

Inter-Organization Correspondence		H.F. Goodrich
TO	FIELD POINT OR AKRON DEPARTMENT & BLDG. NO.	DATE YOUR LETTER
C. L. Woods	Calvert City	
FROM	FIELD POINT OR AKRON DEPARTMENT & BLDG. NO.	DATE THIS LETTER
J. R. Render	Calvert City	2/4/75

TRIP REPORT - VCL CONFERENCE

Attached is the trip report on the VCL Conference between B.F. Goodrich Chemical Company and PPG Industries representatives to exchange information on OSHA's regulations for VCL emissions. The conference was held in New Orleans, Louisiana, on January 27, 1975.

J. R. Render

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Attachment

cc: J. L. Nelson
 E. W. Harrington
 W. E. Brodine
 R. L. Toole
~~H. R. Haffemeyer~~
 D. B. Schrock
 F. R. Carvell
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 J. R. Gough
 Q. M. Adams
 W. C. O'Brien
 J. J. Schonaerts

VCL CONFERENCE

B.F. Goodrich Chemical Company
and
PPG Industries

New Orleans, Louisiana

January 27, 1975

Summary

On January 27, 1975 W. C. O'Brien, J. J. Schonaerts, Q. M. Adams and J. R. Render met in New Orleans, Louisiana, with representatives of PPG Industries from their Pittsburgh office; Lake Charles, Louisiana plant; and the plant in Puerto Rico. The purpose of this meeting was to compare plans and present practices for meeting the OSHA requirements.

Those attending from PPG Industries were:

John Clapperton	Manager of Manufacturing	Pittsburgh
Bob Lynch	Manager of Organic Operations	Lake Charles
Glen Work	General Foreman, VCM Plant	Lake Charles
Murry Davis	Safety	Lake Charles
Mark Wood	Laboratory	Lake Charles
Jim Lafleur	Shipping	Lake Charles
Jack Ferguson	Production Superintendent	Puerto Rico
Dan Daniels	Laboratory	Puerto Rico

PPG at Lake Charles is buying Arcas G.C. with ten point samples. The plant in Puerto Rico is buying a Bendix G.C. At the present they are using OVA meters with columns. The carbon disulfide method of extraction is being used by the PPG lab. They claim to have no problems with high VCM levels, above 1 ppm, in their plant although private discussions indicated otherwise. They have not sampled maintenance operations. The levels at Puerto Rico are higher. Equipment is drained and flushed back to the process, and then the equipment is purged free of VCM with nitrogen. The cartridge type mask is being used by the operators, and PPG expects NIOSH to approve it.

Vents are not collected for recovery nor incineration, and there are no plans for an area exhaust system. Their interpretation of the OSHA regulations is more conservative than that of BFG. The PPG tank car loading procedure appears to be excellent.

Review Summary of BFG-Dow Meeting

Dow is ahead of both BFG and PPG in the G.C. area monitoring. Dow's interpretation of the OSHA regulations is more in line with BFG and more liberal than those of PPG. In reference to the collection of vents and drains, Dow

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Review Summary of BFG-Dow Meeting (continued)

has in service or will put in service vent collection systems and drain collection systems for recovery, whereas PPG and BFG have none at the present. Dow will incinerate vapors from this system and the process in a thermal incinerator with heat recovery. PPG plants continue to vent the vapors from the VCM plants. While PPG has carbon filters in the air supply to the control rooms, they were not installed for VCM. None of the three companies have any assured way of filtering VCM from air.

✓ BFG is the only company who has set their goal to operate the VCM plants as non-regulated areas. However, PPG may be expected to change as a result of our interpretation of the standard.

Personnel monitoring is basically the same for all three companies. Dow prefers a longer sampling time (six to eight hours) while PPG and BFG will use a shorter time (about four hours). Neither Dow nor PPG has a personnel monitoring program as extensive as BFG. Neither PPG nor Dow has any plans to make changes in their piping specifications.

Discussion

OSHA Regulations

PPG interprets the OSHA regulations less liberally than BFG. They believe that an area must be regulated if either it is a manufacturing area or it is an area that has levels of VCI of 1 ppm or greater; but not necessarily both. Interest was shown in BFG's interpretation of requiring both, and indications were that PPG would accept BFG's interpretation. Interest was also shown in BFG's goal of operating the VCM plants as non-regulated areas.

