



Interoffice Communication

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To L. N. Vernon, Saddle Brook
From D. V. Porchey, Ponca City
Date April 19, 1974
Subject VCM HEALTH PROBLEM--CONOCO CHEMICALS MANUFACTURING--STATUS
REPORT NO. 7

Since our last update on the number of reported cases of angiosarcoma among VCM industry workers, some additional disclosures have been made by several industries. Firestone and Norsk Hydro reported one case each. Goodyear has confirmed three cases. The total of confirmed cases worldwide is now fourteen. All but one of these men had worked in the industry over fourteen years. (The one exception had seven years of industry experience.) No cases have been identified among Conoco PVC or VCM plant workers.

Conoco is a participant in MCA sponsored animal exposure studies which have been in progress since September, 1973 at the Industrial Bio-test Laboratories of Chicago. Rats, hamsters, and mice have been exposed to gaseous vinyl chloride at levels of 2500 ppm, 200 ppm, and 50 ppm for seven hours per day five days a week for about seven months. April 15, 1974 Industrial Bio-test presented preliminary results to industry sponsors and representatives of NIOSH, OSHA, and EPA which indicated that angiosarcoma, a rare liver cancer, had been found in mice at all three levels of exposure.

Status Report No. 6 described the April 5, 1974, Emergency Temporary Standard and the expected timing for issuance of a Permanent Standard. As a result of the Bio-test data, appropriate government agencies are reviewing the issue of a safe VCM exposure level. A new Emergency Temporary Standard may be issued.

On April 17 and 18, the Vinyl Chloride Safety Association held a special meeting that was well attended by Conoco and industry-wide personnel. Forty-three VCM and PVC manufacturing facilities were represented as were a few VCM monitoring hardware representatives. A great deal of valuable information was learned that should improve our monitoring efficiency.

VCM Monitoring: The April 5 ETS required monitoring for VCM with personnel mounted devices by April 22. We had monitored with carbon adsorption techniques in all plants by April 18, 1974.

The method of monitoring remains poorly defined as stated in Report No. 6. We do feel, however, that adequate information was obtained at the VCSA meeting to allow Conoco to define accurate dosimeter techniques using charcoal adsorption and/or air bags. While we believe we can refine the accuracy of our techniques, we will still be measuring TWA values. According to NIOSH, ceiling values cannot adequately be measured.

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To L. N. Vernon, Saddle Brook
From D. V. Porchey, Ponca City
Date April 11, 1974
Subject VCM HEALTH PROBLEM--CONOCO CHEMICALS MANUFACTURING STATUS
REPORT NO. 6

All interested parties have received copies of the pages of the April 5, 1974, Federal Register in which the Emergency Temporary Standard for Exposure to Vinyl Chloride (ETS) was published. The standard follows the general trends we had anticipated and applies to the industry from VC manufacturer to finished product fabricator. A time weighted average concept of VCM exposure is rejected. The environment is to be controlled so that no employee is exposed to VCM in concentration in excess of 50 ppm. Monitoring for VCM must begin no later than April 22, 1974. Monitoring frequency, methods, records, etc., are discussed. The method of monitoring is discussed but remains ill-defined. It is, however, to be done by collecting samples on devices worn by employees. Compliance guidelines are also defined that require employee evacuation and/or fresh air masks and respiration when exposure above 50 ppm is detected or suspected. Century OVA type monitoring as we are presently practicing it in our plants is also required for leak detection and work practice improvement. The ETS is, we feel, a workable standard with which we can comply while a permanent standard is defined.

We expect the timing for the definition and issuance of the permanent standard to generally be as follows: A proposed permanent standard should be published in the Federal Register within two weeks. An automatic 30-day delay period will then start, during which input will be received by OSHA and a public hearing can be requested. A permanent standard will then be formulated. The earliest time we can expect the permanent standard to be issued would be about early June. The ETS can remain in effect for six months, however.

Glenn E. Schweitzer, Director of the Environmental Protection Agency's Office of Toxic Substances, announced, on March 19, the establishment of a task force to assess the environmental and health risks beyond the workplace associated with the manufacture, distribution and disposal of vinyl chloride and polyvinyl chloride. The task force is scheduled to complete its initial assessment by late May. It was a task force headed by Schweitzer that the MCA briefed on April 2. Dr. Kennedy was present.

VCM Monitoring Requirements: As mentioned above, the method of monitoring for personnel exposure to VCM is ill-defined in the ETS. We have attempted to learn more by contacting OSHA and NIOSH personnel. From OSHA we learned that primary regulatory concern will be placed on personnel exposure data obtained from people-worn devices. While stationary monitoring was referred to as desirable, it will not be required in the proposed permanent standard as presently envisioned by OSHA.

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From NIOSH VCM testing personnel, we learned that no good or reliable dosimeter device has been defined as yet. NIOSH has had poor luck with activated charcoal techniques and has proposed an employee mounted grab sample technique as acceptable. The operational reliability of this grab sample technique is, as you pointed out, questionable. A copy of the NIOSH interim sampling method was transmitted to appropriate Conoco personnel on April 5.

We are continuing our attempts to learn more about VCM dosimeter testing. Activated charcoal dosimeter evaluations are continuing in Lake Charles, Aberdeen, and Ponca City. A dosimeter system will be in place in Oklahoma City in time to comply with the ETS.

