



CALVERT CITY PLANT
INTEROFFICE MEMORANDUM

To: H. Ortega

Date: 23 June 1983

From: B. D. Helms

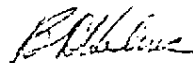
Copies: G. N. Boyd
E. K. McIntyre

Re: PVC Hygiene Program

The hygiene program for the PVC plant should be updated in order to be used during your training programs prior to start-up.

Status of the last review is attached.

Please indicate which chemicals will be used. Also note any chemicals which are not on the list. This information should be given to G. N. Boyd; then a meeting can be scheduled for review.



B. D. Helms

AP00043915



Air Products and Chemicals
INC

CALVERT CITY PLANT
INTEROFFICE MEMORANDUM

To: K. E. Arnold

Date: 13 January 1982

From: B. D. Helms

Copies: G. N. Boyd, cover only
R. C. Lietzau, cover only
E. K. McIntyre
H. Ortega
G. E. Savage
R. E. Varilek, cover only

Re: PVC Hygiene Program

During our meeting, 7 January 1982, with Glen Savage and G. N. Boyd, we discussed in some detail the hygiene program. A summary of the discussion follows.

- Greg Boyd discussed the overall monitoring program including the data sheets.
- A summary of the monitoring data will be available each month.
- A respirator use list was presented.
- Effective use of monitoring data and the GC system can result in reduction of exposures. Problem areas are generally in the reactor 3rd floor area.
- The leak patrol procedures will be reviewed.
- Training with documentation must be conducted per regulation and needs.
- Dust exposure in the bagging and bulk loading areas has been a problem. This area will continue to be monitored.
- Bagging of copolymer sometimes results in VCM exposures in the warehouse. Fans were installed at the bagger but some product cannot be stored in warehouse.
- The Work Practice Standard (15 April 1981) will be reviewed by Arnold and Savage. We will then meet to discuss problem areas.
- Emergency procedures must be adopted and training conducted.


B. D. Helms

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Attachments

1. Hygiene Program Outline
2. 1982 Monitoring Schedule
3. Problem Areas
4. VCM Trend Analyses
5. Respirator List
6. Data Sheets
7. OSHA Regulations
8. Work Practice Standard, 15 April 1981
9. Leak Patrol Procedure

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HYGIENE PROGRAM FOR EACH PLANT AREA

- I. Identification of All Possible Exposures
 - A. Chemicals
 1. Raw materials
 2. Products
 3. Intermediates
 4. By-products
 - B. Noise
 - C. Dust
 - D. Others
- II. Determine Basis for Control
 - A. Physical Properties
 - B. Health Effects
 - C. TLV
 - D. Exposure Potential (Evaluation of Work Practice)
- III. Evaluation of Exposures
 - A. Review Past Monitor Data vs. Control Levels
 - B. Establish Monitor Schedule

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C. Set Priorities

D. Engineering Evaluation - Review of Exposure Potential and health Effects May Satisfy Monitoring Requirements.

IV. Plan for Uncontrolled Exposures

A. Source of Exposure

B. S.W.P. for Employees Exposed

C. Plans for Control of Exposure

D. Time Tables

E. Schedule for Monitoring Follow-Up If Process or Equipment Changes Are Made

V. Change/Shower and Lunchroom Facilities

A. Change/Shower Facilities

1. Do exposures require shower/clothes change?

a. Exposure data

b. Work practice

c. Health effects

2. Do facilities meet Group/OSHA standards?

3. Plans

B. Lunchroom Facilities

1. Do facilities meet Group/OSHA standards?

VI. Reviews (Annually)

A. Area Superintendent

1. Approval and commitment to program

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B. S.H.E. Manager Approval

C. Plant Manager Approval

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HYGIENE PROGRAM FOR EXPOSURE MONITORING

I. Schedule

- A. Scheduling From Each Area Program
- B. Prioritize From Each Area Program
- C. Schedule According to A & B and Available Manpower
- D. Request to Chemicals Group Hygiene for Analytical Methods If Needed

II. Monitor Method

- A. Select Method
 - 1. NIOSH-approved, APCI procedure, etc.
- B. Establish Method Accuracy
 - 1. Calibrate analytical methods, etc.
 - 2. Standards
 - 3. Precision and accuracy data
- C. Establish Sampling Procedure
 - 1. Select procedure
 - 2. Calibration, before and after sampling
- D. All Procedures to Methods Book

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III. Documentation

A. Analytical Data

1. Document clearly in permanent records (Lab notebook, etc.)

B. Results

1. Document clearly in permanent records (Lab notebook, etc.)
2. Publish on standard form
3. Distribute to
 - a. Area superintendent
 - b. S.H.E. manager
 - c. Plant chemist

C. Availability

1. Data centrally filed in Laboratory
2. Accessible by hygiene chemist, plant chemist, and S.H.E. manager

IV. Review

A. Results Reviewed With Area Superintendent and S.H.E. Manager

B. Monitor Schedule Re-established Based on Results

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RESPIRATOR PROTECTION PROGRAM

I. Program Responsibility

A. Plant-Wide Coordinator

1. Revision of plant-wide program
2. Audit area compliance to program
3. Assist in training of employee
4. Approve selection of respirators
5. Approve use of respirators

B. Area Superintendents

1. Implement program in area
2. Train employees
3. Provide proper respirator equipment
4. Inspect and maintain respirators

