels of government in Canada, and those who categorized themselves as "others" (e.g., universities and hospitals).

We received comments from 79 organizations/persons who were not among the original 131 recipients, but who either contacted us to request the discussion papers or received them indirectly through a third party.

In total, 107 organizations/persons provided responses. Of these, 76 provided comments on all four discussion papers and 31 provided comments on at least one discussion paper.

Of the 107 responses received, approximately:

- 34 per cent were from industry;
- 21 per cent were from government officials;
- 18 per cent were from self-employed trainers or training institutions;
- 16 per cent were from industry associations; and,
- 11 per cent were from the "others" category.

We also received 35 requests from organizations/persons for follow-up discussions of which we held 32 via teleconference and 3 in-person.

Stakeholder feedback highlights include:

- Support for each option was varied. No particular option received overwhelming support or opposition. Positions often correlated to stakeholder groups.

- There was strong support to hold employers accountable for ensuring that their employees are trained in the areas directly related to job functions. This includes “additional” or “specialized” training beyond general training, when required.
- There was some support to hold trainers and/or training institutions accountable for the training that they deliver.
- There was general opposition to a “one size fits all approach” to training since:
 - Employers may be forced to train their employees in areas that are not relevant to their job functions; and,
 - Employees in some companies require specific training with regard to classes of dangerous goods and/or modes of transport.
- There was a lack of support for additional regulatory requirements from some stakeholders given the current economic challenges that they face, especially if these new requirements increase training costs, time, and/or increase administrative burden.
- In summary there was support for:
 - greater clarity of the term “adequately trained”;
 - a CBTA approach to training;
 - a TDG 101 course to provide a general basic level of understanding;
 - an “audit” of trainers and institutions that may meet any future TC requirements; and,
 - more awareness and outreach efforts to the regulated community.

Appendix A contains a more detailed account of the stakeholder feedback.

3. Proposed Options Moving Forward

3.1 Overview of TC’s Proposed Approach

TC is proposing three recommendations:

1. To replace the term “adequately trained” in the existing regulations with what it means to be a “competent person.”
2. To:
 - Adopt a competency-based approach to training and assessment that would be reflected in the regulations;
 - Develop a CBTA framework that identifies performance expectations based on a person’s job functions; and,
 - Develop a standard and guidelines to supplement the CBTA framework.
3. To develop a standardized generic “TDG 101” test the public sector would administer and deliver.

The TC standard and guidelines for training would help the private sector develop their training curriculum, training courses (both TDG 101 course and specialized courses), and assessment tools. Note: Although TC would develop the TDG 101 Test, the private sector would need to develop its own courses.

3.2 Adequately Trained

Recommendation: Replace the term “adequately trained” by amending regulations to state the person must be competent to perform his or her assigned functions.

Rationale: Approximately half of respondents want TC to further define what it means to be “adequately trained.” By replacing the term “adequately trained” with the requirement that the person must be competent to perform their assigned functions, TC would clarify its expectations of trained persons and set the foundation for a competency-based approach to training. This would also change the current training requirements from knowledge-based to competency-based (i.e., both knowledge and skill-based).

TC would propose a definition similar to the one in the *ICAO Procedures for Air Navigation Services-Training* document, which defines competency as “a combination of skills, knowledge and attitudes required to perform a task to the prescribed standard”.

Another suitable definition from the United Kingdom’s Health and Safety Executive² use of the term defines competence as “the ability to undertake responsibilities and perform activities to a recognized standard on a regular basis.” It combines practical and thinking skills, knowledge and experience. The competent person should focus on the significant risks and those risks with serious consequences. Competence is vital since it ensures persons recognize the risks in their activities and can apply the right measures to control and manage them.

In Canada, the Occupational Health and Safety Regulations (OSH) of several provinces define “competency” as follows:

- Saskatchewan defines “competent” as “possessing knowledge, experience, and training to perform a specific duty.”
- Alberta defines “competent” in relation to a person as “adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or only with a minimal degree of supervision.”
- Ontario defines a “competent person” as a person who:
 - a) Is qualified because of knowledge, training, and experience to organize the work and its performance;
 - b) Is familiar with the Act and the regulations that apply to the work; and,
 - c) Has knowledge of any potential or actual danger to health or safety in the workplace.
- New Brunswick defines “competent” as:
 - a) Qualified, because of such factors as knowledge, training and experience, to do assigned work in a manner that will ensure the health and safety of persons;
 - b) Knowledgeable about the provisions of the Act and the regulations that apply to the assigned work; and,

² United Kingdom’s Health and Safety Executive is a government department whose mission is to prevent death, injury and illness in Great Britain’s workplaces. See: <http://www.hse.gov.uk/involvement/competentperson.htm>

- c) Knowledgeable about potential or actual danger to health or safety connected with the assigned work.

