

SASKATCHEWAN ASSOCIATION FOR
SAFE WORKPLACES
IN HEALTH

Workplace health and safety:
a priority for all.

Transportation of Dangerous Goods (TDG) 6.2 Infectious Substances

February 2022

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IN HEALTH

Course Outline

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TDG Act & Regulations: General Overview

The TDG Act and Regulations are published by Transport Canada. They are Federal Laws that stipulate the roles of the worker and the employer with respect to shipping hazardous substances.

The *TDG Act & Regulations* are meant to ensure that hazards associated with the movement of dangerous goods are minimized by:

- Use of standardized, tested containers
- Clear communication of hazards
- Documented tracking of hazardous shipments
- Provision of effective emergency response plans

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TDG Act & Regulations: General Overview

Both laws (Provincial OH&S and Transport Canada) hold the employer accountable for provision of training and a safe work environment; the worker is accountable for following safe work practices and reporting unsafe conditions.

Accountability



What does accountability mean to you?

How are we accountable at home?

How are we accountable at work?

How is your employer accountable to you?

As your trainer, how am I accountable to you?

Legislation



Saskatchewan Occupational Health and Safety Legislation outlines:

- Employer Responsibilities
- Worker Responsibilities
- Rights of the Worker

What are the 3 rights of the worker?

Right to Know
Right to Participate
Right to Refuse

The Importance of Training



- Part 6 of the TDG Regulations, states that anyone who handles, offers for transport, or transports dangerous goods **MUST** be adequately trained and holding a training certificate
- An employer **MUST NOT** direct or allow an employee to handle, offer for transport or transport dangerous goods unless the above conditions have been met

The Importance of Training



A person is considered **adequately trained** if they have sound knowledge in all of categories listed below as it pertains to their duties and the dangerous goods they are expected to handle:

- | | |
|-------------------------|--|
| a) Classification | g) Emergency Response Assistance Plans |
| b) Shipping Name | h) Accidental Release Reporting Requirements |
| c) Use of Schedules | i) Safe handling & Transportation Practices |
| d) Shipping documents | j) Reasonable Emergency Measures |
| e) Safety Marks | |
| f) Means of Containment | |

The 9 TDG Classes



1. Explosives
2. Gases
3. Flammable Liquids
4. Flammable Substances
5. Oxidizers & Organic Peroxides
6. Toxic & **Infectious Substances**
7. Radioactive
8. Corrosives
9. **Miscellaneous (includes Dry Ice)**

What is an Infectious Substance?



An Infectious Substance is defined under Section 1.4 of the TDG Regulations as:

A substance, such as viruses, bacteria, parasites, fungi or other agents that is known or reasonably believed to cause disease in humans or animals.

Infectious Substances might also be blood, tissue, organs, body fluids, or cultures that contain pathogenic microorganisms.

Category



Infectious Substances fall under Class 6.2 in TDG Regulations

Class 6.2 has two categories: Unlike other classes, Infectious Substances are not assigned packing groups, but are included in either Category A or Category B.

Exempt Specimens (Meaning not meeting the criteria as Category A or B Infectious Substances) will still be assigned to a packing group:

- Packing group I: High danger
- Packing group II: Medium danger
- Packing group III: Minor danger

Category



Category A:

- Are transported in a form that poses the highest risk of infection during transportation.
- They are capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy individuals or animals.

Category



Category B:

- May be responsible for causing disease in humans or animals, but the conditions of transport are such that the likelihood of contracting the disease upon exposure is extremely unlikely.
- Infectious substances that do not meet the criteria for inclusion in Category A.

What Form are Infectious Substances Shipped in?



Cultures:

The result of a process by which pathogens in a specimen are intentionally propagated.

The risk of infection is higher in cultures due to the high concentration of the infectious substances as opposed to patient specimens.

Always shipped as Category A Infectious Substances

What Form are Infectious Substances Shipped in?



