



Table of Contents

Table of Contents	1
Background.....	4
Purpose	4
Scope and Applicability.....	4
Responsibilities	5
Procedures	5
General Requirements.....	5
New Storage Tanks	5
Registration	5
Storage Tanks Decommissioning.....	5
Specific Requirements by Tank Type	6
Above and Underground Fuel Storage Tanks	6
Underground Fuel Tanks.....	6
Special procedures.....	7
1. Fuel Over-Fill Protection Procedure	7
2. Fuel Tanks Spill Response Procedure	7
3. Emergency Response (fire, earthquake, etc.).....	9
Records	9
Tank Inspection and Monitoring (Tank and Piping)	10
Other requirements.....	10
Aboveground Fuel Tanks.....	10
Aboveground Fuel Tanks (outdoors)	11
Special procedures.....	11
Inspections.....	11
Records	11
Labels and signs	11
Above ground Fuel Tanks (indoors)	12



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Special procedures	12
Inspections.....	12
Records	12
Labeling requirements	12
Oil/Water Separators	13
Procedure	13
Standard Operating Procedures for Oil/Water Separator.....	13
Inspections.....	13
Records	14
Grease Traps or Grease Interceptors.....	14
Procedures	14
Installation of grease interceptors	14
Maintenance grease interceptors.....	15
Records	16
Septic Tanks.....	16
Chemical Storage Tanks.....	16
Procedure	16
Purpose	16
Scope	16
Spill Response Procedure	17
Inspections.....	18
Records	18
Acid Neutralization Tanks.....	18
Procedure	18
Inspections.....	18
Records	18
Liquefied Gas Tanks	19
Training	19
Inspections.....	19



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Records	19
Waste Storage and Containment Tanks	19
Procedure	19
Inspections.....	20
Records	20
Appendix A	21
Construction and Location Requirements by Tank Type	21
Unground Fuel Storage Tank	21
Location.....	21
Tank Construction.....	21
Other construction	21
Above Ground Fuel Tanks (outdoors).....	22
Location.....	22
Tank construction	22
Above Ground Fuel Tank (indoors)	22
Location.....	22
Tank construction	22
Chemical Storage Tanks	23
Construction.....	23
Other requirements for Outdoors Tanks.....	23
Liquefied Gas Tanks	23
Construction.....	23
Waste Storage and Containment Tanks.....	23
Construction.....	23
Appendix B	24



Background

Above and underground hazardous materials storage tanks on the UBC Point Grey Campus are used for variety of applications, such as storage of fuel, chemicals, waste water, liquefied gas, oil water separators, grease traps and more. These tanks in capacity of 230 to almost 500,000 liters are owned and operated by multiple on campus departments.

The construction, management, maintenance and decommissioning of these tanks are governed by different regulations depending on the tank type.

If not managed properly storage tanks may present human health and safety hazards such as fire, explosion, chemical exposure or confined space. They may also present environmental hazards as potential spills or leaks may result in soil, water, or air contamination

Purpose

This procedure is designed to:

- Protect the natural environment, specifically soil and the water resources, from adverse effects that may result as a consequence of operating [storage tank systems](#). This includes avoiding the contamination and negative ecological impacts from potential leaks and spills, and/or fires and explosions
- Mitigate the potential financial impacts, particularly due to spills and leaks as a result of the regular operations of storage tank systems at the Point grey Campus
- Ensure that storage tank systems are operated, maintained, and monitored in accordance with standardized preventive practices and according to applicable regulations
- Provide information for maintaining an up-to-date official registry of the storage tank systems owned and operated by UBC

Scope and Applicability

This procedure addresses the registration, operation, maintenance, and decommissioning of all hazardous material storage tanks on the Point Grey Campus. It applies to staff managing and/or operating hazardous materials storage tanks (including fuel tanks).

Summary of key tank construction requirements (by tank type) is available in Appendix A. A comprehensive set of design and construction requirements is available through the UBC Technical Guidelines¹

¹ Planned for the 2016 update of the technical guidelines



Responsibilities

- Head of Administrative Units and their delegates (i.e. storage tanks responsible persons) are accountable to adhere to the regulations and to ensure compliance with this procedure
- RMS Environmental Services will provide guidance and advice relating to this procedure and is responsible for the UBC Point Grey storage tanks inventory system including approval and registration of new storage tanks and confirmation and recording of all tank decommissioning

Procedures

General Requirements

Inventory control is an important part of the UBC Storage Tank Management program. The installation of all new tanks and the decommissioning of inactive tanks must be approved and recorded by RMS through the UBC Storage Tank Inventory.

