

SECTION 4.0 – THE UNDERTAKING

4.0 Description

Alpha Chemical Limited plans to construct and operate a Dangerous Goods bulk storage and handling facility. This facility will include the following construction and operations

A. New Construction

- i. One secondary bulk containment system for control of accidental release from bulk storage tanks.
- ii. Install bulk storage tanks inside secondary containment for storage of hazardous dangerous goods.
- iii. One secondary containment pad for control of accidental product release during the loading, offloading, blending and packaging operations.
- iv. One secondary containment pad at the rail car offloading facility for the control of any accidental product releases during transfer.
- v. One Clear Span canopy installed over the secondary containment pad for protection against rain and snow accumulation.

B. Operations

- i. Storage, shipment and handling of packaged non-flammable dangerous goods.
- ii. Storage, shipment and handling of packaged flammable hazardous goods.
- iii. Transfer of bulk dangerous goods from rail car, storage tanks into tanker truck, intermediate bulk container (IBC), drums and pails.
- iv. Blending and packaging of dangerous goods.

4.1 Purpose

The purpose of this Undertaking is to construct bulk storage, handling, blending and packaging facility for products sold to the Offshore Oil & Gas sector. In order to compete with our multinational competitors for the supply of products into the Oil & Gas market it is imperative that we construct this facility. With this facility we will be the only locally owned chemical company competing for business in this market.

4.2 Site Location(s)

The proposed sites of this undertaking is

a) Bulk Tank Farm and Hazardous Goods Handling Facility

Alpha Chemical Limited
60 Raddall Avenue, Unit 7 & 8,
Dartmouth, NS

b) Third Party Rail Car Offloading Facility

Burnside Recycling
66 Simmonds Drive

Dartmouth, NS

c) Third Party Dangerous Goods Warehouse

Fleetway Inc.
12 Borden Avenue
Dartmouth, NS

Two maps of Burnside Industrial Park are enclosed in Section 6.0 - Engineering

- Map 1 shows a complete map of the Burnside Industrial Park, with the location(s) of the Undertaking circled
- Map 2 is taken from a more detailed site map of Burnside and shows the specific lot, which is lot number C-95B on 60 Raddall Avenue.

Also in Section 6.0 is a plot plan of the existing building showing the proposed manufacturing area and dangerous goods storage area.

4.3 Proposed Construction

a) Secondary Containment for Bulk Tank Farm

Location – 60 Raddall Avenue

We intend to install a secondary containment system to contain all fluids from the accidental release of fluids from the bulk storage tanks.

This secondary containment system consists of ground preparation, installation of pre-cast concrete walls, and installation of a chemical resistant liner covered with sand and crushed stone. Each area where a tank will be installed will be built up using a tank ring filled with crushed stone for stability and erosion protection. (See liner compatibility specifications and the tank ring specifications in Section 6.0 – Engineering Specifications)

Dimensions – 40' wide x 65' long by 3'-2" high
Liquid Containment Capacity – 234,000 liters

b) Bulk Storage Tank Installation

Location – 60 Raddall Avenue

We intend to install up to six (6) vertical carbon steel tanks inside the secondary containment system. Each tank will meet ULC-S630, API 650 or API 653 standards for vertical above ground storage tanks. The products and maximum volumes to be stored are,

- i. Methanol – 90,000 liters
- ii. Ethylene Glycol – 90,000 liters
- iii. Triethylene Glycol – 90,000 liters
- iv. Printing Ink Solvent – 90,000 liters

- v. Methyl Diethanolamine – 90,000 liters
- vi. Future Expansion – 90,000 liters

Initially we intend to utilize smaller existing tanks and tanker trucks for storage of product until business grows enough to warrant installation of the larger 90,000-liter vertical tanks. The tanker trucks will meet CSA Standard B620-98 for Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods.

