8th Edition

(1st Edition 1994)

BC Fuel Guidelines

A Summary of Industry Standards, Environmental Codes of Practice, Fire Codes and Transportation of Dangerous Goods that Pertain to Petroleum Hydrocarbon Dispensing, Storage and Transportation in Remote Areas of British Columbia

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Introduction

This is the 8th Edition of the BC Fuel Guidelines! The purpose of this guideline is to provide quick access to the most common questions related to mobile and short-term storage, handling and dispensing of diesel fuel (UN1202) and gasoline (UN1203). Additional information has been added to assist operators including: an SOP for Treating Small Volumes of Contaminated Soil; Spill Response Equipment Checklist; Risk Assessment Matrix; and with this addition the Compressed Gas Guidelines (Section 7).

This 8th Edition of the BC Fuel Guidelines is written for commercial and industrial operations and is used as a reference for the BC Ministry of Forests, Lands and Natural Resource Operations, including BC Ministry of Environment and Ministry of Mines. The BC Fuel Guidelines provides guidance on acceptable industry practice for managing fuel handling, storage and transportation at remote construction and industrial operations in British Columbia. It summarizes requirements of applicable Federal and Provincial statutes, industry codes of practice and recommendations relating to environmental protection, health and safety, and fire protection.

While this document refers to legal requirements, users should always reference the current legislation for accuracy and legal interpretation. The BC Fuel Guidelines is not a legal document however, if implemented, it will assist your operation in meeting the test of "*Due Diligence*".

Transportation of Dangerous Goods (TDG)

Transport Canada is continually updating the *Transportation of Dangerous Goods Regulation* to ensure that the requirements for the design, manufacture and selection of small and large means of containment, intermediate bulk containers and portable tanks for the transportation of dangerous goods are current and meet the latest International Standards.

Transport Canada is aware of the challenges that remote industrial operations face when transporting fuel. A number of recent changes reflect these challenges, however, Transport Canada still expects operators to apply for *Equivalent Level of Safety Permits* when moving fuel in non-spec tanks, stationary tanks or tanks that are not recognized in Canada.

Fire Code (BC and National)

The Office of the Fire Commissioner expects operators at remote work sites to use "good engineering practices" when storing, dispensing and managing temporary, permanent, mobile or stationary fuel facilities. The BC Fuel Guidelines considers "good engineering practices" to be the industry standard. The industry standard is based on the Fire Code.

Environmental Codes

There are numerous codes and best management practices incorporated into this Edition of the BC Fuel Guidelines including the Environmental Code of Practice (Part 3) for Design and Installation of Aboveground Storage Tank Systems. These codes are based on good engineering practices to manage and reduce risk to the environment.

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Executive Summary of 2018 Updates

- The BC Fuel Guidelines does not reference the Fire Code as a legal requirement but as an *industry standard* to ensure that "good engineering practices" and "the test of *due diligence*" are met.
  - Legal Requirements (■) refer to the TDG Regulations
  - Industrial Standards (☑) refer to the BC & National Fire Codes
  - Information (⧈) on Best Management Practices & Environmental Codes of Practice

Small Means of Containment (TDG Regs)

- Truck box fuel tanks ≤450L for diesel are still exempt.
- The TP14850 Standard will be in effect in 2018. This Standard references:
  - Construction standards for small means of containment (i.e. jerricans and drums).
  - The inspection and testing requirements for reusing small means of containment.
  - Life span of small means of containment (60months) from the date stamp on the container.

Large Means of Containment (TDG Regs)

- Intermediate Bulk Containers (<3000L) constructed to CGSB 43.146 Standard (with *special exemption* for <5000L for diesel):
  - Inspections required every 60 months.
- The use of ULC/ORD-C142.13 tanks are still allowed for diesel:
  - The CGSB 43.146 Standard replaced the UCL/ORD-C142.13 Standard in 2003.
  - Inspection required every 60 months by a TC Registered Facility.
- The CSA Standard B626-13 Portable Tank Specification TC44:
  - Minimum capacity 3000L
  - Inspections as per CSA B620 standard
- The CSA Standard B625-13 for portable tanks has been adopted into the TDG Regulations;
  - These tanks are >450L. For large tanks, baffles are required every 7500L.
  - There are no criteria outlining dispensing requirements or restrictions.
  - Different Inspections and Testing required every 2.5 yeas and 5 years.

Stationary Tanks designed to be relocated

- S601 Utility Tanks may be designed to allow for relocation as required by their intended service:
  - These tanks may be relocated but are *not* mobile fuel tanks and must be emptied prior to relocating.
  - An *Equivalent Level of Safety Permit* is still required to move/ relocate stationary tanks on public roads.

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SMALL STATIONARY CONTAINERS (Less than 230 liters)
Drums, Jerricans, Pails, Canisters

