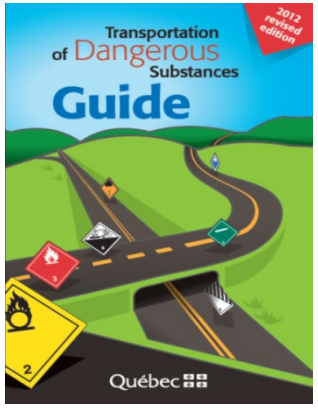
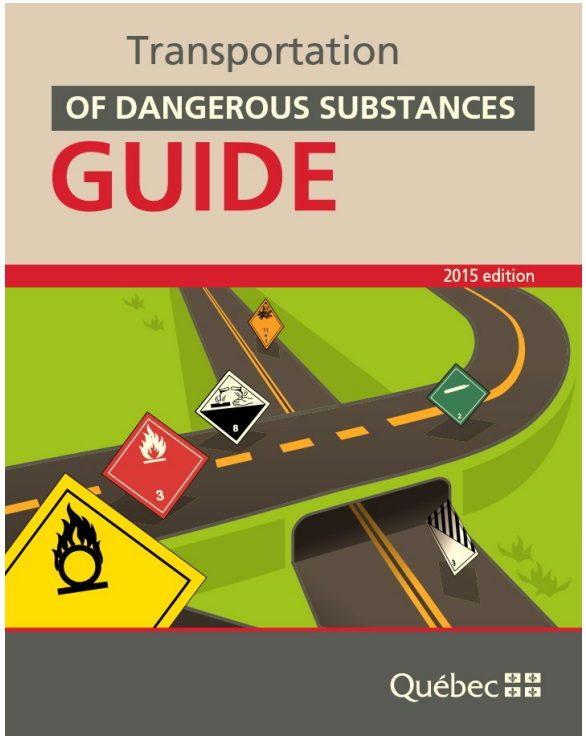
CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

- # Transportation of Dangerous Goods **M03L08**



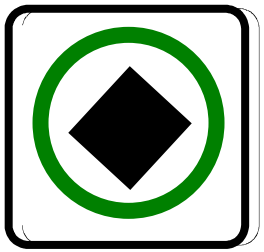


Patrice Nault modifiée par Alain Côté
Translation by: Simon Cousineau and Michel Halley

- NOTICE:
  - THIS GUIDE IS NOT A LEGAL INTERPRETATION OF THE REGULATION AND CARRIES NO LEGAL AUTHORITY. P.5

- Introduction:
  - THIS PROVINCIAL REGULATIONS IS ADAPTED WITH THE FEDERAL DEPARTMENT OF TRANSPORT (DOT) LEGISLATION . P.5

- The TDG act and regulations are in place to govern:
  - The handling of dangerous goods
  - The transportation of dangerous goods
  - The uniformity of TDG's informations.
  - The uniformity of ERAP(emergency response assistance plan)
  - To ensure the safety of drivers, the public and the environment



- The TDG regulations apply:
  - To all users handling DG
  - To all persons involved in the transportation process:Consignors, consignees, carriers, driver, etc… .
  - Emergency responders;
    - Firefighters;
    - Law officers;
    - EMS (Emergency Medical Service)
    - etc

- Classification:
  - The consignor is bound to determine the classification of a dangerous substance before allowing the carrier to take possession of the goods.
  - There are approximately 2200 dangerous substances divided into nine (9) classes

- Classe 1 = Explosives; p.6 to 10
- Classe 2 = Gases;
- Classe 3 = Flammable liquids;
- Classe 4 = Flammable solids,
  Spontaneously combustible materials
  And water-reactive substances;
- Classe 5 = Oxidizers
  and organics peroxides
- Classe 6 = Toxic materials
  and infectious substances
- Classe 7 = Radioactive materials;
- Classe 8 = Corrosive materials;
- Classe 9 = Miscellaneous products,
  Substances or organisms

Shipping documents

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- The consignor must filled out and give to the carrier (the driver) a shipping document.

- At the time of transport carriers must have in their possession a handwritten or printed-paper shipping document.

Shipping documents

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- The shipping documents must contain the following information :
  - The name and address of the consignor's establishment in Canada;
  - The date on which the document was filled out or submitted;

Shipping documents p.11

- **A description of each DG in the following order :**
  - The shipping name;
  - The primary class;
  - *The compatibility group letter, as the case may be;*
  - The subsidiary class or classes, as the case may be (this indication must be recorded in parentheses)
  - The UN number (this number can appear in front of the shipping name) **UN numbers** or **UN** IDs are four-digit **numbers** that identify dangerous goods, hazardous substances and articles (such as explosives, flammable liquids, toxic substances, etc.) in the framework of international transport. They are assigned by the **United Nations** Committee of Experts on the Transport of Dangerous Goods
  - The packing group, as the case may be;
  - *The risk group number in case of infectious substances;*

- Packing group:
  - Identifies the degree of danger represented.
  - Packing group I = great danger
  - Packing group II = medium danger
  - Packing group III = minor danger

- **E**mergency **R**esponse **A**ssistance **P**lan :
  - Some dangerous goods in certain quantities are considered more dangerous than other in need to have an ERAP;
  - the shipper must submitted an ERAP to Transport Canada .
  - Transport Canada must approve the plan and assigned a number to it before the DG can be transport in or through Canada.
  - In case of accident Transport Canada can be contacted to provided proper emergency response.

Shipping documents

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- The quantities must be express in KG or L
- It should be noted that shipping document prepared in Canada must specifed the quantities according to the International System of Units (SI)
- The number of small means of containment for each DG as a case may be;

Shipping documents

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- The «24 hour number» at which the consigor can be reached;
- The telephone number of a person other than the consigor who can provide technical information :
  - The CANUTEC number (*666 on cell phone) may not be used without the organization's written permission.
  - Initiate ERAP if required.

Shipping documents

p.11 and 24

- The carrier must update the shipping documents when the quantities or type of DG change during transport ;

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Shipping document

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Example of a shipping document

CONSIGNOR	Name:	Date:
	Address:	Point of origin:
OPERATOR Name: RIN: R-00000000		CONSIGNEE Name: Destination:

UN number	Shipping name	Primary class (explosives compatibility group)	Subsidiary class (as the case may be)	Packing group (as the case may be)	Quantity (kg or litres)	Number of small means of containment

Indicate any change in the quantity of dangerous substances or the number of means of containment during transport

"24-hour number" at which the consignor can be reached or CANUTEC number, with the organization's authorization

Emergency response assistance plan (ERAP) reference number, as the case may be

Telephone number to immediately implement the ERAP

In the case of the following dangerous substances:
- Class 4.1 (flammable solids) and Class 5.2 (organic peroxides)
  - regulation temperature and critical temperature
- Class 7 (radioactive materials)
  - any additional information required pursuant to the *Packaging and Transport of Nuclear Substances Regulations*

"I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the *Transportation of Dangerous Goods Regulations*."