Each Tank will have the following equipment installed for product control,

- Ultrasonic level transmitter and manual dip system for control of liquid inventories and an overflow alarm during filling operations.
- Hard piped to the pump station at the back section of the secondary containment as indicated on the enclosed drawing in Section 6.0. The piping will be either 304 Stainless Steel or Carbon Steel depending on the product stored and transferred. Each tank system will be double valve for protection against valve bypass.
- Vacuum/Pressure Relief Valves
- Inspection Manways
- Access/Egress Ladders
- Flame Arrestors for the combustible/flammable storage tanks
- Internal Coating for protection against corrosion, if required
- External Coating to protect against corrosion
- Each tank containing combustible/flammable liquids will be grounded and bonded together and attached to a steel grounding plate installed in the ground away from the tanks. Permanent weather proof grounding cables will be attached to the tanks to prevent static charge build up. All piping and pumping equipment will be bonded/grounded to the same steel plate to ensure electrical continuity from one piece of equipment to another.

c) Re-packaging and Blending Secondary Containment Pad

Location – 60 Raddall Avenue

We intend to install a reinforced concrete secondary containment pad to contain all fluids as the result of an accidental release during Loading, Offloading, Packaging and Blending Operations. This containment system will consist of a 10” high reinforced concrete footing formed for the walls of the containment area. Inside the footings there will be an 8” thick reinforced concrete slab floor poured and grouted in the joints to protect leakage to the environment.

Dimensions – 20’ wide x 84’ long x 10” high
Liquid Containment Capacity – 39,648 liters

d) Clear Span Cover for Secondary Containment Pad

Location – 60 Raddall Avenue

We intend to install a fire rated Clear Span Canopy over the secondary containment pad to prevent water, snow and ice build-up. This area will be used for Bulk Transfers, Re-packaging from Bulk to IBC, Drum or Pail and Blending Operations.

Dimensions – 20' wide x 84' long x 16' high
(See Section 6.0 for engineering details)

e) Third Party Rail Car Offloading Secondary Containment Pad

Location – 66 Simmonds Drive

In order for Alpha to be competitive in the Offshore Oil & Gas market we must ship product from our suppliers in rail car versus tanker truck. Therefore we need to install a rail car offloading reinforced concrete pad to contain any accidental product release during the transfer of product from rail car to tanker truck. This containment system will have grounding and bonding system installed to prevent static charge during transfers of combustible/flammable liquids. An approved third party tanker truck transport company will perform all transfers at this location. The maximum pumping rate from the rail car to the tanker truck will be 1000 LPM.

Dimensions – 12' wide x 40' long x 8" curb
Liquid Containment Capacity – 9,000 liters

f) Construction Period:

Construction period will be begin within 15 days after all approvals and should be completed within 30 days from the start of construction.

4.4 Overview of Dangerous Goods Handling

a) Type of Industry: Alpha Chemical Limited is a Manufacturer, Distributor of Commodity and Specialty Chemicals to the Oil & Gas, Mining, Pulp & Paper, Food and Industrial Manufacturing Industries.

b) Size and Capacity of Proposed Facility: The building we lease at the existing site is 2500 square feet, which contains two warehouse offices, 1 bathroom, 1 room with chemical shower and an upstairs mezzanine for storing retained samples from completed work. We also utilize 2000 square feet of yard space which will be used for bulk storage of raw materials, i.e. Tank Farm under developmental approval.

We also have 5 steel containers to provide outside storage of combustible/flammable liquids. The remaining exterior space is for transient material to and from our suppliers to our customers. Total space 7500 square feet, which will be used to store our raw material consisting of Dangerous Goods as, set out in Section 8.0.

c) Roads, Stockpiles. Disturbed lands. Pipelines, Stacks: None of these items are applicable.

d) Quantity of Dangerous Goods to be Stored on Facility: As described Section 8, which also lists the WHMIS and TDG Classifications of these items. Material Safety Data Sheets are not supplied due to the tremendous volumes of paper required. However, they are available on request if needed.

