

BWC
EAS 4/7 1/2

March 4, 1974

To: S. C. Alten
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IMPLEMENTATION OF NIOSH RECOMMENDATIONS

Attached is a clarification of the approach we are taking to implement the NIOSH Recommendations. Each plant is to proceed to put these recommendations into effect.

A PVC Safety Engineers' meeting will be held March 14, 1974 at 8:30 a.m., Conference Room 3-A, in the Cleveland Office. *Motel reservations have been made at the Sheraton Inn, 15455 Brookpark Road (telephone number 216/267-9800), for the night of March 13, 1974.

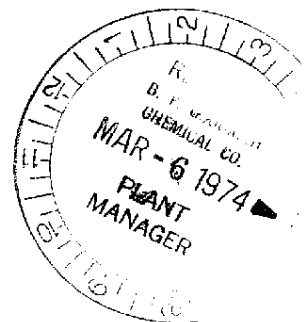
The purpose of the meeting is to work out the various problems which have been encountered in implementing these recommendations. Please forward a list of problems, to my attention, by March 12, 1974.

H. Waltemate
H. Waltemate

HW/kats
Attachment

cc: D. A. Brooks
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E. B. Katzenmeyer, Jr.
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C. L. Woods
B. M. G. Zwicker



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February 25, 1974

IMPLEMENTATION OF NIOSH RECOMMENDATIONS

The following is a clarification of the approach we are taking to implement the NIOSH recommendations. It should be noted that OSHA and several states may also promulgate standards which we will be required to follow.

I. General Housekeeping Procedures

A. Spillage Control

1. PVC Removal

Removal of PVC is to be accomplished at regular intervals. PVC material around polymerization operations as well as drying, packaging, and loading areas, is to be kept at an absolute minimum. If a system upset occurs and an abnormal amount of material is discharged, immediate steps are to be taken to clean the area. Vacuuming is the preferred method for cleaning up of the material. Emphasis should be placed on control of leaks and local exhaust ventilation. In some cleanup jobs, protective clothing and respirators may be necessary as listed under Section II and Section IV.

2. Closed Containers for Recovered PVC

Collect all PVC material (floor sweepings, material collected from overhead structures, etc.) which may be packaged in closed containers.

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3. Closed Containers for Waste PVC

All waste PVC material which is being accumulated for disposal and/or destruction is to be stored in closed containers. Care must be taken in the storage of closed containers to insure that unsafe conditions do not result from internal buildup of pressure and/or temperature in the container.

Examples: material from hard charges, slurry drained from a polymerizer or other similar equipment.

B. Inventory

Adequate records are to be kept of fresh VCl, recovered VCl, vented VCl, and PVC produced and packaged to determine where losses are occurring. It is thought that our present inventory records are adequate. Once problem areas are determined, a program should be instituted to eliminate VCl and PVC losses.

C. PVC from Overhead Structures and Conduit

At regular intervals, each plant is to remove PVC from overhead structures, beams, pipes, ducts, conduit, and areas where it tends to collect. Frequency of removal must be determined by each plant. However, each plant is to inspect these areas on a weekly basis. Vacuuming is the preferred method for cleaning. Emphasis should be placed on control of leaks and local exhaust ventilation. In some cleanup jobs, protective clothing and respirators may be necessary, as listed under Section II and Section IV.

D. Separate Eating Facilities

Eating facilities separate from the production or warehouse areas must be provided. Each plant is to evaluate their present facilities and if it is questionable, the Corporate Environmental Control Department is to be consulted. It may be permissible to eat in a pressurized control room, providing it is maintained in a clean and sanitary condition, there are no toxic substances in the room, and samples are not stored or permitted in the room. In addition, employees are to practice good personal hygiene. Washup facilities must be provided in the near vicinity of the eating area. Refer to OSHA Standard 1910.141 (g).