II. Program Requirements (Minimum) - OSHA 1910.134

A. Standard Operating Procedure (S.O.P.) For Selection and Use of Respirator:

1. How selected?
2. When used?
3. Basic types of respirators

B. Specific Respirators for Hazards Involved

1. Example - VC1

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- C. Training Program
- D. Cleaning and Storage
- E. Inspection Program
- F. Surveillance
- G. Physician's Approval For Employee Use
- H. Approved Respirator List
- I. Air Systems
 - 1. Airline System
 - 2. Self-contained systems

III. Review

- A. Plant Program
 - 1. Coordinator/Safety engineer
 - 2. S.H.E. manager
 - 3. Plant manager
- B. Area Program
 - 1. Area superintendent
 - 2. Coordinator

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PVC 1982 Monitoring Schedule

<u>Stress or Contaminant</u>	<u>APCI Limits TWA/STEL</u>	<u>Past Monitoring Results</u>	<u>Monitoring Frequency*</u>
ABN Catalyst	-	None	A
DMF	10 ppm, 20 ppm	1978, 1979, 1980, <0.5 ppm	A, B
Drew L-475	-	None	A
Ethylene Glycol	10 mg/m ³ , 20 mg/m ³ Particulate, Vapor	None	A
Esperox 33H	-	None	A
Hydroquinone	-	None	A
Lupersol 10M75	-	None	A
Lupersol 11	-	None	A
Lupersol 223M75, (or EHP)	-	None	A
Methocel E50, F50, K35	10 mg/m ³ , 5 mg/m ³ Total Resp	None	A
Methyl Chloride	50 ppm, 100 ppm	None	A
Methyl Styrene	-	None	A, B
PVC Dust	10 mg/m ³ , 5 mg/m ³ Total Resp	~40 samples, 1980, <1 mg/m ³ (Area)	A, C, H
PVP-K-90	10 mg/m ³ , 5 mg/m ³ Total Resp	None	A
Sodium Bicarbonate	10 mg/m ³ , 5 mg/m ³ Total Resp	None	A
Sodium Hydroxide	2 mg/m ³ (C)	None	A
Sodium Nitrite	10 mg/m ³ , 5 mg/m ³ Total Resp	None	A
Sterox DF	-	None	A
Sulfuric Acid	1 mg/m ³	None	A
TCE	50 ppm, 150 ppm	None	A

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<u>Stress or Contaminant</u>	<u>APCI Limits TWA/STEL</u>	<u>Past Monitoring Results</u>	<u>Monitoring Frequency</u>
Vinyl Acetate	10 ppm, 20 ppm	1978 (25 samples) <0.5 ppm 1979 (19 samples) <1 ppm (1 sample) 424 ppm 1980 (7 samples) <0.5 ppm	A, C, H
Vinyl Chloride	1 ppm, 5 ppm	All past results are computerized.	A, E, H

Noise will be monitored in 1982. Except where noted, all the above sampling results are averages of personnel monitoring. The actual results are tabulated in the Industrial Hygiene Sampling Methods book, and each particular test is documented in a log book.

*Monitoring Frequency Code:

- A - Engineering evaluation
- B - Air sample, every other year
- C - Air sample, yearly
- D - Air sample, quarterly
- E - Air sample, monthly
- H - Air sampling is high priority for these chemicals.

NOTE: 1981 monitoring results are reported separately.

GNB:07JAN82

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Problem Areas at the PVC Plant

Chemicals with LD₅₀ values less than 500 mg/Kg are considered to be highly toxic. These at the PVC plant are categorized as such:

- ABN Catalyst
- DNF
- Hydroquinone
- Sodium Hydroxide
- Sodium Nitrite
- Vinyl Chloride (cancer suspect agent)

The most likely route of exposure for all the above (except vinyl chloride) is dermal contact rather than inhalation. Therefore, most of the exposures to these chemicals are controlled by the work practice.

"Threshold Limit Values (TLV's) are levels to which nearly all workers may be exposed, day after day, without adverse effect. Short term exposure limits (STEL's) are concentrations to which workers can be exposed from a period up to 15 minutes continuously without suffering from 1) irritation, 2) chronic or irreversible tissue change, or 3) narcosis of sufficient degree to increase accident proneness, impair self rescue, or materially reduce work efficiency, provided that no more than four excursions per day are permitted. Threshold Limit Value-Ceiling, (TLV-C) is the concentration that should not be exceeded even instantaneously."¹ Action levels are $\frac{1}{2}$ TLV.

Chemicals with potential exposures above the action levels are:

Vinyl Acetate, TLV 10 ppm, STEL 20 ppm

High exposures to this chemical are generally short-term, limited to jobs such as cleaning filters.

PVC Dust, TLV 10 mg/m³ total, 5 mg/m³ respirable

Dryer buildings, bagging facilities, and loading areas sometimes generate atmospheres which are very dusty. Even though sampling results indicate average exposures are low, the potential exists for high exposures in these areas.

¹TLV's, ACGIH, 1978.

GNB:07JAN82

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VCM TREND ANALYSIS
TYPE BY MONTH AND YEAR BY EXPOSURE

9:09 FRIDAY, DECEMBER 4, 1981 1

TABLE OF YEARMO BY EXPOSURE
CONTROLLING FOR LOCHNAME=CALVERT TWA=8 HOUR TWA

YEARMO	EXPOSURE			TOTAL
FREQUENCY	0 - .5	.51 - 1	ABOVE 1	
year/mo → 8106	17	16	1	34
8107	37	2	2	41
8108	18	13	4	35
8109	20	2	4	26
8110	30	3	2	35
8111	18	0	0	18
TOTAL	140	36	(13)	189

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