
OxyChem

Vinyls Division

Safety and Industrial Hygiene Program Status



March 1991

Vinyls Division

Industrial Hygiene Program Status

March 1991

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Statement on Health Effects of VCM

Kenneth A. Mundt, Ph.D.
September 10, 1990

Vinyl chloride monomer, or VCM, is used in the production of polyvinyl chloride (PVC) polymers. Several OxyChem facilities produce VCM and/or use it to produce PVC.

Before 1960, VCM was thought to be safe, even at moderately high levels, as reflected by an exposure limit of 500 ppm. In fact, VCM was evaluated for possible use as an anesthetic for surgery. By the early 1970's, however, evidence was gathered which suggested that VCM might be hazardous at high levels. For example, it was discovered that some of the employees involved in cleaning the polymerization vats used in the production of PVC developed a condition in which the bones in their hands degenerated (acroosteolysis).

In 1972, evidence of liver damage among exposed employees was observed with VCM levels over 300 ppm, and in 1974, studies demonstrated an association between high levels of exposure to VCM and the occurrence of a very rare liver cancer, called angiosarcoma. Most cases of these conditions were observed among those who had worked for 10 years or more in the most highly exposed jobs, especially the polymerization vat cleaners. As of January 1, 1981, the Occupational Safety and Health Administration (OSHA) standard for exposure to VCM was changed to 1 ppm.

Numerous studies have been conducted to better understand the possible health effects of VCM. To date, the only clear association between VCM and cancer is that of liver cancer, including angiosarcoma, and the

excess risk appears to be limited to individuals sustaining prolonged exposures to VCM levels of 100 ppm or higher. A worldwide registry of occupationally-related cases of angiosarcoma has identified 157 cases, occurring between 1955 and 1990, out of an estimated workforce of 2.2 million potentially exposed to VCM. Among these cases, the average duration of exposure was over 15 years, and the detection of angiosarcoma occurred, on average, 20 to 25 years after the first occupational exposures. The United States has identified 39 of the cases to date, and 29 of these were associated with employment during the 1940's and 1950's in one of three plants. New cases are becoming fewer worldwide, indicating the effectiveness of the low exposure limits in preventing this disease.

At present, there is no evidence, despite several toxicological studies (in animals), that VCM can cause birth defects. To date, there have been no human studies of reproductive effects.

I believe that employees in OxyChem's VCM and PVC plants and the members of the surrounding communities are protected from the possible adverse health effects of VCM, primarily because of the lower exposure limits.

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Plant Summaries

**OSHA COMPLIANCE
MINIMUM PROGRAM REQUIREMENTS**

P & P Vinyls

(% Completion)

<u>Facility</u>	<u>Haz Com</u>	<u>Respiratory Protection</u>	<u>Noise</u>	<u>Chem PEL</u>	<u>Substance Specific</u>	<u>Medical Notification</u>	<u>Total</u>
Addis*	92	74	86	85	100	86	87
Burlington North*	92	62	87	75	100	100	86
Burlington South*	92	91	100	92	100	71	91
Pasadena	100	100	100	100	100	100	100
Pottstown	85	88	93	75	75	100	86
Salisbury	100	96	93	83	0	100	79
Total	94	85	93	85	79	93	88

* Self-assessment

Questionnaire

INDUSTRIAL HYGIENE

QUESTIONNAIRE

Facility: _____

Prepared By: _____

Date: _____

Industrial Hygiene Questionnaire

Facility: _____

Page 1

I. HAZARD COMMUNICATION

All plants must have a written HazCom program in place which addresses container labeling, material safety data sheets (MSDSs), and training. All new employees must be given training within 30 days of hire and before being assigned to work with hazardous chemicals. The written program should be reviewed annually and signed by the facility manager. The following items are designed to insure that your facility is in compliance with the HazCom standard.

	YES	NO
a. Do you have an up-to-date chemical inventory?	_____	_____
b. Do you have a written hazard communications program?	_____	_____
c. Has there been a hazard determination made on all hazardous chemicals?	_____	_____
d. Has everyone been trained in the hazards and properties of the chemicals he/she works with within 30 days of the introduction of the chemicals?	_____	_____
e. Does this training include target organs?	_____	_____
f. Are all appropriate containers, tanks, etc. labeled?	_____	_____
g. Is the H M I S labeling system used?	_____	_____
h. Are these labels in good condition and legible?	_____	_____
i. Do you have an MSDS file that is up-to-date and readily accessible?	_____	_____
j. Is there a designated individual responsible for assuring that workers are informed of MSDS changes/additions that results in a new hazard being introduced into the workplace?	_____	_____

Industrial Hygiene Questionnaire

Facility: _____

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I. HAZARD COMMUNICATION (Con't)