Medical or Clinical Waste:

Medical or Clinical wastes include sharps, soiled linen etc.

They are derived from the medical treatment of animals or humans or from bio-research.

If the medical or clinical waste is believed to contain a pathogen that meets the definition of Category A or B, it must then be assigned appropriately.

What Form are Infectious Substances Shipped in?



Biological Products:

Products derived from living organisms, such as a virus therapeutic serum, blood, blood derivatives, or vaccines applicable to the prevention, treatment, or cure of a disease or condition of humans or animals.

If a biological product is believed to contain a pathogen that meets the definition of Category A or B, it must then be assigned appropriately.

What Form are Infectious Substances Shipped in?



Neutralized/Inactivated

Substances in a form that any pathogens present have been treated such that they no longer pose a health risk.

These neutralized/inactivated/fixed materials are not subject to the Regulations unless they meet criteria for inclusion in another class. For example, fixed samples are not infectious, but the fixative is often flammable.

The substance would then be a Class 3 Flammable Liquid.

What Form are Infectious Substances Shipped in?



Patient Specimens:

Patient specimens are collected directly from humans or animals (for example: blood, tissue, body parts), that are being transported for purposes such as research, diagnosis, investigational activities, disease treatment and prevention.

If the patient specimen is believed to contain a pathogen that meets the definition of Category A or B, it must then be assigned appropriately.

Are There Exemptions?



YES!

Human/Animal/Biological specimens are exempt from certain parts of the TDG Regulations if you have **NO REASON TO BELIEVE** that the specimen contains an infectious substance.

Examples of specimens that may be transported under this exemption are:

- Blood/urine specimens for blood sugar levels, hormone levels, cholesterol levels.
- Drug/Alcohol screening
- Pregnancy tests
- Biopsies to detect cancer

Are There Exemptions?



YES!

Medical and Clinical Waste is exempt from certain parts of the TDG Regulations if you have **NO REASON TO BELIEVE** that the specimen contains an infectious substance. Exempt Medical or Clinical waste must be marked as:

Clinical Waste N.O.S.
(BIO) Medical Waste N.O.S.
Regulated Medical Waste N.O.S.

The dangerous goods must be in an appropriate means of containment as outlined in the TDG regulations and marked with a biohazard symbol.

Examples of Waste Exemptions



Clinical Waste, N.O.S.

- Human Tissue or Animal Tissue
- Bodily Fluids or Blood

(BIO) Medical Waste, N.O.S.

- Solids generated in the diagnosis, treatment or immunization of human beings.
- For example: Sharps, swabs, gloves, bandages

Regulated Waste, N.O.S.

- Contaminated items that could release blood or other potentially infectious material during handling.
- For example: Contaminated sharps, isolation waste, lab materials such as culture dishes, test tubes etc.

Are All Specimens Exempt?



NO!!!!

If you **HAVE REASON TO BELIEVE** that the specimen contains Class 6.2 micro-organisms, the specimens are classified as Class 6.2 and assigned to either Category A or B.

If the specimens are part of routine screening tests, they would be shipped as per section 1.42 of the TDG Regulations (exempt specimens)

UN Number



A UN Number (United Nations Number) is a 4 digit number that identifies hazardous materials in the framework of international transport. It can be found in Column 1, of Schedule 1.

TDG 6.2 UN Numbers



Category A:

UN 2814- INFECTIOUS SUBSTANCE, AFFECTING HUMANS
UN 2900- INFECTIOUS SUBSTANCE, AFFECTING ANIMALS, only

Category B:

UN 3373- BIOLOGICAL SUBSTANCE, CATEGORY B

Exemptions:

UN 3291- CLINICAL WASTE, UNSPECIFIED N.O.S.
UN 3291- (BIO) MEDICAL WASTE, N.O.S.
UN 3291- REGULATED MEDICAL WASTE N.O.S.

