

TO	T. S. Bialke	FIELD POINT OR DEPT. & BLDG. NO. Cleveland	DATE YOUR LETTER
FROM	M. W. Reynolds	FIELD POINT OR DEPT. & BLDG. NO. Henry	DATE THIS LETTER 3-10-81
SUBJECT	<u>Fourth Quarter 1980 Industrial Hygiene Report</u>		

The following report is an update of the progress made during your Industrial Hygiene Audit of the Henry Plant during November 6-8, 1979.

1. Obtain Personnel Monitoring Samples during Asbestos Removal

The plant has all the necessary monitoring equipment to conduct the monitoring. However, no source of asbestos exposure has been identified in the plant. To assist in the identification of asbestos, the Henry Plant Chief Chemist has trained two Environmental personnel to identify asbestos. Upon determining an asbestos source the Henry Plant will conduct the monitoring and supply the monitoring cassette to you. Until that time, this project will not be shown on the status report.

2. Document Nickel Catalyst Exposure

Completed. Exposure below permissible levels.

3. Reduce the Number of Benzene Personnel Monitoring Samples

Completed.

4. Use OSHA Dust Monitoring Procedures

Completed.

5. Use "3-M" Gasbadge Rather than "Abcor"

The switch in badges is being made. The Corporate Environmental Laboratory is evaluating the "3-M" badge, at this time. The plant is switching to the "3-M" badge prior to the completion of its evaluation as recommended by the Brecksville Laboratory.

6. Supply Noise Dosimetry Data to the Medical Group

Completed. To assist in the evaluation of hearing loss.

7. Install Noise Reduction Material in "Cuber Room"

As mentioned in the previous audit this project is no longer needed and has been dropped.

8. Install New Laboratory Hoods

Completed. Exhausts check out good.

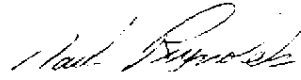
1981
D. P. J.
H. R.
T. B.

26061001

Notes:

1. The Henry Plant has received your letter foretelling your upcoming audit on May 19-21, 1981 and are looking forward to it.
2. A summary report detailing the results of the Henry Plant 1980 Personnel Monitoring program is nearly complete and will be forwarded.

If there are any questions or comments concerning the above information, please call me at extension 330, Henry.


M. W. Reynolds

MWR:ksp

cc: L. V. Goode
A. W. Otto
K. D. Konter/D. W. Lou/D. G. Friesz
J. D. Krumholz/M. E. Brummitt
R. V. Tebbutt
G. E. Higby
H. Lanese - Cleveland
H. Waltemate - Cleveland
W. C. Becker - Cleveland
E. C. Martinelli - Cleveland
N. R. Aquino - Cleveland
P. T. Whitmire - Cleveland
File

26001002

REF ID: A66000

INTER-ORGANIZATION CORRESPONDENCE

TO	L. V. Goode	FIELD POINT OR DEPT. & BLDG. NO.	Henry	DATE YOUR LETTER
FROM	T. S. Bialke	FIELD POINT OR DEPT. & BLDG. NO.	Akron - D/0020, 5-H	DATE THIS LETTER 6-26-81
SUBJECT				

Industrial Hygiene Survey - Henry Plant

During the period May 19-21, 1981 I conducted an industrial hygiene survey of the Henry Chemical plant. The plant's VCL monitoring and leak detection programs, chemical review committee, monthly reports and action on previous industrial hygiene recommendations were found to be excellent.

Attention needs to be given to extending personnel sampling times to at least 10 hours for a 12 hour shift, reviewing the plant's breathing air system, enclosing a hopper in Polymer Chemicals because of noise and initiating a job hazard inventory.

I wish to thank Ken Konter, Mark Reynolds, Ken Willings, Diane Friesz and Jim Krumholz for making my visit profitable and memorable.