	YES	NO
k. Is there a procedure in place that requires the Purchasing Department to request and receive a MSDS on all new chemical purchases?	_____	_____
l. Is there a tracking system for new chemicals to assure that they do not leave the receiving dock until a MSDS has been received, reviewed and distributed to the appropriate departments?	_____	_____
m. Do you have a procedure for informing contractors about the chemicals on site?	_____	_____

II. RESPIRATORY PROTECTION

If the facility uses or provides employees with respirators of any kind (even nuisance dust disposables) or emergency SCBAs (such as Scott Air Paks), the facility must have a respiratory protection program which contains, as a minimum, the following elements:

	YES	NO
a. Do you have a written respirator program?	_____	_____
• Is the program reviewed annually?	_____	_____
b. Have the respirators been selected for the type of contaminant protected against?	_____	_____
c. Have workers been trained in the use and limitations of their respirators?	_____	_____
Does their training include:		
1. an opportunity to handle the respirator?	_____	_____
2. having it fitted properly?		
• Qualitative	_____	_____
• Quantitative	_____	_____
3. is the fit test current (annual)?	_____	_____
4. if asbestos is handled at your facility, is fit testing conducted semi-annually?	_____	_____
5. testing its facepiece-to-face seal (beard, glasses, etc.)?	_____	_____
6. wearing it in normal air for a long familiarity period?	_____	_____
7. wearing it in a test atmosphere?	_____	_____
8. is the training documented?	_____	_____
d. Have respirators been individually assigned, where appropriate?	_____	_____
e. Are respirators regularly cleaned?	_____	_____
(This requirement does not apply to disposables.)		
• Are they disinfected?	_____	_____
f. Are respirators stored in a clean, convenient and sanitary location?	_____	_____

Industrial Hygiene Questionnaire

Facility: _____

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II. RESPIRATORY PROTECTION (Con't)

	YES	NO
g. Have workers been instructed to inspect respirators for wear or damage including a leak check, before and after each use?	_____	_____
h. Are monthly inspections of SCBA equipment conducted and records maintained?	_____	_____
i. Is Grade D breathing air utilized for all supplied-air respirators?	_____	_____
• Is oxygen content checked?	_____	_____
j. Do supervisors maintain awareness of possible changes in workplace exposure conditions and respirator effectiveness through frequent random inspections?	_____	_____
k. Has each worker in the respiratory protection program been medically certified for ability to wear?	_____	_____
l. Is his/her status reviewed periodically?	_____	_____

III. NOISE - HEARING CONSERVATION

There is no OSHA requirement for a written noise program. The regulation does require that we determine whether our employees are exposed at or above the "action level" of 85 dBA as an eight-hour time-weighted average (TWA). If they are, the affected employees must be given training, access to hearing protection and audiometric testing. Our practice has been to include all plant employees in the program if there are any sources of noise above 90 dBA in the plant.

You should have an up-to-date noise survey on file to show the compliance officer. Noise surveys should be updated whenever new noise sources are added, or at least every two years. If indicated by the survey, dosimetry should be performed on employees in high noise environments.

	YES	NO
a. Has a sound level survey of the facility been performed to identify areas above 85 dBA within the past two years?	_____	_____
b. Are areas above 90 dBA posted with signs?	_____	_____
c. Are workers offered an annual audiometric exam?	_____	_____
d. Has representative 8-hour dosimetry been conducted on those individuals identified by the sound level survey?	_____	_____
e. Are employees given annual training?	_____	_____
f. Does this training include effects of noise on the ear, and the principles of noise generation?	_____	_____
g. Is a copy of the OSHA Noise Standard 1910.95 readily available for employees to examine?	_____	_____
h. Is proper hearing protection provided for identified employees?	_____	_____
• Are employees trained in care and use?	_____	_____
i. In areas over 90 dBA, is hearing protection usage enforced?	_____	_____

Industrial Hygiene Questionnaire

Facility: _____

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III. NOISE - HEARING CONSERVATION (Con't)

	YES	NO
j. Does the program include documentation of:		
1. Area and personal sampling?	_____	_____
2. Audiometric testing?	_____	_____
3. Annual training?	_____	_____
k. Is the documentation readily available?	_____	_____
l. Is special training given to employees who have experienced a standard threshold shift?	_____	_____

IV. CHEMICAL EXPOSURE

For all chemicals in your facility for which there are OSHA Permissible Exposure Limits (PELs) or Threshold Limit Values (TLVs), employee exposure should be determined or estimated. A listing of these limits & values may be obtained from Corporate Industrial Hygiene. Sometimes, a careful review of the exposure potential will result in the conclusion that exposure is minimal or non-existent. In other cases, it will be necessary to actually sample to determine the extent of exposure. If exposure (without regard to the use of personal protective equipment) is above the action level (1/2 of the limit), then a program of routine sampling must be established, and an engineering solution investigated. Chemicals for which there are substance-specific standards (asbestos, formaldehyde, vinyl chloride, etc.) should be sampled routinely to generate sufficient data to allow exposure to be estimated with more confidence. (See section V.)