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 1

TYPE	*CONDITION, DESIGN & MAINTENANCE*	*STORING AND SECURING*	*DISPENSING*	*TRANSPORT*	*PREPAREDNESS & PREVENTION*
Drums, Jerricans, Pails, Canisters (Less than 230L)	**Condition** ■ Must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety ■ Containers must be in good condition – not damaged, rusting or leaking ☑ Replace used containers on a regular basis (plastic containers every 60 months) **Construction Standard** ■ Containers must be specifically designed for the product: TP14850 Standard ☑ Containers less than 30 liters are exempt from TDG requirements & are governed by Fire Code & WHMIS Regulations **Inspections** ☑ Regularly inspect containers. Remove containers that are leaking or have deteriorated.	**General requirements** ☑ Store all containers to prevent spillage ☑ Secondary containment is not required for small stationary containers (<230L) ☑ Helicopter fuel storage is usually left to the discretion of the pilot ☑ Do not store small fuel containers in Riparian Management areas without authorization **Securing** ■ Containers must be appropriately secured to prevent shifting, swaying, damage or escape from the vehicle ■ Tie down straps must have safe combined working load rating *greater* than the secured load ■ Containers must be secured to prevent damage to container and accidental release of product **Labeling** ■ TDG safety marks (labels or placards) must be visible if containers are stored within an enclosed unit ⊡ WHMIS labeling or appropriate Product Identification is required when storing hazardous products ⊡ Jerrican containers are exempt from *additional* WHMIS label requirements if content matches the product identifier on the container	**General requirements** ☑ Dispense all flammable and combustible substances only from drums in an upright position ☑ Do not fill containers beyond their safe filling level *(approximate safe level – 90%)* ☑ Store the hose above the pump (up-right drum) to avoid siphoning **Administration** ⊡ Maintain current MSDS at work site ⊡ Keep an inventory of product stored on site	**Transport** ■ All Small Stationary Containers may be relocated (transported) ■ Drums must be properly arranged by: • Stacking in a vertical position • Separating with dunnage • Protecting through use of sides, sideboards, or stakes on the vehicle ■ Empty drums are exempt from TDG Regs Parts 2, 3, 4 & 7 provided the following: • Drum <10% residue • Transported for filling or reconditioning • If more than 10 drums then DANGER Placard is used on all four sides of transport vehicle and include a Shipping Document outlining: – Primary Class – "Residue Drums" – Number of drums ■ If the combined capacity of multiple containers (diesel or gasoline) exceeds 2000 liters, then: • A Shipping Document as per TDG Regs. is required • The Operator must have TDG training and possess a valid Certificate • The load must have placards on all visible sides ☑ Maintain containers in an upright position and follow securing requirements **Labeling** ■ Any container over 30 liters must have appropriate safety marks including: • Label or Placard, • UN Number, • Shipping Name	**Spill Control and Cleanup** ■ Take precautions to prevent spills ■ Report & respond to all fuel spills ☑ Industry Training Standards: • Fuel Management • Spill Response • TDG ⊡ *Preventative* spill control measures are expected for small containers maintained in storage areas ⊡ *Additional* spill control measures may be required in high risk areas for caches (see Risk Assessment Matrix) ⊡ Maintain a spill kit of suitable size **Fire Control and Response** ☑ Maintain one or more BC-rated fire extinguisher(s) to handle the potential risk ☑ Conduct Fire Response Training and maintain a Fire Response Plan

SMALL MOBILE CONTAINERS
Truck Box Fuel Tanks (≤ 450 liters)

■ Legal Requirements
☑ Industry Standards
⊡ Information / BMP

Section 2

TYPE	*CONDITION, DESIGN, & MAINTENANCE*	*STORING AND SECURING*	*DISPENSING*	*TRANSPORT*	*PREPAREDNESS & PREVENTION*
SMALL MOBILE CONTAINERS (450 liters or less)	**Tank Condition** ☑ Must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety ☑ Containers must be in good condition – not damaged, rusting, or leaking **Construction Standard** ■ **Diesel:** a spec or non-spec tank may be used. Tanks used for diesel (450L or less) are exempt from being built to an engineering standard (spec tank) ■ **Gasoline:** a spec tank is required and must be designed and constructed to a design standard specification and must bear a visible and legible Spec Plate of that standard ■ Spec tanks marked with any of the following are acceptable: • UN 31A/B IBC Portable Tanks as per CAN/CGSB 43.146 (2002) • ULC/ORD 142.13 (with a TC *Equivalency Permit no longer required*) **Inspections** ■ Spec tanks (listed above) must be inspected by a TC Registered Facility every 60 months ⊡ Regularly inspect & remove containers that are leaking or have been compromised	**General requirements** ■ Use a pressure relief cap that meets manufacturers design specifications ☑ Mobile containers do not require secondary containment ☑ If a mobile tank is removed from the vehicle and placed on the ground, then additional Spill Control and Preventative Measures are required (i.e. secondary containment) ⊡ Do not store fuel in Riparian Management areas without authorization ⊡ Ensure tank remains level ⊡ Protect the fuel tank from wear or damage (i.e. metal-on-metal) **Securing** ■ Containers must be appropriately secured to prevent shifting, swaying, damage or escape from the vehicle ■ Tie down straps must have safe combined working load ratings *greater* than the secured load ■ Containers must be secured to prevent damage to the container and accidental release of product **Labeling** ■ TDG Safety Marks must be visible from outside the truck • Label or Placard • UN Number • Shipping Name ⊡ WHMIS labeling or appropriate Product Identification is required when storing hazardous products	**General requirements** ■ Use fuel dispensing pumps, designed for the products being handled ■ Use an appropriate hose and nozzle (in accordance with ULC Standards) for dispensing fuel ☑ Operators must stay with the nozzle at all times while dispensing fuel ☑ Do not fill containers beyond their safe filling level *(approximate safe level = 90%)* ⊡ Hoses and nozzles must be maintained and not leak ⊡ Nozzles must be secured to prevent leaks and spills ⊡ Do not dispense fuel within a Riparian Management area without authorization **Precautions** ⊡ Make sure there is suitable bonding between tank and truck box to prevent static charges (specifically for gasoline) ⊡ Maintain current MSDS at work site	**Transport** ■ Multiple diesel and/ or gasoline tanks with a combined capacity that exceeds 2000 liters, require: • A Shipping Document • Placarding on all visible sides • Operator must have a valid TDG Certificate ■ Small Mobile Containers are exempt from TDG Regs Parts 3, 4, 5, 6, 7 & 9 provided the container contains diesel: • Container contains Class 3 Flammable Liquids with no subsidiary class • Includes Packing Group III and a flash point greater than 37.8°C • In one or more small means of containment (≤ 450L) **Labeling** ■ Any container over 30 liters must have appropriate TDG safety marks including: • Label or placard • UN Number • Shipping Name ■ Spec plates must identify the following: • Container Type & Standard • Manufacturer & Date • Re-certification Date & TC Registered Facility	**Spill Control and Collision Protection** ■ Take precautions to prevent spills ■ Report & respond to all fuel spills ☑ Training Requirements: • Spill Response • TDG • Fuel Management ⊡ Assess and manage the RISK (as per Risk Matrix) ⊡ Maintain a spill kit of suitable size **Fire Control and Response** ☑ Maintain one or more BC-rated fire extinguisher of a suitable size(s) to handle the potential risk ☑ Conduct Fire Response Training and maintain a Fire Response Plan