Discussion Question 1: What do you think of the existing definitions of “competent person”? Is one clearer than the others? Why?

3.3 Competency-based Training and Assessment

Recommendation: TC proposes to develop a competency-based framework to identify the skills needed to perform job-related functions, and the performance criteria for assessing the outcome. The requirements for the CBTA would become a TDGR requirement. To support this framework, TC would:

- Develop a standard that outlines the requirements of CBTA; and,
- Develop guidance materials to accompany the CBTA framework.

Note: TC will consult with stakeholders from the regulated community during the development of the CBTA framework, standard and guidelines.

Rationale: The CBTA framework would provide additional information to clarify the term “competent” in the amended regulations, and:

- Help employers determine the training their employees need;
- Allow employees to better understand what is expected of them; and,
- Provide trainers with a model to modify or develop their curriculum, training materials, and assessments.

3.3.1 CBTA Framework Developed by TC

Training is often knowledge-based, requiring persons to complete a training course and to pass a test. This does not guarantee they can effectively apply what the course taught to the functions necessary for their jobs. However, a competency-based training framework is designed to ensure that persons can perform their job functions.

CBTA takes a systematic approach, which:

- Defines competencies and related standards;
- Develops training programs based on these competencies and standards; and,
- Assesses persons to determine whether they have achieved these competencies.

A CBTA framework consists of competency units, competency elements, and performance criteria, defined as:

- Competency unit: A discrete job function with a number of competency elements (e.g., Classify dangerous goods).

- Competency element: An action (task) with both a triggering and terminating event that clearly defines the limits, and has an observable outcome (e.g., Determine dangerous goods description).
- Performance criteria: Simple, evaluative statements on the competency element's required outcome; and a description of the criteria used to judge whether the required level of performance has been achieved (e.g., Determine class or division).

Appendix B contains more information on a possible structure for the CBTA framework.

Developing a CBTA framework is complex, given the diversity of dangerous goods in transport, the different modes of transportation, and the variety of job functions along the transportation chain. And since the depth of training should be appropriate to a person's job functions, it could range from familiarization-level to expert-level training.

Despite this complexity, a clearly defined CBTA is very useful for the design and delivery of training programs aimed at developing persons that are better able to reduce or eliminate risks involved in transporting dangerous goods.

To succeed, we must clearly identify and understand the roles and responsibilities of the employer, trainer, employee and regulator:

- The employer's role is to:
 - Determine the purpose and objective of the competency-based training program, based on a person's job functions; and,
 - Ensure training is designed and developed to establish clear links among the competencies a person must achieve, the learning objectives, the assessment methods, and the course materials.
- The trainer's role is to
 - Facilitate a person's progression in achieving the desired competencies; and,
 - Collect information about the effectiveness of the training material that supports continuous improvement.
- The employee's role is to
 - actively participate in the learning process and achieve the required competencies
Note: CBTA provides a clear learning path through their training program; and,
 - Provide feedback to their employers and trainers to help ensure that training is relevant, improved and effective for his or her job functions.
- The regulator's role is to verify employers are training employees to perform the function for which they are responsible for in a specific operational setting, and in compliance with regulations.

Discussion Question 2: What do you think of the move to a CBTA approach? Should other elements be considered? Why?

3.4 TDG 101 Testing

Recommendation:

TC proposes clarifying that every person involved in the handling, offering to transport, transporting, and importing of dangerous goods receive:

- General awareness/familiarization training, which explains:
 - the classes of dangerous goods;
 - labelling, marking, placarding and packaging;
 - compatibility requirements;
 - the purpose and content of the dangerous goods shipping document; and,
 - available emergency response documents.
- Function-specific or specialized training in specific dangerous goods transport requirements, which apply to the function the person performs.

TC proposes to develop a TDG 101 Test for every person responsible for handling, offering for transport, transporting or importing dangerous goods. The test would:

- evaluate a person's knowledge and understanding, at a basic level, of TDG Act and TDGR requirements (e.g., what they are, how they apply, how to comply with them, the benefits of compliance and the liabilities for non-compliance, etc.); and,
- provide general awareness/familiarization, and not function-specific or specialized training.

TC also proposes to develop a TDG 101 guidance manual, based on Safety Awareness Materials and FAQs on our website³, aligned with the CBTA framework. Training institutions and trainers would then use the TDG 101 guidance manual to develop their own TDG 101 training course materials, including case studies or practical exercises.