	YES	NO
a. If as a result of sampling an overexposure is believed to exist, have the individual employees who were monitored been provided with proper personal protective equipment?	_____	_____
• Is its use enforced?	_____	_____
b. Is there an action plan to engineer out the source of overexposure?	_____	_____
c. Is ventilation checked regularly and results documented?	_____	_____
d. Have representative exposure samples been taken for all chemicals with OSHA-PELs or ACGIH-TLVs at your facility?	_____	_____
e. Are samples taken on a scheduled basis?	_____	_____
f. Are they representative of an 8-hour TWA?	_____	_____
g. Are area STEL and Ceiling samples taken?	_____	_____
h. Are employees notified of monitoring results?	_____	_____
i. Is there prompt follow-up on high exposures?	_____	_____
j. Is there proper documentation of:		
1. Monitoring data?	_____	_____
2. Sampling/Analytical procedures?	_____	_____
3. Results	_____	_____

V. SUBSTANCE SPECIFIC STANDARDS

If your facility handles chemicals which have been specifically regulated by OSHA as listed below, the requirements of that standard(s) must be met. If there are any questions in this area, please call Corporate Industrial Hygiene.

Substance Specific Standards have been promulgated by OSHA for the following:

- | | |
|-------------------------------------|---------------------------------|
| 1. Asbestos | 14. Dimethylaminoazobenzene |
| 2. Coal tar pitch volatiles | 15. N-Nitrosodimethylamine |
| 3. 4-Nitrobiphenyl | 16. Vinyl chloride |
| 4. a-Naphthylamine | 17. Inorganic arsenic |
| 5. Methyl chloromethyl ether | 18. Lead |
| 6. 3,3'-Dichlorobenzidine and salts | 19. Coke oven emissions |
| 7. bis-Chloromethylether | 20. Cotton dust |
| 8. b-Naphthylamine | 21. 1,2-Dibromo-3-chloropropane |
| 9. Benzidine | 22. Acrylonitrile |
| 10. 4-Aminodiphenyl | 23. Benzene |
| 11. Ethyleneimine | 24. Formaldehyde |
| 12. b-Propiolactone | 25. Ethylene oxide |
| 13. 2-Acetylaminofluorene | |

Have the specific requirements of these standards been addressed as to...

	YES	NO
a. Sampling to measure action level?	_____	_____
b. PEL, ceiling and STEL concentration?	_____	_____
c. Change rooms & shower facilities?	_____	_____
d. Medical monitoring?	_____	_____
e. Medical removal from workplace exposure?	_____	_____
f. Recordkeeping & training?	_____	_____
g. Is there a written program where required?	_____	_____
h. Have regulated areas been established and demarcated as required?	_____	_____

VI. ACCESS TO EXPOSURE AND MEDICAL RECORDS

OSHA regulations require that employees be informed annually that they have a right to see and/or obtain a copy of their exposure and medical records. Should an employee ask to see his/her data, we have fifteen days to comply. Requests for exposure data will likely be minimized if you discuss the results of any sampling with employees as they are obtained. The notification of right of access can be done by posting an appropriate announcement on the bulletin board, or by discussion during a safety or communications meeting. If you use the latter method, you must document that fact. Records are required by the standard to be preserved and maintained for the duration of employment, plus thirty years.

	YES	NO
a. Are employees informed annually of their right to exposure data and medical records, both past and present?	_____	_____
b. Are employees notified of their personal exposure data as collected?	_____	_____
c. Can you meet the 15-day time frame to supply requested records?	_____	_____
d. Do the employees know of the existence, the location and availability of records?	_____	_____
e. Do employees know the designated person who maintains these records?	_____	_____
f. Do employees know of their right of access?	_____	_____
g. Is a copy of the standard (OSHA 1910.20) readily available for employee examination?	_____	_____

VI. ACCESS TO EXPOSURE AND MEDICAL RECORDS

OSHA regulations require that employees be informed annually that they have a right to see and/or obtain a copy of their exposure and medical records. Should an employee ask to see his/her data, we have fifteen days to comply. Requests for exposure data will likely be minimized if you discuss the results of any sampling with employees as they are obtained. The notification of right of access can be done by posting an appropriate announcement on the bulletin board, or by discussion during a safety or communications meeting. If you use the latter method, you must document that fact. Records are required by the standard to be preserved and maintained for the duration of employment, plus thirty years.

