CONOCO

Interoffice Communication

To "OSHA - Engineering and Work Controls Plan" File

From W. F. Revelt

Date April, 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-st
Attachment
CC: (RTF-File), AWS, JWW, WVH, DEM

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

EXPOSURE SOURCE	STATUS
1. Residual monomer in slurry and resin.	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. Currently, air purging in the slurry blend tank is being considered to further reduce VCM residual levels. Also, work to optimize steam stripping is continuing.
2. Obtaining and handling samples.	2. a. After evaluation of current sampling programs, our existing lab hood space was found to be adequate. b. Design of a closed sampling system for obtaining reaction slurry samples has been assigned a lower priority because work practice controls have essentially eliminated worker exposure from this source and because the total monomer release is small. A closed sampling system is being designed and will be installed as part of the systems for compliance with the EPA's VCM regulation. c. The advent of steam stripping has virtually eliminated dryer line sampling exposure problems. If air purging in the blend tank is implemented, exposures from this source will be further reduced.
3. VCM railcar unloading.	3. Work practice controls are essentially eliminating employee exposure to VCM from this source. Also, CONOCO is in the process of installing magnetic level indicators on all VCM railcars. The releases from the railcar unloading operation will be significantly reduced when systems for compliance with the EPA's proposed VCM regulation are installed.

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

ENGINEERING AND WORK PRACTICE CONTROLS PLAN
FOR COMPLIANCE WITH OSHA VCM EXPOSURE STANDARD
CONOCO CHEMICALS
OKLAHOMA CITY CHEMICAL PLANT
April, 1975

EXPOSURE SOURCE	WORK PRACTICE CONTROLS	ENGINEERING CONTROLS
1. Residual monomer in slurry and resin.		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.

EXPOSURE SOURCE	WORK PRACTICE CONTROLS	ENGINEERING CONTROLS
2. Obtaining and handling samples.	2. Wear personnel protection equipment wich meets OSHA standards when sampling reactors, slurry, wet cake, or resin.	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. VCM rail car unloading	3. Wear personnel protection equipment which meets OSHA standards while at the unloading rack during car hook-up and disconnect.	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.

EXPOSURE SOURCE	WORK PRACTICE CONTROLS	ENGINEERING CONTROLS
4. Chemical wash screener.		4. Design and install an enclosure and vent system for the chemical wash screener similar to the system on the dump screener.
5. Reactor rinse after dump.	5. Transfer the effluent from the initial water rinse after reactor dump to the dump system and eliminate transfer to the sewer.	
6. M-500 dryer exhaust.		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.
7. All rotary seals, flexible hoses, pipe unions and flanges, valve stems and swivel joints which are in low or high concentration VCM service.	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.	

EXPOSURE SOURCE	WORK PRACTICE CONTROLS	ENGINEERING CONTROLS
8. Opening and working on equipment or piping which may contain VCM in low or high concentrations.	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.	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.