T. S. Bialke
T. S. Bialke

v

- cc: K.Konter
J. Krumholz
E.Martinelli/E.Harrington
H.Waltemate
W.C.Becker/W.C.Holbrook
N.Aquino/W.Lodge
R.C.Kaminski/J.F.Malone
P.T.Whitmire/G.Krcmar/R.Krueger

26002001

Final
Recommendations:

1. Increase the sampling time period for personnel monitoring to ten (10) hours minimum when evaluating exposures for a 12 hour work-shift. *Done*
2. When using a passive organic vapor dosimeter (3M, Abcor, duPont, etc.) enter only those results obtained for benzene or toluene. The use of these devices for other air contaminants has not been approved by the Environmental Health Department. *Done*
3. Review the plant's breathing air system to define the frequency of and responsibility for filter changes. Label each air filter cartridge with the date of change and expected replacement or inspection date. *No Action - Rec. replacement of monitors w. the 60 minutes if changed beds in all Areas.*
4. Enclose Line 2 hopper on the second floor of the PC building with a noise shield. *Being removed. Succeeded. Next quarter, not used.*
5. Review implementation of the respirator maintenance procedure, i.e. cleaning and inspection, to ensure it is being followed. *Know Ste or checks inspection. needs attention*
6. Initiate a job hazard analysis of each job class for the purpose of developing a job hazard inventory relating all potential chemical and physical agent exposures to each job class. *lost*

over
Discussion:

The Henry PVC operation is experimenting with 12 hour shifts to replace the traditional 8 hour shift. To properly assess an employee's exposure to environmental workplace contaminants, the personnel monitoring time must be increased to sample for the full period of the shift. When workers are on an 8 hour shift, sample times of 6 hours are sufficient. When 10 hour shifts are worked, 8 hour sampling periods should be conducted and during 12 hour shifts, samples must be taken for at least 10 hours. Sampling for the full shift is, of course, the best way to determine an employee's time weighted average exposure. Sampling two hours less than a full shift and calling it a full shift TWA exposure allows the sample collector one hour at the beginning of a shift to set up and distribute the monitors and one hour at the end of the shift to collect and prepare samples for the laboratory.

The Henry plant is currently using passive organic vapor dosimeters for routine benzene and toluene sampling. Occasionally the devices are used for other organic air contaminants. Data obtained from the use of the badges for chemicals other than benzene or toluene are not to be placed in the computer data bank. Only benzene or toluene results are to be entered. The Environmental Laboratory in Brecksville and the Environmental Health Department pass judgment on air sampling and analytical procedures. As the badges or other sampling and analytical procedures are found reliable, they will be approved for use within the BFGoodrich Company and the plants will be so informed. If you have special monitoring requirements or wish to use a procedure in a novel way, communicate your desires to the Environmental Health Department for review.

26002002

Discussion (con't)

During my walk-through the plant's breathing air system was discussed. There was some uncertainty on the part of plant personnel on the exact location of breathing air filter stations established in various buildings, how often they are to be replaced, what constitutes a requirement for replacement and who is to do the checking and replacing of filter cartridges. Also noted during the system review was that the cartridge placement made them very difficult to check and replace. Maintenance checks of the system would benefit by placing the filtration bed in more readily accessible positions. In a separate letter I have mailed to K. Konter some reference material on breathing air systems.

During discussion of the implementation of the BFG medical policy on hearing conservation and the requirement for posting as "noise hazardous" areas greater than 85 dBA, the Line 2 hopper on the 2nd floor Polymer Chemicals building was mentioned. When the hopper's vibrator is operating, noise is generated that creates a zone of 85 dBA or greater some 25-30 ft. away. No other excessive noise sources are in the immediate vicinity. Instead of declaring the whole area as being noise hazardous, it would be much simpler to enclose the hopper in a sound barrier. KoroKlear strips should attenuate the noise sufficiently to eliminate the hearing protection requirements. Rigid, durable prefabricated sound absorbent panels, however, would be more effective and would certainly last longer.

On the 2nd floor of the P.C. building, just outside the entrance to the control room, is a respirator storage box. The respirator inside this box was in poor condition. The plant has a well written respirator program, but assurances are needed that it is being implemented.

Prior to the next IH survey, it will be necessary for the Henry plant to develop a hazard inventory for each job classification in each department. Such an inventory will list the chemical or physical agent exposure by job class. This project will require a hazard analysis of each job to determine what chemical or physical agents a person working in that job class may be exposed to. Not only will such a job hazard analysis fulfill the requirements of the medical surveillance system, but it will present the opportunity for the Health/Safety team to become more cognizant of potential hazards within the plant. It will be a learning experience and hazards heretofore unrecognized may be identified. During my next visit the degree of hazard will be assigned and data entered into the medical surveillance system.