	YES	NO
a. Are employees informed annually of their right to exposure data and medical records, both past and present?	_____	_____
b. Are employees notified of their personal exposure data as collected?	_____	_____
c. Can you meet the 15-day time frame to supply requested records?	_____	_____
d. Do the employees know of the existence, the location and availability of records?	_____	_____
e. Do employees know the designated person who maintains these records?	_____	_____
f. Do employees know of their right of access?	_____	_____
g. Is a copy of the standard (OSHA 1910.20) readily available for employee examination?	_____	_____

Executive Summary
Pasadena Plant Industrial Hygiene Survey
OSHA STAR Recommendation

**Employee Exposure Monitoring
at the
Occidental Chemical Corporation
PVC Resins Plant
Pasadena, Texas**

I. Executive Summary

Employee occupational exposures to certain chemical substances and noise at the Occidental Chemical Corporation PVC Resins Plant in Pasadena, Texas, were studied. Activities to accomplish this project included the following:

- Physical inspection of the plant prior to the formal industrial hygiene (IH) survey;
- Development of a comprehensive monitoring plan; and
- Conducting an formal IH survey that included:
 - Identification of employee exposure potentials to dusts, fumes, organic chemicals, and noise;

- Collection of air samples for chemicals, noise dosimetry, and measurement of area noise levels;
- Analysis of the air samples and noise data; and
- Evaluation of the sample results in relation to established criteria.

Exposure monitoring representative of employee exposures in the plant was conducted for chemical substances including PVC dusts, welding and zinc oxide fumes, and organic chemicals used in the laboratories and solution preparation area. Air sampling was accomplished using OSHA, NIOSH, or equivalent methodology. Noise monitoring was conducted using noise dosimeters. An area noise survey of the plant was also conducted to provide data that could be useful in developing recommendations to reduce noise levels.

Time weighted average airborne PVC dust levels exceeding the OSHA PEL were measured in the Dryer area. While dust levels in the PVC Loading area did not exceed the PEL, dusty conditions were observed for short periods of time. The high dust levels in both areas were caused by the use of compressed air to clean screens and magnets (Dryers) and the tops of rail cars (Loading area). Airborne dust can irritate or injure the eyes and obscure vision, and cause slipping on walking surfaces where dusts accumulate.

The Dryer operator was using a single-use disposable respirator ("paper mask") for protection against the airborne PVC dusts. These respirators, although certified by NIOSH, cannot be fit tested with a challenge agent. As a result, the quality of protection is unknown. **RiskFocus** recommended that Dryer operators be fit-tested and issued a NIOSH approved dust cartridge respirator, and that alternate cleaning methods be investigated to reduce the dust levels.

The results of the noise dosimetry revealed average noise levels that exceeded PELs in the Dryer, PVC Loading (including the rail car cleaners), Liquid Loading, the Bagging machine, and Recovery areas. These areas have been designated and posted as hazardous noise areas where hearing protection is required. Consistent wear of hearing protection was observed.

The Dryer blower noise was remarkable in that the noise was 108 dBA and was a pure tone at 600 Hz. While past efforts to reduce the noise emission have not been successful, efforts are continuing. Continued use of hearing protection with the highest Noise Reduction Rating (NRR) in this area was recommended.

The area noise survey confirmed where noise levels exceeding 85 dBA were possible and validated the posting of the hazardous noise warning signs. No additional recommendations resulted from these measurements.

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VCM TASK FORCE

Purpose

The purpose of the VCM Task Force is to review current industrial hygiene procedures and work practices at each OxyChem facility where VCM is handled, and to recommend an effective, consistent industrial hygiene policy for those facilities.

Scope

The group consists of a representative from each plant, appointed by the plant manager, and Bob Adams, corporate industrial hygiene, who will act as team leader. The task group will use written and telephone communications to accomplish their initial objectives, which are:

1. Review current procedures and practices at each facility.
2. Identify, prioritize and develop solutions to industrial hygiene issues.
3. Recommend necessary modifications to existing VCM procedures and practices.

Issues

At this time, the recognized major issues at the VCM facilities include:

1. Respiratory protection practices
2. Industrial hygiene monitoring
 - a. Monitoring methods
 - b. Frequency
 - c. Area vs. Personal
 - d. Task specific sampling
 - e. Survey instruments
 - f. Analytical methods
3. Personal protective equipment

Status

Only initial contacts have been made with the task group members. Currently, the project is in the information collecting phase.

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Plant Summaries

Vinyl Division Hazard Potentials

Chemicals	Adds	Burlington N.* Fabrication	Burlington S. Fabrication	Pasadena	Pottstown** Fabrication	Pottstown Resins	Salisbury
Acetone		✓	✓				
Acrylates					✓	✓	
Adipates		✓					
A rosols		✓	✓				
Ammonia			✓				
Ars nic					✓		
Asbestos					✓	✓	
Asphyxiants		✓					
Cadmium		✓					
Carbon Disulfide		✓					
Carbon Monoxide		✓					
Caustic Soda	✓	✓					
Chlorine	✓						
Chrom		✓					
Cyclohexanone		✓	✓				
Dimethyl Formamide						✓	
Freons	✓						
Heat Stress	✓	✓		✓	✓		
Hydrochloric Acid			✓				
Initiators						✓	
Insecticides		✓					
Isopropyl Alcohol			✓				✓
Lead		✓					
2-Mercaptoethanol						✓	
Mercury		✓					
M tals							✓
Methanol			✓				
M thyl Alcohol	✓						
Methyl Ethyl Ketone							✓

