



*Air Products and Chemicals*  
NC

CALVERT CITY PLANT  
INTEROFFICE MEMORANDUM

To: H. Ortega

Date: 21 June 1983

From: B. D. Helms

Copies: G. N. Boyd/T. C. Noll  
W. D. Greer  
R. C. Lietzau  
E. K. McIntyre  
F. C. Rydzewski  
W. F. Smith  
M. R. Chmura, Trexierstown

Re: Employee Notification of  
Vinyl Chloride Exposure  
Above the TLV

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The notification required by OSHA, 1910.1017 (n)(3), has been filled by use of the form letter attached. OSHA requires employee notification within 10 working days of any monitoring and measuring which discloses employee exposure, without regard to the use of respirators, in excess of the permissible exposure limit. The notification must be in writing and include the monitoring results and the steps being taken to reduce the exposure to within the permissible limits.

The form needs to be updated. Other areas where VCM is monitored should remain on the form.

I suggest that you ask M. Chmura to coordinate the revision of this form with R. Schenck prior to restart of the PVC plant.

  
B. D. Helms

**AP00043841**



# *Air Products and Chemicals*

CHEMICALS GROUP  
CALVERT CITY PLANT

INC.

P. O. Box 97, Calvert City, Kentucky 42029 • Telephone 502 395-4181

In conformance with the Occupational Safety and Health Administration Standard relating to exposure to vinyl chloride, Section 1910.95-(q), 1017 (n) (3), this will advise you that on the monitoring required by such Standard disclosed that the vinyl chloride monomer concentration in the atmosphere around your working station was            parts per million averaged over the 8-hour shift.

As you realize, this atmosphere measurement does not necessarily mean that you have been exposed to this level.

You are also aware that Air Products and Chemicals, Inc. is in the process of an extensive program to reduce the exposure to vinyl chloride in the work environment. As a part of this ongoing program, we have prepared and are in the process of implementing an engineering program designed to reduce your exposure and the exposure of your fellow employees to the greatest extent feasible in our plants. A copy of this engineering program is enclosed for your information.

Air Products very much appreciates the cooperation and patience which you have exhibited in helping to resolve this problem and we know that with the dedication and cooperation of all concerned, the protection of your health and the continuation of our operations will be achieved.

Very truly yours,

AIR PRODUCTS & CHEMICALS, INC.  
Chemicals Group

*A. F. Cantor*

A. F. Cantor, Superintendent  
PVC Resin Plant

AFC/jsd

**AP00043842**

ENGINEERING PROGRAM FOR  
ABATEMENT OF WORKER EXPOSURE TO  
VINYL CHLORIDE

The Engineering Program for abatement of worker exposure to Vinyl Chloride Monomer consists of a combined effort from Research, Plant Staffs and Divisional Management. Those programs which are active at this time are indicated below:

I. RESEARCH

The following studies are underway:

1. Methods to reduce exposure by decreasing the frequency of opening and closing or cleaning of reactors by developing effective antifoulants and more stable recipes which reduce the amount of wall fouling and scrap resin. Part of this work has been a joint project with a National Science Foundation fellow.
2. Methods to improve stripping by reformulation to produce more porous resins, and improved anti-foam agents.
3. Fundamental studies on diffusion constants and equilibrium data for the system PVC-Water-Vinyl Chloride in order to extend our knowledge of the stripping and drying processes, and thus reduce exposure in the production and fabrication stages.
4. Continuing studies are underway to reduce the monomer content of resin and compound after the production phase, also for protection of the worker and consumer.

II. PLANT STUDIES

Plant engineering and process studies now completed or underway include the following items:

1. Use of the fixed and portable monitors to locate sources of exposure, evaluate modifications to equipment and ventilation systems, and test the effectiveness of new work procedures.
2. Relocation of equipment so as to remove potential sources from the work area or relocate work positions away from possible exposures.
3. A continuing program of revision of procedures and retraining of personnel for the purpose of reducing the chance for error and improving work production. Revised copies of this written program are available at each plant and have been distributed to each affected employee.
4. A multimillion dollar program to improve slurry stripping and to reduce manual cleaning of reactors has been completed. The first continuous stripping unit has been in operation since November 1975 at Calvert City, and a similar unit is in operation at Escambia. The solvent recovery equipment has been expanded and improved.

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5. The use of a computer to charge and drop batches to reduce the personnel exposure to VCM.

### III. OUTSIDE ASSISTANCE

Assistance is being obtained from outside the company in the following ways:

1. Participation in information exchange with industry within the U.S. through the technical programs of the Vinyl Chloride Safety Association and the Society for the Plastics Industries, as well as through personal contacts.

2. Information exchange programs with PVC producers in Europe and Asia.

### IV. PLANT MODIFICATIONS

#### A. Escambia Plant

- 1) A major capital investment has been made which resulted in a plant capable of reducing exposure to as low a level as any other plant. Two 24,000 gallon reactors have been installed complete with all required supporting equipment. Five of the existing reactors have been retrofitted so that the entire plant is now computer controlled from a remote area.
- 2) Controlled atmosphere areas exist on two floors of the old reactor building to provide a work area free from vinyl chloride.
- 3) Reactor relief lines have been extended above the roof peak.
- 4) A closed reactor rinse water system will be completed in mid-1978.
- 5) The personnel entrance gates and data logging equipment are currently being installed. Completion is expected in mid-1978.
- 6) A solvent cleaning system is in operation. Further capacity expansion is included under item #1.
- 7) A separate air system, with carbon-bed protection against VC contamination, has been installed, to provide VCL free breathing air to be used with continued flow respirators where overexposure potential exists.
- 8) The reactor seal pressure system has been redesigned to minimize possible agitator seal leakage.
- 9) All reactor manways and sightglass assembly are routinely serviced to reduce the possibility of leakage.
- 10) A revision is underway on the recovered monomer water drain line to eliminate monomer spillage.

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#### R. Calvert City PVC Plant

- 1) The monomer recovery system has been rebuilt, modernized and located outside a process building.
- 2) Electronic processing of the area monitoring data will be installed.
- 3) Ventilation has been improved in the compound, warehouse and bagging area, so that these are not regulated areas.
- 4) The expanded plant is computer controlled.
- 5) Relief valves have been placed on the charge pots to control emissions from overpressure.
- 6) Continuous strippers have been installed to reduce residual vinyl chloride in the product.

#### C. Calvert City Emulsions Plant

Monitoring results show that workers are not generally exposed to concentrations above 0.5 ppm vinyl chloride during normal production of VC-containing polymer, but may be affected by upsets in the PVC Plant, or during some venting and repair operations. The engineering program is designed to reduce further these possible excursions.

1. Items listed under IV B, above, will reduce the effects of upsets in the PVC Plant.
2. A major project is underway to recover and recycle the unreacted monomers, thus reducing emissions and potential exposure.
3. In the interim, operators are furnished respirator protection.
4. To reduce the potential for operators exposure to VCM, a direct vinyl chloride monomer feed is being installed. This will eliminate the present charge tank and certain sequences in the operation for VCM addition.

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