



Interoffice Communication

To "OSHA - Engineering and Work Controls Plan" File
From W. F. Revelt
Date October, 1976
Subject UPDATE OF ENGINEERING AND WORK PRACTICE CONTROLS PLAN

Attached is an update of this Plant's engineering and work practice controls plan for complying with the OSHA VCM Exposure Standard. This update is in the form of a Status Report keyed to the exposure sources listed in the April, 1975, plan (copy attached).

All work practice controls have been implemented and significant progress has been made on most of the engineering controls. Currently, however, we are having to rely on breathing air to limit the VCM exposure from some exposure sources.

William F. Revelt

WILLIAM F. REVELT
Process Engineer
CONOCO Chemicals
Oklahoma City Chemical Plant

APPROVED:

Ralph T. Ferrell

RALPH T. FERRELL
Plant Manager
CONOCO Chemicals
Oklahoma City Chemical Plant

WFR-spt
Attachment
CC: (RTF-File), AWS, JWW, WVH, DEM, RAF

CCR 000010524

STATUS REPORT - OCTOBER, 1976
UPDATE OF ENGINEERING AND WORK CONTROLS PLAN
FOR COMPLIANCE WITH OSHA VCM EXPOSURE STANDARD
CONOCO CHEMICALS
OKLAHOMA CITY CHEMICAL PLANT

EXPOSURE SOURCE

1. Residual monomer in slurry and resin.

2. Obtaining and handling samples.

STATUS

1. All batches are routinely being steam stripped. The stripping operation has reduced VCM residual in the slurry and dried resin to such a low level that it has been possible to deregulate the dryer building. The decision to air purge the slurry blend tanks has been made. A temporary system employing a rental compressor has been installed to get immediate results and to gather data for the design of a permanent system. Currently, one dryer feed loop is being air purged with installation of the sparger in the other feed loop to occur shortly.

2. a. After evaluation of current sampling programs, our existing lab hood space was found to be adequate.
- b. Work practice controls have essentially eliminated worker exposure from this source. A preliminary design for a closed sampling system has been prepared for internal review.
- c. The advent of steam stripping of all reactor batches and air purging of the slurry blend tanks has virtually eliminated dryer line sampling exposure problems.

CCR 000010525

EXPOSURE SOURCE

3. VCM railcar unloading.
4. Chem wash screener.
5. Reactor rinse after dump.
6. M-500 dryer exhaust.
7. All rotary seals, flexible hoses, pipe unions, and flanges, valve stems and swivel joints which are in low or high concentration VCM service.
8. Opening and working on equipment or piping which may contain VCM in low or high concentration.

STATUS

3. Work practice controls are essentially eliminating employee exposure to VCM from this source. CONOCO is in the process of installing magnetic level indicators on all VCM railcars. In addition, a process design to significantly reduce VCM releases when uncoupling railcars has been prepared.
4. Steam stripping has significantly reduced exposure resulting from this source. Work is continuing on developing a "clean wall" formula which will eliminate the need for the chem wash screener.
5. The initial rinse is now going to the sewer. This is done to minimize VCM at the slurry dump screener since the dump screener has a higher potential for VCM exposure.
6. Steam stripping has lowered the total VCM to the dryers by such a great amount that revisions to the exhaust stacks are not necessary.
7. Recently, the data from one fixed point monitor was questioned. It has been overhauled. A study is underway to determine how to best employ the fixed point monitor, which was freed when the dryer room was deregulated.
8. Specified work practices are being followed. Electro-polished internals have been installed in all reactors. Steam stripping also seems to be keeping the reactor cleaner thus further lowering the cleaning frequency. In addition, continuous flushes of the reactor chem wash spray nozzles have been installed to reduce plugging problems. Also, new spray nozzles are being tried to make the chem wash system more effective.