New Storage Tanks

Design, Construction, and Installation

The design, construction, and installation of all new storage tanks must adhere to all relevant regulations, codes of practices, best management practices, and must be performed by qualified professional.

Registration

Every new storage tank must be preapproved by Risk Management Services and registered [[refer to link](#)] in the storage tank database prior to installation. Information required for the registration will vary depending on tank type.

An as-built drawing of the storage tank system needs to be submitted with the registration application outlining the storage tank, the related piping, and any auxiliary tanks (e.g. oil-water separator or chemical storage).

Storage Tanks Decommissioning

All storage tanks have construction requirements specific to tank type (see following procedures for details). If a tank does not meet the minimum requirements it must be upgraded or decommissioned and replaced.



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Any owner of a tank that is inactive for more than 180 days must contact Risk Management Services and follow a proper tank decommissioning process:

- Obtain a qualified contractor for removal and disposal of tank and contents
- Obtain and provide to RMS documentation of proper disposal of tank and contents from the contractor
- Obtain test results of soil samples after the tank is removed from contractor and provide to RMS (applicable for underground tanks)
- Complete the online (tank type specific), "Decommission Existing Tank" form [[on this web page](#)].

During the active life of the tank, regular maintenance, monitoring, and inspections must be conducted by tank's owner and qualified personnel.

Key operation, maintenance, inspection, testing, and record keeping requirements, are prescribed below by tank type.

Specific Requirements by Tank Type

Above and Underground Fuel Storage Tanks

Above and underground fuel storage tanks are used at UBC to supply fuel for emergency generators, for vehicle fueling stations, and for storage of boilers' heating oil.

Owner and operator of these tanks must comply with the following Federal and Provincial regulations and codes:

- [Canada's Environmental Code of Practice for Aboveground and Underground Storage Tank Systems](#)
- BC's [Environmental Management Act, Petroleum Storage and Distribution Facilities Storm Water Regulation](#)
- [BC Fire Code 4.3 Storage Tanks](#)

Underground Fuel Tanks

An existing underground storage tank system must be upgraded to include the following components or removed from service and decommissioned:

- corrosion protection.
- liquid and vapour-tight connections, caps and adapters;
- an overfill protection device;
- a fill pipe spill containment device;
- dispenser sumps; and
- leak detection
- a spill containment device



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Special procedures

1. *Fuel Over-Fill Protection Procedure*

Person responsible for transferring the fuel to a storage tank system shall take all reasonable steps to prevent spills.

- Ensure there is enough room in the tank BEFORE each delivery. MEASURE the fuel level in the tank before the delivery
- Monitor all fuel deliveries from beginning to end
- Place the fuel absorbent material and Spill Kit, at the fill site
- When the truck arrives:
 - One employee will be present during the fill procedure
 - Verify fuel type (Diesel)
 - Verify fuel quantity
 - Verify safe working environment:
 - Fuel delivery personnel connects the ground strap to eliminate spark
 - Equipment in good repair – no visible cracks, tears, etc.
 - Snug fit of all connections
- When a tank vehicle is being unloaded, the vehicle operator shall remain:
 - in constant view of the fill pipe; and
 - in constant attendance at the delivery control valve
- Upon completion:
 - Verify removal of vendor equipment
 - Return fuel spill absorbent material and Spill Kit

This procedure must be posted by the tank.

2. *Fuel Tanks Spill Response Procedure*

Purpose

The following procedure addresses the proper spill response in case of accidental release of diesel fuel from fuel tanks used for generators or emergency generators.

Scope

The spill procedure is intended for Building Operations staff servicing generators and responding to spills. The spills can occur during fueling or leak testing of fuel tanks and (emergency) generators.