Vinyl Division Hazard Potentials

Chemicals	Addis	Burlington N.* Fabrication	Burlington S. Fabrication	Pasadena	Pottstown** Fabrication	Pottstown Resins	Salisbury
Molybdenum		✓					
N-Hexane						✓	
N Iso	✓	✓		✓	✓	✓	
Nuisance Dust	✓		✓	✓	✓	✓	✓
Organotins		✓					
Petroleum Distillates	✓						
Phosphoric Acid	✓		✓				
Phthalate		✓					
Pigm nts					✓	✓	
Plasticizers					✓	✓	✓
Pyradin			✓				
Respirable Dust		✓					
Silica Dust					✓	✓	
Sodium Hydroxide	✓						
Solvents		✓					
Stabilizers					✓		
Sulfamic Acid			✓				
TBP			✓				
4-T rt Butylphenol					✓	✓	
Tetrahydrofuran		✓					
Titanium Di oxide		✓					
Toluene						✓	
Trid c			✓				
VACM			✓				
VCM	✓	✓	✓				
Vinyl Acetate						✓	
Vinyl Chloride				✓		✓	
Welding Fumes		✓	✓	✓			

* Burlington North VCM resins plant is not in operation.

** The calendaring department is currently not in operation.

Worksheet Example

ELECTROCHEMICALS / VINYL INDUSTRIAL HYGIENE PLAN - 1991

PLANTS	PLANT	NUMBER OF	NUMBER	POTENTIALS	HAZARD	TOTAL EMP'S	JOB	EMPLOYEES	HEG	SAMPLES	SAMPLES	SAMPLES	SAMPLING
	RATING	EMPLOYEES	PLANT IH	HAZARDS LIST	RATING	EXPOSED	CLASSES	BY JOB CL		TWA	CEIL	STEL	FREQUENCY
VINYL													
Bartington North Rebas	B	427	0.33										
				AMMONIA		31	Reactor Crewleader	12					
							Reactor Cleaner	18					
							Catalyst Cutter	1					
				HEAT STRESS		49	Reactor Crewleader	12					
							Reactor Cleaner	18					
							Mechanics	8					
							Electricians	5					
							Floorman	1					
							Utility Crewleader	4					
							Catalyst Cutter	1					
				LEAD		4	Utility Crewleader	4					
				MERCURY		5	Electricians	5					
				NITRIC ACID		31	Reactor Crewleader	12					
							Reactor Cleaner	18					
							Catalyst Cutter	1					
				NOISE		60	Supervisor/Foreman	11					
							Reactor Crewleader	12					
							Reactor Cleaner	18					
							Mechanics	8					
							Electricians	5					
							Floorman	1					
							Utility Crewleader	4					
							Catalyst Cutter	1					

OCC 10347

ELECTROCHEMICALS / VINYL INDUSTRIAL HYGIENE PLAN - 1991

PLANTS	PLANT	NUMBER OF	NUMBER	POTENTIALS	HAZARD	TOTAL EMP'S	JOB	EMPLOYEES	HEG	SAMPLES	SAMPLES	SAMPLES	SAMPLING
	RATING	EMPLOYEES	PLANT III	HAZARDS LIST	RATING	EXPOSED	CLASSES	BY JOB CL		TWA	CEIL	STEL	FREQUENCY
VINYL													
Burlington North Reaser	B	427	0.33										
				VCM		69	Supervisor/Foreman	11					
							Reactor Crewleader	12					
							Reactor Cleaner	18					
							Mechanics	8					
							Electricians	5					
							Operator	4					
							Fieldman	6					
							Floorman	1					
							Utility Crewleader	4					
				WELDING FUMES		8	Mechanics	8					
				RESPIRABLE DUST		60	Supervisor/Foreman	11					
							Reactor Crewleader	12					
							Reactor Cleaner	18					
							Mechanics	8					
							Electricians	5					
							Floorman	1					
							Utility Crewleader	4					
							Catalyst Cutter	1					
				PEROXIDE		13	Reactor Crewleader	12					
							Catalyst Cutter	1					
				METHYL ALCOHOL		13	Reactor Crewleader	12					
							Catalyst Cutter	1					
				PVC		6	Fieldman	6					

OCC 10348

ELECTROCHEMICALS / VINYL INDUSTRIAL HYGIENE PLAN - 1991

[illegible]

