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Interoffice Communication

To "OSHA - ENGINEERING AND WORK CONTROLS PLAN" FILE

From W. F. Revelt

Date October, 1975

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. Several of these sources are expected to be either eliminated or significantly reduced with the advent of steam stripping of reaction slurry.

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STATUS REPORT - SEPTEMBER, 1975
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. Steam stripping equipment has been installed. A few "shakedown" batches have been run. Steam stripping of all batches will be started by November 1, 1975.
2. Obtaining and handling samples.	2.a. After careful evaluation of current and future 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 to a lower priority because work practice controls essentially eliminate worker exposure from this source and because the total monomer release is small.
	c. With the advent of steam stripping, this exposure source is not expected to continue as a problem, therefore, it is currently a low priority project. After steam stripping is routinely operational, emissions from this source will be monitored and the project's priority re-evaluated.
3. VCM Railcar Unloading.	3. Work practice controls are essentially eliminating employee exposure to VCM from this source to VCM. Conoco is in the process of installing magnetic level indicators on all VCM cars. Several process designs have been prepared to reduce VCM release to a minimum level. These designs are currently being reviewed relative to the proposed EPA Standards on VCM. The objective is to install a system that will comply with both OSHA and EPA regulations.

4.	Chemical Wash Screener.	4. Steam stripping is expected to significantly reduce exposure at this source. After steam stripping is lined-out, exposure from this source will be monitored. If necessary, revisions to this system will be made when the unit is relocated in 1976 as part of our capacity replacement program.
5.	Reactor rinse after dump.	5. Complied with plan.
6.	M-500 dryer exhaust.	6. Installation of the stack is being held pending evaluation of the effects of stripping the reaction slurry.
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. Work practice controls are being followed. Currently, electropolished internals have been installed in 3 of the 4 polymerization reactors. We are awaiting receipt of the 4th set of internals from the contracted electropolishing firm.

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.