Rationale: The TC TDG 101 Test would:

- Provide clarity to the regulated community on their roles and responsibilities as well as consequences for non-compliance. It would also help them to better use the TDG Act, TDGR and other tools to improve compliance;
- Establish that those involved in the handling, offering for transport, transporting or importing of dangerous goods are evaluated consistently with regard to their basic understanding of the TDG regulatory requirements. The TDG 101 guidance manual would also help to ensure that the quality of basic training is consistent;

³ Transport Canada Safety Awareness Materials and FAQs (<http://www.tc.gc.ca/eng/tdg/awareness-materials-and-faq-1159.html>)

- Allow persons to move from one employer to another because they have a sound understanding of basics of the TDGR. Based on a person's role, a new employer would then only have to provide additional:
 - function-specific or specialized training related to the person's specific job functions;
 - additional training on the topics covered in the TDG 101 Test, at a higher level of mastery, if necessary; and,
- Provide a tool to help inspectors verify compliance. The regulated community would be aware inspectors can ask them to demonstrate their understanding after having passed the TDG 101 Test. The current method of presenting a training certificate alone would no longer demonstrate understanding.

The TDG 101 guidance manual and CBTA framework would provide a foundation to develop more advanced function-specific or specialized training.

Discussion Question 3: What are your thoughts on a TC TDG 101 Test? Is there anything in particular that we should consider in its development? Why?

3.5 Accreditation and Certification

Recommendation: At this time, TC recommends against the option to certify trainers.

Rationale: TC may consider pursuing accreditation of training institutions in the future, should there be a demonstrated need. The current proposed approach (i.e., the CBTA approach and TDG 101 Test):

- should improve training within the regulated community and lead to increased compliance and public safety.
- should give inspectors the tools they need to assess whether persons are trained in their job functions. If there is a need to further enhance the training regime by providing additional oversight after the proposed approach takes effect, we would develop an accreditation process for training institutions.

3.6 “Common look and feel” for training certificates, and the contents of a training certificate

Recommendations:

- TC would not adopt a “common look and feel” for training certificates.
 - **Rationale:** Prescribing the format, size and layout of the training certificate would cost industry time and money, with little to no benefit to the safe transportation of dangerous goods.
- TC would continue to specify the information to include on a training certificate, according to section 6.3 of the TDGR, including the date the certificate expires. However, we would avoid prescribing specific words (e.g., “Expires on” or “Date d’expiration” in section 6.3 (1) (c) of the TDGR.)

- **Rationale:** In the past, persons were in non-compliance simply because those exact words were not on the certificate, even though the certificate's expiry date was indicated.
- TC proposes making no additional modifications to the current requirements of the contents of a training certificate until there is certainty on the components of the training regime with regard to testing, certification of trainers or accreditation of training institutions.
 - **Rationale:** Recognizing that space on a training certificate is a limiting factor, TC would consider allowing additional information to be reflected in the record of training or statement of experience as per section 6.6 of the TDGR - Keeping Proof of Training: Employer's and Self-employed Person's Responsibility. A record of training may include a course outline, test results, trainer's reports, etc. A statement of experience is a document explaining how the employer believes the person is trained and ready to handle, offer for transport, or transport dangerous goods. The recommended competency-based approach to training would further complement and enhance the information required in the statement of experience.

3.7 Self-employed Persons

Recommendation: TC would address self-issuance of a training certificate by self-employed persons through the proposed CBTA approach, and provide the tools necessary for inspectors to enforce the requirements. The proposed amendments set out that persons involved in the transportation of dangerous goods must follow CBTA. The standard would outline the necessary how-to of CBTA (e.g., Competency Units, Competency Elements, and Performance Criteria). TC would also develop related guidance materials (e.g., examples of CBTA) to support stakeholders and enforcement officials.

Rationale: The overall intent of modifying Part 6 of the TDGR is to have competent persons handling, offering for transport, importing, or transporting dangerous goods. These persons must be able to demonstrate to a TDG inspector that they are competent to perform their assigned functions.

In the upcoming amendments, employers remain responsible for issuing a dangerous goods training certificate to persons. TC recognizes the need to take self-employed persons into consideration. The proposed training regime would:

- Ensure that all persons involved in the transport of dangerous goods are competent to perform their assigned job functions by including the requirement for those involved in the transportation of dangerous goods to be trained using a CBTA framework.
- Include a standard on how one must use competency-based training. All persons would need to demonstrate their competence, regardless of who issues the training certificate.
- Require that self-employed persons be able to demonstrate competency like any other employee.