The PPG tank farm will be operated as a non-regulated area as well as parts of the VCM plants, such as the furnace area. Warning signs have already been installed, and their operators have been given the required training. VCM spheres have not been marked, and they were not intending to do so.

PPG is starting its tenth year of medical examinations. All operators have been getting a liver function test. The computer has been programmed to indicate the hours maintenance personnel spend in the VCI areas. This is done with the time each man charges to a VCI area and is not accurate for the actual time spent in VCI areas.

Personnel with cardiovascular problems, obesity and abnormal liver functions are restricted from organic areas. Women are not restricted and PPG does not believe that it is possible to do so. Pre-employment physicals are repeated for applicants failing to meet the average values for the initial blood chemistry tests.

Discussion

OSHA Regulations (continued)

PPG is using the MSA double filter cartridge type mask (same as BFG) and expects that NIOSH will approve its use. They said that they have no jobs where personnel are subjected to VCM levels above 5 ppm. PPG has prepared a large, loose-leaf book which contains pertinent data for the OSHA regulations. We were informed that the OSHA inspector was favorably impressed when he reviewed its contents. The book contains sections as follows:

- A. Temporary OSHA standards.
- B. Proposed permanent standards.
- C. Letters of communication to employees from PPG management.
- D. Follow-up safety meetings.
- E. Personnel and area monitoring.
- F. Medical surveillance.
- G. Job procedures.
 - 1. Plant lab.
 - 2. Main lab.
 - 3. Process shipping.
- H. Respiratory protection.
- I. Enforcement rules and regulations.
- J. Projects.

PPG will hold safety meetings with contractors' personnel. Their program for handling contractors in regulated areas is not complete at this time. The construction contracts with labor will not permit enforced physicals.

OSHA had inspected the PPG Lake Charles plant because of an employee complaint. Evidently a rumor was started that there were unreported angio cases at the plant. Inspection of the plant revealed no cases. PPG has spent a large amount of time training the operators concerning VCI. This has been done through safety meetings in which the following subjects were discussed: 1) OSHA regulations, 2) VCI history, 3) operating procedures, and 4) evacuation procedure. They have done no work as yet in the preparation of a training film or a video tape. A plant evacuation test is run twice each year.

Monitoring

At present PPG is using grab samples to check for VCM before issuing an entry permit for equipment. They are using a four-hour sample for the TWA and have never experienced a level greater than 50 ppm. OVA detectors are being used for area monitoring and leak locations. Their Century OVA meters have a special column attached to give a better readout on VCM. G.C.'s are on order from Arcas and Bendix. Their G.C.'s will have ten, single sample points with two minute analysis time required for each point. The sample

Discussion

Monitoring (continued)

points will be located at greater distances apart than those of BFG. Each sample point will be located two feet above grade rather than breathing height, thinking that this will give them an earlier detection of high VCM levels. A Bendix flasher is being evaluated in the lab but unsuccessfully due to mechanical problems with the unit. Plans are to continue experimenting with it. The G.C. will be connected to a computer and data will be printed by a teletypewriter in the control room. They have no plans for alarm levels. At present the G.C. will monitor only VCI.

Operating Methods

PPG does not incinerate nor recover the vented material and does not plan to do so until required by EPA. They do not believe their vents cause high levels of VCI in the operating areas, which is confirmed by two different computer programs for calculating the dispersion of material from vents. At present they are sampling perimeter air to verify these calculations. The equipment vents are discharged into a 36-inch diameter header, which has a 100-foot high stack on each end. The relief valves also discharge into the vent header system. Both PPG plants have a prevailing 7 mph wind.

Filters which are used on VCI are pressured back to the process with 200 psig nitrogen and then purged with 100 psig nitrogen to the vent header prior to being opened for maintenance. The same is done for their calcium chloride dryer. Double pump seals are not used at Lake Charles, and they have no plans to change. The Puerto Rico plant is looking into the use of double seals.

Sample bombs are normally not cleaned but are reused. Production vents the bombs back to the process. Each sample bomb has a dip leg for filling in the vertical position, which prevents overfilling. PPG uses the same type of closed sample system as BFG and vents the bombs to their vent stack. Different size connections are used on the ends of the sample bomb to prevent incorrect installation. The dip leg is a standard item for the Hoke valve. A sample bomb is left installed most of the time. Purging the bomb for 20 minutes is done for process sampling and 60 minutes for product analysis. PPG has already labeled their sample bombs as containing a carcinogenic material.