INTERMEDIATE BULK CONTAINERS
Truck Box Fuel Tanks (>450 liters to ≤3000 liters)

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 3

TYPE	*CONDITION, DESIGN, & MAINTENANCE*	*STORING AND SECURING*	*DISPENSING*	*TRANSPORT*	*PREPAREDNESS & PREVENTION*
INTERMEDIATE BULK CONTAINERS (Greater than 450 liters to ≤3000L)	**Condition** ☑ Must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety ☑ Containers must be in good condition – not damaged or leaking. **Construction Standard** ■ **All Tanks:** must be designed, constructed and/or tested to a design Standard Specification with visible Spec Plate ■ **Spec Tanks:** required for diesel and gasoline and may be built to one of the following Standards: • UN 31A/B IBC (≤3000L- most common) Portable Tanks - CAN/CGSB 43.146 • UN 31A/B IBC (≤5000L- diesel only & not as common) Portable tanks as per CAN/CGSB-43.146 • UN Portable Tanks (are not commonly seen) CSA Standard (>450L) B625-13 • TC57 Portable Tanks (rarely seen) as per CAN/CGSB 43.146-2002 • ULC/ORD 142.13 (TC re-instated) ■ **Non-Spec Tanks:** used to transport diesel may no longer be used and must be removed from operation. **Inspections** ■ Non-spec diesel or gasoline tanks require an *Equivalent Level of Safety Permit* including testing/ inspection by a Transport Canada (TC) Registered Facility as outlined in their *Equivalency Permit* ■ All Spec tanks (listed above) must be inspected every 60 months (5 years) by a TC Registered Facility ⊡ Regularly inspect & remove containers that are leaking or have been compromised	**General requirements** ■ Use a pressure relief cap that meets manufacturers design specifications ☑ Mobile containers do not require secondary containment during transport ⊡ Do not leave vehicles carrying auxiliary fuel unattended in Riparian Management without authorization ⊡ Place appropriate protection under the tank to prevent wear or damage to the tank ⊡ Ensure tank is secured and remains level ⊡ Maintain record of inventory **Securing** ■ All containers must be appropriately secured to prevent shifting, swaying, damage or escape from the vehicle/ trailer ■ All containers must be secured to prevent damage to the container and accidental release of product ■ Tie down straps must have safe combined working load ratings *greater* than the secured load **Labeling** ■ TDG safety marks must be visible on the tank or enclosed storage unit ⊡ WHMIS labeling or appropriate Product Identification is required when storing hazardous products	**General requirements** ■ Use dispensing pumps designed for the products being handled ■ Use an appropriate hose and nozzle (in accordance with ULC standards) for dispensing fuel ☑ Do not fill containers beyond their safe filling level *(approximate safe level – 90%)* ☑ Secure fuel hose on a retractor, hose reel or coiled bracket ☑ Operators must stay with the nozzle at all times while dispensing fuel ⊡ Hoses and nozzles must be maintained and not leak ⊡ Nozzles must be secured to prevent leaks and spills ⊡ Do not dispense fuel within a Riparian Management areas without authorization **Safety** ⊡ Make sure there is suitable bonding between tank and truck box to prevent static charges (specifically refers to gasoline) ⊡ Maintain current MSDS at work site	**Transport** ■ Non-spec diesel & gasoline tanks cannot be used to transport fuel. As a "mobile" unit these tanks may be used for storage and dispensing. If these tanks are moved, then the following is required: • Must be emptied (<5%) prior to moving tank • Require an *Equivalent Level of Safety Permit* • Must have inspection documentation as per *Equivalency Permit* ■ Multiple diesel and/or gasoline tanks with a combined capacity that exceeds 2000 liters require: • A Shipping Document • Placarding on all visible sides • Operator must have a valid TDG Certificate **Labeling & Spec Plates** ■ All means of containment must have appropriate TDG Safety Marks: • A Label or Placard • UN Number • Shipping Name ■ Spec plates must identify the following: • Container Type & Standard • Manufacturer & Date • Re-certification Date & TC Registered Facility	**Spill Control and Collision Protection** ■ Take precautions to prevent spills ■ Report & respond to all fuel spills ☑ Training Requirements: • Spill Response • TDG • Fuel Management ☑ Maintain written Fuel Handling & Spill Response *Procedures* ☑ Mobile IBC tanks that are removed from the vehicle and placed on the ground require additional spill control and preventative measures (i.e. secondary containment) ⊡ *Preventative* spill control measures should reflect the associated risk identified ⊡ Maintain a spill kit of suitable size ⊡ Assess and manage the RISK ⊡ *Additional* spill control measures may be required in high risk areas (see Risk Assessment Matrix) **Fire Control and Response** ☑ Maintain one or more 80-BC rated fire extinguisher(s) to handle the potential risk ☑ Conduct Fire Response Training and maintain a Fire Response Plan