e) Discharge Points into Environment: The company has a policy of zero chemical discharge and of recycling as much waste as is technically feasible. Other than normal sewage and kitchen wastes, there will be zero liquid discharge into the environment. Other than the emissions from and existing oil furnace used for heating the building, there will be essentially zero air emission from this facility. All solid wastes that can be recycled are – all fiberboard and metal products are sent for recycling. Non-recyclable waste is disposed of in a conventional industrial 5 cubic yard garbage bin, which is emptied every 3 – 4 weeks.

f) Quantities of Dangerous Goods to be used: See Section 8

g) Blasting: Not applicable.

h) Pit or Quarry: Not applicable.

4.5 Detailed Description of Dangerous Goods Handling

a) Incoming Product – Packaged Goods

Each product purchased must be pre-qualified through our CACD system to ensure the proper shipping and handling procedures are in place prior to receiving the material on site. Incoming raw materials are inspected to ensure that they are correctly and safely packaged. Any leaking containers are handled as per our Emergency Response Plan in Section 7.0 and placed in quarantine until repackaged into UN approved containers.

b) Packaged Product Warehouse/Storage

We have two warehouse operations for storage of packaged hazardous goods as follows,

- i. Alpha Chemical Limited – 60 Raddall Avenue, Dartmouth, NS
- ii. Fleetway Inc. – 12 Borden Avenue, Dartmouth, NS

The Fleetway warehouse is rented on a month-by-month lease for the storage of packaged products only. (See attached list of chemical stored at this facility)

Packaged products of different hazardous classes are stored apart and materials that can potentially react are stored in separate areas of the warehouse. Thus, acids, caustics, bleach all have their own individual storage section and are physically separated from each other in the warehouse such that a spill of one type of product can not leak to a dangerous reaction with another type of product. All materials are stored in drums or on skids so that in the event of a liquid spill the liquid cannot run into bags of incompatible product. All packaged products are to be stored in UN approved packaged as outlined in our CACD manual and the CGSB Standard-CAN/CGSB-43.150-97 (Performance Packaging for Transportation of Dangerous Goods) and

CAN/CGSB-43.146-94 (Intermediate Bulk Containers for the Transportation of Dangerous Goods)

Each warehouse is equipped with the following safety equipment in case of an accidental spill,

- i. Chemical Spill Kit – See Spill Kit contents in Section 7.0 – Emergency Response Plan
- ii. Safety Eye Wash Station
- iii. First Aid Kit
- iv. MSDS Station
- v. Fire Extinguishers
- vi. 24 hour security alarm system

Monthly Inspections – Once per month each warehouse/facility will be inspected as per our CACD guidelines to ensure the integrity of the product packaging, personal protective equipment, eye wash stations, emergency response equipment, fire extinguishers, first aid stations, alarm systems, safety devices, product inventory, bulk storage equipment, blending vats, hoses, piping, and pumping equipment

Special provisions for the 60 Raddall Avenue warehouse are as follows,

Only non-flammable packaged products will be stored inside the warehouse other than a small quantity stored in a fireproof cabinet in the laboratory. (See Warehouse Plot Plan for product locations)

All flammable products will be stored in steel IMO shipping containers located outside in the yard as shown on the 60 Raddall Avenue plot plan. Each container is 8' wide x 40' long x 8' high. (See attached picture for details)

All floor drains in the warehouse will be blocked with steel plates to prevent dangerous goods from entering the sewer or drain system. The nearest outside drain is located west and downhill from the building, in the road surface of Wright Avenue, 30 yards from the building. In the case of a product release all open drains will be covered with a rubber mat and sand bags to protect fluid from entering.

c) Rail Car to Tanker Truck Transfer

Location – Burnside Recycling
66 Simmonds Drive
Dartmouth, NS

Product delivered from suppliers via rail car will be offloaded into tanker truck using the pump on the tanker truck and chemical transfer hose. The transfer of product will be performed over the 12' wide x 40' long x 8" high cement secondary containment pad to protect the environment from any accidental product release during the transfer. Detailed safe work procedures will be written and followed for each product handled at this facility as required under our CACD

operating procedures. Approved third party trucking companies that follow the CSA Standard B620-98 Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods will perform tanker truck transfer. The product will be transported directly to the customer or to 60 Raddall Avenue for storage, re-packaging or blending.