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Procedure

Planning, Preparation and Spill Prevention

- Provide appropriate spill kits, check regularly and replenish materials as necessary
- Secondary containment (110% of capacity) should be used for all fuel tanks
- Tanks should be inspected, checked and tested for spills and leaks regularly
- Inspections should be documented
- Refer to RMS website ([Storage Tanks](#)) for more information

Spill Response and Cleanup

In the event of a spill:

- Small spills contained within the secondary containment may be addressed by the tank "owner" responsible person; if spill beyond their response capacity
- Activate the Building Operations Fuel Spill Response Team by contacting the Building Operations Service Center at 604-822-2173.
- Spill kits are located at the Garage in room 0024 in the University Services Building and outside by the fuel pump.
- The maximum fuel spill volume (on the ground/floor) that can be cleaned up by Building Operations Fuel Spill Response Team (Hard Landscape crew) is **100 L**. [Note: volumes $\geq 100L$ have to be reported to Emergency Management BC (formerly PEP)].
- Take action to stop the spill if active (i.e. shutting off valves etc.).
- Prevent the oil from leaving the building, spreading to adjacent areas, or entering sewers or streams by diking the area, and/or using drain plugs/barriers and absorbing flowing fuel.

If it is safe to do so:

- Dike the area with sand bags, elastomer mats, or elastomer berms.
- Ensure drains in area/room are covered
- Spread absorbents over the surface of the spill working from the perimeter of the spill to its center.
- Socks and pillows work best on pooled liquid while pads have an advantage on thin layers of oil.
- Containerize spill residues (i.e. contaminated socks, pads, Oil Sorb, etc.) and tag for disposal as hazardous waste (disposal can be arranged through the UBC Environmental Services Facility, contact 604-822-1285 for details).
- Contact UBC Risk Management Services at 604 822-2029 and the Fire Department HazMat Team (by dialing '911') if:
 - The quantity of spilled oil is more than 100 L (~25 gallons), or



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- The spill has entered a sanitary or storm drain, or
- The spill has entered a ground or surface water, or
- The spill cannot be contained or stopped, or
- The spill poses a fire/explosion hazard, or
- Additional spill equipment/materials/training to address spill is needed and is not (immediately) available

Note: The maximum fuel volume that can be recovered in liquid state from a damaged leaking tank or from the ground/floor by Building Operations is **400L** (i.e. recovery tank capacity).

Training

All workers are trained in spill clean-up procedures in case of emergencies.

Spill Reporting

All spills should be reported to the following agencies:

- UBC Building Operations (Service Centre, 604-822-2173)
- UBC Building Operations ([Michael Chapman](#), Manager Mechanical Trades, 604-827-5538, cell: 778 877-0169)
- UBC Risk Management Services (Main Office, 604-822-2029)

Complete the [Spill Reporting Form](#).

3. Emergency Response (fire, earthquake, etc.)

Follow the UBC emergency response procedure for [fire](#) or [earthquake](#)

Records

Maintain records on-site² for at least seven years of all:

- Inventory control and reconciliation
- Inspections and maintenance and repairs
- Precision leak detection tests
- Construction, alterations, or upgrades
- As-built drawings
- Excavation or nearby construction that could affect the integrity of the storage tank system

² Location to be determined by tank owner



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Documentation of tank and piping arrangement must be made available to the fire department per request
- Records of training with respect to all prescribed SOPs

Tank Inspection and Monitoring (Tank and Piping)

- Single wall:
 - Manual or electronic dip and [inventory reconciliation](#) – weekly
 - High pressure inert gas or vacuum leak detection test/pressure liquid media leak detection test – annually for steel; every 2 years fiberglass
- Double wall:
 - Secondary containment monitoring – monthly
 - Liquid level measured and [inventory reconciliation](#) – monthly³
- Routine visual inspection to ensure no leak or deterioration
 - Daily for tanks >5000L
 - Weekly for single wall tanks
 - Monthly for double walled
- Annual inspection and test in conformance with the manufacturer's requirements and procedures to ensure satisfactory equipment performance

Note: Construction and location requirements can be found and summarized in [Appendix A](#).

