

OSHA - ENGINEERING AND WORK PRACTICE

CONTROL PLAN

SEPTEMBER 20, 1984

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ENGINEERING AND WORK PRACTICE CONTROLS
OSHA VCM STANDARD

I. WORK PRACTICE CONTROLS

The OSHA Vinyl Chloride Standard defines the permissible exposure limit to vinyl chloride as:

- a. No employee may be exposed to vinyl chloride at concentrations greater than 1 ppm averaged over any 8 hour period.
- b. No employee may be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes.
- c. No employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.

Although engineering controls at the Aberdeen Plant have significantly reduced employee exposure to vinyl chloride, work practice controls are still an integral part of the plant's vinyl chloride exposure reduction program. Work practice controls primarily consist of respiratory protection guidelines and plant procedures which minimize the discharge of vinyl chloride into the workplace.

A. Respiratory Protection Guidelines

Employees must wear fresh air respirators, Scott Air packs or Scott sling packs for the following operations, because the possibility of exposure to greater than the permissible limit exists.

1. When entering a vessel or any confined area that contains more than 1 ppm vinyl chloride.
2. When opening any piece of equipment that has been in vinyl chloride service, except for the Lenape manway on a reactor with steam jet evacuation on the reactor.
3. When working in the following areas:
 - a. The VCM tank farm compressor station.
 - b. The top of a VCM railcar.
 - c. The top of any blend tank that is being filled or aerated.
 - d. Near the dump Sweco while dumping a coarse batch.
 - e. Near the dump Sweco while dumping a reactor when the Sweco exhauster is inoperative.

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- f. Near the biodisc when the biodisc shaft covers are not being ventilated.
 - g. Near Pond 1 while using compressed air to fluidize the resin in Pond 1.
 - h. Any area where the local VCM warning beacon is flashing, or the fixed point monitor indicates a VCM concentration of 3 ppm or more in the area.
4. When performing work on the following equipment:
- a. Any open piece of equipment that has been in vinyl chloride service, unless the equipment is blinded and a supervisor has verified that the VCM concentration in the work area is less than 1 ppm.
 - b. An open reactor condenser, unless an air mover is used to ventilate the condenser. *verified less than 1 ppm*
 - c. Any equipment that is leaking VCM, and the VCM concentration in the work area exceeds or is expected to exceed 1 ppm.
 - d. A plugged reactor dump valve or dump line.
5. When sampling reactors, VCM storage tanks or VCM railcars.
6. When using a HNU to pinpoint a VCM leak detected by the fixed point monitor, and the VCM concentration in the work area exceeds or is expected to exceed 3 ppm.
7. When performing any other operation which has the possibility of resulting in exposure greater than the permissible limit.

B. Exposure Protection Guidelines

The following plant procedures have been implemented in order to minimize the concentration of vinyl chloride in the workplace.

1. Equipment Operating Procedures

Plant employees have been trained in the standard operating procedures for all equipment in the plant. Strict adherence to these procedures minimizes the likelihood of process upsets which could result in a VCM release into the workplace.

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2. Equipment Opening Procedures

Any equipment that contains significant amounts of VCM must be opened according to the following procedures:

- a. The equipment must be thoroughly evacuated, flushed or purged to a recovery system before being opened.
- b. The equipment must be blinded, where possible.
- c. Hazardous job signs must be posted around the equipment while the equipment is being opened.
- d. Respiratory protection must be worn when the equipment is initially opened. Respiratory protection may be removed after the equipment has been opened, provided that a supervisor has verified that the VCM concentration in the work area is less than 1 ppm.

3. Hazardous Job Posting

During the performance of certain jobs, VCM will potentially disperse around the workplace. Hazardous job signs which read "DANGER-POTENTIAL VCM EXPOSURE AREA-RESPIRATOR REQUIRED" must be posted around the work site whenever the following work is performed:

- a. VCM or VCM-contaminated filter changes.
- b. Vessel opening and cleanout of VCM-contaminated material.
- c. Flushout of VCM-contaminated material to grade or sewer.
- d. Repair of major VCM leaks.
- e. Any other job that will potentially disperse VCM around the workplace.

4. VCM Leak Detection And Elimination

VCM leaks must be expeditiously eliminated whenever detected. It is the responsibility of the panel operators to watch the fixed point monitor strip charts for any indication of VCM in the vinyl processing units, and to notify the field operators whenever significant amounts of VCM are detected at any location. The field operators are responsible for locating and isolating VCM leaks, where possible.

VCM leaks are also detected during routine leak surveys with an HNU. These surveys are performed by the Safety or Engineering Departments.

ENGINEERING AND WORK PRACTICE CONTROLSOSHA VCM STANDARDC. PVC And VCM Sample Handling Guidelines1. PVC Resin Analysis

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.

- a. Samples fresh from the dryer department should not exceed 3 pounds. This will limit exposure to residuals of VCM in resin.
- b. 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 waste can and removed from the area to be placed in a waste box outside the Laboratory.

2. VCM Analysis

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.

- a. When pressure vessels are brought to the lab for analysis, they must be placed in a fume hood for storage.
- b. Any transfer and testing of VCM shall take place in an adequate vent hood. Technician will wear impervious gloves when transferring liquid VCM.
- c. Any unused portions of samples must be returned to the process.

ENGINEERING AND WORK PRACTICE CONTROLSOSHA VCM STANDARDII. ENGINEERING CONTROLSA. Exposure Reduction Projects To Be Installed1. Centrate Tank Exhauster

This project will install an exhauster on the centrate tank to disperse centrate tank vapors.

Target Completion Date: 12/84

B. Completed Exposure Reduction Projects1. General Plant

- a. Continuous Flow Fresh Air System
- b. Fixed Point Monitor, Data Logging Computer and Warning Lights
- c. Emission Recovery System
- d. Process Vent Containment (sphere, bullets and reactors)
- e. Relief Valve Leakage Reduction (rupture discs installed)
- f. Improved Rupture Disc Holders
- g. Biodisc Exhausters

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- a. VCM Unloading Compressor Seals
- b. VCM Transfer Pump Seals
- c. Railcar Unloading Arm Revisions
- d. General Compressor Revisions (process piping simplifications)
- e. VCM Unloading Revisions (unloading line, K.O. pot, sphere alarms)

3. Vinyl Area

- a. Emergency AMS Kill System
- b. Steam Stripping
- c. Vent Gas Incineration System And Spare
- d. VCM Pump Seals
- e. Compressor-Vacuum Pump Seals
- f. Batch Water Stripping System
- g. Process Waste Water Containment (receivers and recovery systems)
- h. Reactor Double Rupture Disc Replacement
- i. Emergency Cooling For Reactors
- j. Receiver High Level Alarms
- k. Emission Recovery System
- l. Reactor Evacuation Stack Extensions

4. Laboratory

- a. Laboratory Analysis Hood Revisions