

SECTION 3.0

THE UNDERTAKING

3.0 Description

Alpha Chemical Limited plans to construct and operate a Dangerous Goods bulk storage and blending 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 flammable blending, packaging and storage building complete with secondary containment.

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.

3.1 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. An added benefit to this location is all our operations will be at one location versus the three we proposed on our previous application. Rail siding access will allow us to receive raw material in rail cars thus increasing our competitiveness in the market place by lowering our cost of goods.

3.2 Site Location

The proposed sites of this undertaking is

a) Bulk Tank Farm, Blending, Packaging and Storage Facility
Alpha Chemical Limited
533 Rocky Lake Drive
Waverley, Nova Scotia
B4A 3X5

3.3 Proposed Construction

a) Secondary Containment for Bulk Tank Farm

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

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,

Tank 1 – Methyl Diethanolamine
Maximum Volume – 36,320liters
Material – Carbon Steel with
Internal Coating - Fiberglass lined
Insulated - Yes

Tank 2 – Spare
Maximum Volume – 36,320liters
Material – Carbon Steel
Internal Coating – Fiberglass lined
Insulated – Yes

Tank 3 - Methanol
Maximum Volume - 90,000 liters
Material – Carbon Steel
Internal Coating – No
Insulated – No

Tank 4 – Ethylene Glycol
Maximum Volume - 90,000 liters
Material – Carbon Steel
Internal Coating – Amine cured epoxy
Insulated – No

Tank 5 – Printing Ink Solvent
Maximum Volume - 90,000 liters
Material – Carbon Steel
Internal Coating – No
Insulated – No

Tank 6 – Future
Maximum Volume - 90,000 liters
Material – Carbon Steel
Internal Coating – No
Insulated – No

Initially we intend to utilize IMO type tanks for storage of the Printing Ink Solvent until business grows enough to warrant installation of the larger 90,000-liter vertical tanks.

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

- Level transmitter and manual dip system for control of liquid inventories and an overflow alarm during filling operations.
- Hard piped to the pump station located on the secondary containment as indicated on the enclosed drawing in Section 5.0. The piping will be either 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 as per the manufacturer
- 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) Rail Car and Tank Truck loading/offloading secondary containment pad

We intend to install a reinforced concrete secondary containment pad to contain all fluids as the result of an accidental release during loading and offloading from Rail Car or Bulk Tanks to Tanker Truck. This containment system will consist of a 8” 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 – 12’ wide x 40’ long x 8” high
Liquid Containment Capacity – 9,063 liters

d) Blending, packaging and storage building

We intend to construct a 25' wide x 50' long re-enforced concrete foundation that will act as our secondary containment. On top of this cement foundation we will erect an 18' high pre-engineered building. This area will be used for blending, packaging and storage of flammable and non-flammable products.

Dimensions – 25' wide x 50' long x 18' eve height
Liquid Containment Capacity – 23,600 liters (Based on a 8" high concrete foundation)

e) Construction Period:

Construction period will be beginning within 15 days after all approvals and should be completed within 90 days from the start of construction.

3.4 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. Packaged product storage

The existing warehouse will be used for storage of our non-flammable and a new building will be constructed to store flammable products.

c. Bulk product storage

A new secondary containment system will be constructed and bulk tanks installed to store both non-flammable and flammable liquids. Products will be received and shipped from the bulk tank farm via rail car and tanker truck.

d. Blending and packaging

Blending and packaging of both non-flammable and flammable liquids will be performed in the new building located adjacent to the bulk tank farm.

e. Empty Drum Storage

Steel shipping containers will be used to store both new and used empty drums.

f. Roads, Stockpiles. Disturbed lands. Pipelines, Stacks

None of these items are applicable.

g. Quantity of Dangerous Goods to be Stored on Facility

- i. Non-flammable packaged product stored in existing warehouse – 165,000 kilograms
- ii. Flammable packaged product stored in new flammable building– 146,000 kilograms
- iii. Bulk product stored in steel upright 90,000 liter tanks – 540,000 liters

f. Discharge Points into Environment

Chemical - The company policy is zero discharge of any chemical into the environment. All residual product that is collected from mixing vats, hoses, equipment, intermediate bulk containers (IBC), drums and pails will be collected and re-used in the manufacture of new products, where product is approved by the quality control department. The residual product collected will be stored in UN approved 1000-liter IBC or 205 liter drums. Residual products that are not suitable for manufacturing will be disposed off site via an approved environmental service company. In cases where residual products can be used by another company or recycled into a prime product we will choose this method versus disposal. All product packaging, blending and transfers will performed over secondary containment systems to prevent product entering the environment in the case of an accidental release.

Water - We will be discharging rainwater collected in our bulk tank farm secondary containment area. Samples of the water will be testing prior to any discharges to ensure compliance with the HRM storm sewer bylaw W - 101. Process water generated from process equipment, IBC, drum, pail and hose cleaning will be collected in IBCs or drums for re-use or disposal. Office water discharge will continue to be discharged into the existing septic system on site. Twice annually ground water samples will be tested from the existing site well, stream and North West pond will be used as our monitoring system to ensure our secondary containment systems are working effectively. Samples will tested based on the HRM W 101 sewer bylaw parameters by a qualified third party laboratory with results shared with the Department of Environment. The existing well on site is located under the existing office and there are no records as to how deep the well has been drilled. The pond is located on the North West corner of the property and from site visits this would be the location for all site ground water run-off. The stream runs along the site that and dumps directly into the North West pond as you can see from the enclosed photos.