II. Protective Clothing

A. Daily Change of Clothing

Provide a daily change of work clothing, including full coveralls, or the equivalent, for employees in areas where exposure to VCl or PVC could occur. This clothing can be of the standard type material such as cotton, or of a disposable type. Short sleeved coveralls or shirts are not permitted. Clothing contaminated by accidental spills is to be changed as soon as possible.

B. Protective Gloves, Footwear or Footcovers

Protective gloves and footwear or footcovers are to be worn in those PVC operations where exposure to excessive PVC material is possible (i.e. cleaning polys, cleaning accumulated PVC from overhead structures, changing Dustex bags, cleaning in the silo area, cleaning bagging hoppers or storage bins, cleaning dryers, etc.). If the material is wet and the feet

are exposed, rubber boots or overshoes are to be worn. If the material is dry, the rubber boots or overshoes can be worn or a disposable shoe cover can be used. (Information on the disposable shoe covers has been sent to the Safety Engineers). Protective gloves are to be worn any time an employee is exposed to PVC. If the PVC material is dry, a cloth glove can be used; but if the material is wet, a waterproof glove is to be worn.

C. Protective Head Covers

Protective head covers are required when an employee is exposed to PVC while performing jobs such as cleaning of polymerizers, packaging operations, cleaning overhead structures, etc. In general work areas where there is not excessive PVC, a hard hat is suitable. In operations that are excessively dusty, a disposable type hood is to be worn, and in operations that are wet a waterproof hood is to be worn. (Information on a disposable hood and waterproof hood has been sent to the Safety Engineers.)

D. Impervious Suits

We have received a clarification on impervious suits that are required for vessel entry. For vessel entry in which the PVC material is dry, a Tyvek disposable coverall with elastic sleeves and cuffs will be worn. (This is the white disposable suit shown at the February 7, 1974 Plant Managers' meeting.) This coverall can also be worn for vessel entry if a small amount of water is lying on the bottom, but rubber boots must also be worn.

For vessel entry in which the vessel is wet and the employee may be in contact with the wet material, a waterproof, nonreinforced PVC slicker suit will be worn. This is a disposable two piece suit with elastic sleeves and cuffs.

Approximately two dozen of the Tyvek disposable coveralls and PVC slicker suits have been ordered for each plant. (Information on re-ordering has been sent to the Safety Engineers.)

III. Showers

All personnel who work in the VC1/PVC operations must take showers at the end of their work period. Maintenance personnel assigned to, or working in VC1/PVC areas, are also required to take a shower at the end of their work period. If an abnormally dusty job is performed, a shower is to be taken at the completion of that job.

Casual visitors need not take a shower unless there has been an accidental exposure to VC1/PVC.

Shower facilities must comply with OSHA Standard 1910.141 (d)(3).

IV. Monitoring

A. Environmental

1. Vessel Entry

Every entry of a vessel related to VC1 is to be checked with the OVA to determine the VC1 content. The findings must be recorded on the vessel entry permit (see attachment #1).

We must gather additional data on VC1 levels when opening vessels and during the duration of the vessel entry on all jobs (i.e. scraping the walls, hard charges, etc.). Gather this data as the OVA is available.

2. Establish Fixed Points

Continue with the present OVA monitoring program of reducing VC1 levels to a very minimum and to establish points for the fixed monitoring systems.

3. 50 ppm Maximum VC1 Levels

You are to accelerate your program of eliminating leaks and reducing other sources of vapor emission. This can be accomplished with the OVA and the fixed monitoring system. We have set 50 ppm as a ceiling, however, every effort should be made to eliminate VC1 in the working environment.

4. Measure VC1 in Exhaust

When a rise in VC1 concentration is noted on the Bendix system it indicates that corrective action must be taken immediately.

V. Respiratory Protection

A. Air Supplied Respirators

For all VC1 vessel entries, an air line respirator must be worn. It is to be Bureau of Mines approved. You may use either constant flow or demand, however, constant flow is preferred.