LARGE PORTABLE TANKS
Fuel Trucks, Trailers & Portable Tanks (Volume > 3000 liters)

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 4

TYPE	CONDITION, DESIGN & MAINTENANCE	STORING AND SECURING	DISPENSING	TRANSPORT	PREPAREDNESS & PREVENTION
LARGE PORTABLE TANKS (Greater than 3000 L)	**Tank Condition** ■ Must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety ■ Containers must be in good condition – not damaged, rusting, or leaking **Construction Standard** ■ **All Tanks:** must be designed, constructed and/or tested to a design standard specification and must bear a visible and legible Spec Plate to that standard ■ TC44 Portable Tanks as per CSA B626-13 min. capacity 3000L ■ UN Standardized Portable Tanks as per CSA B625-13 Standard and still require *Equivalency Permit* ■ Fuel trucks must meet the following standard requirement: • CSA B620-14 Highway and Portable Tanks for TDG • Spec tank built after 2003 may transport **Diesel or Gasoline** • Inspected as per CSA B620-14 by a TC Registered Facility ⊡ **Non-Spec Tanks:** used to transport Class 3 Products (Gasoline &/or Diesel) may no longer be used and must be removed from operation **Inspections – Spec or non-Spec tanks** ■ Inspect and document regular inspections as per B620 Standard ■ Non-spec tanks require *Equivalent Level of Safety Permit* & Inspections as per *Equivalency Permit*	**General requirements** ☑ Large Portable Tanks do not require secondary containment ☑ Fuel trucks will be located more than 6 meters from a building ⊡ Do not leave Large Portable Tanks with auxiliary fuel unattended in Riparian Management areas without authorization ⊡ Fuel trucks & Portable Tanks will not be unduly exposed to accident or collision ⊡ Ensure tank is secure, stable and remains level ⊡ Maintain record of inventory **Securing** ☑ Large mobile tanks must be integrally mounted to the mobile unit **Labeling** ⊡ WHMIS labeling or appropriate Product Identification is required when storing hazardous products ⊡ Product identification is an acceptable substitute for supplier or workplace labels and may be affixed to the sides of the tank compartments and piping	**General requirements** ■ Use dispensing pumps designed for the products being dispensed ■ Use an appropriate ULC hose and nozzle for dispensing fuel ☑ Do not fill containers beyond their safe filling level *(approximate safe level – 90%)* ☑ Dispensing **gasoline** fuel directly from a fuel truck into the equipment is **NOT** permitted ☑ Operators must stay with the nozzle at all times while dispensing fuel ⊡ Store nozzle & hose in a safe manner to prevent damage and leaks (i.e. on a retractor, hose reel or coiled) ⊡ Hoses and nozzles must be maintained and not leak ⊡ Do not dispense fuel within Riparian Management areas without authorization **Safety** ⊡ Ensure suitable bonding between fuel truck and stationary dispensing units to prevent static charges ⊡ Maintain current MSDS at work site	**Transport** ■ Fuel trucks and trailers (CSA B620) used to transport Class 3 Products on public roads must meet Motor Vehicle requirements (i.e. GVW, brakes, lights, axles, etc) and TDG requirements (Placards & Documentation) ■ **TDG Spec Tanks** with diesel or gasoline (Class 3 Products) greater than (>) 2000 liters, require: • A shipping document for the goods hauled or residue last contained • Visible Spec Plate & visible TC Inspection date on tank • The operator must have a TDG training and possess a valid Certificate ■ Non-spec portable tanks cannot be used to transport Class 3 Products (Diesel and/or Gasoline). As an "outdated mobile unit" these tanks may be used for storage and dispensing. Prior to moving these tanks, the the following is required: • Must be emptied (<5%) prior to moving tank • Require a TC *Equivalent Level of Safety Permit* • Must be inspected and have documentation as per TC *Equivalency Permit* **Labeling** ■ Required TDG Placards on all four sides of tank: • TDG Class • UN Number • Shipping Name	**Spill Control and Collision Protection** ■ Take precautions to prevent spills ■ Report & respond to all fuel spills ☑ Training Requirements: • Spill Response • TDG • Fuel Management ☑ Maintain written Fuel Handling & Spill Response *Procedures* ☑ Large Portable Tanks used as *stationary* dispensing facilities will require secondary containment and spill control ⊡ *Preventative* spill control measures should reflect the associated risk identified ⊡ *Additional* spill control measures may be required in high risk areas (see Risk Assessment Matrix) ⊡ Maintain a spill kit of suitable size to respond to a potential fuel spill **Fire Control and Response** ☑ Maintain two or more 80-BC fire extinguishers to handle potential risks ☑ Conduct Fire Response Training and maintain a Fire Response Plan

LARGE STATIONARY CONTAINERS
Skid-Type Tanks Generally Greater than (>) 3000 liters