Other requirements

- Contaminated soil must be removed from location if spill occurred
- Tank bottom water must be segregated from rain water and sent to treatment facility

Aboveground Fuel Tanks

All above ground fuel storage tanks must comply with the following or be removed from service and decommissioned:

- underground piping must have *secondary containment*
- dispenser sumps and secondary containment
- spill containment and runoff collection
- corrosion protection
- a secondary containment system
- leak detection
- be provided with overfill protection

³ Not required if all components are designed to contained liquid, or are secondarily contained and monitored



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Aboveground Fuel Tanks (outdoors)

Special procedures

Refer to the [underground fuel storage tanks](#) section for the following procedures:

- [Fuel Over- Fill Protection Procedure](#) (to be posted by the tank)
- [Fuel Tanks Spill Response Procedure](#)
- [Emergency Response](#) (fire, earthquake, etc.)

Inspections

- Visual inspection for leaks (single-walled) weekly
- Secondary containment monitoring (double-walled) monthly [monitoring procedure will depend on tank construction, refer to manufacturer manual for details]
- Visual inspection of pipes, tank condition, shut off valves, and for open flame in area, weekly - single wall, and monthly -double wall tank. [Refer to [SAMPLE Fuel Tank Monthly Checklist](#) or see [Appendix B](#)]
- High pressure inert gas or vacuum leak detection test/pressure liquid media leak detection test (only for tanks with no secondary containment), yearly

Records

Records shall be maintained on-site⁴ for at least seven years of all:

- Inspections and maintenance and repairs
- Precision leak detection tests
- Construction, alterations, or upgrades
- As-built drawings
- Excavation or nearby construction that could affect the integrity of the storage tank system
- Documentation of tank and piping arrangement is available to fire department
- Records of training with respect to all prescribed SOPs

Labels and signs

- Sign indicating shutoff valve location
- Pipe line marked with content
- Filling and emptying connections identified per [CPPI color symbol system](#)

Note: Construction and location requirements can be found and summarized in [Appendix A](#).

⁴ Location to be determined by tank owner



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Above ground Fuel Tanks (indoors)

Special procedures

Refer to the [underground fuel storage tanks](#) section for the following procedures:

- [Fuel Over- Fill Protection Procedure](#) (to be posted by the tank)
- [Fuel Tanks Spill Response Procedure](#)
- [Emergency Response](#) (fire, earthquake, etc.)

Employees involved in liquid transfer must be trained on above procedures, and the operation of the emergency shut of valves.

Inspections

- Visual inspection of secondary containment, pipes, tank , condition, shut off valves, and for open flame in area, monthly if has secondary containment - weekly otherwise [Refer to [SAMPLE Fuel Tank Monthly Checklist](#) or see [Appendix B](#)]
- High pressure inert gas or vacuum leak detection test/pressure liquid media leak detection test (only for tanks with no secondary containment) – yearly
- Inspection and test of safety shutoff valve and any other fire protection device - yearly

Records

Records shall be maintained on-site for at least seven years of all:

- Inspections and maintenance and repairs
- Precision leak detection tests
- Construction, alterations, or upgrades
- As-built drawings
- Excavation or nearby construction that could affect the integrity of the storage tank system
- Included tank in the Building Emergency Response Plan
- Documentation of tank and piping arrangement must be available to fire department
- Records of training with respect to all prescribed SOPs

Labeling requirements

- Sign indicating shutoff valve location
- Pipe lines marked with content

Note: Construction and location requirements can be found and summarized in [Appendix A](#).



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Oil/Water Separators

An oil/water separator is a device designed to separate gross amounts of oil and suspended solids from the wastewater effluents. They must be installed for every parking lot with 20 or more vehicles and downstream from certain fuel storage tanks.

The operation of oil water separators is governed by the CCME [Environmental Code of Practice for Aboveground and Underground Storage Tank Systems](#).

Procedure

Standard Operating Procedures for Oil/Water Separator

- The operation, maintenance and inspection of an oil-water separator must be in conformance to the manufacturer's instructions or as prescribed by this procedure
- The depth of the free oil layer and separated solids accumulation in an oil-water separator must be checked and recorded monthly
- If a monthly inspection is not possible, an oil-water separator must be electronically monitored
- The depth of the free oil layer and separated solids accumulation in an oil-water separator must be measured as close to the baffle as possible
- An oil-water separator must have the free oil layer removed:
 - continuously by an automatic skimmer; or
 - at a maximum depth of 50 mm
- After a spill or leak, the depth of the free oil layer and separated solids accumulation in an oil-water separator must be checked and recorded
- Do not discharge tank bottom water or gasoline, solvents, used oil, glycol, detergents, or sludge from outside the storage tank system directly to an oil-water separator
- The amount of solids entering an oil-water separator must be minimized
- An oil-water separator must have the separated solids removed:
 - at a maximum depth of 150 mm; or
 - at the maximum depth allowed by an automatic removal device.
- Free oil and contaminated water from an oil-water separator must be disposed of by approved hazardous waste disposal contractor

