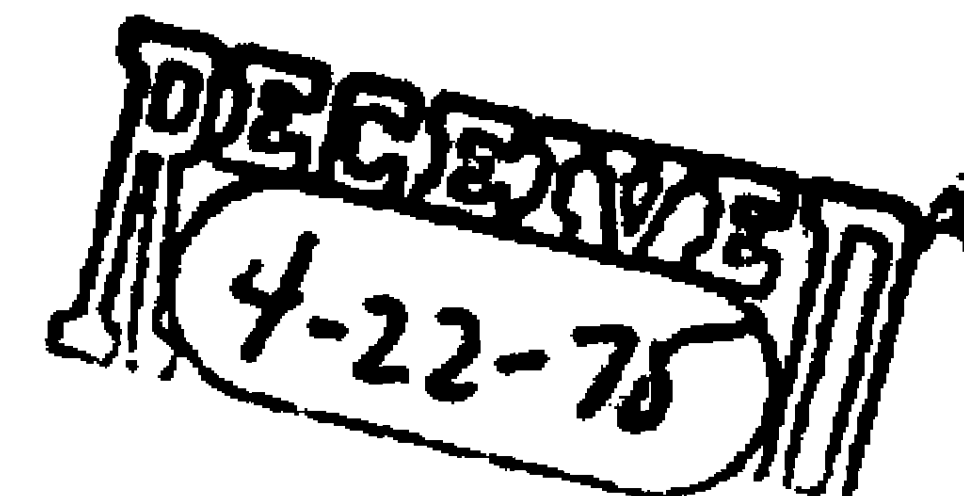


PERSONAL AND CONFIDENTIAL



Interoffice Communication

To E. M. Smith, Saddle Brook, New Jersey

From R. G. Weiss, Ponca City, Oklahoma

Date April 15, 1975

Subject VCM Health Problem--Conoco Chemicals Manufacturing Status
Report No. 30

This final report brings to a close this particular phase of the VCM Health Compliance Program. The individual plants have outlined their compliance plans in detail to carry out the requirements of the Standard for Occupational Exposure to Vinyl Chloride. Further coordination of this effort will be handled through normal plant channels.

The Standard for Occupational Exposure to Vinyl Chloride went into effect on April 1, 1975, as a result of the U.S. Supreme Court's denial of the Stay Application of the Standard on March 31, 1975. This action does not effect the pending Petition for Certiorari, although its chances are not good.

This Standard (29 CFR 1910.93g) has been amended to state that the effective date will be April 1, 1975, and that the wearing of respirators will not be discretionary for exposures above the permissible limit after April 1, 1976. This Order appeared in the March 25 Federal Register and was promulgated to conform the effective date of the Standard to the Second Circuit decision. This should lay to rest all questions concerning the 1976 effective date.

The long awaited OSHA Program Directive, which is being prepared for the guidance of the agency's field inspectors, has been delayed in the agency's solicitor's office. However, copies have been sent to the area directors for comment. The document is to contain answers to a majority of questions concerning interpretations of the requirements of the Standard.

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Labeling

The Society of Plastics Industry (SPI) PVC/VCM Committee on Distribution presented their program for labeling requirements to OSHA enforcement personnel. The OSHA staff generally accepted the industry's recommendations, with a question being raised only with respect to marking VCM moving in tank trucks.

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out.*

A verbal interpretation of labeling received from OSHA, although not official, states that PVC products with very low residual monomer levels would not require the "Cancer-Suspect Agent" labeling if such products are (a) not subject to mass melting or (b) can be shown incapable, as a practical matter, of releasing concentrations of vinyl chloride in excess of the "action level" (0.5 ppm) in the absence of any special engineering controls in any areas where employees could reasonably be expected, either deliberately or accidentally, to be in contact with the containers or contents thereof. This interpretation could possibly be expanded to cover disposal and labeling of waste resin if it can be shown that it does not release concentrations of vinyl chloride in excess of the "action level."

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The OSHA enforcement staff has indicated that, for labeling existing inventories, a palletized unit could be considered a single container, therefore eliminating the requirement for labeling individual bags, so long as the required label is visible until the last bag is removed from the pallet.

{ OSHA is also considering an exemption of the Standard for transportation of small quantities (50 pounds or less) of PVC materials due to the difficulty in application of the Standard by UPS, air cargo, and Parcel Post.

The agency also intends to exercise its full jurisdiction in personnel exposure on the docks, stating that longshoremen are entitled to all appropriate health hazard warnings. This reply is in response to the SPI Committee on Distribution stating the problems involved in moving labeled export goods across docks and in selling the labeled materials abroad.

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The Coast Guard was withholding publication of its regulation, pending clarification of the status of the OSHA regulation and action by the Supreme Court on Application for a Stay. With this question answered, notice of the Coast Guard regulation on vinyl chloride in the Federal Register is imminent.