3.8 Exemptions

Recommendation: TC would remove most of the existing exemptions for training except the following special cases (found in Part 1 of the TDGR) that all Canadians use in their daily lives:

- Section 1.15 enables users, purchasers and retailers to transport no more than 150kg of certain dangerous goods that are available to general public.
- Section 1.27 exempts from the regulations, dangerous goods used for the propulsion of means of transport (i.e. fuel), on board a means of transport for safety of occupants and the means of transport and used for ventilation, refrigeration or heating units necessary to maintain environmental conditions.
- Section 1.42 allows persons to put specimens (animal or human) in the transport system in kits provided by health care providers which are believed to not contain infectious substances.

Rationale: Most Canadians who use exemptions are not aware that the TDG Act and Regulations apply to them.

All persons need training to perform their dangerous goods functions - even the users of special cases and special provisions. They should:

- Understand the fundamental principles behind the TDGR;
- Be aware of the dangers associated with the dangerous goods and know how to apply the conditions of the special cases and special provisions; and
- Realize that if not all conditions of a special case or special provision are met, the whole of the TDGR applies.

Many special cases that exempt persons from training still require compliance with Part 8, Reporting Requirements of the TDGR. Therefore, anyone handling or transporting dangerous goods under such special cases must report a release of dangerous goods. However, they may not know how and what to report if training is not required.

Other special cases have conditions that require a good understanding of the regulations, especially when preparing consignments. For instance, the person offering limited quantities for transport needs to determine what dangerous goods they can ship as limited quantities, to apply the quantity limits per inner packaging, and to display markings, etc.

4. Conclusion

The safe transportation of dangerous goods is important to all Canadians. This is why those responsible in the transportation chain must have the knowledge and skills they need to safely perform their jobs.

Developing a CBTA framework will address the issue of what it means to be competent. It will also outline the knowledge and skills a person must have to safely perform his or her job.

Introducing the TDG 101 Test will provide a defined benchmark that will support:

- Employees, by providing a common nation-wide test that will allow persons to transfer from one employer or job function, to another;
- Employers, in hiring and developing persons, since everyone who has taken the Test will have a basic understanding of a safe transportation of dangerous goods system; and
- Regulators, by setting clear expectations of the regulatory requirements.

The proposed amendments are the necessary first steps in strengthening TDGR training requirements that, until now, have been largely administrative. These steps will improve public safety, and will give inspectors the enforcement tools they need to ensure compliance.

Discussion Question 4: In your experience, are there other safety issues related to training in the transportation of dangerous goods that have been overlooked? Please explain.

APPENDIX A – Stakeholder Feedback

The following are the answers Transport Canada (TC) received during stakeholder consultations we held from fall 2015 to winter 2016. We have organized them by discussion paper and presented them as high-level comments to the online questionnaire.

PAPER 1: OVERARCHING FRAMEWORK

Does Part 6 of the *Transportation of Dangerous Goods Regulations* (TDGR) clearly define for you as an organization what it means to be adequately trained? How can we better define “adequate training,” beyond what already exists in section 6.2 of the TDGR?

Of the 107 respondents who provided feedback during the consultation, only 71% responded to this question. Of those who responded, just under half of them indicated the term was too subjective and should be made clearer. To do this, some suggested that TDG develop guidance material and that it could:

- Explain to employers what their training responsibilities are, which includes ensuring employees maintain their knowledge and skills.
- Help employers determine what training their employees need, with the understanding that employers know their operations and the functions their employees perform.
- Give employers tools to determine whether their employees have acquired the necessary knowledge and skills to complete their job functions.
- Explain how a TDG inspector will determine that a person has the necessary knowledge and skills to complete their job functions.

Were TC to prescribe the format of the Training Certificate for increased consistency, please respond to the following questions:

a. What information should the Training Certificate contain?

The purpose of a training certificate is to show proof to an inspector/regulator, on the spot, that its holder has dangerous goods training. None of the 98 respondents to this question had an issue with the information that is currently required on a training certificate under subsection 6.3(1). In fact, 16 respondents believed that no change was needed. However, some suggested adding the:

- Name of the trainer and the training institution;
- Role and job functions of the certificate holder;
- Class of dangerous goods;
- Date of training and/or course completion date, in addition to the date of expiry;
- Aspects covered (mastered) during training **only**, as some employers tend to check off all aspects regardless of the extent of training.

Suggestions with lesser support included the:

- Training delivery method
- Test/exam/assessment taken

- Means of containment to be handled/used/transported
- Specific dangerous goods the person was expected to handle, offer for transport or transport
- Exemptions/special cases to be used, equivalency certificates to be used, etc.

Despite these suggestions for additional information, some respondents expressed concern with requiring too much information on a training certificate, due to limited space on the wallet-sized training certificates they issue.

b. How would a “common look and feel” Training Certificate impact you or your organization?