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 5

TYPE	CONDITION, DESIGN & MAINTENANCE	STORING AND SECURING	DISPENSING	TRANSPORT	PREPAREDNESS & PREVENTION
LARGE STATIONARY TANKS Generally Greater than (>) 3000L	**Tank Condition & Set-up** ■ Must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety ■ All tanks must be in good condition – not damaged, rusting, or leaking ☑ Follow the BC Fire Code as a *guide* for fire and environmental safety as this is the Industry Standard that would most likely meet "good engineering practices" ☑ Stationary tanks are not designed as a mobile tank and therefore required to be emptied prior to moving **Construction Standard** ■ **All Tanks:** must be designed, constructed and/or tested to a design standard specification and must bear a visible and legible Spec Plate ■ **Spec Tanks:** used for diesel or gasoline will generally have one of the following markings: (partial list – most common) • ULC-S601 Utility Tanks (may be relocated empty) • ULC-S602 AST Steel Tanks • ULC-S630 AST Vertical Tanks • ULC-S653 AST Steel Tanks ⊡ See *Fire Code* for full listing of Stationary Spec Tanks ☑ *Non-Spec Tanks* must never be used to transport fuel ☑ CAN/ULC-S601 Utility Tanks are stationary tanks designed to be relocated (empty) ☑ Ensure secondary containment conforms to a ULC specification for stationary aboveground tanks (AST) ☑ **Inspect** as per tank specification/Permit	**General Requirements** ■ All stationary tanks must have secondary (110%) containment. Options: • Tank-in-tank (vacuum monitored) • Tank-in-tank (visible access port) • Tank-in-box (visible access hatch) • Tank-in-berm with geotextile liner (or equivalent) ☑ Skid tank shall be equipped with overfill protection (see Safety) ☑ Store nozzle & hose in a safe manner to prevent damage and leaks (i.e. on a retractor, hose reel or coiled) ☑ Do not leave skid tank with fuel unattended in Riparian Management areas without authorization ☑ Close and lock valves when the dispensing station will be left unattended for extended (i.e. overnight) periods of time ☑ Use a pressure relief cap that meets manufacturers design specifications ☑ All tanks (>4000L) containing gasoline require a vapour recovery system (emissions control) ⊡ Maintain record of inventory **Securing** ■ Tanks must be level and mounted to a fire-resistant cradle on the skid ■ Tanks must be appropriately secured to prevent shifting, swaying, damage or escape **Labeling** ⊡ WHMIS labeling or appropriate Product Identification is required when storing hazardous products ■ TDG safety marks (placards) must be visible on all four sides of the container when moving the skid tank	**General Requirements** ■ Use dispensing pumps designed for the products being handled ☑ Use only ULC approved fuel hose and nozzle for dispensing fuel ☑ Operators must stay with the nozzle at all times while dispensing fuel ⊡ Secure fuel hose on a retractor, hose reel or coiled bracket ⊡ Do not dispense fuel within a Riparian Management areas without authorization ⊡ Hoses and nozzles must be maintained and not leak **Safety** ☑ When filling a AST skid tank, the operation must be supervised or the skid tank shall be equipped with an overfill protection device ⊡ Make sure there is suitable bonding between tank and equipment to prevent static charges where applicable ⊡ Ensure all stationary tanks are properly grounded ⊡ Maintain current MSDS in a location available to workers	**General Requirements** ☑ Skid tanks must never be used to transport fuel **TDG Transport** ■ All Skid-type tanks are considered stationary tanks (i.e. non-mobile tanks) and must: • Be emptied (5% or less) prior to moving • Require an *Equivalent Level of Safety Permit* for transporting • Require Inspection as per *Equivalency Permit* ■ When relocating an empty skid tank with a total capacity greater than 2000 liters, the following TDG Regulations must be implemented: • A shipping document must be completed for the *Residue Last Contained* • The hauler must have a TDG training and possess a certificate • The skid tank must be placarded (TDG Classification) on all four sides, include Shipping Name and UN Number ■ Ancillary gasoline fuel tanks from equipment/ instruments are exempt from TDG Part 3, 4, 5 & 6 if capacity is ≤ 200L	**Spill Control and Protection** ■ Take precautions to prevent spills ■ Report & respond to all fuel spills ☑ Training Requirements: • Spill Response • TDG • Fuel Management ☑ Maintain written Fuel Handling & Spill Response *Procedures* ☑ When tanks are utilized in a fixed location for fuel dispensing, the following requirements apply: • Collision protection • Spill Control - containment • *Additional* control measures are required for high risk areas - Anti-siphon foot valve - Overflow alarm - Spill containment fill-box - Shear valve on tank - Breakaway valves on hose - Posted Procedures (SOPs) - Site specific training ⊡ *Preventative* spill control measures are expected for large tanks ⊡ Assess and Manage the RISK ⊡ Maintain Spill Kit of suitable size **Fire Control and Response** ☑ Post "No Smoking" signs ☑ Maintain two or more 80-BC rated fire extinguishers to handle the potential risks ☑ Conduct Fire Response Training and maintain a Fire Response Plan ⊡ Post Fire & Spill Response procedures

FUEL FACILITIES - ABOVEGROUND STORAGE TANKS (AST)
Remote Construction/ Industrial Operations