Table I contains VCM personnel sampling results. Each value is a composite result of two partial period samplings that, when combined, represents a full shift sample. The 8.1 ppm result is quite high, however the individual worked on hazardous tasks requiring the wearing of a respirator.

Table II shows the results of benzene and toluene monitoring. All samples were collected with a 3M organic vapor passive dosimeter and all results were below the lower detection limit. Toluene results also indicate no excessive exposure.

26002003

Discussion (con't)

Review of the plant's monitoring program for PVC dust indicates no excessive exposures. Polymer Chemical dust monitoring occasionally reveals exposures above 5 mg/M³. Although there is no published TLV for the type of dust exposures encountered in the P.C. building, it is recommended that employees be encouraged to wear at least a nuisance dust respirator.

The plant's VCL leak detection and VCL sampling programs are functioning well. The access to medical records and chemical MSDS policies are in order. The new chemical review committee is functioning properly. Replies to previous surveys have been timely. Particularly noteworthy are the plant's monthly operating close-up and VCL task force meeting minutes as well as the VCL and P.C. safety and environmental operations procedures.

TSB

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TABLE I.

VCM PERSONNEL MONITORING RESULTS
Henry Plant - May 19-20, 1981

<u>Name/SS No.</u>	<u>Area</u>	<u>Job Class.</u>	<u>Sample Time (min.)</u>	<u>Respirator Worn</u>	<u>VCM (ppm)</u>
	Poly Bldg.	SOP Oper. 010	393	Yes	8.1
"		Valve Cleaner 019	491	"	<0.2
"		LOW SOP Oper. 010	501	"	0.37
"		Plant Chge. Op. 009	501	"	0.76

TABLE II.

<u>BENZENE PERSONNEL MONITORING RESULTS</u>				<u>Benzene (ppm)</u>
B/718	045	390		< 0.3
B/713	054	390		< 0.3
"	050	390		< 0.3
B/712	640	390		< 0.3
B/713	052	390		< 0.3
B/718	046	390		< 0.3
<u>TOLUENE RESULT</u>				<u>Toluene (ppm)</u>
B/711	071	390		1.9

REDACTED

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26002005

TO	L. V. Goode	FIELD POINT OR DEPT. & BLDG. NO. Henry	DATE YOUR LETTER
FROM	K. D. Konter	FIELD POINT OR DEPT. & BLDG. NO. *Henry	DATE THIS LETTER 7-30-81
SUBJECT	<u>1981 Industrial Hygiene Survey - Henry Plant</u>		

AUG 03 1981

EP
as per

On May 19-21, 1981 an Industrial Hygiene Survey of the Henry Plant was conducted by T. S. Bialke of the Corporate Industrial Hygiene Staff. After careful review of the Survey Report we have prepared the attached action plan.

Plan

1. Increase sampling time for personnel monitoring to 10 hours for individuals on 12 hour shifts.

Response: Complete...

2. When using passive organic vapor dosimeters, enter only those chemicals (i.e. benzene and toluene) which have been approved by the Environmental Health Department.

Response: Complete.

3. Review the plant's breathing air system and label each air filter cartridge.

Response: Will be complete by 9-1-81.

4. Enclose Line 2 hopper in Polymer Chemicals with a noise shield.

Response: We are currently investigating alternative control measures. A decision will be made by 9-15-81 on the particular control we will install.

5. Review Implementation of Respirator maintenance procedure.

Response: Complete.

6. Initiate a job hazard analysis for each job class in the plant.

Response: Will be complete by 9-1-81.

K. D. Konter

KDK:ksp

cc: T. S. Bialke
A. W. Otto
R. K. LaCosse
R. V. Tebbutt
W. B. Bispeck
R. L. Russ
G. P. Smith
File

26063001

26004001

Handwritten notes:
 10/22/82
 5-2-82

cc: A. Otto
 K. Willings/D. Friesz
 E. Martinehl/H. Waltemate
 W.C. Becker/W.C. Holbrook
 N. Aquino/W. Lodge
 R.C. Kaminski/J.F. Malone

Signature: T. S. Blake

During the period June 29-July 1, an industrial hygiene survey was conducted at the Henry chemical plant. The plant has a good program for checking ventilation in polymer chemicals and maintenance of respirators in the poly vinyl chloride area.