There were 49 responses to this question:

- 57 % indicated that a “common look and feel” training certificate would not have an impact on them or their organization. In fact, some questioned how a “common look and feel” training certificate would improve training and what benefits it would add.
- 33 % supported a “common look and feel” training certificate
- 10% opposed it because of cost to industry and/or the complex nature of the industry

PAPER 2: COMPETENCY-BASED TRAINING AND ASSESSMENT.

What are your views on the general concept of competency-based training and assessment (CBTA) as it could be applied to the transportation of dangerous goods?

The goal of CBTA is to produce a competent person by providing training that is directly related to his/her assigned functions. However, the responses reflect some misunderstanding as to the extent of training under CBTA.

Respondents feel the CBTA concept:

- Appears to be too generic, so persons would not obtain the specific training required for their specific functions.
- Requires persons to be trained in aspects that are unrelated to their functions, which would result in more intensive or longer training.
- Requires persons to attend training off-site if the training is given by a third party (i.e., training institution).
- May present challenges as off-site training may not be feasible, easily facilitated, or allow for the practical aspects of training such as practical exercises or on-the-job-training.

This discussion paper is based on two approaches to CBTA. We recognize that there may be other models available. What do you think of the International Civil Aviation Organization’s (ICAO) approach to CBTA which includes a generic competency framework, and the Australian approach which includes specific introductory courses, a training registry and accreditation of colleges?

Of the respondents that answered this question, most supported the ICAO approach, while some believe both approaches had merit. Regardless of the preferred approach, some respondents

expressed concerns about the administration, management and overall implementation of CBTA. They stated industry would need a phase-in period to train and assess persons in all locations.

A few respondents indicated that the discussion paper did not provide enough practical information about taking either approach.

What are the advantages and disadvantages of adopting a CBTA approach to training for your specific organization?

Respondents indicated that one of the main advantages to the CBTA approach is that it enables persons to master specific skills, knowledge and behaviors at their own pace. Other advantages were related to the CBTA framework itself that would allow for developing consistent function-specific training, and guidelines to assess competencies. Respondents also indicated that the CBTA approach will enhance public safety by producing better trained persons.

Disadvantages respondents identified included:

- Added costs to industry to develop an appropriate competency framework, to establish specific training or modify existing training, and to assess persons.
- The impact of this cost would be disproportionately greater for smaller enterprises with limited resources, and for larger enterprises with a large number of persons who have different job functions and/or are in various remote locations.

However:

- Some respondents mentioned that the CBTA approach would reduce costs, which would therefore be an advantage.
- Others expressed concerns that continuous on-the-job assessment of persons may be difficult for some employers to achieve.

PAPER 3: STANDARDIZED TESTS AND CURRICULUM

Please provide your comments on the overarching concept of standardized testing, including any advantages or disadvantages to your organization.

In general, respondents supported standardized testing, citing it would provide a benchmark that would guarantee quality assurance and a standard of knowledge, and would ensure a person is fully trained. Advantages to standardized tests included, they:

- Are transferable from one employer to another,
- Allow for consistent testing regardless of the trainer,
- Serve as a means to track a person's performance by indicating areas of strength or weakness.
- Make testing easier, as it provides a designated exam that is certified as being accurate.

Despite these advantages, respondents also identified some disadvantages, believing standardized testing:

- Would be costly and resource intensive to develop, implement, and maintain.

- Would lack the flexibility required to address specific operational requirements of the industry.
- Could incite trainers to teach to allow a person to pass the test rather than to emphasize the understanding, retention and application of the material.

Other concerns included the risk that standardized tests:

- Would require persons to receive training in areas not relevant to their role or job function.
- May be an unnecessary burden for some employers that already have company-specific training programs in place.

Standardized- General test (e.g., TDG 101).

Respondents supported a general TDG 101 Test because it would serve as a national benchmark to evaluate and verify the knowledge of persons across the country. Furthermore, being developed and administered by a neutral, regulated or accredited body would increase confidence in the quality and consistency of testing. Some respondents also suggested the general TDG 101 Test should:

- Have some degree of flexibility so that it can be adapted to a specific mode of transport or specific aspects of the job function.
- Be delivered online.
- Provide a solid foundation to develop function-specific or specialized training/testing.

Respondents seemed to feel that a general TDG 101 Test could simplify the training process and benefit everyone involved. Other advantages they identified include:

- Cost effectiveness.
- Ease of implementation.
- Potential for wide distribution.
- Oversight of the knowledge that all persons involved in the transportation of dangerous goods must possess.

