

Conoco Chemicals Company
Conoco Inc.
P. O. Box 91, New Highway 25
Aberdeen, Mississippi 39730
(601) 369-8111

PVC PLANT SAFETY AND HEALTH MANUAL

ABERDEEN, MS

SUBJECT: Work Environment Hazard Control Program
EFFECTIVE DATE: August 5, 1982
WRITTEN BY: *Jerry V. Gilem*
APPROVED BY: *John F. [Signature]*
TITLE: Manager

I. INTRODUCTION

Operation of the Aberdeen PVC Plant involves the presence of the work environment hazards described below. Each hazard may be damaging to the human body if controls are inadequate. This program establishes the minimum controls required for that purpose.

A. Chemicals

A wide range of chemicals are required for plant operation. Many of them are toxic or otherwise hazardous. In those cases, harm to people may occur via inhalation, ingestion, or direct skin/eye contact, depending upon the specific chemical and conditions present.

B. Noise

Inherently noisy equipment exists throughout the plant. Excessive exposure to the resulting noise may produce temporary or permanent hearing loss.

C. Low Light Levels

Safe plant operation requires adequate work area lighting. Loss of this light, regardless of cause, greatly increases the risk of personal injury and other non-productive accidents.

I. INTRODUCTION (Continued)

D. Biological Hazards

Plant breakrooms, restrooms, and trash containers represent locations where biological hazards may develop. The presence of vermin attracted to these areas increases the risk of incurring illnesses.

II. HAZARD IDENTIFICATION AND CONTROL

Any employee who discovers what he believes to be a new work environment hazard is expected to eliminate the hazard if it is within his authority and ability to do so. If this is not possible, he should take preventive action to insure that the risk of personal injury due to the hazard is kept at a minimum until further corrective action can be taken. The preventive action necessary may range from something as simple as closing a valve to shutting down an entire process.

III. HAZARD EVALUATION

A. New Chemicals

1. General

Any new chemical will not be used in the plant until:

- a. All hazards associated with the intended use of the material have been identified by the using department and the Safety Department.
- b. Protective measures, including the acquisition of personal protective equipment, have been taken to cope with the hazards.

2. Material Safety Data Sheets

Any person who causes a new chemical material to be introduced into the plant must also insure that a material safety data sheet is obtained from the vendor prior to the use of the chemical. A copy of the sheet is to be given to the Safety Supervisor, who is responsible for maintaining an up-to-date file of vendor safety data sheets for all chemical materials used in the plant.

Should the attempt to obtain a vendor data sheet before use of the chemical fail, the Safety Supervisor should be contacted. He is to determine the hazards and other information pertinent to the chemical by whatever means are appropriate. This will include a direct contact with the material vendor. It may also

III. HAZARD EVALUATION (Continued)

A. New Chemicals (Continued)

2. Material Safety Data Sheets (Continued)

involve communication with Conoco industrial hygienists toxicologists, or other person(s) who can supply information regarding potential exposure problems as well as necessary controls for the safe use of the material.

B. Routine Dosimetry

The Safety Department will conduct effective, on-going dosimetry programs for the following hazards. Each program will comply with the requirements of regulation pertinent to each hazard:

1. VCM

Worker TWA VCM exposures will be routinely determined, using REAL "Minimonitors". Sample analysis will be done twice each week by the laboratory, using a Perkin-Elmer "F42" head-space analyzer, or other equivalent analytical instrument.

As soon as the results of analysis are available, the Safety Supervisor will investigate and determine the causes of any overexposures found. Whenever possible, the causes (and possible solutions) will be discussed by him and the overexposed employee. In the absence of the Safety Supervisor, the Safety Director will conduct such investigations.

2. Lead and Antimony

Worker TWA lead and antimony exposures will be routinely determined, using Bendix Mod. BDX-44 pumps, operated at 1.5 liters per minute, and either Gelman #4337 filters or Millipore MAWP037AM filters. Analysis will be done by Research Services, using atomic absorption analysis.

As with VCM, the Safety Supervisor will conduct follow-up investigations of all overexposures.

III. HAZARD EVALUATION (Continued)

B. Routine Dosimetry (Continued)

3. Total Dust

Worker TWA total dust exposures will be routinely determined, using Bendix Mod. BDX-44 pumps, operated at 1.5 liters per minute, and Millipore MAWPO37AM matched-weight, dual filters. Analysis will be done by Research Services, using a 5-place analytical balance.