Problems with respirator usage and maintenance still exist in the polymer chemical area. The hearing conservation program is partially implemented, but more attention needs to be given in the PVC area. Some routine personnel monitoring can be eliminated, as results obtained over the past several years indicated exposures to be well below recognized standards.

I would like to thank K. Willings and D. Friesz for their assistance during my visit.

Industrial Hygiene Survey - Henry

TO	L. V. Goode	FIELD POINT OR DEPT. & BLDG. NO.	Henry	DATE YOUR LETTER	8-25-82
FROM	T. S. Blake	FIELD POINT OR DEPT. & BLDG. NO.	Akron - D/0020, 5-H	DATE THIS LETTER	8-25-82

INTER-ORGANIZATION CORRESPONDENCE

Henry IH Survey - 1982

Findings

Items from Previous Survey

1. Common use respirators in polymer chemical area were observed to be dirty and improperly stored. One worker in 3114 process seen not wearing dust respirator properly. PVC area respirator usage was satisfactory.

2. No hazard inventory available.

Recommendations

1. The Henry plant has a well written respirator program; however, as noted in the 1981 IH survey report, the program needs to be reviewed. More attention should be given to proper cleaning, storage, and wearing of respiratory protection in the polymer chemical area. Common use respirators must be cleaned and sanitized between wearings; when not in use they must be sealed in plastic bags and stored in boxes provided to ensure procedures are being followed. All respirators must be inspected monthly.

2. The 1981 IH survey report requested that the Henry plant develop a hazard inventory prior to this years survey. The inventory was unavailable at the time of the visit. As soon as the inventory is complete, forward a copy to me in Akron, at which time I will contact the plant to discuss assigning the degree of hazard and enter the data into the medical surveillance system.

Exp.Date
Completion

Responsi-
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FindingsRecommendationsExp. Date
CompletionResponsi-
bilityItems from This Survey

1. All VCM employees monitored monthly; benzene, toluene and acetonitrile workers also being checked monthly. Colormetric badges being used for H₂S monitoring.

1. Monitoring frequency for chemicals listed can be reduced to the following frequency:

VCM - OSHA sampling requirements for VCM are as follows: all employees with exposures greater than 1 ppm are to be checked monthly; all employees with exposures between 0.5-1 ppm are to be checked quarterly. Monitoring may be discontinued for any employee when two consecutive samples collected not less than 5 days apart are below 0.5 ppm.

Benzene - Employees with exposures greater than 10 ppm to be monitored monthly; exposures between 5-10 ppm monitor quarterly; less than 5 ppm, no monitoring required.

Toluene - employees with exposures greater than 50 ppm are to be checked monthly; 25-50 ppm are to be checked quarterly; less than 25 ppm - no need to monitor.

Acetonitrile - Employees with exposures greater than 40 ppm are to be checked monthly; between 20-40 ppm check quarterly, less than 20 ppm, no need to monitor.

H₂S - Since there is area monitoring for H₂S, there is no need to conduct routine personnel monitoring. The colorometric badges used for H₂S monitoring are not reliable.

Polymer Chemical Dust monitoring - no change is recommended.

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1. (con't)

1. The OSHA VCL standard allows for the discontinuing of monitoring when exposures drop below 0.5 ppm, 1/2 the TLV or action level. Although it is permissible to discontinue monitoring below that level, it is recommended that yearly checks be made on all employees routinely exposed to VCM. It is up to the plant's discretion in conducting yearly monitoring for the other chemicals listed; however, when there is a process or work practice change that may have an impact on any employee's exposure to any chemical, that employee or job is to be re-monitored to determine if exposures have changed.

2. All respirable dust measurements taken with improper air flow rate of 1.4 Lpm.

2. Respirable dust sampling requires the use of a small cyclone to collect airborne particles in size range respired by the human lungs. To properly function, the airflow through the cyclone must be at $1.7 \pm .05$ Lpm. The plant calibrated the cyclone at 1.4 Lpm flow rate, thus invalidating all respirable dust values obtained. These values must be deleted from the computer, the employees' medical records and repeat monitoring must be conducted.

3. Some signs have been posted in PVC poly bldg. 731, PVC dryer bldg. 732 and boiler house bldg. 714 indicating areas are noise hazardous. Not all areas within these buildings are posted. The basement of water treatment bldg. 724, the mill and Henschel area of compounding bldg. 724 not posted as noise hazardous.

