

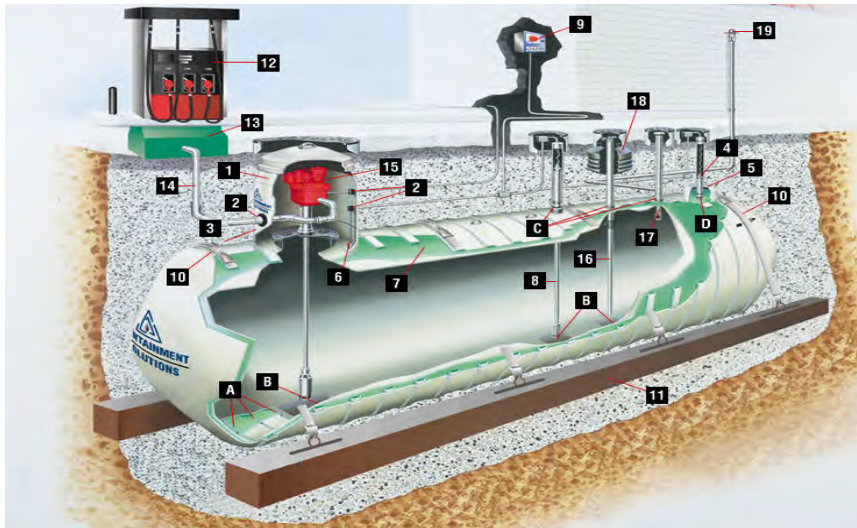


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Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations



**Northern Ontario First
Nations Conference**

**Lisa McClemens
October 3, 2012**

Purpose of the Regulations

Reduce leaks into environment

Reduce impact of spill events

**SOIL AND GROUNDWATER
PROTECTION**

Application

The application of the Regulations

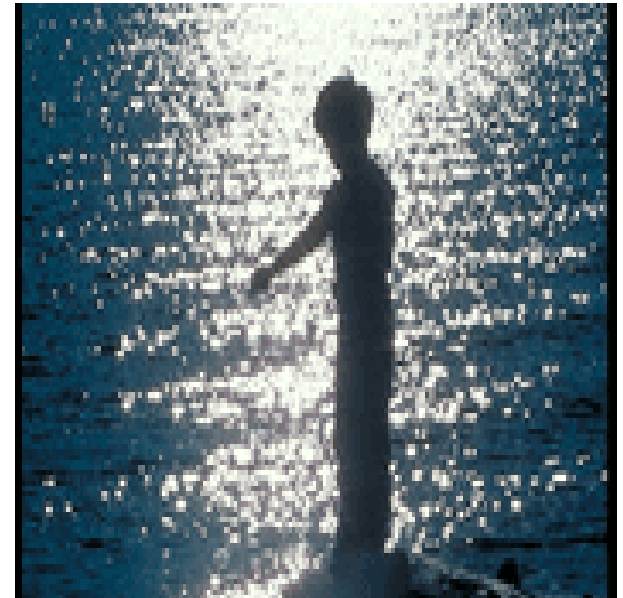
- 1. Aboveground and underground storage tank systems**
- 2. Petroleum products and allied petroleum products**
- 3. Selected Federal House (CEPA 1999, s. 207(1))
(- Includes Aboriginal Lands and Reserves)**



Introduction

You have responsibilities if you:

- Own a storage tank system; OR
- Operate a storage tank system; OR
- Deliver fuel to a storage tank system.



Introduction

It is your responsibility to:

- Prevent leaks and spills – compliant systems;
- Report spills
- Implement emergency response; and
- Exercise due diligence in everyday actions.

Understand how your actions impact the earth.

Overview of the Regulations

- Identification with EC
- Withdraw leaking systems
- Remove 'high risk' systems
- Mandatory compliance with technical requirements for 'new' systems
- Leak detection for components without secondary containment
- Containment of spills at product transfer areas

Overview of the Regulations, cont'd...

- Emergency plans
- Approved installers
- Operation and Maintenance
- Release Reporting
- Withdrawal from Service
- Record keeping

Identification with EC

What is the identification process?