Follow-up investigations of any overexposures will be conducted by the Safety Supervisor.

4. Noise

Worker noise exposure will be routinely determined, using audio dosimeters which comply with the requirements of OSHA noise regulation.

C. VCM Area Monitoring

The Honeywell continuous monitoring system will be used to reduce the risk of VCM overexposures in areas where high concentrations may occur. The system will be maintained and used under the direction of Process Engineering.

D. Special Studies

1. VCM

The Safety Department will conduct VCM exposure studies of high-exposure-risk jobs, as they become evident. This may involve area sampling, dosimetry, or a combination of both, as needed to define exposure levels and corrective action required for their control.

2. High Volume Use Control

As with VCM, the Safety Department will conduct exposure studies involving other high-volume-use chemicals as needs arise. This includes occasional rechecks of exposure levels and studies of unique conditions that may develop.

III. HAZARD EVALUATION (Continued)

D. Special Studies (Continued)

3. Noise

The Safety Department will conduct an on-going program of area noise level measurement. This work will be aimed at determining noise reduction and hearing protection needs, as required by OSHA 1910.93. They will be assisted by the Medical Department, as required.

4. Lighting

Work area lighting deficiencies will be determined at night by department heads and the Safety Director during the annual safety audits of each operating area. Particular emphasis will be given walking surfaces where slips/trips could result in severe injury. A light meter will be used, as needed.

5. Restrooms, Breakrooms, and Washrooms

The Plant Nurse will conduct quarterly inspections of all plant breakrooms, washrooms, and restrooms to insure adequate cleanliness standards are being maintained.

E. Reports

1. General

The timely reporting of work environment hazards is essential to their effective control. Any such hazard suspected of representing a serious danger must be reported immediately via the chain of command. Additionally, interim measures must be taken to control the hazard until further action can be taken. This is a responsibility borne by each employee. The reporting of hazards to non-plant personnel will be confined to that established by local manager policy.

2. Routine Reports

The following reports will be routinely made:

a. Weekly Results of Chemical Dosimetry

The Plant Nurse will issue weekly reports of the results of routine chemical dosimetry. This includes VCM, lead, antimony, and total dust.

III. HAZARD EVALUATION (Continued)

E. Reports (Continued)

2. Routine Reports (Continued)

b. Weekly Results of Noise Dosimetry

The Plant Nurse will issue weekly reports of the results of noise dosimetry during the times when noise dosimetry is being done.

c. Overexposure Notices

The Plant Nurse will issue reports to employees found to have been overexposed during routine chemical and noise dosimetry, notifying them of their overexposures. In the absence of the Plant Nurse, the reporting will be done by the Safety Supervisor.

d. Monthly Chemical Dosimetry Results Summary

The Safety Supervisor will issue monthly summaries of the results of all routine chemical dosimetry results, including the details pertinent to overexposures.

e. Monthly Continuous Monitoring Summary

Process Engineering will issue a monthly summary of the results of Honeywell VCM continuous monitoring.

f. Quarterly Summary of Exposure Monitoring

The Safety Supervisor will issue a quarterly summary of the results of non-routine chemical exposure monitoring.

g. Annual Summary of Dosimetry Results

The Safety Supervisor will issue an annual summary of the results of routine chemical dosimetry. This will include recommendations for changes in sampling frequencies, where appropriate.

IV. EMPLOYEE COMMUNICATIONS AND TRAINING

A. Hazardous Material Control

Prior to the use or handling of new, hazardous materials, each employee involved will be advised of the associated hazards and trained in the steps to be taken to control them. Additional information and training will be provided when required by regulation pertinent to each hazard.

B. Noise

Work areas having hazardous noise levels will be posted with warning signs that require the use of hearing protection. Employees are required to use such protection while in posted areas.

C. New Employees

1. Initial Orientation

The Safety Department will provide general orientation training on VCM, lead, and similarly regulated materials to new employees.

2. On-the-Job

Further training on the use and handling of hazardous materials will be provided to new employees by the employee's immediate supervisor. All training of this nature will be documented by a training meeting report at the time of occurrence and the reports distributed to the Manager, Plant Superintendent, the Operations Superintendent, Safety Director, and Plant Nurse.

D. Annual Health Training

The Safety Department will conduct an annual health training session for all employees. The session will include a review of plant work environment hazards and their control. Special emphasis will be given to OSHA-regulated materials, including VCM, lead, and noise.