Name of consignor or of the person acting on this behalf: _____

INTERMEDIARY
Name:
Identification number:

Storage and location of the shipping document during transport

When the driver is in the vehicle, the shipping papers must be stored in a pocket attached to to the driver`s door, or must remain within reach.

When the driver is not in the vehicle, the papers may be kept in a pocket attached to the driver's door or placed on the driver's seat, or kept within view of anyone who might have to climb aboard on the driver's side.

Drivers must replace any lost or damaged placard during transport

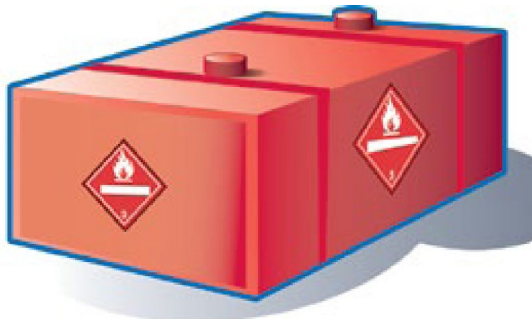
Small means of containment

Small means of containment have a capacity of 450 L or less, e.g. cylinders, jerry cans, pails, barrels of bottles.

Labels

Large means of containment

Large means of containment have a capacity greater than 450 L, e.g. tank trucks, large bulk containers or portable tanks.



Placard

Labels

The consignor is responsible for displaying or having displayed the primary class label and the subsidiary class label (as the case may be) on each small means of containment containing dangerous substances.

The carrier must ensure that the labels remain in place during the trip.

The label must be displayed:

- on any side if the outer surface of a small means of containment other than the side on which it is intended to rest or to be stacked during transport. «in the case of radioactive materials, the label must be displayed on two opposite sides of the outer surface;

- On or near the shoulder of a gas cylinder

The shipping name, the technical name (as the case may be), and the UN number of dangerous substances must be displayed on small means of containment in the following manner: the shipping name, beside the label, followed by the technical name in parentheses; the UN number, beside the primary class label or in the centre of the label inside a white rectangle.

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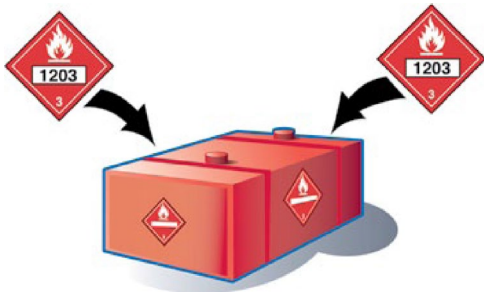
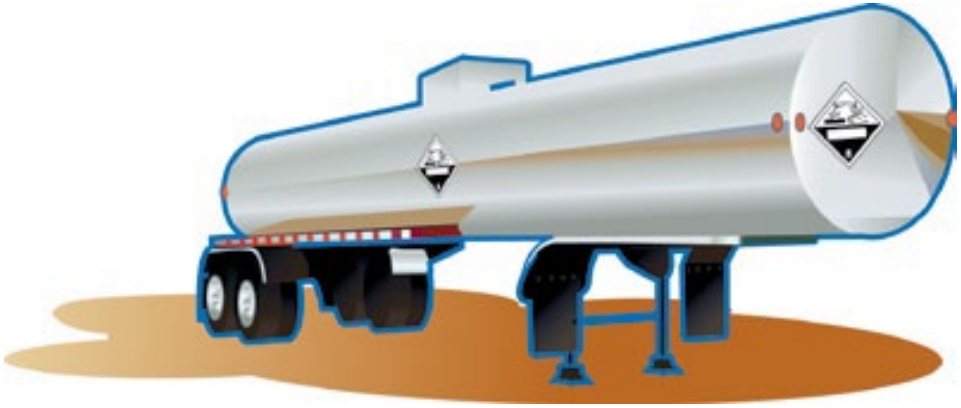
Labels

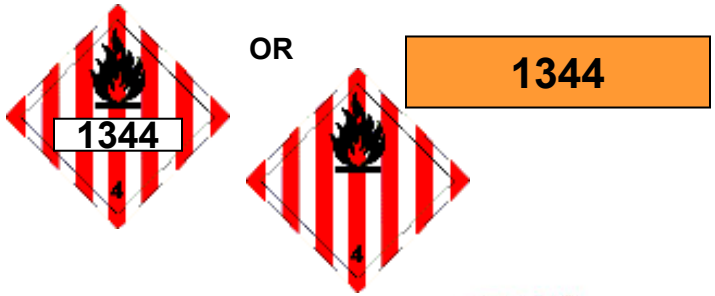
The consignor is responsible for displaying the placards or having them displayed,along with the UN number, where required, on each side and at each end of every large means of containment with a capacity over 450 litres that contains dangerous substances. The consignor must also, where required, provide the carrier with the placards to be displayed on the container or vehicle (truck, semi-trailer or trailer).





The carrier must affix or remove the placards when the quantities or type of dangerous substances change during transport. The carrier must also ensure that the appropriate placards remain in place during transport.
The UN number may be displayed either:

- inside a white rectangle on the placard;
- on an orange panel right beside the placard.



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- DANGER placard:
  - The «DANGER» placard may be used in certain situation to identify loads of various DG's.The diagram on page 25 makes it possible to ascertain whether the DANGER placard may be affixed.