3. The Henry hearing conservation program is well written, but to ensure that workers know in what areas hearing protection is to be worn, all areas must be clearly posted with appropriate warning signs. All entrances to PVC poly bldg. 731 must be posted. The PVC dryer bldg., including bagging area, are to be posted. PVC compounding mill and Henschel areas also must be posted.

Date of
Completion

Responsi-
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Henry IH Survey-1982

Findings

4. Laboratory Draeger pump tube seals leaking. Safety shed - Draeger pump with chain broken.

5. Urinalysis for phenol given to employees having acute exposure to benzene.

6. (a) No respirator exam given to PC and maintenance operator,
(b) Compound area - mill, Henschel feed and weigh areas contain pulmonary hazards.

Recommendations

4. Draeger pumps, which are to be used only with Draeger brand indicator tubes, are engineered to draw a known volume of air through the tube. To meet these specifications, they must be maintained. A repair kit is available from Draeger which will allow the plant to recondition each pump. The pumps described here need to be maintained.

5. The BFG OHP on benzene (5.11) does not require that urinalysis for phenol be given to employees having brief, high exposures to benzene.

6. (a) Per BFG OHP 1.17, use of respirators: Any employee whose job requires him to routinely wear a respirator must be provided an examination to determine if he will be handicapped by such respirator wearing,
(b) Total particulate samples collected on Henschel operator showed a value of 8.7 mg/M^3 (see attachment). BFG exposure standard is 10.0 mg/M^3 . Since this sample result is below the BFG exposure standard for total particulate, no recommendation for engineering controls is being offered. However, the value is over one-half the exposure standard, high enough to declare the area a pulmonary hazard area requiring that employees wear a dust respirator such as 3M8710 or 3M9900. Employees assigned to work in these areas must receive a medical examination per BFG OHP 5.06.

Exp.Date
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Henry IH Survey-1982

Findings

7. Polychemical area issues monthly meeting minutes. The Environmental Health Dept. is on distribution list. Plant issues monthly Environmental report; Environmental Health Dept. is not on distribution.

8. No formal reply to 1981 IH survey report.

Recommendations

7. Henry should consolidate their polymer chemical environmental meeting minutes with the plant's environmental report and include the Environmental Health Dept. in the monthly distribution.

8. Due to an oversight on the part of the Henry plant and my lack of follow-up, the plant failed to reply on a quarterly basis to the 1981 IH survey. Quarterly reports on actions taken to address recommendations contained in this report are required.

Date of
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Responsi-
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5.

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Discussion

The attached table contains the results of personnel monitoring conducted at Henry for noise and total particulate. Noise results on a time weighted average for an 8-hour shift show exposures to be 34 to 77%. A reading of above 100% would be a violation of OSHA law and above 50% requires implementation of the hearing conservation program.

Total particulates were collected in the compound operation. The Henschel operator's exposure of 8.68 mg/M^3 TWA for 8-hours is below the BFG standard of 10 mg/M^3 , but above 5 mg/M^3 action level. Due to this high result, the compound Henschel floor is to be considered a potential respiratory hazard area with appropriate physical examinations and respirator wearing required.

TSB

26001007

TABLE I.
PERSONNEL MONITORING - NOISE
Henry - June 1982

<u>Employee/SS#</u>	<u>Job/Area</u>	<u>Sample Time (min.)</u>	<u>Value 8-Hr. TWA % of Standard</u>
	Recovery Oper. - PVC	445	42%
	Upstairs recovery Oper. PVC	350	41
	Pearl Charge Oper. PVC	347	34
	Dispersion bagger PVC	347	44
	Venturi Oper. PVC	342	77

TABLE II.
TOTAL PARTICULATE MONITORING

		<u>TLV (mg/M³)</u>
Compound weighman	345	0.6
Henschel operator	345	8.68

REDACTED

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TELECOPY

TO: R. Graheck, Henry, Ill. Plant

From: T.S. Bialke, Akron, D/0020, 5-H

Subject: Henry Chemical Plant Industrial Hygiene Survey

This is to confirm the Henry plant industrial hygiene survey scheduled for the week of April 23-26.