Inspections

On a monthly basis inspect the depth of the free oil layer and separated solids accumulation in the oil-water separator and record (or electronically monitor).



Records

Records shall be maintained on-site for at least seven years of all:

- Free oil layer in the separator
- Separated solids level, measured at a point where the maximum buildup can be expected
- Date and quantity of oil removed
- Date and quantity of separated solids removed
- Name of contractor
- All inspections and maintenance activities
- Records of training with respect to all prescribed SOPs

Grease Traps or Grease Interceptors

When fats, oils and grease from food preparation and cooking get put down the drain it can plug drain lines and eventually clog the sewers. Grease build-up in sewers causes them to overflow, potentially damaging buildings and the environment.

A lot of the grease in the sewers comes from commercial kitchens where grease interceptors (or grease traps) are not properly maintained or are too small.

A grease interceptor or a grease trap is a device designed and installed to separate and retain oil and grease from wastewater, while permitting wastewater to discharge to the sewer. Grease and oil removed from grease interceptors must not be discharged to the sanitary sewer, the storm drainage or surface water. Grease traps installation and maintenance requirements are regulated by the Metro Vancouver [Food Sector Grease Interceptor Bylaw No. 268, 2012](#), which prescribes the installation of such devices for all Food Sector Establishments.

Procedures

Installation of grease interceptors

A grease interceptor must be:

- Connected to any fixture that generates grease
- Properly sized – if it is too small it will fill with fats, oils and grease too quickly and will not do its job
- Equipped with a sampling point so that the quality of liquids leaving the interceptor can be tested
- Accessible – so it can be inspected and maintained
- The following fixtures must be connected to Grease Interceptor:
 - Sinks used for washing pots, pans, dishes, cutlery, and kitchen utensils



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Drains serving self-cleaning exhaust hoods installed over commercial cooking equipment
- Drains serving commercial cooking equipment
- Drains serving a Garbage Compactor used for food waste
- Any other Fixture that discharges wastewater containing Oil and Grease
- Dishwasher (if interceptor properly sized to accept the specific volume)
- The following fixtures must not be connected to a Grease Interceptor: food grinders, potato peelers, similar equipment discharging solids; toilets, urinals and hand sinks
- Grease Interceptors must be connected to a Sanitary Sewer not discharged into a Storm Sewer
- Labels:
 - Grease Interceptors must be labeled with the rated flow capacity of the unit
 - The label must be permanently affixed and visible following installation
 - If such label is not possible manufacturer's and installation drawings must be maintained and available for inspection
- Garbage Compactor, used to compact waste containing food must be installed on a concrete pad equipped with a drain connected to a Grease Interceptor.
 - If installed outdoors must be provided with a rain cover and curbing as necessary to prevent rainwater from entering the drain connected to the Grease Interceptor

Maintenance grease interceptors

Grease interceptors only work if they are properly maintained. These are the key maintenance requirements for grease interceptors.

- The depth of fats, oils, grease and solids (combined together) must not be more than 25% of the total liquid depth of the grease interceptor
- Have grease interceptors fully pumped out by a waste management company:
 - When fats, oils, grease and solids are more than 25% of the total liquid depth or
 - Every 90 days (whichever occurs first)
- Inspect all components that may affect its proper operation
- Wastewater leaving the grease interceptor should not exceed the regulation limits of:
 - 300 mg/L of oil and grease
 - 600 mg/L of solids
- Don't use enzymes or other agents that will allow grease to pass through the grease interceptor and go into the sewer



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Oil and Grease removed from Grease Interceptors are not discharged to any Sewer, Sanitary Sewer, Storm Sewer, or other sewer, drainage ditch or surface water, nor be disposed of with regular garbage

Records

Records of all inspections and maintenance are retained for two years and include:

- Date of inspection
- Date of cleaning or maintenance
- Type and quantity of material removed from the trap
- Disposal location

Septic Tanks

A septic tank is a watertight container for receiving, treating and settling domestic sewage.