The EPA Subcommittee of the SPI presented comments on the Environmental Protection Agency's (EPA) draft proposal standard for control of vinyl chloride emissions from VCM and PVC plants at the National Air Pollution Control Techniques Advisory Committee (NAPCTAC) meeting on March 25 and 26. A brief summary of the SPI presentation is as follows:

1. Industry agreed with the EPA that fugitive losses could be adequately controlled through monitoring and maintenance programs, although it was suggested that each company be allowed to determine the specific method required to abate the emission.
2. The committee suggested that EPA abandon the standard relating to vinyl chloride content in effluent water. It was stated that removal of trace amounts of vinyl chloride from water was expensive for its small improvements in air quality.
3. The SPI disclosed the problems industry discovered in the investigations of control techniques of solvent absorption, incineration, and carbon adsorption. It was also noted that industry would be unable to use these means to reduce dilute emissions to less than 10 ppm.
4. The committee informed EPA that no data exist which show that the conventional air process oxychlorination vent containing up to 95 percent inert gas can be successfully incinerated and scrubbed to meet the proposed 10 ppm limit.

The EPA will be reviewing their current draft in light of the comments at the NAPCTAC meeting and will publish a revised copy on April 29. The timing for finalization of the Standard remains the same--proposal published in late June and hearings to follow in July and August with the final Standard being issued in December 1975.

VAB.0001042101

The Food and Drug Administration (FDA) Proposed Interim Regulation on PVC has not yet been promulgated. The recent news concerning the intubation feeding studies conducted by Professor Maltoni caused the FDA to hold up on any further consideration of the draft, pending evaluation of the new report. Professor Maltoni, during his appearance at the New York Academy of Sciences (NYAS), stated that he does not consider his results to have realistic significance with respect to human dietary exposure to vinyl chloride.

Despite this recent development, no significant modifications are planned for FDA's draft proposal. It is still expected to reaffirm the prior sanctioned status of polyvinyl chloride food contact surfaces and materials subject to a limitation that no detectable vinyl chloride be extracted by food simulating solvents.

Status of Process Engineering Department's VCM exposure-related projects is as follows:

1. The basis for design of additional large reactor capacity at the Aberdeen plant is being formulated. Two cases are being evaluated: (a) Additional reactors to the existing pad and (b) installation of an independent reactor pad.
2. Work is ongoing on the design and location of a new source air system for the Aberdeen plant control room and V-11 break area. This system will be tied into the existing system for the large reactor, V-11 reactor, and V-11 dryer building control rooms.
3. A report on the evaluation of the steam stripping section of the Oklahoma City PVC Plant test run is in circulation.
4. Two VCM tank car unloading system designs, one involving a kettle reboiler and the other a thermosiphon reboiler, are pending review. Strike duty has delayed completion of these items.

5. A design of a low level vinyl chloride collection system for the dump Sweco, chem wash Sweco, blend tank exhaust, and the recovery seal water streams is being investigated. Methods using (1) carbon adsorption and (2) solvent absorption with stripping will be compared.
6. Four methods of air treatment for the Oklahoma City plant control room were investigated:
 - a. Pressurize the control room with air cleaned with activated carbon.
 - b. Treat the recirculating control room air with activated carbon and allow fresh air to enter by leakage.
 - c. Pressurize the control room with clean air from a remote site.
 - d. Pressurize the control room with air treated with potassium permanganate.

Preliminary cost estimates for these methods were \$225 M, \$147 M, \$400 M, and \$335.5 M, respectively.

The Engineering Research Group has conducted silo aeration tests for the purpose of determining the effect of time and temperature on removal of residual monomer from dried resin. It was revealed that, for 5385-type resin with 70°F (room temperature) air, 30-40 ppm was the lowest attainable level. At the same conditions with 5406 resin, a level of 16 ppm could be reached. In order to get 5385 resin below 10 ppm, it was necessary to heat the air to 150°F.

The dioctyl phthalate (DOP) addition to 5406-type resin was done with limited success. Residual monomer levels of less than 100 ppm were reached for dried resin with 1.78 phm of DOP added, although this technique required longer than normal recovery times (90 versus 60 minutes) and the drying rates were lower than normal. No levels below 10 ppm were attainable; and no apparent quality problems resulted, although decreased dry times are being evaluated by the plant.

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The Honeywell fixed point monitor has been installed in the Ponca City Pilot Plant; however, only six of the ten points are currently operational at this time. These six points are distributed throughout the two cells that house the 75-, 15-, and 8-gallon reactors. The maximum reading of 2 ppm is observed only during slurry transfer, with levels of zero being registered during charging and polymerization. Eight-hour personnel dosimeter results are below the action level of 0.5 ppm.

Research and Development testing of the post-addition of Irganox 1076 to the 75-gallon reactor has shown good success in increasing the heat stability of heat-kicked resin. Plant testing of this material is scheduled for this week in Oklahoma City.

Ponca City, Aberdeen, and Oklahoma City were involved in an Analytical Research Group's survey of assay methods of PVC for residual vinyl chloride monomer. Results showed no significant differences were found among laboratories in values obtained for residual in raw resins, although the Aberdeen plant obtained lower residual values for the PVC pipe samples. This was attributed to virtually no agitation during equilibration time.

Analytical Research is currently using the Ponca City Pilot Plant's fixed point monitoring system to test the memory effect of the sample lines from sampling point to the monitors.