During my survey I will be interested in the following:

1. Henry plant industrial hygiene program requirements,
2. Henry industrial hygiene personnel monitoring codes interface with Corporate PMIS,
3. VCM exposure of PVC bagger,
4. Henry plant respirator fitting procedure implementation,
5. Worker exposures to VCM, benzene, OBTS, MBT,
6. Henry job health hazard inventory,
7. Review completion of actions to address previous survey recommendations.

I look forward to meeting with you and your staff to discuss any industrial hygiene and/or occupational health concerns that you may have.

T.S. Bialke
T. S. Bialke

v

cc: ~~E.B. Katz~~ ~~Walter, Jr.~~ / H.W. Dietz, MD / *file*
H. Waltemate/G. Lefebvre
K. Willings, Henry

26003001

NGC 01271

~~Date~~ ~~P.S.~~ I would like to see this done for you v.s. *SK*

BFG-4956-E

INTER-ORGANIZATION CORRESPONDENCE

TO	R. V. Tebbutt	FIELD POINT OR DEPT. & BLDG. NO. Henry	DATE YOUR LETTER FEB 17 1984
FROM	K. J. Willings	FIELD POINT OR DEPT. & BLDG. NO. Henry	DATE THIS LETTER 2/14/84
SUBJECT	1983 INDUSTRIAL HYGIENE SUMMARY FOR THE PVC AREA		

The Environmental Group, with the aid of the Safety and Environmental Operator, conducts an extensive personnel monitoring program designed to document personnel exposure to chemical substances and physical agents in the work environment. Once exposure sources are identified through monitoring or area surveys, then the proper engineering controls or other corrective action may be instituted to ensure that personnel exposure is maintained below permissible levels. The following is a summary of the 1983 PVC Area Industrial Hygiene activities:

- I. Vinyl Chloride
- II. Dust
- III. Noise
- IV. 1984 Goals

I. Vinyl Chloride

Monitoring for Vinyl Chloride exposure has been greatly reduced as compared to past years and only those personnel regularly working in the Poly Building, Dryer Building, and Tank Farm are being regularly monitored. The Vinyl Chloride OSHA permissible exposure limit (PEL) is:

- 1 ppm for 8 hour (TWA)
- 5 ppm for 15 min (TWA)

Anyone working regularly in an area in excess of the Action Level (0.5 ppm for 8 hour (TWA)) will be monitored to determine if their exposure to Vinyl Chloride is in excess of the PEL.

In 1983, 164 personnel monitoring samples for Vinyl Chloride were taken. They are broken down to the following categories:

- 21 % 35 samples were > 1 ppm
- 23 % 38 samples were < 1 ppm, but > 0.5 ppm
- 56 % 91 samples were < 0.5 ppm

The job classes with exposures greater than the PEL are the following:

<u>Job Code</u>	<u>Name</u>	<u>Building</u>	<u>No. > 1 ppm</u>
009	Pearl Charge Operator	731	7
010	Lo Sope Charge Operator	731	5
011	Recovery Operator	731	1
012	Dryer Operator	732	6
015	HRC Poly Cleaner	731	6
016	Dryer Building Ragger	732	7
028	Safety and Environmental Operator	731	2

26003002

By examining the job classes' exposures it shows that two of the highest exposure classes are in the Dryer Building. Most of these are attributed to the new Reduced Lo Sope Process. This area is being monitored and corrective action plans are already in motion. A study of this area is being prepared.

II. Dust Exposure

Dust Exposure monitoring in the PVC area has been limited to the Dryer Building and Cmpound Building. The limit for exposure to respirable (PVC) dust is 5 mg/m³.

The following lists the samples taken in 1983:

<u>Job Class</u>	<u>No. of Samples</u>	<u>Building</u>	<u>Average Value</u>
023	1	741	1.66
012	5	732	0.76
016	6	732	0.72

From this and previous sampling, no dust exposure problems have been encountered. Sampling in 1984 will be limited to areas that have had changes that may increase dust exposure.

III. Noise Expoosure

In accordance with the BFGoodrich Occupational Health Policy for Noise, Section 9.80, the Henry Plant has performed personnel monitoring to determine noise exposures throughout the facility. In the PVC area actual noise exposure is determined by the use of noise dosimeters to measure the person's actual noise exposure on a time-weighted basis. In addition to the personnel monitoring, area surveys are taken and any area above 85 dBA is posted "Noise Hazardous".