- Identify storage tank system to EC:
 - **Before first fill for new tank systems**
 - **Before June 12, 2010 for existing tank systems**
 - If tank systems not all identified by June 12, 2009, then the owner must submit a progress report to EC
- Receive ID number from EC
- Display ID number on or near tank system
- On-line, or mail or FAX



Remove 'high risk' systems

High-risk systems

- Leaking single-walled underground tanks and piping

Withdraw from service now and remove by June 12, 2010*

- Aboveground tanks installed underground
- Underground tanks installed aboveground
- Partially buried tanks
- Single-walled underground tanks without corrosion protection and leak detection
- Single-walled underground piping without corrosion protection and leak detection

**Permanent withdrawal & removal is required by
June 12, 2012**



What is an Emergency Plan?

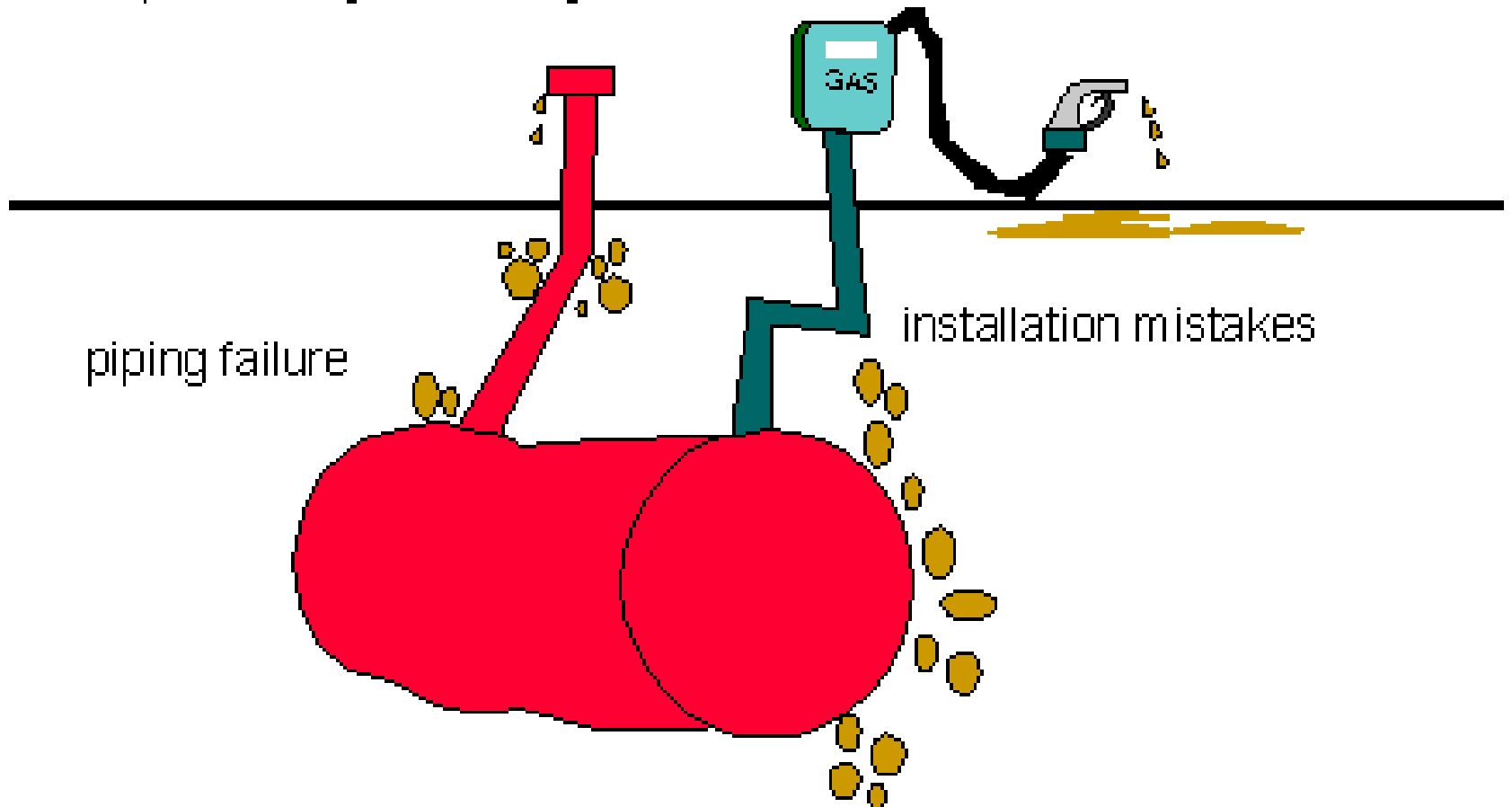
- Emergency plans identify potential hazards, establish systems for preventing leaks/spills and provide mechanisms for minimizing risk, loss and damage
- Should a leak/spill occur an effective emergency plan will provide owners and/or operators of STS with guidance for a timely and effective response (e.g. to minimize health, safety and environmental impacts)
- Owners/operators of regulated STS must prepare an emergency plan to respond to leaks/spills