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 6

TYPE	CONDITION, DESIGN, & MAINTENANCE	STORING AND SECURING	DISPENSING	PREPAREDNESS & PREVENTION
FUEL FACILITIES Remote Construction/ Industrial Operations	**General** ☑ Prior to installing a permanent aboveground fuel storage and dispensing facility: • Conduct a Risk Assessment • Follow the BC Fire Code as a *guide* for fire and environmental safety as this is the Industry Standard that would most likely meet "good engineering practices" ☑ Follow: Environmental Code of Practice for AST & UST Storage Tank Systems Containing Petroleum & Allied Petroleum Products (Part 3) **Construction Standard** ☑ All aboveground storage tanks (AST) must be constructed in accordance with "good engineering practice" **Fuel Dispensing Stations** ☑ Tanks must not exceed 80,000L capacity and aggregate capacity at facility must not exceed 200,000L **Inspections** ☑ Daily inspections are required of all stationary AST facilities that includes tank(s), secondary containment, associated piping, valves, connections, flanges, pumps, hoses and nozzles ⊡ Maintain a record of inspection	**Storage** ☑ All aboveground fuel storage tanks must be stored within a secondary containment. Options include: • Tank-in-tank (vacuum monitored) • Tank-in-tank (visible access port) • Tank-in-box (visible access hatch) • Tank-in-berm with geotextile liner (or equivalent) ☑ A canopy cover is not a *building* if it is open on one or more sides (>25%) of perimeter and has no foundation ☑ All tanks (>4000L) containing *gasoline* require a vapour recovery system (emissions control) ☑ Areas where fuel is dispensed should be designed to handle accidental spillage (*Spill Control*) for not less than 1000L ☑ AST shall be equipped with overfill protection (see **Safety** under Dispensing) ⊡ Ensure secondary containment does not fill with precipitation. Any accumulated must not be contaminated from the fuel storage either by leaks, drips or spills ⊡ Storage tanks will not be located closer than 4.5m horizontally from the normal high-water mark ⊡ An expansion chamber is recommended for storage tanks with exposed piping ⊡ Maintain record of inventory **Securing** ☑ AST must be securely mounted in a cradle on a fire-resistant foundation ☑ Close and lock valves when the dispensing station will be left unattended for extended (i.e. overnight) periods **Labeling** ⊡ WHMIS labels (supplier or workplace) are required on all storage tanks ⊡ Product identification is an acceptable substitute for supplier or workplace labels and may be affixed to the sides of the tank compartments and piping	**General requirements** ■ Fuel dispensing pumps must be designed for the products being handled ☑ Operators must stay with the nozzle at all times while dispensing fuel to avoid overfilling ☑ Manual or auto shut-off nozzles must be used when dispensing fuel (*note: auto shut-off not allowed at Marine Facilities)* ⊡ Nozzles must be secured to prevent leaks and spills ⊡ Hoses must be stored off the ground when not in use (i.e. retractor, hose reel, hook system or equivalent) ⊡ Electrically operated solenoid valves (open only during dispensing) and anti-siphon valves are recommended ⊡ Only use Cam-Locks as a quick connect. Not as a long-term connection ⊡ Maintain Standard Operating Procedures ⊡ Solid piping coupled with short suitable lengths of flexible hose must be used between on-shore storage tanks and floating dispensing units **Safety** ☑ When filling "your" AST, "your" *trained* operator must supervise the operation or the AST shall be equipped with an overfill protection device as per ULC-S661 ⊡ Ensure suitable bonding between tank and equipment to prevent static charges ⊡ Ensure all stationary tanks are properly grounded ⊡ Maintain current MSDS at work site ⊡ Smoking is not permitted during dispensing operations	**Spill Control and Protection** ■ Take precautions to prevent spills • Implement *preventative* spill control measures ■ Report & respond to all fuel spills ☑ Training Requirements • Spill Response • Fuel Management ☑ Maintain written Fuel Handling & Spill Response *Procedures* ☑ When tanks are utilized in a fixed location for fuel dispensing, the following requirements apply: • Collision protection will be provided • Spill Control - Containment will depend on risk factors at site • *Additional* Control Measures for high risk areas may include: - Anti-siphon valve - Overflow alarm - Spill containment fill-box - Shear valve on tank - Breakaway valve on fuel hose - Training for all operators - Posted Procedures (SOPs) ⊡ Maintain a Spill Kit of suitable size ⊡ Assess and Manage the RISK (see Risk Assessment Matrix) **Fire Control and Response** ■ Post "No Smoking" signs ☑ Conduct Fire Response Training and maintain a Fire Response Plan ☑ Maintain two or more 80-BC fire extinguishers to handle the risks ⊡ Post Fire & Spill Response procedures at all storage & dispensing facilities

PROPANE/ ACETYLENE/ AIR/ OXYGEN/ CO2/ NITROGEN/ ARGON
TDG Class 2 – Compressed Gases