Air – We intend to install new heating oil furnace in existing warehouse, which will emit carbon monoxide from the burning of the fuel. To control emissions from flammable liquids stored in bulk tanks we will be installing pressure/vacuum vents. Keeping the mixing vats tops closed during processing will control emissions from the blending process. Venting from the mixing vats will be direct outside the mixing building. Continuous air monitoring of explosive vapors, carbon monoxide and oxygen levels will be performed during our blending and repackaging of flammable liquids. As part of our operational procedure we will monitor the explosive limits in the tank farm area on a daily basis. These measurements will be taken with our portable gas monitor. Any new products introduced into our system will be reviewed for potential vapor release to the atmosphere by management with consultation with the Department of Environment. Products that require special vapor handling equipment will be controlled by installation of a properly engineered scrubber system. (i.e. – activated carbon scrubbers)

Solids – Plastic and steel packaging material will be sent to local recycling facilities. Old wooden pallets will be given away for fire wood or re-manufacturing. Non-recyclable waste will be disposed in a conventional industrial 5 cubic yard garbage bin, which will be emptied every 2 – 4 weeks.

g. Blasting: Not applicable.

h. Pit or Quarry: Not applicable.

3.5 Detailed Description of Dangerous Goods Handling

a) Packaged Goods

Each product purchased must be pre-qualified through our CACD system to ensure the proper shipping and handling procedures are in place and MSDS has been reviewed 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 and placed in quarantine until repackaged into UN approved containers.

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

- i. Non-flammable products will be stored in the existing warehouse.
- ii. Flammable products will be stored in a new building that will be constructed for this purpose as outlined in the National Building and National Fire Codes.

Products of different hazard class will be stored apart as per the Table 3.2.7.6 (Separation Chart for Storage of Dangerous Goods) in the National Building Code. Different material hazard classes will be physically separated from each other in the warehouse such that if a spill occurs the products will be self-contained. All packaged product will be packaged in UN approved containers as outlined in 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).

All floor drains in the warehouse will be filled in with concrete and coated to prevent dangerous goods from escaping the warehouse in case of an accidental product release.

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

- i. Chemical Spill Kit
- ii. Safety Eye Wash Station
- iii. First Aid Kit
- iv. MSDS Station
- v. Fire Extinguishers
- vi. 24 hour security alarm system

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

b) Blending Operations

Blended product will consist of mixing several different raw materials together in a mixing vat. The raw materials will be loaded into the mixing vats from bulk tank, IBC or drum via a transfer pump and hose or piping system. Calibrated load cells or flow meters will be installed to accurately measure each raw material in the blend as they are being loaded into the mixing vats. When all the different raw materials are loaded in the mixing vat as per a pre-defined blend formulation, they will be mixed together with paddle or in-line static mixers. The finished product will then be transferred into IBC, Drum or pail via a transfer pump and hose. The blending vats are enclosed and all vapors generating during the blending operation will be vented outside the blending area directly to the atmosphere.

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

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.

c) Product Re-packaging

Products will be re-packaged from bulk tank or tanker truck into UN approved IBC, Drum and pail via a transfer pump and hose. Each product will be filled into the approved container on a calibrated weigh scale inside the containment area in the case of accidental release.

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.

d) Rail Car and Tanker Truck Transfer

Product delivered from suppliers via rail car will be offloaded into tanker truck and bulk storage tanks via centrifugal or gear pump and chemical transfer hose. Tanker truck loading/unloading 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. A detailed safe work procedure and check-list will be written and followed for each product handled at this facility as required under our Responsible Care program (CACD). Tanker trucks must conform to the CSA Standard B620-98 Highway Tanks and Portable Tanks.

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.

e) Bulk Tank Farm Transfer

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 transferred into the tanks from rail car or tanker truck. Product will be transferred to the bulk tanks via explosion proof electric driven centrifugal pump or an air diaphragm pump. Each tank will be selected based on product compatibility and engineering specifications from the tank manufacturer.

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.

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.

f) 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.

The secondary containment system will be inspected on a daily basis for integrity and rain water levels. Rainwater accumulation will be tested as per the parameters outlined in the HRM Storm Sewer Bylaw W 101 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 meet the W-101 bylaw prior to discharge into the local storm sewer.

All accidental product releases to the secondary containment systems will be transferred into IBC or drum for temporary storage. The QA/QC department will determine if the product meets specification for sale. If the product does not meet sales specification it will be removed from site by an approved environmental company or sent to an approved recycling facility.

g) Emergency Spill Response

In our 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 systems on our equipment to eliminate the noxious odor.

k) Operating Schedule

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

3.6 Organizational Chart

| | |
|-----------------|---|
| Eric Efford | President & CEO |
| Paul Rawding | General Manager and O.H. & S Coordinator |
| Erica Doucette | Office Manager and RD Coordinator |
| Rod Simpson | Accountant |
| Wanda Sams | Customer Service and Administrative Assistant |
| Melinda Kelly | Administrative Assistant |
| Mike Stevens | Operations Technician |
| Paul Anderson | Junior Operations Technician |
| Gerard Birrette | Sales |
| Ross Blackburn | Sales |

3.7 Schedule

Our goal is to have all operations ready by October 2004

3.8 Funding

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

The company's contact at ACOA is David Chu, phone 426-6301.

3.9 Other Approvals Required

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

- Landlord Approval for the proposed construction and operation.
- HRM Building Permit
- Occupancy Permit
- Fire Marshall Approval

- Nova Scotia Department of the Environment Dangerous Goods/Waste Dangerous Goods Facility
- Nova Scotia Department of the Environment Water Course Withdrawal/Diversion
- HRM Development Permit
- ACOA Approval