A main concern among respondents, was the relevance of a general TDG 101 Test since it would only cover the basics. Other concerns identified include:

- Given the complexity of the TDG regime, a general TDG 101 Test would not allow persons to be evaluated to a higher level of mastery than may be required for their specific job function. Setting an accurate and appropriate baseline for such a diverse industry would be very challenging.
- Some employers with their own in-house training programs may find it a burden to have to send persons for TDG 101 training and/or testing administered by a third-party training institution.
- It could be challenging for TC to maintain the quality and consistency of tests as it makes periodic changes to the bank of questions.
- A general TDG 101 Test would not account for variability in learning methods (e.g., those who do not perform well on exams, or varying literacy/language ability).

Standardized- Specialized tests (based on specific dangerous goods and/or job functions).

Respondents generally agreed:

- The TDG regime needs specialized tests.
- The private sector is in the best position to develop such tests, as it has both the expertise and operational knowledge required to do so.
- While specialized tests signal a higher level of training in certain topics, it must complement general testing.

Among the advantages respondents identified were, specialized training:

- Can address employers' specific needs, specific modes of transport or specific dangerous goods.
- Is well-suited to training those in highly technical fields, and would prove helpful when evaluating a person's competency.

Some respondents:

- Expressed concerns that specialized training will require specialized tests; and it takes time and money to develop, administer and update tests to keep pace with amendments to the regulations.
- Noted that standardized specialized tests would not be flexible enough to address different industry requirements, including special conditions for certain facilities.
- Questioned the value added of specialized tests, as it would be difficult to set a nation-wide baseline, and risks losing general TDG knowledge by separating general testing from specialized testing.

How would a standardized training curriculum impact your organization?

Some respondents noted that a standardized training curriculum would streamline training and provide consistency. Others see access to a standardized training curriculum as beneficial, in terms of cost and time, to employers that currently do not have a training curriculum, and/or are seeking guidance on how to train persons.

Still others expressed concerns. For example, a standardized training curriculum:

- Would require some employers to spend money to modify their existing training materials to reflect the standardized model. To address this, respondents suggested that TC could audit employers' existing training curricula to receive a form of equivalency.
- May be either too general or too specific given the diverse needs of those requiring training in the transportation of dangerous goods.

Does your company currently use a training curriculum? If so, what are its key elements?

Responses ranged from general TDG material (e.g., classification, documentation, labeling and placarding); to specialized training for particular dangerous goods (e.g., Class 7); or for a particular mode (e.g., ICAO training for transport by air).

What would be the advantages and disadvantages to you and/or your organization if TC were to prescribe the following in the amended regulations?

a) The format of the test(s):

Many respondents held positive views about written tests, as it would:

- Provide a more permanent record/proof of training;
- Allow employers and trainers to identify areas where the person is weak and needs additional emphasis;
- Serve as tangible proof of a person's training if he/she changes employers.

And while some respondents indicated that online written tests scored automatically could save time and money, others stated that written tests can be costly or time-consuming because of the additional paperwork involved.

Two drawbacks to written tests respondents identified were that they may:

- Be ineffective if persons are trained to pass the test and not necessarily to understand, retain and apply the information;
- Penalize those who do not perform well on written exams or have limited literacy and/or language skills.

Respondents generally supported giving verbal tests to those who do not perform well on written exams. It would also give trainers the flexibility to reformulate a question in real-time to ensure the person understands it, and to probe further to evaluate deeper knowledge, if necessary.

Respondent concerns related to verbal testing included:

- Consistency could vary between trainers, which could increase subjectivity. Some suggested this could be managed by developing specific trainer guidance material;
- In-person testing could be costly, time-consuming and logistically challenging;
- This method does not provide proof of testing. Some suggested a comprehensive record-keeping process could manage this concern.

Many respondents of this question indicated well-designed practical tests would be effective in assessing both knowledge and skills, because they:

- Support competency-based training since it allows employers to observe and evaluate a person's ability to perform their job function in the workplace;
- Can complement written tests, especially for those whose learning style involves carrying out physical activities rather than reading or listening to lectures.

Despite its advantages some respondents expressed concerns that practical testing,

- Could be costly and time-consuming since it needs to be completed in-person. This is especially true for employers with hundreds of persons;
- Would be difficult to develop and maintain, and lends itself to subjectivity.

b) How often persons should be tested:

While suggestions varied from annually to every six years, most respondents thought re-testing should take place every three years. Some respondents provided additional suggestions such as:

- Annual testing for some elements of the regulations;
- Testing every two years for trainers but every three years for all others;
- Re-testing when a lack of training was the primary cause of an incident or of the escalation in its severity.