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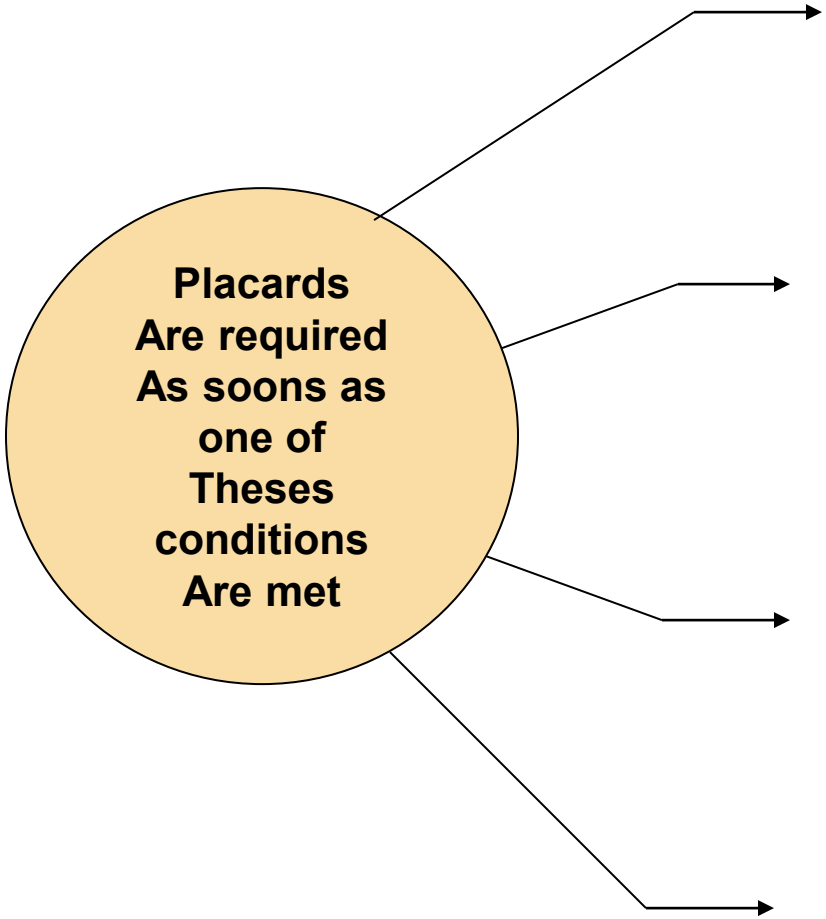
When Placards must be affix ?



- **An emergency Response Assistance Plan is requires (ERAP)**
- **It is a liquid or a gas in direct Contact with the large means of containment**
- **It is a Class 7 substance requiring A category III yellow label**
- **The gross mass (Mass of the container and its content) is greater than 500 Kg**

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SINGLE LOAD

Is an emergency response Assistance Plan(ERAP) required?

YES →

NO ↓

Is it a liquid or a gas in direct contact with large means of containment?

YES →

NO ↓

Affix Primary class placard

YES →

Primary(and subsidiary where warranted) class placard and the UN number

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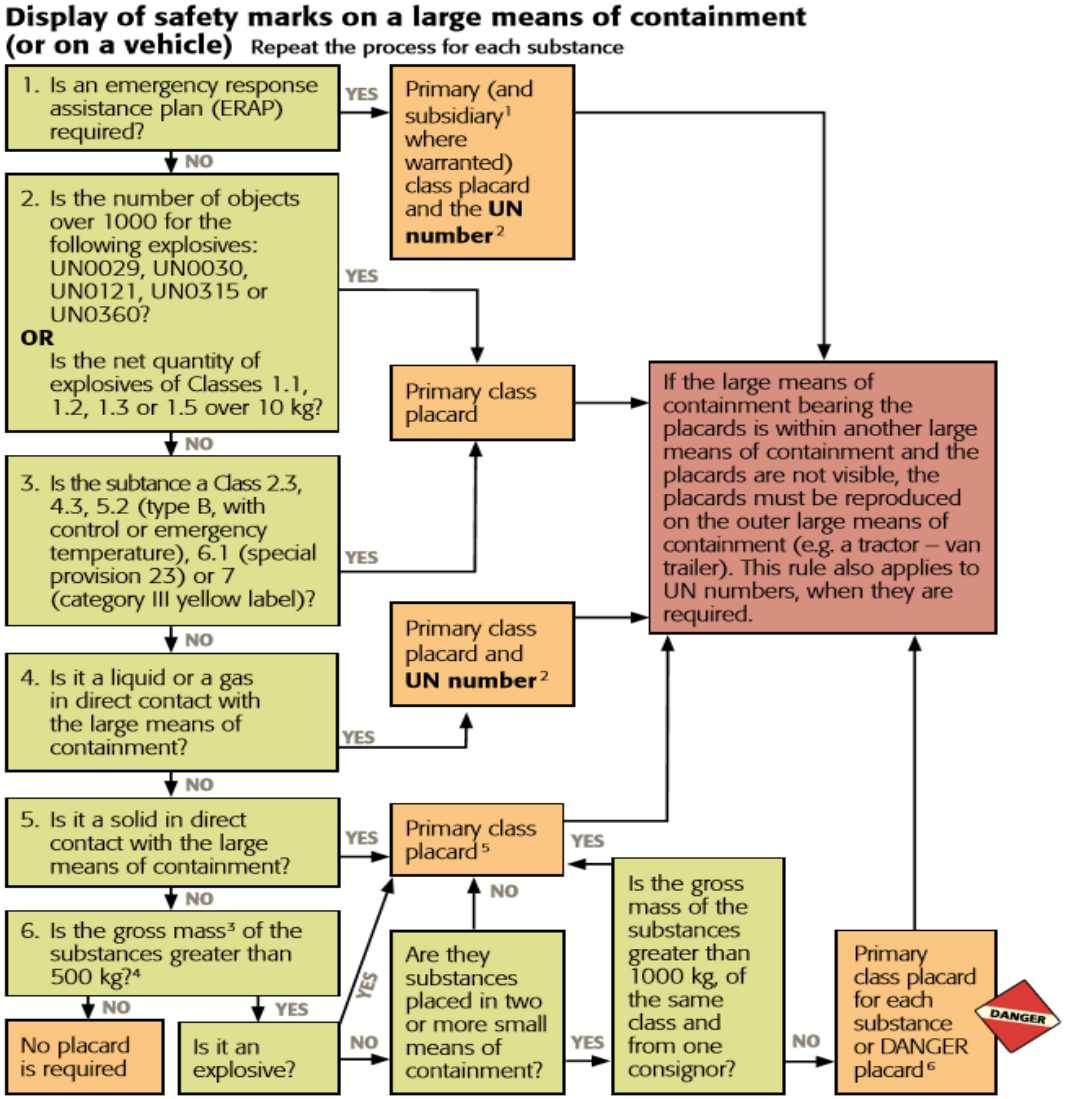
MIXED LOAD p.25

(*Repeat process for each substances*)