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Review your breathing air supply system. If a nonlubricated air compressor is being used, a test weekly for oxygen content and carbon monoxide is to be made and records maintained. If an oil-lubricated air compressor is being utilized, adhere to the requirements set forth in the attached #2. Refer to OSHA Standard 1910.134(d).

Be sure the air line coupling is incompatible with other utility outlets. You may want to use Schrader fittings on air line respirators and Hansen fittings on all other utility outlets. Be certain that nitrogen cannot be inadvertently connected to the breathing air supply.

B. Respirators

NIOSH or Bureau of Mines approved respirators with an organic vapor cartridge must be worn in all areas where the VCl level is above 50 ppm but less than 200 ppm. Cartridges are to be changed daily. (Studies are being conducted at the Avon Lake Technical Center to verify this need.) Respirators should also be worn whenever there is potential VCl exposure such as from breaking a flange, etc. Cartridges must also be changed when a sudden high exposure occurs. (See Attachment #2)

In any area above 200 ppm use either an air pak or an air line respirator. They are also to be used in cold rooms regardless of levels.

It should be emphasized that if a serious gas escape occurs the cartridge respirator should be worn for evacuation only. If the building must be re-entered an air pak is to be used.

Cartridge respiratory equipment with an organic cartridge and a dust filter must be worn in areas which are obviously dusty (i.e. bagging operations or housekeeping in silo areas). The dust filter is to be changed whenever it becomes restricted, and the organic cartridge is to be changed once per day. Further studies are needed to determine if a dust filter only is adequate. OSHA Standard 1910.134 is to be reviewed for other requirements.

C. Self-Contained Breathing Apparatus for Tank Car Unloading

An air pak or air line respirator must be worn when opening valves on VCI tank cars or VCI tank trucks, whether loading or unloading. Also, an air pak or air line respirator must be worn when bleeding down the lines after the transfer is completed.

The Pedricktown plant has installed a system whereby a partial vacuum can be pulled on their unloading line. They are to collect personal monitoring samples with the OVA, with varying weather conditions, to determine if a cartridge respirator is adequate.

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Attachment #1

REQUIREMENTS FOR VINYL CHLORIDE VESSEL ENTRIES

The following items represent procedures to be followed when entering any vessel associated with vinyl chloride.

1. Each plant is to follow their existing vessel entry procedure with regard to isolating, exhausting, standby, rescue line, permit, etc.
2. Before any vessel entry, an OVA reading is to be taken. The findings are to be recorded on the entry permit.
3. As the OVA is available, gather additional data on all jobs (i.e. scraping the walls, hard charges, etc.).
4. An air line respirator is to be used for all vessel entries.
5. If the vessel is wet or damp, an impervious suit must be worn. In addition to the impervious suit, the following is also required: boots, waterproof gloves, and waterproof head cover.
6. If the vessel is dry or a small amount of water is lying on the bottom, boots are to be worn. An impervious suit is not required, however, a light weight disposable suit or the equivalent is to be worn. Cloth gloves and a protective head cover are to be worn.
7. At this time, cartridge respirators are not to be used in vessel entry.
8. Either the impervious or the disposable clothing is required in addition to the daily change of clothing.

Attachment #2

RESPIRATORY EQUIPMENT BEING UTILIZED IN THE B.F.G. PVC PLANTS

The following cartridge respirators are being used:

1. Welsh Protex Respirator, Model 7511 for organic vapors, dusts, and mists.

(This total unit is approved by the U.S. Bureau of Mines. The respirator and cartridge for organic vapors is NIOSH approved, but the filter for dusts and mists has not been approved; it has been submitted to NIOSH for approval.)

2. American Optical Respirator Model R5055, for organic vapors, dusts, and mists.

(This unit is approved by the U.S. Bureau of Mines and has been submitted to NIOSH for approval.)