They are regulated by the Sewer System Regulations under the Public Health Act.

All septic tanks at UBC are to be decommissioned. These tanks are non-compliant with the 2005 changes by the BC government related to septic tanks manufacturing and installation requirements. If you know of a septic tank at UBC, contact [Environmental Services Advisor](#), at 604.822.9840.

Chemical Storage Tanks

Above and underground chemical tanks are used for the storage of large volumes of various chemicals. These tanks are regulated by the [BC Fire Code](#) (section 3.2.7 – Indoor Storage of Dangerous goods and section 3.3 – Outdoor Storage)

Procedure

Standard Operating Procedures (SOPs) are required and should include Leak and Spill Response

Purpose

The following procedure addresses the proper spill response in case of accidental spills or leaks of chemicals from chemical storage tanks.

Scope

The spill procedure is intended for staff responding to chemical spills from containers or storage tanks. Mechanical rooms hold a variety of chemicals such as strong acids or bases (caustics). For example, water chillers use chemical inhibitors to prevent formation of bacteria in the water. Most of these substances are both corrosive and toxic. Some areas also store corrosive cleaning solutions such as bleach (sodium hypochlorite). These may be stored in containers (20L or less) or in storage tanks.



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Spill Response Procedure

Planning, Preparation and Spill Prevention

- Provide appropriate spill kits, check regularly and replenish materials as necessary
- Secondary containment (110% of capacity), e.g. trays or spill pallets, should be used for all chemical storage tanks and containers
- Chemical storage areas are inspected, checked and tested for spills and leaks regularly
- Inspections should be documented and posted by the storage area
- Relevant MSDS should be posted in all storage areas and reviewed before responding to spills

Spill Response and Cleanup

- The spill kit is located at the Power House and includes the following materials and equipment: absorbent pads and pillows, kitty litter, Spill-X-A and Spill-X-C neutralizers*
- Identify the chemical used by reviewing the MSDS
- Only respond if it is safe to do so
- Use appropriate PPE (gloves, aprons/coveralls, rubber boots, face shields, respirators)
- Take action to stop the spill if active and safe to do so (i.e. closing valves or caps etc.)
- Prevent the corrosive and toxic chemical from leaving the building, spreading to adjacent areas, or entering drains by absorbing the chemicals, diking the area, and/or using drain plugs/barriers
- Neutralize the chemicals as necessary using the appropriate neutralizer (Spill-X-C for caustics, and Spill-X-A for acids)
- Absorb, collect, and package the neutralized material for disposal as hazardous waste and contact ESF for pick-up
- For large spills typically more than 10 L or more call 911 for the Vancouver Fire Department HazMat team

Training

All workers are trained in spill clean-up procedures in case of emergencies.

Spill Reporting

All spills should be reported to the following agencies:

- UBC Building Operations (Service Centre, 604-822-2173)
- UBC Risk Management Services (Main Office, 604-822-2029)
- Complete the [Spill Reporting Form](#)

*Note: Customizable spill kits available from vendors like [Acklands-Grainger](#)



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Inspections

Perform monthly visual inspection of tank for leaks, spills, tank condition, availability of absorbent materials and spill response procedure in place, proper labels of piping system, and tank placard (contain content and capacity) posted

Records

Maintain records of:

- inspections
- maintenance activities

Note: Construction and location requirements can be found and summarized in [Appendix A](#).

Acid Neutralization Tanks

Acid neutralization tanks are installed to ensure effluent pH is in compliance with Metro Vancouver Sewer Use Bylaws and to minimize any potential corrosive attack on a facility's drainage system.

Note: RMS no longer recommends the installation of acid neutralization tanks for laboratory buildings' sinks effluent. Most of these tanks are holding tanks where neutralization is achieved passively by dilution and may not be sufficient for corrosive neutralization. UBC procedure requires lab employees to neutralize waste prior to discharge when proper or collect and dispose as hazardous waste.