1. *Display a subsidiary placard when an ERAP is required and the substance belongs to any of these subsidiary classes: 1, 4.3, 6.1 (Packing Group I: Toxic by inhalation) and 8 (UN 2977 or UN2978).*
2. *The UN number does not need to be displayed for Class 1 explosives.*
3. *Mass of the means of containment and of its contents.*
4. *Add together the gross mass of each substance (except those covered by questions 1, 2 and 3).*
5. *Placards are not required for Class 1.4 regardless of the quantity of Class 1.4S explosives or if the quantity of other Class 1.4 explosives is lower or equal to 1000 kg.*
6. *The DANGER placard must be displayed where there are at least two different primary class placards.*

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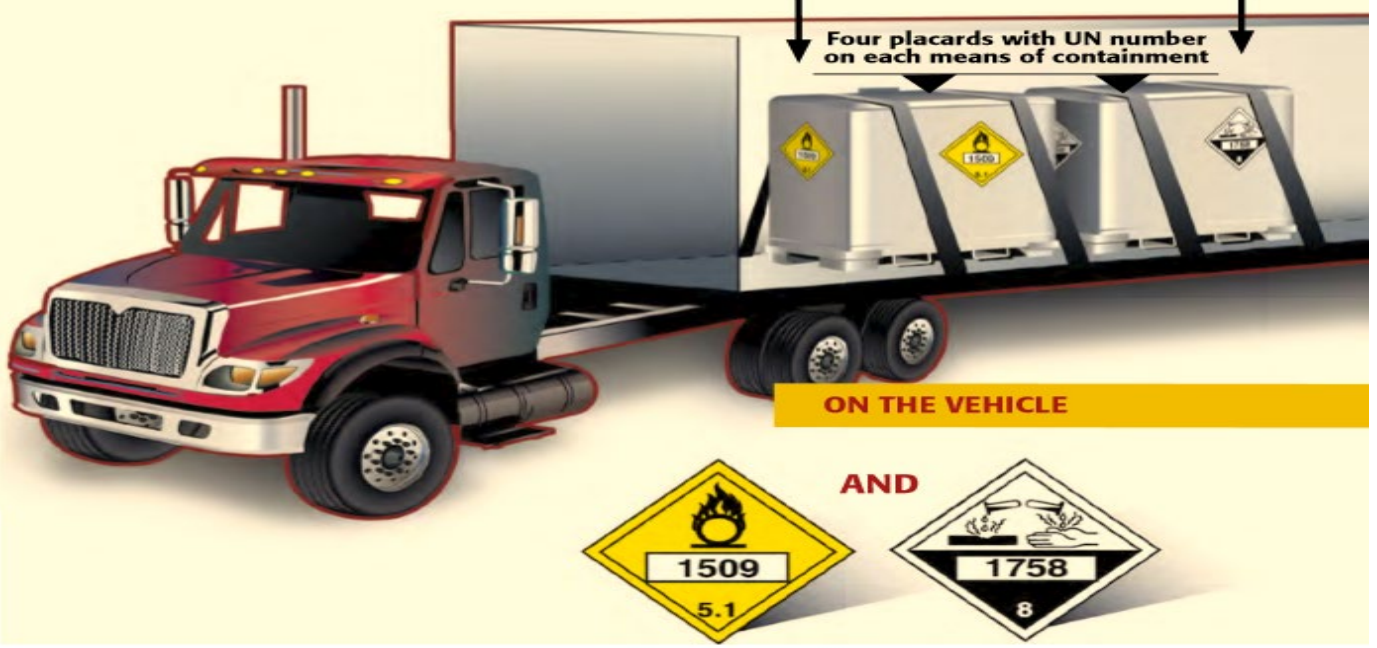
Example:
Placards and UN number to be displayed on a closed vehicle

Strontium peroxide
UN1509
Class 5.1, PG II
Quantity: 1,200 kg
ERAP Index: 1,000 kg

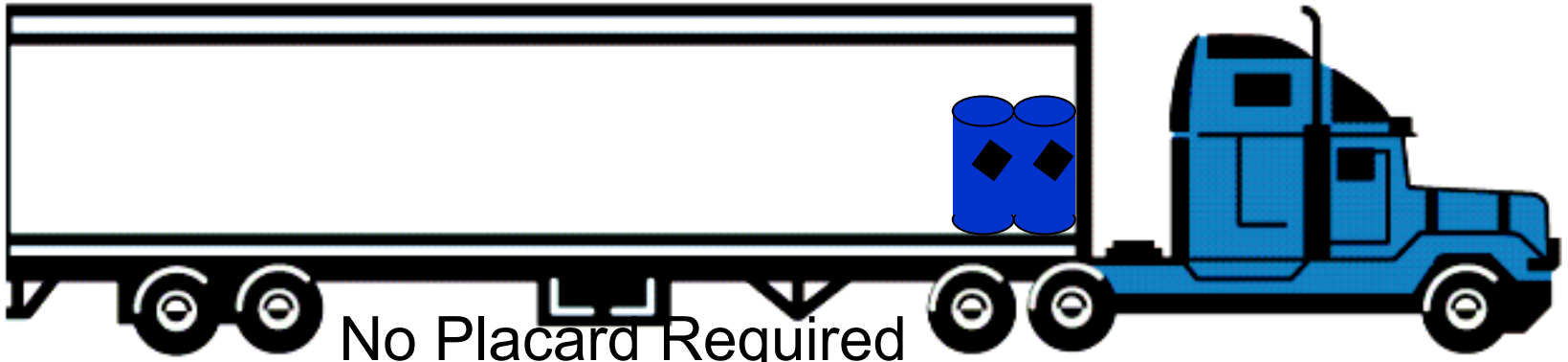
Chromium oxychloride
UN1758
Class 8, PG I
Quantity: 1,300 L
ERAP Index: 1,000 L



CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

Exercice 1
Which placard should be affix ?

400 kg, Class 3 Substance, No ERAP ,
Qty: 2 Barrels?