Class 9 Miscellaneous

UN 1845- CARBON DIOXIDE SOLID (Dry Ice)

Technical Name vs. Shipping Name



The shipping name of a substance is the name that must appear on all shipping documents and shipping containers. The shipping name can be found in Schedule 1, Column 2.

The shipping name of a substance is NOT the technical name of a substance. It is the shipping name assigned to a group of substances and is linked to a UN number.

For Example:

The **technical name** of a sample may be: **Mycobacterium Tuberculosis**

The **shipping name**, however is: **INFECTIOUS SUBSTANCE, AFFECTING HUMANS**

TDG Schedules



The TDG Regulations include 3 schedules which list out all of the hazardous substances recognized under the Regulations, and any special shipping provisions required.

Schedule 1: (Blue Pages)

Listing of all substances by UN Number

Schedule 2: (Yellow Pages)

Special Provisions (instructions) associated with a particular substance, such as compatibility and any special handling/storage instructions

Schedule 3: (Pink Pages)

Listing of all substances in alphabetical order. *Note* you are not looking up substances by their technical name, you are looking them up by their shipping name

Appendix 3



A list of regulated Infectious Substances sorted into either Category A or Category B substances.

If you do not know the UN number or Shipping Name of a substance, you can look up the substance by its Technical Name in Appendix 3.

Once you know what category that substance belongs to you, you can then look it up by the UN Number and/or the Shipping Name.

Appendix 3 is not an exhaustive list, it is there to act as a guide for those classifying infectious substances.

Classification



In order for a substance to be properly classified it must have the following Information:

UN Number: Column 1

Shipping Name: Column 2

Primary Class: Column 3

Infectious Substance Packing Group/Category: Column 4

For example:

If we were to fully classify Ebola Virus for a shipping document/shipping container, it would read:

UN 2814 INFECTIOUS SUBSTANCE, AFFECTING HUMANS Class 6.2 Category A

Practice Exercise



For the following, fully classify the substance. Remember to include the UN Number, Shipping Name, Primary Class and Packing Group/Category.

Nipah Virus

UN 2814 INFECTIOUS SUBSTANCE AFFECTING HUMANS CLASS 6.2 CATEGORY A

Hepatitis C Virus

UN 3373 BIOLOGICAL SUBSTANCE CLASS 6.2 CATEGORY B

COVID-19 PCR Test Sample

UN 3373 BIOLOGICAL SUBSTANCE CLASS 6.2 CATEGORY B

Drug/Alcohol Screening Test

UN 3291 (BIO) REGULATED MEDICAL WASTE CLASS 6.2 PACKING GROUP II

HantaVirus

UN 2814 INFECTIOUS SUBSTANCE AFFECTING HUMANS CLASS 6.2 CATEGORY A

Practice Exercise



For the following, fully classify the substance. Remember to include the UN Number, Shipping Name, Primary Class and Packing Group/Category.

Are there any specific substances that you would like practice in looking up?

What If I am Still Unsure on How to Classify the Substance?



If you are unsure on whether the specimen you are shipping falls under Category A, Category B or Exempt contact the Public Health Agency of Canada who will provide assistance.

Contact Number

Public Health Agency of Canada 1-616-957-1779

Exposure



An exposure occurs when an infectious substance is released outside of the protective packaging in an uncontrolled manner, resulting in physical contact with humans or animals

How can we prevent an exposure??

Packaging substances appropriately, using the proper means of containment

Means of Containment



There are specific Transport Canada approved containers for shipping hazardous goods under TDG Regulations.

These containers meet specific standards and have undergone detailed testing to ensure that they will meet the rigors of shipping without releasing the dangerous goods packed within them.

For substances where the sample is **less than 450L or 500Kg** you would utilize **Small** container

For substances where the sample is **more than 450L or 500kg** you would utilize a **Large** container

Means of Containment



Types of Containers:

When shipping infectious substances there are certain types of packaging required depending on the category it belongs to.