PAPER 4: ACCREDITATION AND CERTIFICATION.

Do you currently use a private training institution or in-house training to train your employees on the transportation of dangerous goods? If so, why? Please provide details.

Of the total number of respondents to questions on accreditation and certification, approximately 25% did not specify which training method used, for unknown reasons. Overall, most respondents trained persons in-house, followed by an almost even split between those who train through a private institution and those who combine both methods.

Main reasons for employers to use in-house training are:

- Limited training budgets, large numbers of persons to train, and/or persons located across the country make in-house training more economical than using a private training institution;
- Persons who need specialized training not readily available or adequately provided through private training institutions;
- In-house trainers are more efficient and effective because they understand the business operations;
- The need to maintain control over training material.

Main reasons small and medium-sized enterprises use private training institutions are:

- Small workforce makes it more economical to contract out training to a private training institute rather than develop in-house training capacity;
- Private training institutions can provide required training to persons working with specific dangerous goods or classes.

Note: Respondents preferred online training over training by a trainer in a classroom setting due to lower costs and time requirements.

The main reason for adopting a combination of in-house and private training is that persons' training span from basic training to advanced or specialized training, and respondents find:

- Private training institutions more suitable for basic knowledge needs, but
- In-house training more suitable for specialized technical, or practical requirements closely related to the employer's operations.

What are your views on the following options for accreditation and certification? Please mention any advantages or disadvantages to your organization:

- a. Option 1: TC develops a TDG Accreditation Program for training institutions, which can then award valid TDG certificates to persons.

Overall, respondents felt that it would be better for TC to accredit training institutions than to certify trainers, because accreditation would:

- Provide legitimacy to the institution and the training it offers;
- Help employers determine suitable institutions to train persons;
- Ensure consistent training across Canada.

The most frequently cited reason against accreditation was the increased cost to industry. Many respondents believed that employers would have to cover the costs to send persons to these accredited training institutions. Other concerns included:

- Accreditation may not be comprehensive enough to cover the broad range of knowledge and skill requirements involved in the transportation of dangerous goods;
- Persons would be trained on topics not relevant to their specific operational needs (e.g., as part of an institution's set-list of "standardized" training courses);
- Restricting training to accredited training institutions would limit the availability of training since all training institutions may not meet the accreditation standards.

Note: Since the question referred to training institutions,

- Some respondents suggested that accreditation be available to companies' in-house training units;
- Many industry associations requested the option to become accredited since they have developed comprehensive training for their members.

- b. Option 2: TC develops a Certification Program for TDG trainers at training institutions. This would involve administered written tests and the conduct of on-the-job evaluations of trainers for them to obtain their certification to teach TDG courses.

Just under half of the respondents supported a certification program for trainers. We must note that while almost all of the private training institutions indicated that trainer certification was a viable option, only a few **preferred** this option to receiving training institution accreditation. Their main reasons to support trainer certification is to:

- Have a means to regulate trainer;
- Help employers identify government or third-party endorsed trainer;
- Assure that private trainers meet quality standards, which would contribute to consistent training.

The most cited reasons against trainer certification were the increased cost and the increased burden to employers. They believed that certification would be more costly due to the large number of trainers to be certified. They also indicated:

- The administrative (i.e., paper work, forms, etc.) and logistic (i.e., travel, accommodation, time spent to retrain/test trainers) costs to certify each trainer would be burdensome;

- It would be difficult to certify trainers consistently given the complexity and variety of TDG training;
 - They question TC's ability and capacity to certify all trainers and to oversee on-going trainer certification and renewal.
- c) Option 3: TC develops a TDG 101 Certification Program. More advanced job-specific training would be the employer's responsibility.

Respondents were marginally more supportive of a Trainer Certification Program than a Certification Program for Persons. Respondents who supported a TDG 101 certification program indicated that it would ensure a common understanding of the basic knowledge requirements across the industry.

Of the respondents who did not support TDG 101 certification program:

- Many indicated it would not be cost-effective for employers with a large number of persons or high turnover rates;
- Some believe a TDG 101 certification program could not effectively capture basic knowledge requirements for the many topics covered in the TDGR and diverse job function requirements;
- Others question the value of the TDG 101 certification program. Since many training institutions and/or employers are already providing general training, a TDG 101 certification program may not enhance the current level of competency in the workforce.

The TDGR makes the employer responsible for issuing Training Certificates to their employees. This means self-employed persons can issue their own certificate. If TC were to amend the regulations to specify that Training Certificates must be issued by an accredited training institution, what benefits or challenges may this present?