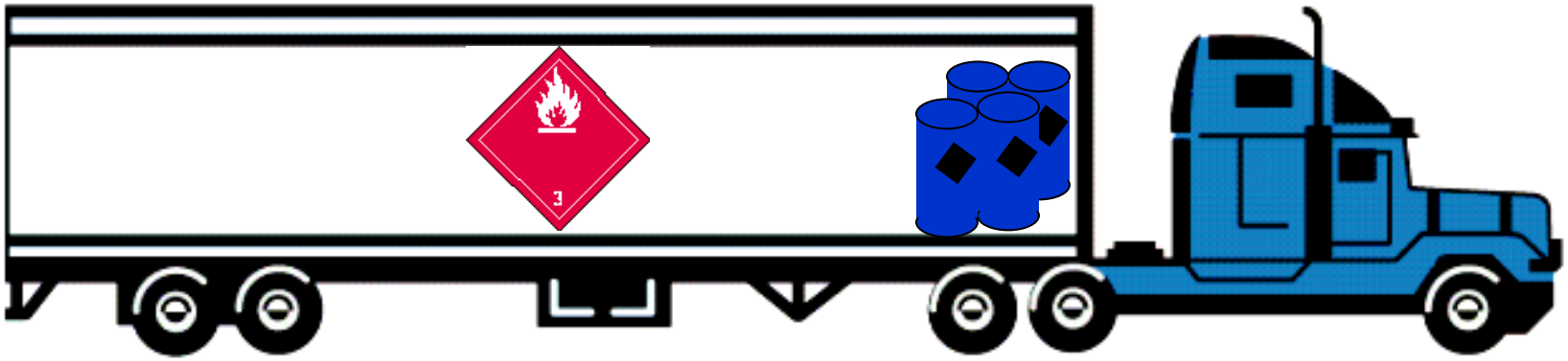


No Placard Required

CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

Exercice 2
Which placard should be affix?

800 kg, Class 3 Substance, No ERAP.
Qty: 4 Barrels ?



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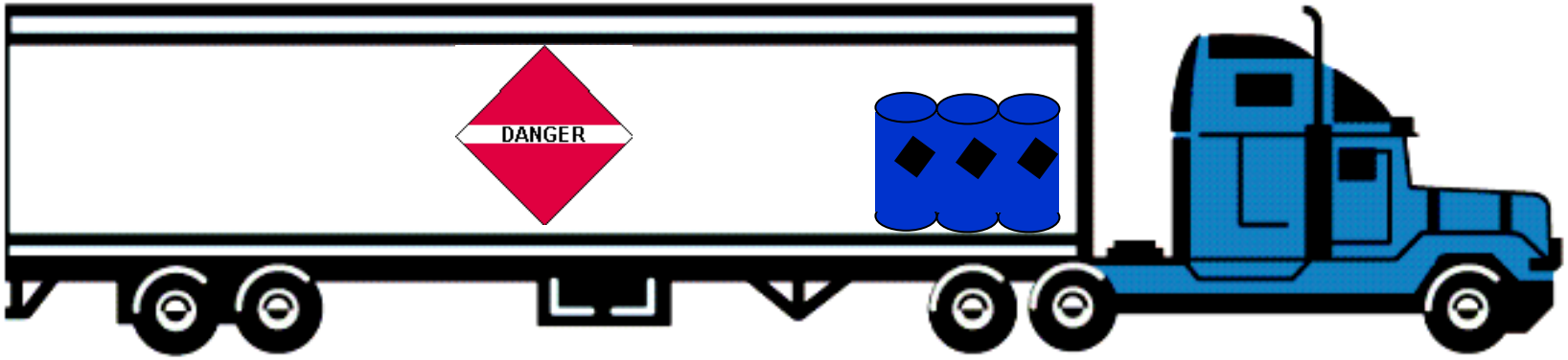
Exercice 3
Which placard should be affix ?

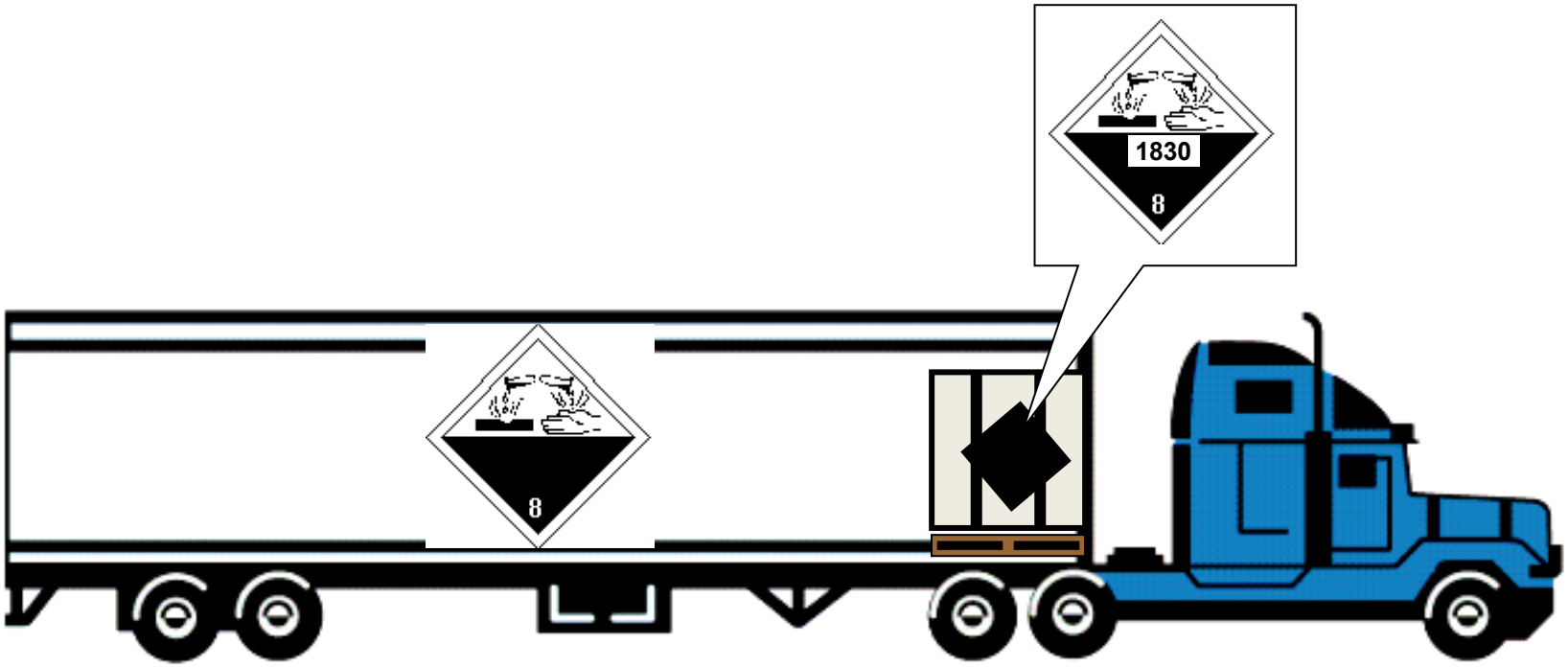
400 kg, Class 3 Substance, No ERAP,
Qty: 2 Barrels
+
200 kg, Class 8 Substance, No ERAP
Qty: 1 Barrel ?



CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

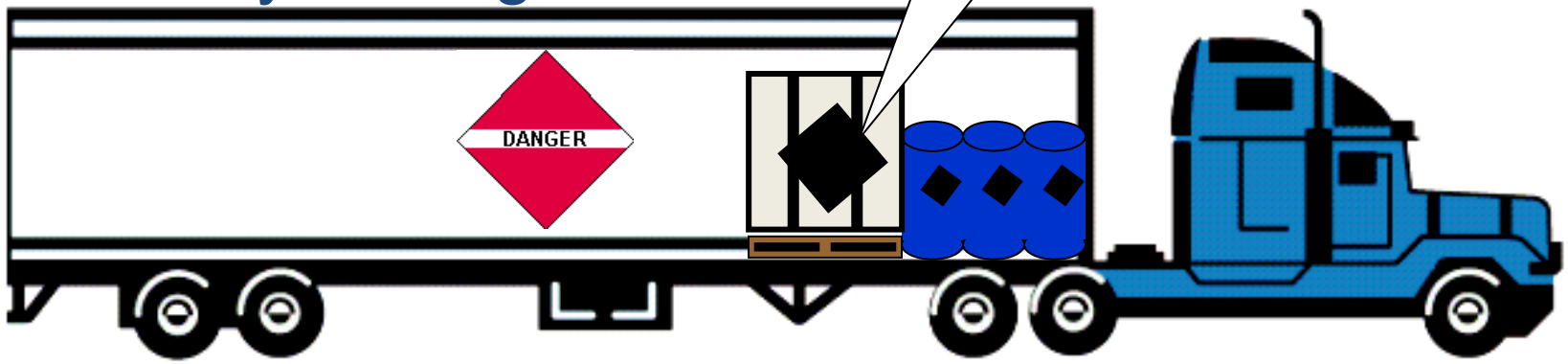
Exercice 4
Which placard should be affix ?

800 kg, Class 8 Substance, No ERAP
Qty: 1 Large Container « tôte tank » ?



Exercice 5
Which placard should be affix ?

400 kg, Class 3 Substance, No ERAP
Qty: 2 Barrels
+
200 kg, Class 8 Substance, No ERAP
Qty: 1 Barrel
+
800 kg, Class 8 Subst[illegible] ERAP
Qty: 1 Large Containe[illegible]tote tank » ?



CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

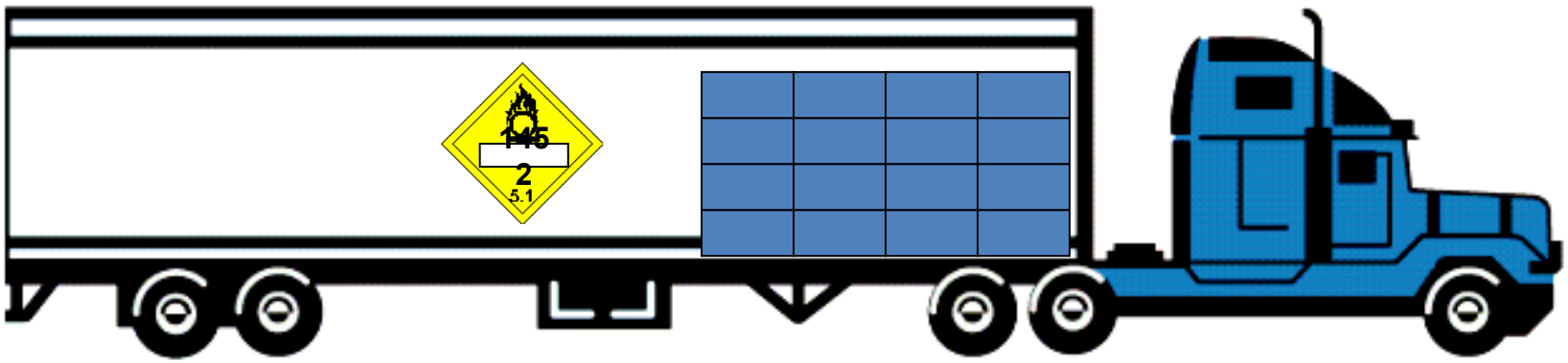
Exercice 6
Which placard should be affix ?

80 kg, Class 4.1 Substance, UN1344;
ERAP number written on Shipping Documents.

CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

Exercice 7
Which placard should be affix ?

4005 kg, Class 5.1 Substance, UN1452;
No ERAP



Training

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- Any person who handles, transports DG's or offer DG's for transport must be adequatly trained and possess training certificate.
- The employers (consignors, consigees, carriers, etc) are responsable for issuing a training certificate to an emplyee who handles or transport DG's or offer them for transport.
- The certificate expires 36 months after the issuance date.