d) Bulk Tank Farm

Location – 60 Raddall Avenue, Dartmouth, NS

We are proposing the installation of a bulk tank farm that consists of a maximum of six (6) 90,000-liter vertical tanks. Products will be filled and stored in the tanks for re-packaging and blending. Product will be transferred to/from the bulk tanks via air diaphragm pumps and or explosion proof electric driven gear pumps. Each tank will be selected based on product compatibility and engineering specifications from the tank manufacturer.

Inventory Control

Each tank will be installed with an electronic level indicator and high-level alarm to monitor volume and protect from overfilling. Each product transferred into and out of the tank will be weighed on a registered scale and recorded on the Bulk Inventory Report form to keep record of volumes in tanks at all time. Our Operations Technician will perform a monthly physical inventory on the fluid levels in the tanks.

Process Control

Detailed Safe Work Procedures will be developed for each product handled at our facility to ensure the protection of our employees, the environment and equipment as per our CACD guidelines. Procedures will be designed to include engineering controls, safe handling equipment, personal protective equipment, specific hazards, environmental control measures, and step-by-step work instructions.

Inspection and Maintenance

Monthly inspections will be performed to ensure the integrity of the tanks, safety devices, valves, pumps and piping. If a deficiency is found it will be reported on the inspection form and an internal work order will be opened to record any maintenance work. Tank inspection and maintenance will be performed as per the API Standard 650 – Welded Steel Tanks for Oil Storage and API Standard 653 – Tank Inspection, Repair, Alteration and Reconstruction.

Secondary Containment

The secondary containment system will be inspected on a daily basis for integrity and rain water levels. Rain water accumulation will be tested by a third party laboratory as per the HRM Storm Sewer Bylaw to determine if the water can be discharged directly to the local storm sewer. If the water does not meet the criteria outlined on the storm sewer bylaw it will be disposed off site by an approved environmental disposal company or treated on site to remove the contaminants prior to pumping into the local storm sewer.

All accidental product releases to the secondary containment systems will be removed from site by an approved environmental company or sent to an approved recycling facility certified for treating hazardous goods.

e) Product Re-packaging – 60 Raddall Avenue facility only

Products will be re-packaged from the bulk storage tanks into UN approved Intermediate Bulk Containers (IBC), Drum or Pails. All products will be transferred over the secondary containment pad to ensure any accidental product release will be contained from entering the environment.

Detailed safe work procedures will be developed and followed as per our CACD manual to ensure protection against the hazards associated with the chemicals being transferred for our employees and the environment. All products will be handled according the Canadian WHMIS regulations.

f) Blending and Packaging – 60 Raddall Avenue facility only

Products will be blended in Stainless Steel blending vats located at the back end of the 20' wide x 84' long x 10" high secondary containment pad as indicated on the enclosed plot plan. The products will be blended using conventional paddle mixers and inline static mixers. Raw material will be pumping into the blending vats as per detailed formulation batch sheets and blended in the tanks using paddle or static inline mixers. The blending vats are enclosed and all vapors generating during the blending operation will be vented outside the Clear Span Canopy directly to the atmosphere. If hazardous vapors are generated during the blending operation we will install the appropriate scrubber system to minimize the impact to the environment. A typical solvent scrubber system would include Activated Carbon filtration for removal of hydrocarbon. Another means to reduce vapor release during the blending operation of combustible/flammable liquids is to apply a Nitrogen blanket in the blending vat to contain vapors.

After the products have been blended they will be packaged into UN approved IBC, Drum or Pails. The packaged goods will then be shipped directly to the customer or stored in the warehouse for delivery at a future date.