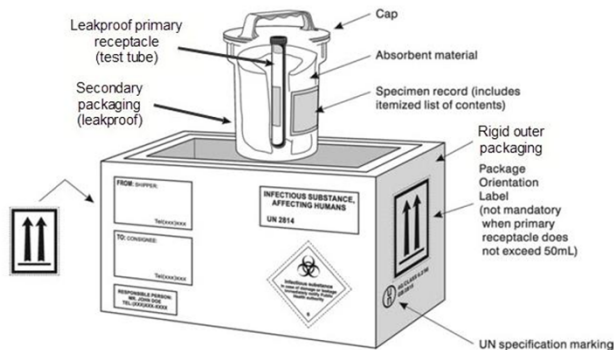
P620 Packaging Intended to transport a Category A Infectious Substances, however, can also be used to ship Category B and exempt medical or clinical waste.

P650 Packaging Typically used for Category B Infectious Substances. This includes any Category A substances that may be shipped as Category B.

Means of Containment



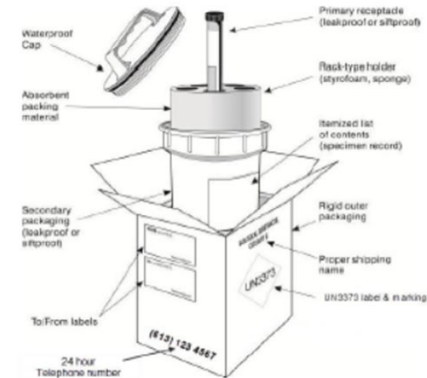
Example of a Type P620 packaging



Means of Containment



Example of a Type P650 packaging



Safety Marks- Labelling the Container



- Labels on the shipping containers provide information to everyone in the shipping chain that there is a hazard present, and also provides information about the construction and durability of the shipping container.
- Shipments must be labelled prior to transport
- Labels must remain legible during transport
- Labels must be removed after the hazard is removed from the container
- Labels must be applied 'on point' and be at least 100mm x 100mm
- The container labelling requirements vary with the classification of the shipment but always include the shipping name, UN number, container specification marks and the address of the consignor.

Safety Marks- Placards



Does my vehicle need a placard?

Placards are required when the:

- Gross mass of the infectious substance is 500kg or more
- Shipment requires an Emergency Response Assistance Plan

Who is responsible for placarding the vehicle?

Whoever loads the vehicle or large means of containment is responsible for displaying the placard. Once the vehicle leaves the site, the carrier is responsible for placarding

Roles and Responsibilities in the Transport Chain



Employer/Supervisor:

- To ensure that staff meet the training certificate requirements
- Ensure the issuance and contents of a Training Certificate
- To keep proof of training
- To show proof of training upon request
- To sign training certificate

Roles and Responsibilities in the Transport Chain



Consignor

- Must be adequately trained and hold a training certificate. Must have signed certificate.
- Responsible for determining the classification of the dangerous good
- Prepares the shipping document and provides that document to carrier
- Ensures the proper display of required dangerous goods safety marks on the means of containment

Roles and Responsibilities in the Transport Chain



Carrier

- Is adequately trained and holds a training certificate. Must have signed certificate.
- Does not take possession of dangerous goods for transport unless the carrier has the shipping document for the dangerous goods
- While the dangerous goods are in transport and in possession of the carrier, the carrier must keep the shipping document within arms reach.
- Responsible for ensuring the dangerous good is properly labelled and has the correct documentation.

Roles and Responsibilities in the Transport Chain



Consignee

- Must be adequately trained and holding a training certificate. Must have signed certificate.
- The person receiving the shipment has a duty to report lost or damaged shipments.
- Has the right to refuse shipments that are damaged.
- Responsible for ensuring shipment is properly labelled and has correct documentation before accepting.

Documentation



A shipping document is the document that contains the required information about the dangerous goods being handled, offered for transport or transported.

While en route, a paper copy must accompany the shipment.

The document is prepared by the consignor. This document must be produced when requested by a Transport Canada Inspector.