■ Legal Requirements
☑ Industry Standards
⊡ Information/ BMP

Section 7

TYPE	GENERAL CONDITIONS & DESIGN	PROPANE STATIONARY TANKS	MOBILE CYLINDERS	PREPAREDNESS & PREVENTION
COMPRESSED GASES TDG CLASS 2	**General** ☑ Containers must be in good condition – not damaged, rusting or leaking ☑ Only Qualified Individuals may inspect and service a pressure tank or cylinder **Stationary Tanks: Construction Standard** ■ CSA B51 Boiler, Pressure Vessel & Pressure Piping Code - Propane • Data Tag/ Name Plate (legible) with Canadian Registration Number for use in BC • Serial # matches Operating Permit • Maximum Allowable Working Pressure clearly identified **Stationary Tanks: Maintenance** ☑ Up-to-date service schedule ☑ No leaking valves ☑ Cover for pressure relief valve **Mobile Construction Standard - Road** *Cylinders / Spheres / Tubes* ■ CSA B339 or 49-CFR for cylinders ■ CSA B340 & CSA B341 ■ CGSB – 43.123 for Class 2.1 & 2.2 ■ CSA B342 (for UN cylinders) *Highway tanks* ■ CSA B620 & CSA B622 *Portable tanks* ■ CSA B622 & CSA B625 **Mobile Cylinder: Maintenance** ☑ Assess for leaks and damage ☑ Cylinder retesting (date stamp on collar of tank) • Aluminum/ Steel: 10yrs • Fiberglass: 5yrs • Composite: 15yrs (max life)	**Storage - Stationary Propane Tanks** ■ Valid Operating Permit for BC required ■ Compliance with CSA B149.2 Propane Storage & Handling Code ■ Do not store within a secondary containment berm ■ Separate multiple tanks by 6m **Tank Condition** ☑ Paint coating provides full protection ☑ Not rusting and no visible corrosion ☑ Not damaged, dented or bulging ☑ No fire damage or leaks **Pressure Relief Valve** ☑ Present and serviceable **Tank Openings & Valves** ☑ Service Valve ☑ Fill Valve ☑ Liquid Transfer Valve ☑ Relief Valve **Filling** ☑ Supplier refills on-site ☑ Easy access with collision protection **Position** ☑ Solid level base made from non-combustible materials **Location** ☑ Adequate clearances to buildings, structures & roadways ☑ Clear of vegetative overgrowth 10m ☑ Clear of all surrounding ignition sources **Labeling** ■ WHMIS labels (supplier or workplace) are required on all storage tanks	**General** ⊡ Don't require an Operating Permit ⊡ Don't have a Canadian Registration Number ⊡ Does have a TC Number with date stamp on collar of tank **Transportation Exemptions** ■ General Exemption: TDG Part 3 & 6 do not apply to transportation on road provided: • Total mass of compressed gas in one or more cylinders is ≤ 500kg • Labels can be seen from outside the vehicle • Transport no more than five (5) small means of containment ■ 150kg (gross mass) Exemption: TDG Parts 3, 4, 5, 6 & 8 do not apply to the handling or transport on road provided: • Max capacity of each cylinder ≤ 46L • Total gross mass of compressed gas and cylinders is ≤ 150kg ■ 500kg Exemption: TDG Parts 3, 4 & 5 do not apply to the handling or transport on road provided: • Total mass ≤ 500kg of compressed gas is in one or more small means of containment that conforms to one of the Construction Standards **Tank Condition** ☑ Paint coating provides full protection ☑ Not rusting and no visible corrosion ☑ Not damaged, dented or bulging ☑ No fire damage or leaks **Secure for Transportation** ■ Tanks must be appropriately secured to prevent shifting, swaying, damage or escape	**Spill Control and Collision Protection** ■ Report & respond to all gas leaks of 10kg or greater (Class 2.1 & 2.2) ⊡ Training Requirements: • Emergency Response Procedures & Evacuation Procedures • Propane Handling & Storage • Take precautions to prevent leaks and spills **Fire Control and Response** ■ Post "No Smoking" signs ☑ Conduct Fire Response Training and maintain a Fire Response Plan ☑ Maintain two or more 80-BC fire extinguishers to handle the risks ⊡ Post Fire & Spill Response procedures at all storage & dispensing facilities

RISK ASSESSMENT MATRIX

For Land Based Fuel Storage Facilities or Caches

Risk Identification	HIGH	MEDIUM	LOW	Assigned Numerical Value*
Numerical Value	**3**	**2**	**1**	
Environmental Factors				
Distance to nearest watercourse or water body	< 50m	50m-100m	> 100m	
Soil characteristics at or around the *Fuel Facility*	Porous or unknown	Semi-porous	Non-porous (i.e. clay/bedrock)	
Terrain slope at or around the *Fuel Facility*	> 6% slope	2%-6% slope	< 2% slope	
Operational Factors				
Site designation or description	High traffic access road (Main Line)	Low traffic access road (Side Spur)	No through traffic or access	
Duration of operation of the *Fuel Facility*	> 6 days	2-6 days	< 2 days	
Volume of fuel stored at the *Fuel Facility*	>4500L	500L-4500L	< 500L	
Number of times the *Fuel Facility* is accessed	> 12x per day	6-12x per day	< 6x per day	
Amount of traffic around the *Fuel Facility*	> 15 personnel on site	5-15 personnel on site	< 5 personnel on site	
Prevention & Preparedness Factors				
Distance to additional spill response cache or equipment	> 60 minutes	15-60 minutes	< 15 minutes	
Additional *Spill Control measures*	Tank with no *secondary containment*	Tank with *secondary containment*	Tank with secondary containment and additional spill controls (i.e. berms, sloped to a sump)	
Last known Spill Response Training	More than 2 years	Between 1-2 years	Within the last year	
Risk Value			***Add the *Assigned Numerical Values*:**	

CONTROL MEASURE RECOMMENDATIONS

Numerical Value	Risk Ranking	Control Measures
< 12	Low Risk	No additional measures are considered necessary
12-23	Medium Risk	1. Additional control measures should be considered to reduce the risk 2. Document facility inspections
> 23	High Risk	1. Additional controls are required 2. Consider moving the fuel facility 3. Document facility inspections

SPILL KITS & TRAINING

RISK:

* All spill response kits should reflect the potential risks – see *Risk Assessment Procedures*

TRAINING:

* Anyone responding to a spill must have had Spill Response Training and carry a valid certificate

EQUIPMENT INVENTORY & ACCESS:

* Each spill kit should reflect the risk and the potential response. *Therefore, no spill kit will be the exact same.*
* Access to the spill kits will be based on potential risk. Therefore some spill response equipment may be on-site, however some equipment may be in a remote or central location (i.e. Spill Equipment Cache).