Of those who responded to this question:

- More than half indicated that they had no preference on this issue as it did not impact their business operations;
- Many self-employed persons indicated that they should not be penalized for the few who misuse this allowance;
- Many training institutions favour amending the regulations, indicating that this would likely increase competency levels for self-employed persons.

Overall, respondents see the onus is on the self-employed person to take full responsibility to ensure that they are adequately trained. A few respondents indicated that there should be no penalties imposed on self-employed persons who are competent. Some:

- Felt that self-employed persons should be able to issue certificates as long as they are able to demonstrate successful completion of adequate training;
- Believe there would be significant costs associated with a requirement to be trained by an accredited institution to obtain certification.

APPENDIX B - Draft sample of a Dangerous Goods Competency Framework

Competency Units (CU) corresponds to job functions, dictated by the mode of transportation and operational requirements, based on the employer's business.

The following is a draft sample of CUs that could be applicable to all modes of transport, unless otherwise noted. In the future, the development of a competency framework would require assistance from industry to address function-specific training.

Some examples of competency units or job functions that may be applied across all modes include:

- CU 1: Classify dangerous goods
- CU 2: Preparing dangerous good shipments
- CU 3: Mark, label or placard dangerous goods
- CU 4: Prepare transportation documents
- CU 5: Offer dangerous goods for transport
- CU 6: Accept dangerous goods for transport (for air transport)
- CU 7: Handle Dangerous goods for transport
- CU 8: Transport dangerous goods

Based on the competency units above, the following competency units and their related competency elements (CE) and performance criteria (PC) may be defined and proposed:

TABLE 1: Competency Unit 1 – Classify dangerous goods

Competency Elements (CE)	Performance Criteria (PC)
CE 1.1. Evaluate substances or articles against classification criteria, as applicable	PC 1.1.1. Determine if it is dangerous goods
	PC 1.1.2. Determine if it is forbidden under any circumstances
CE 1.2 Determine dangerous goods description	PC 1.2.1 Determine class or division
	PC 1.2.2 Determine packing group, if applicable
	PC 1.2.3 Determine proper shipping name and UN number
	PC 1.2.4 Determine if it is forbidden unless approval or exemption is granted
CE 1.3 Review special provisions	PC 1.3.1. Assess if special provision(s) is applicable
	PC 1.3.2 Apply special provision(s)

TABLE 2: Competency Unit 2 – Preparing dangerous goods shipment

Competency Elements (CE)	Performance Criteria (PC)
CE 2.1 Assess packing options including quantity limitations	PC 2.1.1 Consider limitations (de minimis quantities, excepted quantities, limited quantities, special provisions)
	PC 2.1.2 Consider State and operator variations
	PC 2.1.3 Select how dangerous goods will be shipped based on limitations and variations
CE 2.2 Apply packing requirements	PC 2.2.1 Consider constraints of packing instructions
	PC 2.2.2 Select packaging materials (absorbent, cushioning, etc.)
	PC 2.2.3 Assemble package
CE 2.3 Apply marks and labels	PC 2.3.1 Determine applicable marks
	PC 2.3.2 Apply marks
	PC 2.3.3 Determine applicable labels
	PC 2.3.4 Apply labels
CE 2.4 Determine if overpack can be used	PC 2.4.1 Apply marks if necessary
	PC 2.4.2 Apply labels if necessary
CE 2.5 Prepare documentation	PC 2.5.1 Complete the dangerous goods shipping document
	PC 2.5.2 Complete other transport documents
	PC 2.5.3 Include other required documentation as applicable (e.g. approvals/exemptions, etc.)
	PC 2.5.4 Retain copies of documents as required

APPENDIX C – Sample Transport Canada TDG 101 Course

Suggested topics based on internal analysis and stakeholder consultations:

- Define the term dangerous goods; identify the classes and divisions of dangerous goods and understand their associated hazards.
- Describe the structure of, and how to use the *Transportation of Dangerous Goods Act, 1992* (TDGA), and the *Transportation of Dangerous Goods Regulations* (TDGR).
- Summarize who must comply with the TDGR and their responsibilities.
- Explain the special cases (exemptions) and how they apply.
- Identify the penalties for violating the TDGR.
- Identify shipping names, UN numbers, classes, packaging and labelling requirements, limited quantities, and special provisions.
- Complete shipping documents for dangerous goods.
- Demonstrate the proper use of safety marks such as labels and placards.
- Describe the differences in packaging and which packages are appropriate for specific classes and divisions of dangerous goods.
- Proper use of equipment for handling, offering for transport and/or transporting dangerous goods.
- Know what constitutes a release or anticipated release, and the necessary reporting requirements.
- Explain where to find information in case of an emergency, and know how to take reasonable emergency measures.