CCR 000010526

ENGINEERING AND WORK PRACTICE CONTROLS PLAN
FOR COMPLIANCE WITH OSHA VCM EXPOSURE STANDARD

CONOCO CHEMICALS
OKLAHOMA CITY CHEMICAL PLANT

April, 1975

EXPOSURE SOURCE

1. Residual monomer in slurry and resin.

WORK PRACTICE CONTROLS

ENGINEERING CONTROLS

1. Design and install equipment required for steam stripping the slurry. Essentially all processing equipment downstream of the polymerization reactors is designed for atmospheric pressure and therefore open to the atmosphere. Processing slurry or resin in this equipment causes the emission of unreacted VCM which can lead to exposures above 1ppm. Plant tests have shown that steam stripping before dumping to the blend tanks substantially reduces the concentration of VCM in the slurry. Thus, the amount of VCM available for emission from the open processing equipment will be greatly reduced by steam stripping and exposure problems will be minimized. In particular, exposures at the dump screener, chemical wash screener, blend tanks, centrifuges, dryers, resin screeners and resin loading areas will be decreased and residual VCM in resin product leaving the plant will be decreased.

CCR 000010527

EXPOSURE SOURCE

2. Obtaining and handling samples.

3. VCM rail car unloading

WORK PRACTICE CONTROLS

2. Wear personnel protection equipment which meets OSHA standards when sampling reactors, slurry, wet cake, or resin.

3. Wear personnel protection equipment which meets OSHA standards while at the unloading rack during car hook-up and disconnect.

ENGINEERING CONTROLS

2. a) Install a new laboratory hood to provide more work and storage space for slurry and reactor samples.

b) Prepare an engineering design for a closed reactor sampling system. Samples obtained during the early part of reaction contain high concentrations of VCM. By enclosing the reactor sampling system, exposure in the reactor area will be decreased because VCM will not be emitted from the sample in the working area.

c) Prepare an engineering design for an improved resin sampling system at the M-500 dryer.

3. Prepare an engineering design to install glasses in unloading lines and rearrange valving at the unloading racks. Installation of sight glasses will eliminate venting to the atmosphere when determining liquid to vapor transition at the end of unloading. Rearrangement of valving will minimize the volume vented during disconnect.

CCR 000010528

EXPOSURE SOURCE

4. Chemical wash screener.

5. Reactor rinse after dump.

6. M-500 dryer exhaust.

7. All rotary seals, flexible hoses, pipe unions and flanges, valve stems and swivel joints which are in low or high concentration VCM service.

WORK PRACTICE CONTROLS

5. Transfer the effluent from the initial water rinse after reactor dump to the dump system and eliminate transfer to the sewer.

7. At least once per month, measure VCM concentrations at all hoses, flanges, unions, seals, valve stems and swivel joints in low or high concentration VCM service. Repair or replace leakers on-the-spot, where necessary. List other leakers for repair or replacement on the maintenance schedule. The fixed point monitor will detect the occurrence of relatively large leaks which will be attended immediately.

ENGINEERING CONTROLS

4. Design and install an enclosure and vent system for the chemical wash screener similar to the system on the dump screener.

6. Prepare an engineering design to elevate the stack for the M-500 dryer exhaust. Currently, M-500 exhausts at the loading rack level which leads to exposure problems under certain wind conditions. Stack elevation will eliminate this problem.

EXPOSURE SOURCE

3. Opening and working on equipment or piping which may contain VCM in low or high concentrations.

WORK PRACTICE CONTROLS

8. a) Before opening, remove VCM from equipment or piping to the lowest practical level by flushing, purging and/or evacuation, where possible.
- b) Wear personnel protection equipment which meets OSHA standards when opening equipment or piping which may contain VCM.
- c) Before commencing repair work, measure the VCM concentration in or near opened equipment or piping to determine what protective equipment is required and if further VCM removal should be attempted.

ENGINEERING CONTROLS

8. Install electropolished internals in all reactors. Plant experience has shown that the frequency of reactor entries for cleaning is decreased when electropolished internals are used. This is due to a decrease in polymer build-up on electropolished internals as compared to the build-up on other internals. The plant has five sets of internals. Two sets are electropolished and installed. One set is at the shop for electropolishing. The other two sets will be electropolished when they can be switched out.

CCR 000010530