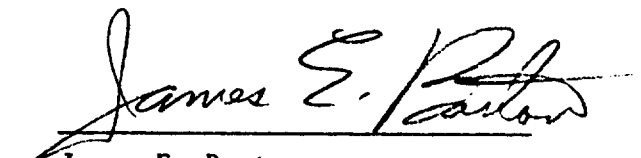


WORK PRACTICES
VCM COMPLIANCE PROGRAM
ABERDEEN PVC PLANT

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WORK PRACTICES
VCM COMPLIANCE PROGRAM

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I. FRESH AIR SUPPLY SYSTEM

A. Respiratory Breathing Air System

A Continuous Flow Fresh Air System (CFFAS) has been installed. Air is supplied by two Nash compressors each capable of supplying 100 CFM at a maximum pressure of 80 psig. Each compressor can supply air to about 15 fresh air masks at a time. One of the compressors is in operation at all times. The second compressor is put in service manually when needed.

The system is equipped with both visible and audible alarms which are activated at 50 psig. A revolving beacon light and an alarm horn are located in the compressor area.

The supply lines are piped through a charcoal bed cleanup system to remove any residual VCM. The clean air then flows to all affected areas of the plant. These include the Vinyl Reactors, Dryers, VCM Tank Farm (both unloading and pumping stations), Silo Storage Area, Plasticizer, Compound Line I and III, Dry Blend, Warehouse and Bagging Area. The individual lines from the piping headers are of 3/4" piping with Snap-tite, quick disconnect fittings. These are designed for a minimum flow of 6 CFM to each mask at 10-15 psig. An air-pressure regulator, shut-off valve and an air filter are provided in the piping header to each area.

B. Environmental Air Supply System

Environmental air is supplied to the Reactor Control Room, the Dryer Control Room and the Supervisor's Offices by a continuous blower located near the west railroad tracks. The Reactor Control Room is pressurized at .2-.4 in. of water.

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II. RAILCAR UNLOADING AREA

The unloading of VCM railcars is an operation which has a high possibility of incurring VCM emissions. It is important that exposure possibilities be minimized through careful operation and use of personnel protective equipment.

In order to minimize personnel exposure, the operator must wear a continuous flow fresh air mask (CFFAM) while performing the following functions:

1. Checking sphere vapor space oxygen content.
2. Working at compressor station while unloading VCM railcars.
3. Opening dome on railcars prior to connecting loading and unloading hoses.
4. Connecting and disconnecting of liquid hoses to the railcar.
5. Connecting and disconnecting the vapor hose from the railcar.
6. Obtaining VCM samples from railcar or storage tank.

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III. LARGE REACTOR AREA

The purpose of the vinyl reactors is to convert vinyl chloride monomer into polyvinyl chloride resin (PVC).

Several of the operator functions in the large reactor area can result in VCM exposure. The following relates to those work practices which are affected by potential VCM emissions.

A. Opening Manhead on Empty Reactor

1. Check the external pressure gauge to insure that the reactor is not under pressure.
2. Put on the continuous flow fresh air breathing mask.
3. Unlatch the manhead roll bar.
4. Radio panel operator to open evacuation jet to the reactor. This will move air inward and disperse VCM vapors.
5. Open manhead completely.
6. Inspect reactor.

NOTE: The manhead is not opened after every reaction but only periodically to check the internal condition.

B. Manual Reactor Entry

1. Open manhead using the procedure described in A.
2. Follow equipment entry procedure as described in Attachment "A" of Safety and Health Manual. This procedure is described in Section VII of this document.
3. Close the top manhead.
4. Hydrostatically test reactor for leakage.

C. Reactor Recovery

Unreacted VCM is removed from the polymerization reactor slurry by the recovery system. The recovery system consists of vacuum pumps, compressors and condensers which remove the VCM from the reactor,

compress, and condense it so that it can be recycled to the process. Operating personnel are required in the recovery area during system start-up and for periodic checks during the recovery. The recovery area is monitored for VCM levels from the Control Room. The operator is alerted by radio before entering the area if the VCM level is above 1.0 ppm.

D. Reactor Dumping

Dumping of the reactor slurry occurs at the end of the VCM stripping operation. The operator observing the dump does not need to wear a CFFAM under normal condition. This area is monitored from the control room and the operator is notified if the VCM level is above 1.0 ppm. Abnormal conditions requiring a CFFAM are:

1. Plugged reactor dump valve or line.
2. Dumping a coarse charge.
3. Cleaning dump Sweco.
4. Inoperative exhaustor.

E. Filter Cleaning, Removal and Replacement

The following information applies to the:

Recovered VCM Filters
Fresh VCM Filters
Seal Water Filters (Compressors)

These filters come in contact with VCM and therefore are potential exposure sources.