Procedure

- [Standard Operating Procedures](#) (SOPs) for spill or leaks
- For active neutralization tanks proper tank specific operation and maintenance procedure must be developed based on the manufacturer system operation manual. Operator must be trained on proper implementation of SOPs

Inspections

Monthly: visual inspection of tank for leaks, spills, tank condition, labels in place

Records

Maintain records of:

- inspections
- maintenance activities



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

Liquefied Gas Tanks

Liquefied gas tanks (propane, oxygen, nitrogen, etc.) are regulated under the [BC Fire Code](#). The hazards associated with liquefied gases include fire or explosion, asphyxiation, toxicity, very low temperatures, and physical hazard.

Training

The department staff responsible for chemical receiving must keep up-to-date Receiver TDG training.

Inspections

Monthly by user representative:

- Area access is controlled
- Placards and labels are in place and intact
- Area is free of spills or leaks
- Good housekeeping is implemented
- Tank is in good condition

Yearly system inspection by Owner Company⁵: tanks condition, safety valve, and burst discs, must be confirmed and verified with Owner Company by UBC responsible person.

Records

Maintain records of all inspections and maintenance activities including:

- Schedule for replacement of safety valve
- Schedule for replacement of burst discs

Note: Construction and location requirements can be found and summarized in [Appendix A](#).

Waste Storage and Containment Tanks

Waste storage and containment tanks are used to collect waste water from cleaning operations in areas where hazardous materials are used and stored. The content is regulated for discharge both by [BC Hazardous Waste Regulation](#), and by the [Metro Vancouver Sewer Use By Law](#).

Procedure

Develop a tank specific procedure to:

⁵ Note that these tanks are usually owned by non-UBC company such as Air Liquid that also supply the material to UBC users



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Routinely monitor the level of waste collected in the tank (at least monthly, weekly if the waste hazardous waste). Gauge stick may be used for this purpose⁶
- Depend on the type of collected waste, make arrangements with proper disposal contractor to dispose of the waste (when tank is $\frac{3}{4}$ full)
- Ensure tanks operators are trained on proper implementation of SOP

Inspections

Monthly: visual inspection for leaks, spills, level of waste accumulated, condition of tank, labels in place (need to be performed weekly if hazardous waste tank)

Records

Maintain records of:

- inspections
- maintenance activities

⁶ [Gauge sticks – http://www.jmesales.com/catalog/guage-sticks-paste.4389.htm?gclid=CP7q1MT_tLACFQkaQgodoxCsUg](http://www.jmesales.com/catalog/guage-sticks-paste.4389.htm?gclid=CP7q1MT_tLACFQkaQgodoxCsUg)



Appendix A

Construction and Location Requirements by Tank Type

The following are summarized location and construction requirements from these regulations:

- [Canada's Environmental Code of Practice for Aboveground and Underground Storage Tank Systems](#)
- BC's [Environmental Management Act, Petroleum Storage and Distribution Facilities Storm Water Regulation](#)
- [BC Fire Code 4.3 Storage Tanks](#)
- Metro Vancouver [Food Sector Grease Interceptor Bylaw No. 268, 2012](#)

These are meant to provide a brief understanding are in no way comprehensive. Please ensure a qualified consultant is engaged before a tank is designed, purchased and installed.

Underground Fuel Storage Tank

Location

- Not located below power line
- Placard with tank content, capacity and hazards
- Fenced off (>1.8 m with locked gate)
- Smoking not permitted sign
- 0.6 m from adjacent structure
- 1 m from building foundation or street line

Tank Construction

All UST containing fuel must contain the following or be upgraded or removed:

- Liquid or vapor tight connections caps and adapters
- Over fill protection device (or procedure)
- Fill pipe spill containment device
- Dispenser sump
- Corrosion protection for steel tank

Other construction

- 0.6 m cover above tank
- Piping materials all exposed underground piping, valves couplings, bolts fabricated of ferrous substance are coated with rust resistant compatible material
- Filling connections:
 - 1.5 m from opening



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Closed when not in use

Above Ground Fuel Tanks (outdoors)

Location

- Not below power line
- On solid surface
- Accessible to fire department (at least 60 m)
- Fenced off (1.8 m with locked gate)
- Sign with tank content, capacity and hazards
- Smoking not permitted sign