The blending vats are free standing and have the following dimensions,

- i. 4500 liter SS Blending Vat – 5" diameter x 7' high
- ii. 2200 liter SS Blending Vat – 55" diameter x 48" high

The blending vats will be cleaned out after each use. The residual products from each product batch and the first wash liquid of the tank are collected and stored in UN approved drums. This residual material is either added back to the next batch of the same product or into a compatible product. Thus, we have essentially zero process discharges.

All residual products not suitable for re-use will be stored in UN approved drums for disposal to an approved environmental disposal company.

g) Spill Response

In Section 7.0 – Emergency Response Plan we outline in detail the procedures in case of an emergency. All employees responding to an emergency must have the appropriate training as per our CACD guidelines.

We will communicate with the local authorities, our spill response contractor and neighbors to ensure they are updated on our operations and emergency response plan. On a monthly basis we inspect our emergency response spill kits to ensure they are ready when needed. Once per year we will plan a mock emergency exercise to test our systems so we can improve our plan as determined by the deficiencies resulting from the exercise.

The company will have a spill control center(s) at each facility in the case of product release to the environment. Each spill control center will consist of a minimum of the following, Personal Protective Equipment including rain gear, rubber boots, hard hat, gloves, mono-goggles, half mask respirator, and cartridges, Drum Over pack, Absorbent Pads (100), Spill Control Barriers (4 socks), Sodium Carbonate (1 bag), Qualisorb powder absorbent (2 bags), broom and shovel. (See Spill Kit list in Section 7.0 Emergency Response Plan)

h) Training

Our CACD Manual outlines the training required (Training Matrix) for each job function and we record all training completed on the Personal Training Record form, which is kept on each employees file for audit purposes.

All staff handling dangerous goods will be trained in the following areas,

- i. Company Induction – Review of Corporate Policies
- ii. Responsible Distribution Manual Review
- iii. Workplace Hazardous Material Information System (WHMIS)
- iv. Transportation of Dangerous Goods (TDG)
- v. First Aid & CPR
- vi. Fire Extinguisher Training
- vii. PPE – Use and Maintenance
- viii. Forklift Operations
- ix. Emergency Response Awareness
- x. Safe Work Procedures

i) Public Security

The facility is secure from public entry and equipped with an alarm system. Signs are posted inside and outside the building advising that the building is a dangerous goods storage area. Emergency phone numbers are posted in clear view outside.

j) Odors

The company's operations do not produce any smell, odor or other noxious emissions of any kind. If there are odor problems we will install properly engineered vapor scrubber systems on our equipment.

k) Operating Schedule

Hours of business are 8:00 am to 5:00 pm, Monday to Friday. Occasional evening or weekend shifts are run.

4.6 Organizational Chart

Eric Efford	President & CEO
Paul Rawding	General Manager & O.H. & S Coordinator
Erica Doucette	Purchasing/Logistics and CACD Coordinator
Mike Stevens	Operations Technician
Rod Simpson	Accountant
Wanda Sams	Customer Service & QA Administrator
Gerard Birrette	Sales Consultant
Ross Blackburn	Sales Consultant

One new position will be created immediately:

New position 1	Plant Operator
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4.7 Schedule

We are currently in the process of bidding a large offshore contract and would need to start construction in April 2003 with completion in May 2003.

4.8 Funding

The company has applied to ACOA for a loan towards the construction to be completed at the proposed facilities.

The company's contract at ACOA is David Parsons, phone 426-1342.

4.9 Other Approvals Required

The company understands that it requires the following permits and approvals to undertake and complete this project:

- HRM Building Permit
- Occupancy Permit
- Approval from Fire Marshall for dangerous goods handling

- Nova Scotia Department of the Environment approval for a Dangerous Goods/Waste Dangerous Goods Facility
- Landlord Approval at 60 Raddall Ave. and Simmons Drive for the proposed construction and operation.



Paul Rawding, General Manager
Alpha Chemical Limited