The filter is flushed to the blowdown tank with hot water and recovered to a 20 inch vacuum using the recovery system.

The operator then puts on a CFFAM, impervious gloves and an impervious suit.

F. Condenser, Subcooler, Line and Vessel Maintenance

The following precautions are required to prevent VCM exposure while performing maintenance on lines vessels, subcooler and condensers.

1. The equipment must be blinded at all inlets and outlets.
2. The unit is to be flushed or evacuated until free of VCM as detected by the HNU OVA instrument.

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G. VCM Monitoring

The reactor operating area and tank farm are continuously monitored for high VCM concentrations by the Honeywell unit located in the reactor control room.

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IV. DRYER AREA

The purpose of the vinyl dryer department is to dry, screen and transfer the PVC resin to the proper location.

The following discussion relates to work practices which are related to product containment and exposure minimization.

A. Dust Collector Monitoring

1. The dust collectors are visually checked for excessive dust emission once/shift or more often if designated by the dryer supervisor.
2. The bags in each dryer dust collector are changed periodically.

B. Dust Collector Bag Changeout

Before entering the dust collector, equipment must be secured according to attachment "B" page 2 of the Safety and Health Manual. This information is included in Section VII of this document.

C. Dryer Entry

Before entering a dryer inlet riser or tumbler, the lock-out and ~~blanking~~ procedure must be completed. This procedure is described on page 3 and 4 of attachment B in Section VII.

D. Transfer Line Hook-Up

1. Each transfer line will be checked once/shift for proper alignment and dust leaks.
2. The inlet line to silos which are not in use must be capped.

E. Silos

1. Silo outages are taken once/shift to prevent overfills.
2. Silos are equipped with dust collectors. These are inspected twice/month for proper operations.

F. VCM Monitoring

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The dryer operating area is continuously monitored for high VCM concentrations by a Honeywell unit located in the dryer control room.

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V. COMPOUND AND DRY BLEND AREAS

A. Compound Operation

The purpose of the compounding unit is to mix plasticizer, stabilizer and color pigment with PVC resin for outside sales in the form of pellets.

The following work practices apply in the compounding area for reduction of potential exposure to VCM:

1. Blenders are exhausted away from the work area.
2. Operators wear a respirator for dust and mist when working at an open blender.
3. Blender entry procedures are outlined in Attachment "C" of the Safety and Health Manual on equipment entry procedures. These procedures are described in Section VII.
4. All calendering mills are exhausted away from the work area.
5. The compound area is continuously monitored for high VCM concentrations by the unit located in the Q.C. Laboratory. The operators are notified immediately if high concentrations occur.

B. Dry Blend Operation

The purpose of the dry blend unit is to mix stabilizer, lubricant and color pigment with PVC resin in a dry mixture for outside sales.

The following work practices are used to reduce the potential exposure to VCM:

1. A respirator for dust and mist is required when sampling a blender if the sampling ports are not used.
2. Blender entry procedures are outlined in Attachment "C" of the Safety and Health Manual on equipment entry procedures. These procedures are included in Section VII.
3. The Welex mixer is exhausted away from the work area.
4. The dry blend area is continuously monitored for high VCM concentrations by the unit located in the Q.C. Laboratory. The operators are notified immediately if high concentrations occur.

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C. Quality Control of VCM

From time to time it will be necessary to perform chemical analysis on samples of VCM. These samples are taken from various points in the process stream in stainless steel pressure vessels. The following work practices apply to the handling and testing of VCM in the laboratory.

1. When pressure vessels are brought to the lab for analysis, they will be chilled to -25°F in a deep freeze before VCM is transferred to other vessels for testing.
2. Any transfer and testing of VCM shall take place in an adequate vent hood. Technician will wear impervious gloves when transferring liquid VC.

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VI. LABORATORY AREA

Quality Control PVC Resin

PVC resin, in small individual samples, is brought to the Laboratory for the performance of certain physical tests. The following work practices apply to handling of dry PVC resin.

1. Samples fresh from the dryer department should not exceed 3 lbs. This will limit exposure to residues of VCM in resin.
2. Upon completion of testing, sample to be retained is stored on sample shelves. Any spillage is immediately swept up and along with samples not to be retained, discarded in a covered 10 gallon industrial waste can with spring fastened lid.
3. Waste cans are to remain covered at all times. Cover is not removed until can is outside and in the process of being dumped.

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VII. EQUIPMENT ENTRY PROCEDURES

The information included in the following pages describes the current equipment entry procedures. These procedures are part of the plant's Safety and Health Manual. These procedures are to be followed to minimize employee exposure and to insure the safety of employees engaged in maintenance activities on equipment.

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