Copies must be kept on file by the consignor and carrier for at least 2 years.

Documentation



Minimum information required on a shipping document:

- Consignor's name and address
- Date of shipment
- UN Number
- Shipping name
- Primary class and subsidiary class
- Packing group or category
- any extra information required by Special Provisions
- the quantity in metric measurement
- 24 hour contact information
- the consignor's certification (Not your training certificate. Rather the consignor stating that the package has been classified and packaged properly)

Documentation

Note: the yellow spaces are required information. Other space reflect common practice.

SHIPPING DOCUMENT							
Consignor (Shipper) Name: Address:				Consignee (Destination) Name: Address:			
DATE:				Point of Origin:			
Name of Carrier:				Shipping Document #:			
Transport unit #:							
REGULATED DANGEROUS GOODS							
24-HOUR NUMBER:				(Only if applicable) ERAP reference #: ERAP telephone number:			
UN number	Shipping name (if applicable, Technical Name)	Primary Class	Subsidiary Class	Packing Group	Toxic by inhalation (SP 23)	Total Quantity (kg or L)	Number of packages requiring labels
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.							
Shipper's name (please print)							
NON REGULATED DANGEROUS GOODS							
Packages	Description of articles					Weight	
Received in apparent good order Consignee's signature				Driver's #: Driver's signature			

ERAP

- ERAP, or **Emergency Response Assistance Plan**, is a plan that must be registered and approved by Transport Canada in advance and the plan must be activated prior to the movement of the shipment.
- It is a plan that describes what is to be done in the event of an accident involving certain higher risk dangerous goods, in our case, the Risk Group 4 viruses. These Risk Group 4 viruses are classified as Category A but they require special expertise and response equipment to respond to an incident or spill.
- The plan is intended to assist local emergency responders by providing them with technical expertise and specially trained and equipped emergency response personnel at the scene of an incident.
- Activation of an ERAP includes the plan number documented on the TDG Shipping Document and includes a 24 hour contact phone number provided in the plan.



ERAP

Required for substances and/or quantities that are considered beyond the risk capabilities of local first responders (usually the fire department).

Regulation 7.1(7): A person who offers for transport or imports any quantity of the following dangerous goods, included in Class 6.2, Infectious Substances, or any substance that exhibits characteristics similar to these dangerous goods, must have an approved ERAP.

Risk Group 4 Viruses

- | | |
|--|---|
| a. Crimean-Congo Hemorrhagic Fever Virus | i. Machupo Virus |
| b. Ebola Virus | j. Marburg Virus |
| c. Foot and Mouth Virus Cultures | k. Nipah Virus |
| d. Guanarito Virus | l. Omsk Hemorrhagic Fever Virus |
| e. Hendra Virus | m. Russian Spring-Summer Encephalitis Virus |
| f. Herpes B Virus | n. Sabia Virus |
| g. Junin Virus/Kyasanur Forest Virus | o. Variola (Smallpox Virus) |
| h. Lassa Virus | p. and recently added Tick borne encephalitis |

Reporting



- When there is a release, or an imminent release, of any amount of Class 6.2 substances it is immediately reportable by whomever has possession of the dangerous goods at the time of the release.
- The incident must be reported to all of the following:
 1. Provincial Authorities
 2. CANUTEC (if applicable)
 3. The Employer
 4. The Consignor
 5. The owner of the road vehicle if applicable

Reporting



CANUTEC: Canadian Transport Emergency Centre of the Department of Transport)

CANUTEC provides emergency response assistance and all spills must be reported to CANUTEC for any amount of class 6.2. To use them as an emergency contact, you must register with them first.

Registration Link: <http://wwwapps.tc.gc.ca/saf-sec-sur/3/SRC-CRS/CANUTEC/index.aspx?lang=0>.