OCC 10349

Corporate Industrial Hygiene Database Example

VINYL DIVISION

03/07/91
Page 1

FACILITY	DATE ASSESSED	I.H. RATING	SAFETY RATING	WARR	CAER	HAZ CON	RESP. PROT.	NOISE	CHEM PEL	SUBSTANCE SPECIFIC	MEDICAL NOTIFICATION	TOTAL COMPLIANCE
Addis	/ /	2	4	3	3	92	74	86	85	100	86	87
Burlington North	/ /	3	3	4	3	92	62	87	75	100	100	86
Burlington South	/ /	4	4	4	3	92	91	100	92	100	71	91
Pasadena	12/31/91	5	5	4	2	100	100	100	100	100	100	100
Pottstown	11/16/89	2	2	3	3	85	88	93	75	75	100	86
Salisbury	12/06/89	2	3	3	3	100	96	93	83	0	100	79

OCC 10351

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Plant Status

1991 INDUSTRIAL HYGIENE PLANS

Background

On February 4, 1991, a request was made to all OxyChem facilities to submit their 1991 industrial hygiene plan by February 25th to corporate industrial hygiene (memo included in this tab section). While each facility was given the freedom to use their own style to develop the plan according their individual plant's health issues, they were asked to summarize the details of their plan to facilitate computer data entry at the corporate level.

Status

As of March 7, 1991, none of the plants in the Vinyls division have submitted their 1991 industrial plan to corporate.

**Memo Requesting
1991 Industrial Hygiene Plans**



To: Distribution February 4, 1991

From: David Manning

Subject: **1991 Industrial Hygiene Plan**

Please send a copy of your 1991 industrial hygiene plan to my attention in Niagara Falls by February 25, 1991. As a minimum, your plan for this year should include:

1. the chemicals and/or physical agents which will be monitored, and type of sampling (area, personal).
2. the frequency (monthly, quarterly, annually, etc.), and scheduled quarter (1st, 2nd, etc.) the monitoring will be conducted.
3. the number of employees by job classes for each substance which will be monitored.
4. the sampling methods (passive badge, charcoal tube, impinger, etc.), and equipment (air pump, noise dosimeter, etc.) that will be used for each monitoring strategy.
5. the laboratory (NATLSCO, in-house, etc.) used to analyze your samples.

Attached is an example of an industrial hygiene plan which was developed by the Ingleside plant in Corpus Christi for 1990. The outline used by Ingleside is not standard, and your plan does not have to follow their format. It is solely included to generate ideas for the development of your facilities' industrial hygiene plan. Please send any information you have already developed. But, in order to standardize everyone's information to make data entry into the computer more efficient, **please summarize the details of your 1991 plan on the attached worksheet (last page).** An example of a worksheet filled out is included for your review.

DJM/hs

cc:	R. F. Adams	T. M. Jones	J. D. Snell
	M. A. Buczynski	S. B. Kemp	
	W. E. Driscoll	D. W. Scullion	

DJM/Correspondence/Plants/IH Plan - 1991



Occidental Chemical Corporation

Corporate Industrial Hygiene

Occidental Chemical Center

360 Rainbow Boulevard South, P.O. Box 728, Niagara Falls, NY 14302-0728

716/286-3000

OCC 10356

**INDUSTRIAL HYGIENE SAMPLING PROGRAM
CORPUS CHRISTI PLANT
1990**

I. CHLORINE

1. Process - Nos. 1, 2, & 3 Chlorine Cell Circuits
 - Chlorine Liquefaction Area
 - Chlorine Recovery Area
 - Chlorine Railcar Loading Area
 - Chlorine Barge Loading Area
2. Employees - Chlorine Technicians
 - Cell Technicians
 - Lab Technicians
 - Bulk Storage Technicians
 - Cell Renewal Technicians
 - Chlorine Recovery Technicians
3. Sample Type - Employee Monitoring/Area Monitoring
 - a. 8-hour Time Weighted Average (TWA)
 - b. 15-minute STEL
4. Sampling Equipment
 - Metrosonics Model dl-3310 Chlorine Monitor
5. Frequency - Conducted Annually
 - Approximately 20 samples
6. Analysis - NATLSCO - Long Grove, Illinois
7. Completion Date - 12/90

II. ASBESTOS

1. Process - Cell Renewal (Asbestos Handling Area)
2. Employees - Cell Renewal Technicians
3. Sample Type - Employee Monitoring/Area Monitoring
 - a. 8-hour Time Weighted Average (TWA)
 - b. 15-minute STEL
4. Sampling Equipment
 - DuPont Alpha-I Air Sampler
 - 25 mm Methyl Cellulose Ester Filter & Cassette

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5. Frequency - Semiannually
- Approximately 16 Samples
6. Analysis - NATLSCO - Long Grove, Illinois
7. Completion Date - 6/90 and 12/90