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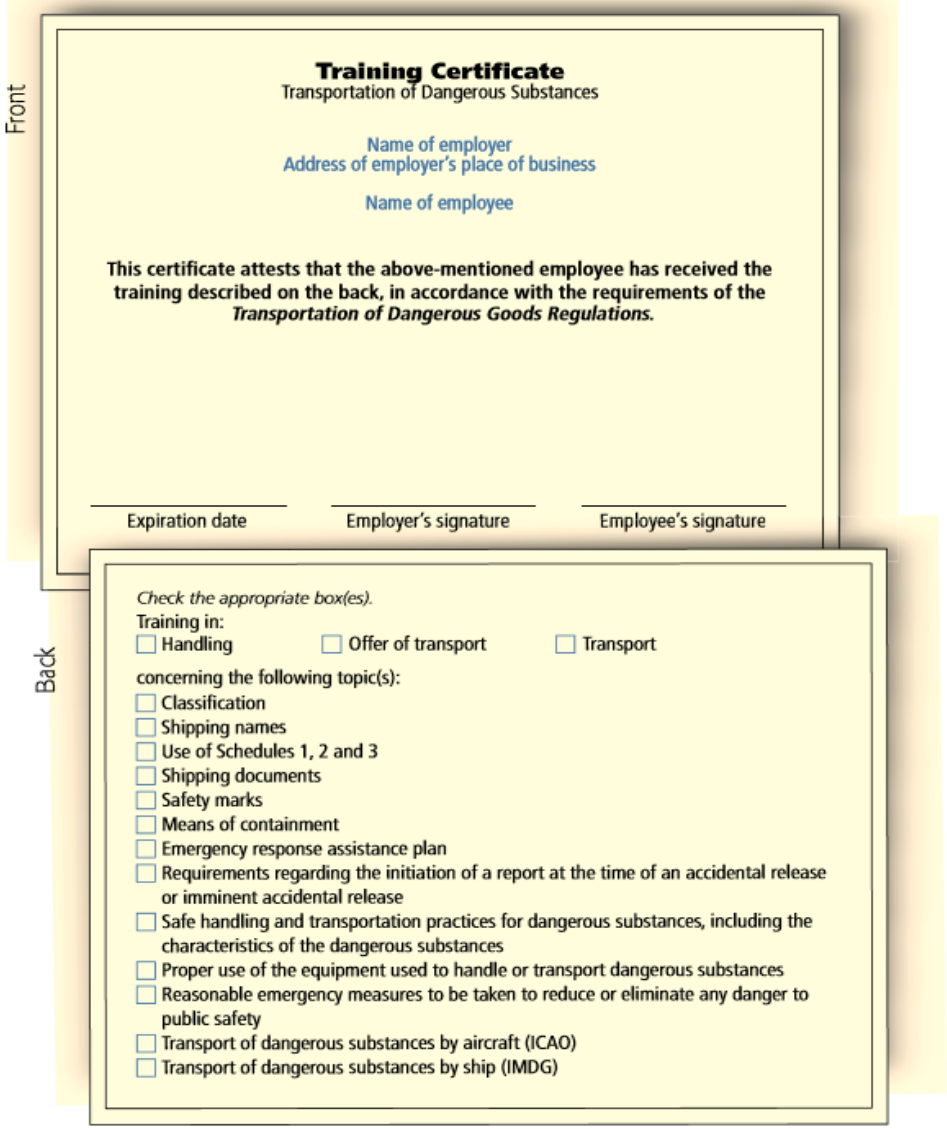
Example of training certificate

Example of a training certificate



Front

Training Certificate
Transportation of Dangerous Substances

Name of employer
Address of employer's place of business

Name of employee

This certificate attests that the above-mentioned employee has received the training described on the back, in accordance with the requirements of the *Transportation of Dangerous Goods Regulations*.

Expiration date | Employer's signature | Employee's signature

Back

Check the appropriate box(es).
Training in:
☐ Handling ☐ Offer of transport ☐ Transport

concerning the following topic(s):
- ☐ Classification
- ☐ Shipping names
- ☐ Use of Schedules 1, 2 and 3
- ☐ Shipping documents
- ☐ Safety marks
- ☐ Means of containment
- ☐ Emergency response assistance plan
- ☐ Requirements regarding the initiation of a report at the time of an accidental release or imminent accidental release
- ☐ Safe handling and transportation practices for dangerous substances, including the characteristics of the dangerous substances
- ☐ Proper use of the equipment used to handle or transport dangerous substances
- ☐ Reasonable emergency measures to be taken to reduce or eliminate any danger to public safety
- ☐ Transport of dangerous substances by aircraft (ICAO)
- ☐ Transport of dangerous substances by ship (IMDG)

Accidental Release

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In the event of an accidental release of a quantity of dangerous substances or an emission of radiation that is greater than the quantity or emission level set out in the following table, the person who has possession of the dangerous goods must immediately notify:

- the local police;
- his or her employer;
- the consignor of the dangerous substances;
- the owner, lessee or charterer of the vehicle;
- for infectious substances, CANUTEC at *666 on cell phone or (613) 996-6666;
- for an accidental release from a cylinder that has suffered a catastrophic failure,

CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

The treshold above which an immediate report is required in the accidental release of DG`S.
The threshold varies depending of the class and quantities of DG`S

1*	**Any quantity:** **a)That could pose a danger to public safety or is over 50Kg;** **b) Where the number of objects exceeds 1,000 for the following explosives: UN0029,UN0030, UN0121,UN0315 or UN0360;** **c) Where the net quantity explosives of Classes 1.2, 1.2,1.3 or 1.5 is over 10 Kg.**
2	**Any quantity that could pose a danger to public safety or any sustainer release of 10 minutes or more**.
3	**200 L.**
4	**25 Kg**.
5.1	**50 Kg. Of 50 L.**

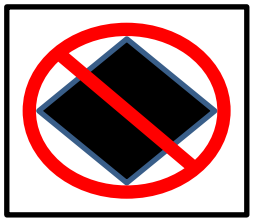
CENTRE DE FORMATION DU TRANSPORT ROUTIER DE SAINT-JÉRÔME

The treshold above which an immediate report is required in the accidental release of DG`S.
The threshold varies depending of the class and quantities of DG`S

5.2	**1 Kg or 1 L.**
6.1	**5 kg or 5 L.**
6.2	**Any quantity**
7	**Any quantity that could pose a danger to public safety. A risk is present when the ionizing level is above that estsblished in section 20 of the Packaging and Transport of Nuclear Substances Regulations**
8	**5 Kg or 5 L.**
9	**25 Kg or 25 L.**
*	**** Under the Regulation under the Act respecting explosives, the driver must also immediately notify thenearest Sûreté du Québec station and the owner of the vehicle.***

Requirements applying to the use of tunnels

Drivers of a road vehicle or combination of road vehicles are strictly prohibited from travelling in the tunnel section of pont-tunnel Louis-Hippolyte-Lafontaine, tunnels Ville-Marie and Viger in Montréal, pont-tunnel Joseph-Samson in Québec, and in Melocheville in Beauharnois



when:

- the quantity of dangerous substances they are transporting requires that placards be displayed, unless the vehicle is carrying only Class 9 dangerous substances;

- transporting Class 3 flammable liquid and the total capacity of the set of containers exceeds 30 L;

- transporting Class 2.1, 2.2 (5.1), 2.3 (2.1) and 2.3 (5.1) gases in more than two cylinders where the water capacity of a cylinder exceeds 46 L;

- the vehicle is equipped with an equipment that generates naked flame or contains incandescent solid fuel.