What must an emergency plan include?

1. Properties and characteristics of products stored
2. Characteristics of site where STS is located
3. A description of the measures to be used to prevent, prepare for, respond to an emergency
4. A list of the individuals who are required to carry out the plan and a description of their roles and responsibilities
5. Identification of the training required
6. A list of the emergency response equipment including location
7. Measures to be taken to notify members of the public

Release Reporting

spills during tank filling



Release Reporting

Spill reporting requirements **s.41**

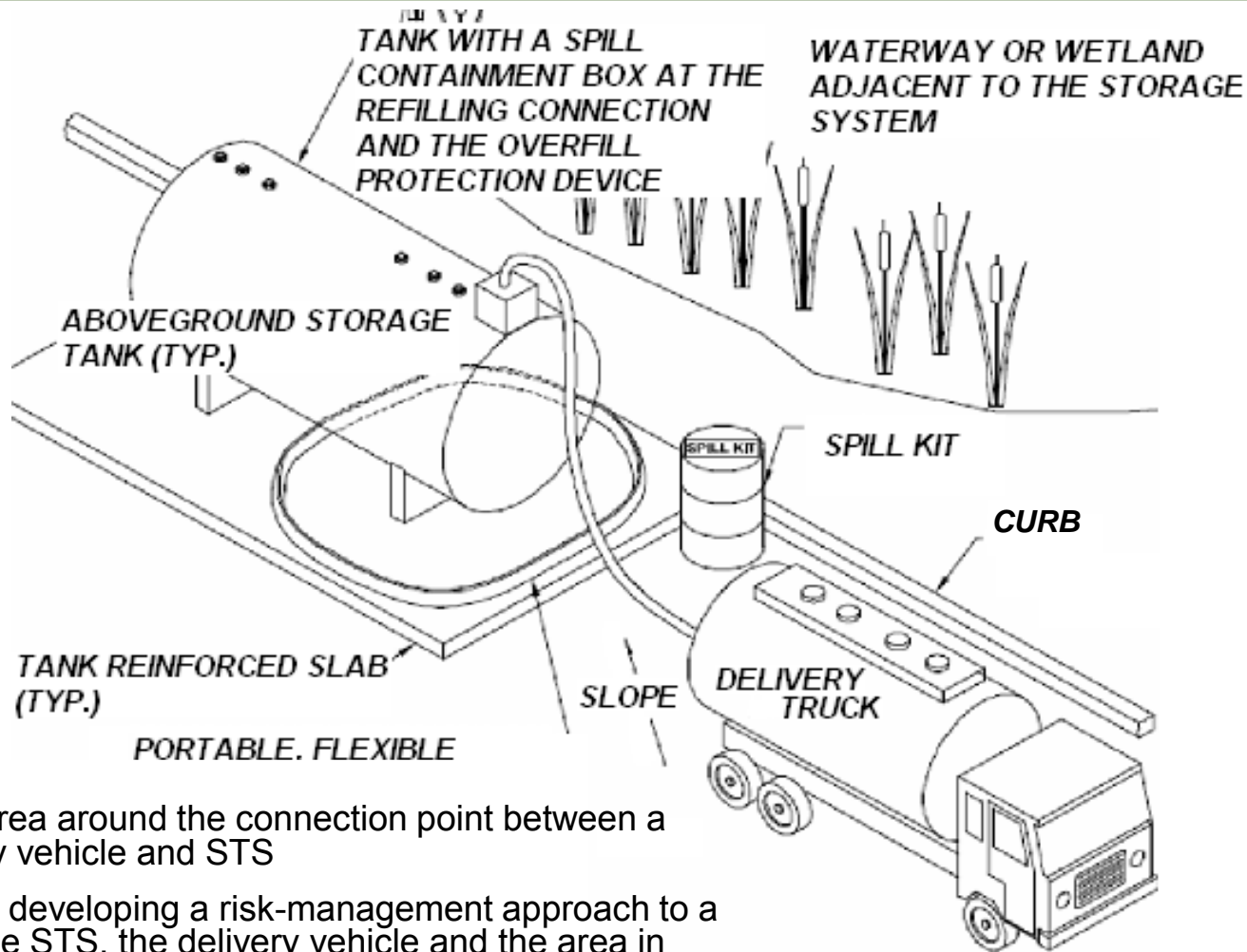
- Verbal notification as soon as possible
- Written follow up for spills 100 liters or larger