VCM Monitoring Status: The comments in Report No. 5 pertaining to Century OVA unit distribution and delivery remain correct, as do comments regarding our difficulties with activated charcoal dosimeters. The MED stationary monitoring trailer was again delayed but should be in Aberdeen by April 15, 1974. Evaluations of other types of dosimeters and stationary monitors are continuing.

Plant Activities: Actions taken by Conoco in anticipation of the ETS has enabled us to be generally in compliance with the ETS. Details of some of the current activities of our VCM and PVC plants related to the VCM health problem follow:

Aberdeen PVC Plant: The present status of the VCM monitoring programs remains as discussed in Report Nos. 4 and 5. Reactor building V-10 with twenty reactors has been shut down. This building was, of course, previously scheduled for late 1974 shut down. The status of plant engineering and operations, PED and CED projects are as follows:

1. Benzotriazole is still being added to all reactors. The frequency of small reactor entry is now down to about one entry per nine reactions.
2. Some reactor blinding is being done in both V-11 and V-12, but plant-wide blinding is not being practiced as yet.
3. Closed slurry dump strainers are operational in V-11. V-12 should be converted from open Sweco to closed dump strainers by April 12.
4. Breathing air has been piped to V-11 and V-12 and should be piped to the VCM unloading area by April 17. Plans call for installation of breathing air in the dryer building next. Based on Century OVA results and personnel dosimeter indications, plans have been made to require use of masks and breathing air during certain routine operations such as cleaning and dumping reactors, breaking VCM lines, unloading tank cars, and others. This is in compliance with the ETS and is to start by April 11 or as soon as possible thereafter.

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5. A decision whether or not to move the reactor building walls as discussed in Report No. 5 will be made probably by April 12.
6. On-site PED personnel have written up their large reactor capacity increase findings and recommendations. Their results were mentioned in Report No. 5.
7. Yield improvement studies are continuing with emphasis still being placed on loss identification. An analytical chemist remains on-site to assist with these studies.
8. PED is attacking source reduction problems dealing with exposure to particulate matter in the plant compound and dry blend areas.
9. An engineer from the Design Section of PED is in the plant measuring particulate emission.
10. The CED design package dealing with colloid system revisions has been sent to the plant for review.
11. Other CED projects dealing with the VCM sphere and change rooms are still being pursued. Reviews with Aberdeen personnel are tentatively planned for next week.

Lake Charles VCM Plant: An extensive monitoring program using the Century OVA in conjunction with GC graph samples was initiated. Three-shift operation is being used. An 88-point grid is continually evaluated. When any grid point registers above 50 ppm total hydrocarbons, a GC sample is taken. (The GC technique was required because the Century unit in GC mode is not quantitative.) Results have shown no VCM concentration above 20 ppm anywhere but in the VCM tank car loading area. Fresh air is being supplied to the loading area and an appropriate use plan will be issued requiring fresh air breathing masks when loading tank cars by April 12. A similar evaluation will be made of the ship loading dock as soon as possible.

Dosimeter evaluations of a majority of all plant occupations were completed April 5. Low VCM levels were detected: no problem areas were defined. The current status of several VCM health-related projects follows:

1. Breathing air (bottled) has been supplied to the loading rack and a work practice is being written as discussed above.
2. The closed VCM sampling system tested as discussed in Report No. 5 will be implemented plant wide. Parts have been ordered.
3. The sampling system is being further tested to allow evacuation of vent sample lines prior to removing the sample bombs.

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4. A design has been issued internally for comment to reduce vinyl emissions from the tank car loading dip tube.
5. More definitive plans have been established to implement the reboiler cleaning procedures mentioned in Report No. 5.
6. Plans to change the bauxite removal procedure mentioned in Report No. 5 in order to reduce employee exposure to chlorinated hydrocarbons have been made.

The plant has made contact with a local doctor to begin appropriate medical testing as defined by our Medical Division.

Oklahoma City PVC Plant: The OKC PVC Plant is continuing work on the project schedules defined in earlier reports. In-plant monitoring for VCM is being done only with a Century OVA, but the results are encouraging: all readings taken as a part of the test grid of employee areas typically are well within compliance with the ETS. Short-term design and work practice solutions are being pursued actively.

Reactor D-304 was opened this week after about 5 weeks of operation of which twenty-six days were with a closed man head. Examination of this reactor reinforced the opinion that closed operation of the large reactors is feasible. Benzotriazole is definitely improving the OKC operation.

A fresh air breathing system using bottled air has been ordered. The bottles are expected by April 12, but installation of the entire system is projected by about May 3. Portable air breathing devices are presently available and will be used in accordance with the ETS.

Among the specific items of equipment being modified to reduce VCM exposure are the following:

1. Reactor dump Sweco
2. Recovery system drainage
3. Chem wash Sweco
4. Slurry blend exhauster
5. Vents
6. Dryer building centrifuge effluent sewer
7. M-500 Sweco

Details of the status of the problems and solutions relating to the above list are available.

Manpower Utilization:

Chemicals PED -	11 Chemical Engineers
Design PED -	1½ Chemical Engineers
LCPD -	1 Operations Man

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MED -	1 Physicist
	½ Chemical Engineer
	1 Technician
CED -	1½ Mechanical Engineer
	½ Architectural Engineer
R&D -	8 Chemists
	5 Technicians
	1 Chemical Engineer
Total	31 3/4 Men

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cdp

cc: RWG JDBu JJL JDBr KLS REL
RDG EMS GFT FK WRS RELa
RSM CW LH JBH JFG

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