Contact information: CANUTEC
1-888-226-8832 (toll free) or 1-613-996-6666

Reporting



Category A: The emergency response contact would be CANUTEC, and if there is a special provision 84, must have an ERAP. The phone number for CANUTEC (1.888.226.8832 toll free or 1.613.996.6666) must be displayed on the shipment container.

Category B: A 24 hour phone number must be used and displayed on the container. This 24 hour phone number is a contact number of a person who must answer the call in an emergency and has knowledge of the dangerous goods being shipped.

Reporting



1. Emergency report by phone.
2. The immediate report - includes the company name and address, shipping name of the spilled substance, quantity, description of the incident, any injuries and any evacuations that resulted.
3. The 30 day report only if release resulted in death or evacuations - a summary of the incident must be submitted to Transport Canada. The information provided in the report is used to evaluate the effectiveness of the regulations and may lead to regulatory change.

Enforcement



Federal inspectors enforce the law. They can:

1. Inspect shipments and tracking documents
2. Search/Seize shipments
3. Take samples from your shipment
4. Make copies of all documentation

There are monetary penalties, creative sentencing options, and jail time for non compliance. Inspectors can issue warnings and/or write tickets.

Any person who contravenes or fails to comply with a provision of this Act can be fined \$50,000-\$100,000 and/or 2 years in jail.

Where violations occur, **EVERYONE** in the shipping chain can be charged

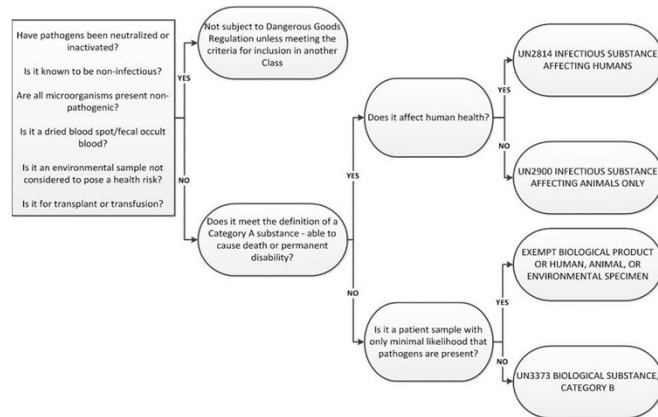
Important Contact Information



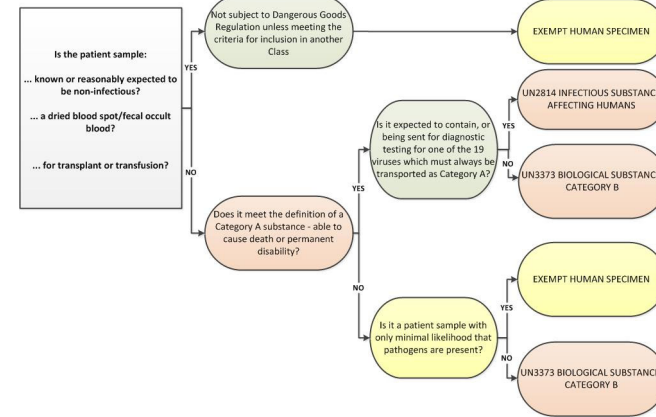
- **CANUTEC** 1-888-226-8832 (toll free) **or** 1-613-996-6666
- **Public Health Agency of Canada** 1-616-957-1779
- **Saskatchewan Provincial Authorities** 1-800-667-7525
- **List of vendors for P620 and P650 packaging**

<https://tc.canada.ca/en/dangerous-goods/list-vendors-type-p620-p650-packagings-infectious-substances>

Classification-General






Classification – Patient Specimens



Safety Marks - Labels

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Category A	Category B	Exempt Specimen
If you are shipping a Cat. A, you must label the pack with an infectious substance label. This label is illustrated in the Appendix to Part 4 of the TDG Regulations.	When shipping a Category B infectious substance, section 1.39 and 4.22.1 say you must label the package with the "Category B mark" illustrated in the appendix to Part 4.	No label required.
		