Tunnel

These prohibitions do not apply:

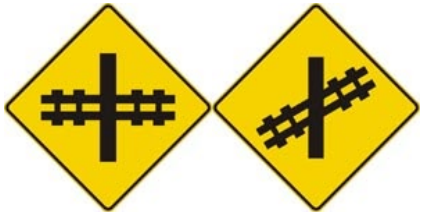
- when the fuel or liquid is used for a vehicle's propulsion system, where it is contained in a single or multiple tanks, which were designed for that purpose by the vehicle's manufacturer and is in compliance with the *Regulation respecting Safety Standard for Road vehicle.*

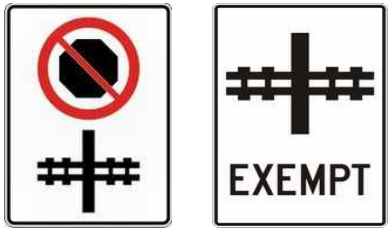
- when the flammable liquid is used for a vehicle's air conditioning system or a loading space, where the liquid is contained in a single tank with a capacity of 450 Liters or less, installed for that purpose by the air conditioning system manufacturer;

- when the flammable liquid is intended for the operation of an equipement permanently attached (screwed or bolted) to the vehicle's chassis where the tank capacity do not exceed 75 L;

- to emergency vehicles within the meaning of section 4 of the *Highway Safety Code;*

Level crossing





The driver of a road vehicle that contains dangerous substances requiring the displaying of placards must stop the vehicle at a level crossing. (Stop 5 Meters from the level corssing)

However, a driver is exempted from this obligation when a road sign indicates the exemption.

In order to alert other road users that a road vehicle stops at level crossings, it would be preferable to install a panel at the back of the vehicle, such as:

THIS VEHICLE STOPS AT LEVEL CROSSINGS

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All DG`s for personal use are exempt from The *Transportation of DG`s Regulation*

Examples: Propane and automobile battery.

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- Exemption for a gross mass less than or equal to 500 Kg

The standardized means of containment (except for Class 2 gases and drums) and the complete shipping document are not required to transport dangerous substances whose gross mass is less than or equal to 500 kg, provided that:

• the load is divided into one or more means of containment that are safe and appropriate (i.e. designed, constructed, closed, secured and maintained to prevent any accidental release), each with an individual gross mass of 30 kg or less (except for Class 2 gases and drums);

• if the substance is a gas, all safety marks are displayed on the means of containment;

• for substances other than gases, all safety marks or the shipping name and certain marks required pursuant to the legislation and regulations mentioned in the TGDR are displayed on one side of the means of containment

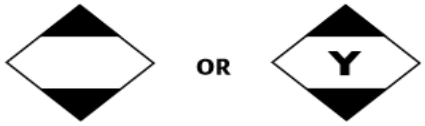
• a document (shipping document or any other document) is included with the dangerous substances and provides the following information: - primary class(es); - total number of means of containment;

• a training certificate is required.

Exemption for limited quantities

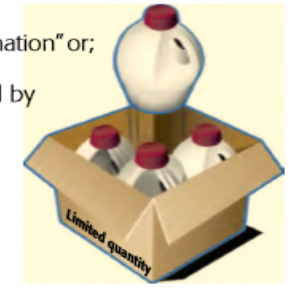
1. A quantity of dangerous substances (other than Class 1, Explosives) is a limited quantity if:
   - the substances are in one or more means of containment that are safe and appropriate (i.e. designed, constructed, closed, secured and maintained to prevent any accidental release);
   - each outer means of containment has an individual gross mass of 30 kg or less;
   - the mass (in the case of a solid), the volume (in the case of a liquid) or the capacity (in the case of a gas) of each inner means of containment is less than or equal to the number shown for them in column 6 of Schedule 1 of the TDGR.

2. Shipping document, safety marks, standardized means of containment (except for gases), training certificate, emergency response assistance plans and accidental release or imminent accidental release reports are not required, provided that:
   - each means of containment is legibly and durably marked on one side (other than a side on which it is intended to rest or to be stacked) with the **Limited Quantity mark**, which is represented by a square on a black point:



   However, the letter "Y" may be displayed in the centre of the mark if the limited quantity is in compliance with the *Technical Instructions* of the International Civil Aviation Organization (ICAO).

   - Until December 31, 2020, instead of being marked with the **Limited Quantity mark**, a means of containment may have displayed on it:
     - the words "Limited Quantity" or "quantité limitée";
     - the abbreviation "Ltd. Qty." or "quant. ltée";
     - the words "Consumer Commodity" or "bien de consommation" or;
     - the UN number (in black, with a height of at least 6 mm) of each limited quantity of dangerous substances preceded by the letters "UN", placed within a square on point.



Standards and safety rules

Cargo securement

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All means of containment used to transport dangerous substances and all other objects must be fastened or immobilized by means of structures of sufficient capacity, blocking devices, reinforcement, dunnage material or sacks, struts, fastening devices, or a combination of the above.

No means of containment used to transport dangerous substances may be installed:

- for a motorized road vehicle with bumpers:
  - on or in front of the front bumper;

- for a motorized road vehicle without bumpers:
  - on the outer front extremity, in the bucket or on any other part of a tool vehicle.

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Double train tank truck

No person may transport dangerous substances in a double train tank truck other than a Type B double train, as defined in the *Vehicle Load and Size Limits Regulation*.

Road train

No person may transport dangerous substances in a road train more than 25 m long when the quantity of dangerous substances requires that placards be displayed.

Tank truck containing flammable substances

The driver of a tank truck that contains flammable substances must ensure that no one smokes or lights a flame inside the truck cab at any time or within 8 metres of the truck during loading or unloading.

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Safety and security measures

More than any other type of transportation, the transportation of dangerous substances requires numerous precautions.

Prior to departure

Drivers must:

- have in their possession their training certificate in the transportation of dangerous substances;
- have the shipping documents on hand;
- verify that safety marks for the dangerous substances have been correctly displayed;
- be aware of safety procedures in the event of an accident;
- have rested for at least 8 hours;
- perform a visual and auditory inspection of certain accessible parts of the vehicle or combination of vehicles before every departure;
- check the securement of the cargo;
- ensure that the load complies with the appropriate load and dimension standards.

During transportation

Drivers must:

- refrain from smoking entirely while transporting flammable substances;
- drive with extra caution when driving a tank truck;
- adapt their driving to the road conditions;
- comply with speed limits;
- comply with braking distances;
- regularly check the securement of the cargo and the condition of the tires;
- observe driving and working hours;
- avoid consuming alcohol or drugs.

- Présentation montée par Patrice Nault, enseignant au S.A.E. du C.F.T.R. Saint-Jérôme.
- All information in this presentation is based on the Transportation of Dangerous Substances Guide from Quebec MTQ.
- www.mtq.gouv.qc.ca
- Translation by Simon Cousineau and Michel Halley CFTR Teachers.