III. VENTILATION

1. Area - Asbestos Handling Room
- Cell Renewal Lab
- Works Lab
2. Sample Type - Air Flow Measurement
3. Sampling Equipment
- Alnor 8565 Thermo Anemometer
4. Frequency - Conducted in each area once/quarter.
5. Analysis - Direct reading instrument
6. Completion Dates - 3/90, 6/90, 9/90, 12/90

IV. NOISE

1. Process - Plant Wide (as required)
2. Employees - Boiler Technicians
- Caustic Technicians
3. Sample Type - Employee Monitoring - 12-hour and
8-hour Time Weighted Average (TWA)
- Area Monitoring - Noise Survey
4. Sampling Equipment - Metrosonics Noise Dosimeters
- Quest 227 Integrating Sound
Level Meter with CA 12
calibrator
5. Frequency - Employee Monitoring - Annually
- Area Monitoring - (as required)
6. Analysis - Direct Reading Instruments
7. Completion Date - 12/90

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V. HEAT STRESS

1. Process - #1, #2, & #3 Cell Circuits
2. Sample Type - Measurement of the Environment
3. Sampling Equipment - Metrosonics
- Heat Stress Monitor
4. Frequency - Monitor during summer months
5. Analysis - Direct Reading Instrument
6. Completion Dates - 06/90, 07/90, 08/90

VI. PERCHLOROETHYLENE

1. Process - Miscellaneous Barge Dock - EDC Finished Product Tank Farm (South Area)
2. Employees - Bulk Storage Technicians
3. Sample Type - Employee Monitoring
 - a. 8-hour Time Weighted Average (TWA)
4. Sampling Equipment
 - 3M 3520 Organic Vapor Diffusion Badges (all samples)
 - Dupont Alpha-I Air Sampling Pumps with Charcoal Media (10% of samples)
5. Frequency - Conducted Quarterly
Approximately 1-2 samples per quarter
6. Analysis - NATLSCO - Long Grove, IL
7. Completion Date - 3/90, 6/90, 9/90, 12/90
8. Sample Type - Area Monitoring
 - Bulk Storage Area (2 points)
 - a) Frequency - Once each shift
 - b) Sampling Equipment - Foxboro OVA-128GC Organic Vapor Monitors for Detection of Volatile Organic Compounds

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VII. ETHYLENE DICHLORIDE

1. Process - EDC Unit
- Bulk Storage Area
2. Employees - EDC Technicians
- Loading Technicians
- All Fluor-Daniel Contract Maintenance
Employees in EDC Production Area
- EDC Process Supervisor
3. Sample Type - Employee Monitoring
 - a. 8-hour Time Weighted Average (TWA)
 - b. 15-minute STEL
4. Sampling Equipment - Dupont Alpha-I Air Sampling
Pumps with Charcoal Tube
Media (10% of Samples)
- 3M 3520 Organic Vapor
Diffusion Badges (all
samples)
5. Frequency - Conducted quarterly
Approximately 32 Samples per Quarter
6. Analysis - NATLSCO - Long Grove, IL
7. Completion Date - 3/90, 6/90, 9/90, 12/90
8. Sample Type - Area Monitoring
 - EDC Process Area (15 points)
 - Bulk Storage Area (7 points)
 - a) Frequency - once each shift
 - b) Sampling Equipment - HNU
Organic Vapor Monitors for Detection of
Volatile Organic Compounds

VIII. CARBON TETRACHLORIDE

1. Process - Chlorine Recovery
- Chlorine Liquefaction
2. Employees - Chlorine Recovery Technicians
Chlorine Technicians
3. Sample Type - Employee Monitoring
 - a. 8-hour Time Weighted Average (TWA)

INDUSTRIAL HYGIENE SAMPLING PROGRAM - 1990
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4. Sampling Equipment
 - 3M 3520 Organic Vapor Diffusion Badges (all samples)
 - Dupont Alpha-I Air Sampling Pumps with Charcoal Tube Media (10% of Samples)
5. Frequency - Conducted Quarterly
Approximately 2 Samples per Quarter
6. Analysis - NATLSCO - Long Grove, IL
7. Completion Date - 3/90, 6/90, 9/90, 12/90
8. Sample Type - Area Monitoring
 - Chlorine Recovery Area (3 points)
 - a) Frequency - Once each shift
 - b) Sampling Equipment - Foxboro OVA-128GC Organic Vapor Monitors for Detection of Volatile Organic Compounds

IX. SODIUM HYDROXIDE

1. Process - Caustic Unit
2. Sample Type - Employee Monitoring
 - a. 8-hour time weighted average
3. Sampling Equipment
 - Dupont Alpha-I Air Sampler
 - Impinger
4. Frequency - Conducted Quarterly
- Approximately 1-2 samples per quarter
5. Analysis - NATLSCO, Long Grove, Illinois
6. Completion Date - 03/90, 06/90, 09/90, 12/90