Three vinyl chloride railcars will be equipped with magnetic gauging devices and straight through flow valves on the dome by next week. The installation has been delayed due to other priorities and limited manpower at the Ponca City rail shop because of the strike. The valves will be equipped with a flange compatible with the Kamlock coupling that is in use at the loading rack in the Lake Charles VCM Plant. This coupling has replaced the hammerlock screw coupling and has shown good results.

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Aberdeen PVC Plant

Eight-hour monitoring results since April 1, 1975, of approximately 100 employees have resulted in highs of 10.3 and 5.0 ppm from the large reactor operators with four other samples from the dryer area that were between 5.0 and 1.0 ppm. The balance of the samples were less than 1 ppm.

At the present time, there has been no employee request for air purifying canisters.

The EPA has discontinued the ambient air sampling program at the plant for the present time. They have relocated the additional sampling equipment at the B. F. Goodrich, Louisville, Kentucky, plant and the Shell, Norco, Louisiana, plant. No further results of the plant's samples are available.

No new work has been done in the VCM tank car unloading system, pending completion of the PED system design. Mechanical design modifications to the unloading compressors is planned. This will include a type of seal enclosure.

Dryer rate and efficiency studies are still ongoing. Experiments with extending blend tank retention times from twenty minutes to eight hours have decreased residual content by a factor of two.

Planned revisions to the dump strainer have been tabled due to reevaluation of exposure data in that area.

The plant's design of an inerts venting system for the large reactors is scheduled for completion this month.

Pressurization of the V-12 control room is essentially complete, with completion of the V-12 dryer room pressurization scheduled for next month.

The plant is currently using a no solvent head space method of testing slurries, resin, and wet cake samples for residual monomer content. This method enables the plant to run 70 samples in an eight-hour period. The method also cuts down on setup time and reduces the chances of plugging the test column.

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Oklahoma City PVC Plant

Eight-hour monitoring results during operating conditions are not conclusive due to the plant being shut down during the past week and the lack of an adequate number of samples, because only one sample pump has been available. Additional pumps are scheduled for delivery this week. Of five samples, only one was above 1.0 ppm at 2.7 ppm.

Replacement air purifying canister usage has been place at twenty per month. Three specific jobs are responsible for this usage:

1. Erecting scaffolding in the reactor prior to cleaning.
2. Mechanic's work on reactor throttle bushing.
3. Changing socks in the dryer dust collector.

Most plant engineering time has been spent with the steam stripping design with completion scheduled for next week. Procurement of materials for this design has already started.

The erection of regulated area signs was completed during the plant shutdown along with the stenciling of all preloaded hopper cars.

Delivery of the Scott half facepiece constant flow respirator is scheduled for May 1. This will complete the plant's respiratory equipment order.

Lake Charles VCM Plant

An extensive monitoring program has been in progress since the plant started to shut down for its turnaround on April 4. The first three days of initial clearing were used to purge all vessels, columns, pipes, etc. Personnel dosimeter results for these days were:

<u>Area</u>	<u>Number of Samples</u>	<u>Highest, ppm</u>
Block I	12	4.5
Block II	13	10.6

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Lake Charles VCM Plant (Continued)

No temporary employees were allowed in the plant during these first days of shutdown.

Personnel samples for the fourth through the seventh days showed the highs to be 0.09 and 0.14 ppm in Block I and Block II, respectively. Total samples for these two areas were 29 and 47, respectively. All personnel samples were for a nominal four hours and were supplemented by area monitoring with grab samples and use of the Century OVA and the HNU Photoionization Analyzer. The latter device is being used similar to the Century OVA. Although only on a trial basis for the turnaround, the Photo-Ionizer has shown greater sensitivity than the Century OVA.

The plant had an influx of 100 temporary employees for the turnaround, and some concern was raised as to the need for them to be included in the medical surveillance. The medical program for the temporary employees was planned to be confined to 25 individuals who would be doing vessel and column cleaning which would present the greatest exposure to vinyl chloride. Upon offering this program to these employees, everyone waived the right of participation. Plans had been made to include these personnel because no prior sampling had been done to estimate the exposures involved. However, as was previously mentioned, the monitoring results reveal that the medical surveillance of these employees is not required because exposures are below the action level of 0.5 ppm.

No regulated area signs have been posted until after the turnaround, although employees were informed by letter of the regulated areas and the authorized personnel rosters necessary to satisfy the requirements for the first week of April. The rosters are also being used during the turnaround.

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Manpower

PED--Chemicals	15	Chemical Engineers
R&D	2	Chemical Engineers
	4	Chemists
MED	<u>1/4</u>	Physicist
Total	21 1/4	

R. G. Weiss

R. G. Weiss
VCM Health Coordinator
Chemicals Division
Process Engineering Department

lkm
CC:
WEG:RWG:JDBu:JJL:WBC:KLS:REL
LNV:JMB:ERA:FK(3):DHS:RTF
~~BDG~~:JADeB:TRP:RAF:JFG:WRS
RELa:CLW:LH:ODS:RLL:DVP:JBH