SPILL KIT – *Example of Equipment List for ≤ 1000L Diesel Storage for Land-based Operation*

- SPILL PLAN or Emergency Response Procedures must be with each kit or within easy access to the spill kit
- CONTAINMENT:
  - Tarp Containment©:
    - Large tarp for containment
    - 2x4 lumber or equivalent to use as a cross-beam
  - Culvert Block Containment©:
    - Plywood or equivalent for blocking a culvert
    - Small tarp for sealing culvert block
  - Underflow Containment©:
    - Sandbags for diversion or containment dam
    - PVC Pipes for underflow construction
  - Patch & Plug
    - Bentonite clay material or equivalent
    - Wooden dowels & wedges or equivalent
- MOP-UP & TREATMENT
  - Absorbent pads (i.e. petroleum) or equivalent material (i.e. peat moss) appropriate for the type and volume of spilled product,
  - Appropriate number of absorbent booms for skimming and absorption
  - Drum liner bags or plastic pails (20L)
  - Bioremediation product to treat contaminated soil
  - Shovels, rakes or appropriate hand tools
- SAFETY
  - Fire extinguisher (BC type)
  - Traffic Control where required
- PPE (personal protective safety gear)
  - Rubber boots
  - Rubber, Nitrile or equivalent protective gloves
  - Hard Hat, Hearing & Eye Protection
  - Rain gear or chemical splash protection
- ADVANCED WATER RESPONSE EQUIPMENT
  - Site Specific Containment Systems:
    - Watergate® (MegaSecure Dam)
    - Water Barrier® (AquaDam)
- PPE (Advanced Equipment with Appropriate Training)
  - Respirators
  - Gas Meter (or Vapour Monitor)
  - Decontamination Unit

Standard Operating Procedure:
Treatment (Bioremediation) of Small Volumes of Petroleum Hydrocarbon Contaminated Material

Best Management Practices (BMP): This SOP will ensure that BMP are implemented when treating small volumes of hydrocarbon waste material.

Specifications for this SOP:

- The contamination is petroleum hydrocarbon based (synthetic oil will not bio-remediate)
- The source of the petroleum hydrocarbon contamination is from:
  1. Non-reportable spills to land including: Class 3 *Spills* less than (<)100L / Leaks / Drips / Hydrocarbon Stains
  2. On-site facilities including: Wash-Pad Sumps / Oil-Water Separator Sumps / Sediment & Storm Drain Sumps / Shop Sweepings
- On-going treatment is a long-term maintenance plan to reduce site contamination from increased concentrations of petroleum hydrocarbons;
- Criteria for identifying contamination follow these general guidelines:
  1. The depth of contamination does not exceed 0.5m below surface grade
  2. The surface staining is less than 3m in diameter
  3. The volume of contaminated media is less than (<) $5m^3$

***In-situ* Treatment** (see Table 1)
The visible suspect/contaminated material will not be excavated or removed. All treatment will be performed within the boundaries of the stained/ contaminated area.

Spill Assessment:

- Contain and remove any free product:
  - Use petroleum absorbent pads or equivalent absorption product(s) to remove free product prior to treatment

Environmental Assessment:

- Identify the characteristics of the contaminated media:
  - Clay, Silt and Mud mixtures
  - Sand and Gravel mixtures
  - Pebbles and Cobble mixtures
  - Gravel and mixed fragments
  - Fibric, Silt and Sand mixture
  - Humic, Silt and Sand mixture

Bio-remediation *in-situ* Treatment:

- Add treatment product to contaminated area (see Table 1)
  - Dry or liquid product, depending on the media
    - Dry product: 1 bag/ $1m^3$ of contaminated media
    - Liquid product: 1L concentrate to 50L water or as prescribed
- Mix treatment product with contaminated media
  - Use excavator, grader or equivalent to ensure a good mix
  - On hard surfaces (i.e. asphalt or cement pads) spread product to absorb, sweep and remove
- Assess the treated area:
  - Check for petroleum hydrocarbon odors & visible staining
- Repeat *in-situ* treatment if staining or odors persist

***Ex-situ* Treatment** (see Table 1)

- Stockpile contaminated media in a mini-biocell for treatment;
  - A small cell lined with 20mil poly and 1m soil cover, a cement pad or equivalent
- Mix treatment product with contaminated media
  - Dry product: 1 bag/ $1m^3$ of contaminated media (see Table 1);
  - Use excavator or equivalent to ensure a good mix
  - Aerate with excavator every two weeks
  - Leave uncover if no precipitation is in the forecast
- Assess the treated area:
  - Check for petroleum hydrocarbon odors & visible staining
- Repeat treatment within *biocell* if petroleum hydrocarbon odors or staining persist

Disposal Options:

- Landfill intermediate cover and/or final cover material (Check with *Permit* requirements)
- On-site restoration (no *off-site* media relocation permitted):
  - Construct berms, ditches & use to backfill around the site
  - On-site road surface improvements

Table 1. Remedial Options for Media Characteristics.

Remedial Options for Media Characteristics	*In-situ* Bioremediation Dry Product[1]	*In-situ* Bioremediation Liquid Product[2]	*Ex-situ* Bioremediation Cell Dry-Product
Clay/ Silt/ Mud	YES		YES
Sand/ Gravel	YES		YES
Pebbles/ Cobble		YES	YES
Gravel/ Mixed Fragments		YES	YES
Fibric/ Silt/ Sand	YES		YES
Humic/ Silt/ Sand	YES		YES
Cement Pad/ Asphalt Road	YES	YES	
Large Rocks & Boulders		YES	

[1] *Oil Gator®* or equivalent
[2] *Microblaze®* or equivalent