JS:nla
JS-508

OCC 10361

PLANT	NUMBER OF	DEPT	TOTAL	POTENTIAL	JOB	EMPLOYEES	SAM	PLE	SAMPLE	SAMPLE	SAMPLING	LABORATORY
	EMPLOYEES		EMPLOYEES	HAZARDS LIST	CLASSES	BY JOB CL	TY	PE	FREQ'CY	QUARTER	METHOD	ANALYSIS
			EXPOSED	(CHEMICAL / AGENT)			Area	Per				
(Plant Name)	166											
		EVAP	15	AMMONIA	Operator	10		X	Annually	1st	Pump / Cassette	NATLSCO
					Head Operator	4		X				
					Relief Operator	1		X				
		CELL REP	9	ASBESTOS	Operator	4		X	Semi-Annually	2nd / 4th	Pump / Cassette	NATLSCO
					Head Operator	1		X				
					Operator Trainee	4		X				
		CELL REP	9	ASBESTOS	Operations	9	X		Annually	1st	Pump / Cassette	NATLSCO
		LIQUEFAC	15	CARBON TETRACHLORIDE	Operator	10		X	Quarterly	All	Pump / Charcoal Tube	NATLSCO
					Head Operator	4		X				
					Relief Operator	1		X				
		CELL REP	9	CHLORINE	Operator	4		X	Semi-Annually	1st / 3rd	Pump / Impinger	DATAChem
					Head Operator	1		X				
					Operator Trainee	4		X				
		LIQUEFAC	15	CHLORINE	Operator	10		X	Semi-Annually	2nd / 4th	pm-7700 Monitor	METROSONICS
					Head Operator	4		X				

OCC 10362

PLANT	NUMBER OF	DEPT	TOTAL	POTENTIAL	JOB	EMPLOYEES	SAM	PLE	SAMPLE	SAMPLE	SAMPLING	LABORATORY
	EMPLOYEES		EMPLOYEES	HAZARDS LIST	CLASSES	BY JOB CL	TY	PE	FREQ'CY	QUARTER	METHOD	ANALYSIS
			EXPOSED	(CHEMICAL / AGENT)			Area	Per				
					Relief Operator	1		X				
		CELL ROOM	13	CHLORINE	Operator	8		X	Semi-Annually	1st / 3rd	Pump / Impinger	NATLSCO
					Head Operator	4		X				
					Operator Trainee	1		X				
		EVAP	15	CHLORINE	Operator	10		X	Semi-Annually	2nd / 4th	Pump / Impinger	NATLSCO
					Head Operator	4		X				
					Relief Operator	1		X				
		LIQUEFAC	15	NOISE	Operator	10		X	Annually	2nd	db-3100 Monitor	METROSONICS
					Head Operator	4		X				
					Relief Operator	1		X				
		CO-GEN	20	NOISE	Operator	14		X	Annually	3rd	db-3100 Monitor	METROSONICS
					Head Operator	4		X				
					Relief Operator	2		X				
		VCM	20	VINYL CHLORIDE MONOMER	Operator	14		X	Quarterly	All	Reisner Badge	IN-HOUSE LAB
					Head Operator	4		X				
					Relief Operator	2		X				

OCC 10363

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Divisional Summary

Vinyls Division

Industrial Hygiene - Major Issues

Divisional Summary

- Respiratory protection practices
- IH exposure monitoring methods
 - Frequency of monitoring
 - Type of monitoring (area vs. personal)
 - Task specific sampling requirements
 - Standardized instrumentation for area survey
 - Standardized PPM alarm settings for fixed monitors
 - Analytical methods of IH samples
- Personal protective equipment practices
- HAZCOM labeling inspection programs
- Work practices for similar exposure hazards
- Employee notification procedure for VCM over-exposure

Plant Summaries

Vinyls Division

Industrial Hygiene - Major Issues

Plant-by-Plant Summary

Addis

- Training of additional person in *Basic Fundamentals of Industrial Hygiene* course scheduled in March 1991.
- Sound level survey conducted by corporate IH.
- Comprehensive monitoring for personal exposure to air contaminants and noise needs to be conducted.
- IH program needs to be assessed by corporate IH.

Burlington North

- IH program needs to be assessed by corporate IH.
- Open position needs to be filled (person may need *IH Fundamentals* course training).
- Resins department is currently not in operation. IH exposures for that area are not presently applicable.

Burlington South

- No individual plant issues.

Pasadena

- No individual plant issues.

Pottstown

- Open positions need to be filled (persons may need *IH Fundamentals* course training).
- Establish action plan to accomplish recommendations of corporate environmental, health and safety assessment.
- Calendering department is currently not in operation. IH exposures for that area are not presently applicable.

Salisbury

- Solvent storage and usage.
- UV-cured resin coatings procedures.
- Comprehensive monitoring for personal exposure to air contaminants needs to be conducted.