3. Wilson 1200 Basic Respirator with R21 cartridge for organic vapors and R14 filter for dusts and mists.

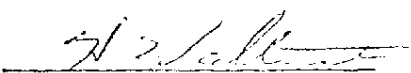
(This total unit is approved by the U.S. Bureau of Mines. The respirator and cartridge for organic vapors is NIOSH approved, but the filter for dusts and mists has not been approved; it has been submitted to NIOSH for approval.)

4. MSA Comfo II Respirators with GMA cartridge.

(This unit is NIOSH approved, but the delivery is very long.)

As far as airline respirators, the plants are utilizing and expanding their existing equipment. In general, they are using an MSA or Acme unit. Both of these units are U.S. Bureau of Mines approved. (I am not sure if they have been submitted for NIOSH approval.)

The air supply for the airline respirators is from either purchased air cylinders or from the plants' instrument air compressor. Where the instrument air compressor is used, it is set up to meet the attached criteria.


H. Waltemate

HW/kats
February 15, 1974

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Air Quality Standards and Quality Control Procedures for Breathing Air
Supplied From Industrial Air Compressors

I. System Design Criteria:

- A. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system.
- B. Suitable in-line air purifying absorbent beds and filters* shall be installed to further assure breathing air quality.
- C. A reservoir of sufficient capacity shall be provided to enable the respirator wearer to escape from a contaminated area in the event of compressor failure.
- D. Alarms to indicate compressor failure and overheating shall be installed in the system.
 - 1. Install an audible and visual signal to warn the user that the compressor has shut off.
 - 2. Install an automatic device to shut off the compressor if it overheats and to warn the compressor operator.
- E. Install a suitable carbon monoxide monitor and an alarm to sound when carbon monoxide in the system exceeds 20 ppm by volume. This same device shall shut the compressor off when the carbon monoxide level exceeds the 20 ppm limit.
- F. Provide air line couplings in the system which are incompatible with outlets for all other gas systems to prevent inadvertent servicing of air line respirators with non-respirable gases or oxygen.

II. Quality Control Testing:

- A. On a monthly basis tests shall be performed to assure quality breathing air. The breathing air shall meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966. The allowable limits are: Condensed Hydrocarbons, 5 mg/m³; Carbon Monoxide, 20 ppm; Carbon Dioxide, 1,000 ppm; odor, non appreciable.
- B. All methods used in determining the quality of breathing air shall be those prescribed by Department 0020. At present these are:
 - 1. Carbon monoxide concentrations may be determined by the use of a comparison tube filled with a color-reactive material such as the Drager Indicating Tube, catalog no. CH-28900 connected to a Drager Gas Detector Pump, catalog no. 27610. A Stroke Counter, catalog no. 27033, and a Carrying Bag, catalog no. 26977, may prove convenient.**

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II. Quality Control Testing:

- B. 2. Carbon dioxide concentrations may be determined by the use of a comparison tube filled with a color-reactive material such as the Drager Indicating Tube, catalog no. CH-30901, connected to a Drager Gas Detector Pump, catalog no. 27610. A Stroke Counter, catalog no. 27033, and a Carrying Bag, catalog no. 26977, may prove convenient.**
3. Hydrocarbon content shall be determined by passing a sample of air through an adequate filter medium*** and measuring the increase in weight of the filter and noting the presence of any discoloration.
- C. Copies of the monthly test results are to be sent to the Manager, Environmental Control Department, Akron, Ohio.

* Recommended--Del-Monox equipped with BA-3 Cartridge, DelTech Engineering, Inc., Century Park, New Castle, Delaware 19720.

MSA Air line Filter 10-81857 equipped with 2 @ 10-46727 Cartridges and 1 @ 10-79030 Cartridge.

Acme Products CA-4235

** These may be ~~ordered~~ from the Safety First Supply Company, 1990 East 69th Street, Cleveland, Ohio 44103.

*** Recommended--Whatman Filter Paper or Milipore Filter.