IV. EMPLOYEE COMMUNICATIONS AND TRAINING

E. Respirator Training

1. New employees

The Safety Department will conduct basic respirator training for each new employee as a part of the orientation in C.1, above. The instruction will include explanation of the functioning of each respirator, a demonstration of its correct use, and employee practice.

2. Refresher Training

The Safety Department, in conjunction with Operating and Maintenance Departments, will conduct annual respirator refresher training for all employees whose job duties require the use of respirators. The training will be done by using 1st line supervisors as assistant instructors and will include negative face piece fit seal checks, using a test environment.

V. ENGINEERING CONTROLS

Whenever possible or practical, engineering controls will be used to control environmental hazards. When hazards are present and adequate engineering controls have not been implemented, interim measures of other types must be used to protect employees from the hazard.

VI. VENTILATION

A. General

Ventilation systems in use must be maintained and used as designed and intended. Should system failure occur, employees normally protected by ventilation must be removed from the area(s) of the hazard unless other equally effective protective measures are provided.

B. Building Ventilation System

The Compound Department is responsible for daily monitoring of the compound ventilation system and the issuance of work orders or other measures needed to correct system deficiencies.

VI. VENTILATION (Continued)

B. Building Ventilation System (Continued)

The Safety Department will conduct quarterly measurements of ventilation system airflow and immediately alert the Compound Department of any serious deficiencies found.

VII. HOUSEKEEPING AND SANITATION

A. General

To the degree possible, employees are expected to maintain their areas of responsibility in a state of order and free of trash, litter, and other materials which might produce biological hazards.

B. Breakroom and Restroom Cleaning

The Mechanical Department is responsible for insuring the timely cleaning and maintenance of breakroom and restroom facilities throughout the plant.

C. Vending Machine Cleanliness

The Administrative Services and Safety Departments will be responsible for liason with food vendors for the purpose of correcting any vending machine health hazards.

D. Breakroom/Restroom Inspection

The Plant Nurse will conduct quarterly inspections of all plant restrooms, washrooms, and breakrooms to insure adequate sanitary conditions are being maintained.

E. Personal Hygiene

All employees are expected to exercise care to minimize unnecessary or prolonged hand, face, and skin contamination with chemicals of any type. It is especially important that employees thoroughly clean their hands and face prior to eating, drinking, or smoking following the handling of chemical materials.

VIII. PERSONAL PROTECTIVE EQUIPMENT

Employees exposed to environmental hazards that require the use of personal protective equipment must be provided and required to use such devices. The equipment must be effective and it must have Safety Department approval.

When doubt arises about what hazards are present or what personal protective equipment is needed, the Safety Department should be contacted.

IX. CHEMICAL DISPOSAL

Process Engineering will conduct an on-going program for the safe disposal of hazardous materials. Appropriate State and Federal regulations must be complied with.

X. MEDICAL SURVEILLANCE PROGRAM

An employee medical surveillance program, performed under the guidance of the Medical Division, will be maintained and all employees encouraged to participate.

WORK ENVIRONMENT SPECIAL STUDIES

WORK CALENDAR

<u>ITEM</u>	<u>TIMING</u>
A. <u>VCM Exposure Studies</u>	
1. VCM Filter Pack Changes	May/June
2. Reactor Condensor Cleaning	May/July
3. VCM Railcar Loading/Unloading	June/Aug.
4. Fluid Bed Dryer Area	June/Aug.
5. V-11 Roof Area	June/Aug.
6. Other - As Needs Are Found	May/Dec.
7. Contractor Hazardous Jobs	As Needed
B. <u>High Volume Use Chemical Exposure Checks</u>	
1. CTA	July/Sept.
2. Plasticizer	July/Sept.
3. Phthalic Anhydride	July/Sept.
4. Chlorine	July/Sept.
5. AMS	July/Sept.
C. <u>Building Ventilation Performance Monitoring</u>	Mar/June/Sept./Dec.
D. <u>Sampling Equipment Checks/Calibrations</u>	
1. Test Bendix Box 44 Pumps	Mar/June/Sept./Dec.
2. Calibrate Gilmont Flowtube	Jan./Apr/Aug./Oct.
E. <u>Update Material Safety Data Sheet Files</u>	May/Sept.
F. <u>Policies and Procedures Reviews</u>	
1. Respiratory Protection Program Evaluation.	Oct.
2. Work Environment Hazard Control Plan	Feb.