Tank construction

- Secondary containment (110%)
- Over fill protection (continuous supervision + device/procedure)
- Piping above ground (supported not to touch ground)
- Piping contain shut-off valves
- Normal and emergency vent provided
- Corrosion protection rust resistant coating
- Tank supports and connections designed to resist earthquakes (per BC Building Code)

Above Ground Fuel Tank (indoors)

Location

- Placard with tank content, capacity and hazards
- Smoking not permitted sign
- Tank 0.55m from walls
- Floor painted with liquid tight paint

Tank construction

- Secondary containment (110%)
- Over fill protection (continuous supervision and device)
 - Piping above ground (supported not to touch ground)
 - Piping contain shut-off valves (preferred outdoors)
 - Normal and emergency vent provided
 - Filling connections:
 - Outside building
 - 1.5 m from opening



Hazardous Materials Storage Tanks Management

Procedure

Date of Issue: 15.01.27

- Close when not in use
- If tank is located indoors - measures are to be taken prevent vapors from entering building
- Tank has corrosion protection rust resistant coating
- Tank supports and connections designed to resist earthquakes (per BC Building Code)

Chemical Storage Tanks

Construction

- Secondary containment (110%)
- Tank should be made of material compatible with chemical to be stored
- Signage (tank placard) indicating the content, capacity and hazards
- Appropriate piping labels

Other requirements for Outdoors Tanks

- Cannot be located below power line
- Fenced off (>1.8 m with locked gate)

Liquefied Gas Tanks

Construction

- Not located below power line
- Placard with tank content, capacity and hazards
- Fenced off (>1.8 m with locked gate)
- Supported on raised concrete or other non- combustible platform
- Toxic/corrosive/flammable gases out door distance from building openings 1.5 m if gas expansion, 170 m³
- Toxic/corrosive/flammable gases out door distance from building openings 7.5m if gas expansion > 170 m³, < 500 m³
- Toxic/corrosive/flammable gases out door distance from building openings 15 m if gas expansion > 500 m³

Waste Storage and Containment Tanks

Construction

- Secondary containment (110%)
- Signage (tank placard) indicating the content, capacity and hazards
- Appropriate piping labels



Appendix B

Date of Issue: 14.09.23

Date of inspection Year: _____	No spills/leaks (Y/N)	Spill response kit/SOP on-site (Y/N)	Labels in place (Y/N)	Tank, pipes and shut off valve in good condition (Y/N)	Area free of ignition source (Y/N)	Initial
January						
Date:	Comments:					
February						
Date:	Comments:					
March						
Date:	Comments:					
April						
Date:	Comments:					
May						
Date:	Comments:					
June						
Date:	Comments:					
July						
Date:	Comments:					
August						
Date:	Comments:					
September						
Date:	Comments:					
October						
Date:	Comments:					
November						
Date:	Comments:					
December						
Date:	Comments:					



Appendix B

Date of Issue: 14.09.23

Single-walled Underground Fuel Storage Tanks Inspection Process⁷

1. Visual area inspection (as above)
2. Dip stick measure at least monthly and every time product is added or removed and completion of the **Fuel Inventory Management** spread sheet (Use paste that change color in contact with water to determine water level)

Resources:

Fuel Inventory calculator – <http://www.blocklayer.com/tankhorizontal.aspx>-

Dip stick – http://www.patentdata.com/report_full.php?aid=1184&pid=2508&uid

Gauge sticks – http://www.jmesales.com/catalog/guage-sticks-paste,4389.htm?gclid=CP7q1MT_tLACFQkaQgodoxCsUg

⁷ For double walled, 110% contained underground storage tanks (except those that contain automotive fuel) the inventory reconciliation process can be replaced with checking the secondary containment for leaks on a monthly basis.



Hazardous Materials Storage Tanks Management

Procedure

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END OF DOCUMENT

Approved by:

Name and Title	Date	Signature
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Andrew Parr, Managing Director, Student Housing & Hospitality Service	FEB 16/15	
David Woodson, Managing Director Energy and Water Services	JAN 28/15	
Karyn Magnusson Managing Director Building Operations	Jan 28/15	
John Metras, <i>MANAGING</i> Director Infrastructure Development	JAN. 28/15	
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