***Will Use Existing Spill Reporting Lines Across
Canada***

***In Ontario – Spills Action Centre
1-800-268-6060***



What is a PTA?



- The area around the connection point between a delivery vehicle and STS
- When developing a risk-management approach to a PTA, the STS, the delivery vehicle and the area in between must be considered



Definitions

The following definitions are from the STR:

- “transfer area” means the area around the connection point between a delivery truck, railcar, aircraft or vessel and a storage tank system in which the tanks have an aggregate capacity of more than 2,500 L.
- “spill” means any loss of a petroleum product or an allied petroleum product in liquid form from a storage tank system, including a loss during a transfer of such a product to or from a storage tank system, but not including a loss that does not reach outside the storage tank system’s secondary containment.

With respect to PTAs, section 15 of the STR says:

- The owner or operator of a storage tank system must **ensure** that petroleum product and allied petroleum product transfer areas are **designed** to contain spills that occur during the transfer process.

Purpose of Product Transfer Area

- The majority of spills that reach the environment occur when a storage tank is being filled
- A properly designed product transfer area will provide inexpensive protection against this form of pollution
- Prevention is cost effective – average cost of PTA = \$2-5k vs. average cost of cleanup = \$50,000 and up







What is a performance-based approach?

- A performance-based approach is when all reasonable risks of product reaching the environment for a given site are identified and appropriately mitigated.
- Risk management integrates the notions of probability and consequence should a spill occur & is used to evaluate ways to prevent releases to the environment

How many types of Product Transfer Areas are there?

- There are as many types of PTAs as there are tank systems
- For the purposes of this presentation we will broadly divide PTA's into two types:
 - Curbed & Dyked Concrete
 - A Performance Base Approach



What's Curbed and Dyked Concrete?

- Functioning of this type of PTA is typically easily understood
- Contains the volume of the STS and the fuel delivery truck
- In the event of a leak/spill, prevents the product from escaping to the environment (i.e. no open drains).
- Many applications where this would be a good choice
- Functioning of this type of PTA is very clear and should be clear



What's a PTA Method?

- A PTA method is when risks of product reaching the environment for a given site are identified and addressed
- a method/procedure is when human involvement is necessary to ensure containment, unlike a physical barrier that will usually provide containment on its own

What's a PTA Method?

- Each PTA method will be unique to a system
- Typically contains a volume identified in the risk assessment
- In the event of a leak/spill, prevents the product from escaping to the environment.
- Many applications where this may be a good choice

What should be considered when using a PTA Method?