The text on the (bilingual) label is: INFECTIOUS IN CASE OF DAMAGE OR LEAKAGE IMMEDIATELY NOTIFY LOCAL AUTHORITIES AND CANUTEC 613-996-6666	The text on the label is: UN3373 24- Hour Telephone Number	
Extra marking requirements: The shipping name and UN number UN2814 – Infectious Substance, Affecting Humans, or UN2900 – Infectious Substance, Affecting Animals	Extra marking requirements: The shipping name Shipping name is required if you are using the exemption under section 1.39	Extra marking requirements: Exempt Human Specimen Exempt Animal Specimen

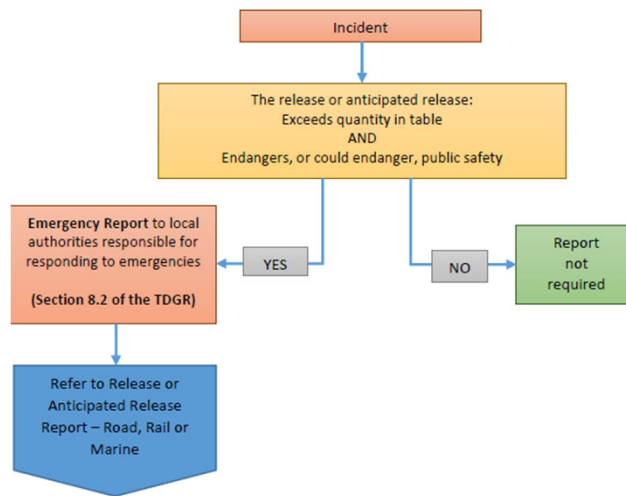
Shipping Documents

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Item	Category A	Category B	Waste
Classification	UN2814 Infectious Substance, affecting humans UN2900 Infectious Substance, affecting animals	UN3373 Biological Substance, Category B	UN2814 or UN2900 if waste contains Category A UN3291 if waste contains Category B
Packaging Selection	Type Cat A Type Cat B, if permitted in Section 5.16	Type Cat A or B	Type Cat A or B
Documentation	Yes	No, if meeting the conditions of Exemption 1.39.	Yes, unless meeting the conditions of Exemption 1.39.
Labels & Markings	Yes. Class 6.2 Label UN Number & Shipping name.	Yes. Category B mark & 24 hr number	Yes. Class 6.2 Label.
Placards	Yes, if: • ERAP is required 7.1(7) • Over 500 kg	Yes, if: • Over 500 kg	Yes, if: • Over 500 kg
Training	Yes	Yes	Yes

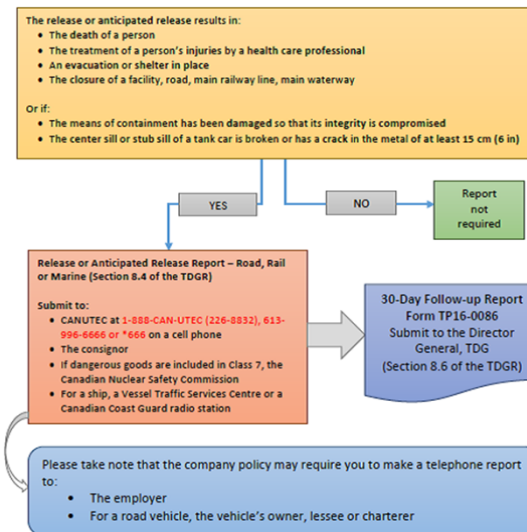
Reporting

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Reporting

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Summary



- To protect public health, there is an international agreement on shipping practices for dangerous goods.
- In Canada, these practices are outlined in the *TDG Act & Regulations*.
- All shipments must be classified, packaged, labelled and documented as per *Regulations*.
- Each person in the shipping chain has responsibilities and required documented training.
- Failure to meet responsibilities can result in penalties.

Exam Evaluation Certificate

Thank you for attending! Be safe.