A bulls-eye is used with the tank car dipstick to measure the VCI level. PPG does not plan to use a Midland loading gauge. They are satisfied with their dip leg--bulls-eye method. Prior to loading, the material in the sphere is rolled and sampled. A single, large bomb is taken for all quality tests. The Teledyne oxygen analyzer is vented to the vent stack. All loading is done through a dip leg. Pressure is equalized back to the sphere except

Discussion

Operating Methods (continued)

in cases of oxygen level above 1,000 ppm. Loading lines are purged into the car. Tank cars having this high oxygen content (about 5% of all cars) are purged with nitrogen to the vent stack. The spheres are periodically vented back to the process when they have high pressure. Pressure buildup has always been from nitrogen before oxygen has ever exceeded 1,000 ppm in the sphere. There was one case of polymerization in the spheres caused by contamination of venting back to the sphere, which might have been caused by venting high oxygen back to the sphere. However, PPG plans to continue to load cars with the vent going back to the sphere.

In shutting down the VCM plant, the distillation train is operated six to eight hours after shutting down the cracking furnaces. This should reduce or eliminate much of the venting from the furnaces.

PPG can clear a column of VCI in about 24 hours. EDC is flushed through the column, and the column is then purged with nitrogen until the VCI level is below an acceptable level for entering without respiratory equipment. Columns have been water washed only occasionally. Columns have dual reboilers but no valves. There is no concern about leakage from packing of valves or control valves. A Johnson-Williams dual vapor detector system is used for alarm and furnace shutdown in case the explosive limit is approached.

PPG uses massive amounts of nitrogen for purging equipment. This is possible due to nitrogen availability and cost, \$4 to \$6 per ton. They have an air separation plant located next to each of their VCM units since their oxy unit requires oxygen instead of air.

PPG will not permit vehicles with catalytic convertors on the exhaust in the plant area because of fire hazard. The convertor can get to a temperature of 1300°F. Permission has been granted by the State to remove the convertors from plant vehicles.

Charcoal filters are used on the air supply to the control rooms. These filters were not installed for VCI but to remove other chemicals. PPG is not aware of any filter for removing VCI. The intake for the air supply to the control rooms is 20 to 30 feet above the building roof.

Each control room has a manifold of bottled air which can be used for emergency air supply for fresh air masks in times of major releases. In addition, there are portable bottles for escape.

PPG at the Lake Charles plant appears to have many problems with other chemicals; and, consequently, this is taking attention away from VCM studies. EDC is very low on their environmental study program.

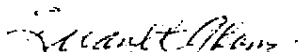
Discussion

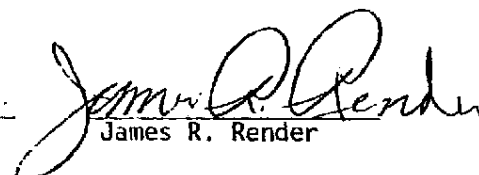
Operating Methods (continued)

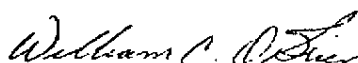
PPG uses Teflon ball and Teflon lined valves in some locations in their oxy and VCM units. They are not concerned that these valves are not considered firesafe valves. They claim that these valves are the only types which give suitable service.

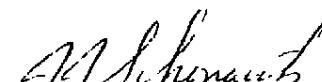
Recommendations

1. Evaluate a modified Century OVA meter such as PPG is using and compare this with a H-NU photoionization analyzer to determine if it would be worthwhile to change from our present OVA meters to a modified OVA meter or to the H-NU meter.
2. If the closed VCM bomb sample systems give a problem in the future, consider installing dip legs in the bombs to minimize liquid filling. We presently have only one problem area, the VCI stripper bottoms sample, due to high pump discharge pressure.
3. Prepare an OSHA inspection book such as PPG has done, which brings together all the information an OSHA inspector will want to see.
4. Continue goal of reducing number of samples required for various shipment tests. PPG is taking only one large sample per sphere, and they do not have a loading process analyzer.
5. Consider evaluating the bulls-eye--dip stick loading method either on a temporary basis until Midland gauges are installed or in place of Midland gauges.
6. Stop routine cleaning of sample bombs. Neither Dow nor PPG cleans every sample bomb as we do, except when they get into bomb contamination problems.
7. Make process study on venting low oxygen tank cars back to spheres when loading. Then either with or without vapor recovery system return inerts to the Cracking plants to eliminate 90% of present flare venting.


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