- Identify Environmental Risks
 - Identify potential incidents
 - Identify potential receiving environment
- Assess Risks
 - Evaluate Risks
 - Identify those to address
- Act
 - Mitigate the risks
 - Confirm effectiveness of mitigation

Steps to demonstrate compliance

- The Following slides will take us through one risk analysis method for risk managing a PTA and includes the following 5 steps:
 1. Describe the STS, its characteristics & how its filled
 2. Identify potential incidents & potential receiving environment
 3. Evaluate Risks & Identify those to address
 4. Mitigate risks
 5. Confirm effectiveness of mitigation

Step 1: Describe the STS

- The STS owner/operator should first document the characteristics of the STS and its operation (e.g. filling method, type of overflow protection system, alarm, etc). Site characteristics should also be described.
- As you will see later in step 2, the idea is not necessarily to manage every risk, but to address all reasonable risks.
- These risks may include most sources that could result in a spill.

Step 2a: Identify Potential Incidents

- When using a method for the product transfer area it is important to define the risks that you are managing for, this is the essential step which will inform the others
- As you will see in step 3, the idea is not necessarily to manage ALL risks, but to address reasonable risks (first potential risks should be identified)
- These risks will include most sources that could result in a spill, for example:
 - Coupling between truck & tank fails spilling product on ground
 - Human error for a given incident & calculated volume
 - Tank is overfilled spilling product on ground
 - Overfill device fails, product is spilled on ground
 - etc ...

(Suggestion: always consider the truck)

(Suggestion: always write it up)

Step 2b: Identify risks to the environment

- Determine all (reasonable) spill scenarios.
- Determine the receiving environments to which the liquid product could flow should product get outside of the STS:
 - Impermeable surface (e.g. concrete, etc)
 - Permeable ground (e.g. sand, gravel, grass)
 - Drainage ditch
 - Storm and/or sanitary sewer
 - Adjacent water body (e.g. pond, river, ocean)
 - Oil water separator
 - etc ...

(Suggestion: Always consider proximity to water sources (e.g. sewer, permeable ground, drainage ditch. etc.))

Step 3: Evaluate risks

- Based on the scenarios developed and the receiving environments, assess:
 - Probability of a spill (e.g. high, moderate or low)
 - Potential consequences of a spill (e.g. contamination of soil and water) and assess the impact of the consequence (e.g. severe, moderate, negligible)
 - Determine volume to be considered for each risk identified
 - Suggest including reasoning for evaluation

(Suggestion: Consider if a spill has previously occurred at the site & take this into consideration)

Step 4: Identify mitigation measures

- Determine the means to mitigate the risks that must be addressed from step 3
- If, after completing step 3, you have concluded that no more measures need be taken, you may **want to re-evaluate** (i.e. based on the PTAs that we have seen so far, it would be rare where no action is required)



Step 5: Confirm effectiveness of mitigation

- It is recommended that the PTA method be tested to confirm that liquid from the PTA cannot reach the environment in the event of a spill
- Ideally, the conditions in which a spill would occur would be simulated with water for the max volume that you identified from step 3
- This step should confirm that mitigation measures are effective in the event of a spill



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Questions?



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Resources

Useful websites

- EC's Storage Tank website for Petroleum and Allied Petroleum Products – <http://www.ec.gc.ca/st-rs/>
- CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products – <http://www.ec.gc.ca/ceparegistry/documents/regs/CCME/toc.cfm>
- Compliance and Enforcement Policy for the *Canadian Environmental Protection Act, 1999* - <http://www.ec.gc.ca/CEPARegistry/documents/policies/candepolicy/toc.cfm>
- National Fire Code of Canada http://www.nationalcodes.ca/nfc/index_e.shtml

Rogues Gallery 1 – Fuel, Fumes, Heat & Source of Spark = FIRE & Explosion



Rogues Gallery 2 – Improper Installation Causes Fire During 1st Fill



Rogues Gallery 3 – Not a PTA



Rogues Gallery 4 – Repurposing Tanks is Almost Always a Bad Idea



Thank You