The areas that are posted in the PVC area are:

1. The Poly Building
2. The Dryer Building/Resin Reclaim
3. Sections of the Compound Building

Hearing protection is required in those areas.

The following outlines the personnel monitoring results:

<u>Total Samples</u>	<u>Exposure > 50% (85 dBA)</u> <u>NOISE</u>	<u>Exposure < 50 %</u> <u>NOISE</u>
44	30	14

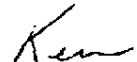
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These results are in line with the area surveys taken and show the need for hearing protection.

IV. 1984 Goals

- A. A reduction in exposures and the identification of methods to reduce exposures to Vinyl Chloride.
- B. Implement the requirements as specified by the Illinois worker "Right-to-Know" law.
- C. Insure all tasks needing respirator protection are properly defined.
- D. Continue auditing all areas for compliance with Industrial Hygiene Requirements.


K. J. Willings

KJW:ksp

cc: R. J. Grahek
A. W. Otto/F. V. Zemanek
M. E. Guyer/J. P. Griffin/R. D. Webber
A. M. Matyger
J. V. Nordmeyer
D. L. Rys
D. E. Giffin/W. J. Grudzinski/N. H. Louis
R. A. Martin
T. S. Bialke
File

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R.J. Grahek

Henry

T.S. Bialke

Akron - D/0020, 5-H

5-30-84

Industrial Hygiene Survey

During the period April 23-26, 1984, an industrial hygiene survey was conducted at the Henry plant. The plant has done a good job of implementing hearing conservation and respiratory protection programs. All previous survey recommendations have been completed.

Out of 82 industrial hygiene audit items, the Henry plant was found to have 75 satisfactory; seven items need attention. Recommendations are contained herein to review employee VCM monitoring data with consideration to reducing VCM physical examinations, to eliminate audiometric testing of polymer chemicals employees, and to reducing monitoring even further for acetonitrile, benzene and polymer chemicals dust. Recommendations are also offered to improve ventilation of resin reclaim press dryer, ventilate metal spray operations, and conduct semi-annual flow check of the compound weigh booth.

I want to thank K. Willings and D. Friesz for their help during the survey. My thanks also to J. Griffin, M. Guyer and R. Grahek for their enthusiastic support of the plant's industrial hygiene program.

T S Bialke
T. S. Bialke

v

cc: M.Guyer/K.Willings/D.Friesz

G.Lefebvre/H.Waltemate

N.Aquino/F.Krause/J.Hobey

J.Stroope/K.Lee

✓ E.B.Katzenmeyer/H.W.Dietz, MD/0020 Staff /fill

R.A.Guyton, MD/R.A.Kelley

26006001

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Compliance with Previous Survey Recommendations:

- 81-1. Respirator cleaning and storage has been improved; action complete.
- 81-2. Job health hazards have been inventoried; action complete.
- 82-1. Personnel monitoring for VCM dropped to OSHA standard requirements. Benzene and acetonitrile monitoring has been reduced. Routine monitoring for toluene and hydrogen sulfide has been discontinued. Action complete.
- 82-2. Respirable dust sampling requirement of 1.7 Lpm is being met. Invalid data has been deleted from monitoring records. Repeat monitoring has been initiated. Action complete.
- 82-3. All noise hazardous areas are posted; action complete.
- 82-4. Draeger monitoring pumps are being properly maintained; action complete.
- 82-5. Urinalysis of employees for phenol who receive brief, high exposure to benzene has been discontinued; action complete.
- 82-6. All employees whose job requires them to wear a respirator are offered a respirator examination; action complete.
- 82-7. Monthly environmental health report has been discontinued; see current findings.
- 82-8. Formal replies to 1982 industrial hygiene survey were timely and complete; action complete.

Industrial Hygiene Survey Recommendations: 1984

- 84-1. Arrange for the Henry plant's industrial hygiene coordinator to attend a course in industrial hygiene. NIOSH, Natalsco and others offer such courses. Contact T.S. Bialke in Akron (ext. 4224) for details.
- 84-2. Issue a quarterly industrial hygiene report containing, as a minimum, the following: summary of personnel monitoring results, explanation of overexposures, personal protective devices worn and corrective actions taken to prevent further occurrences of overexposures. I am forwarding examples of report formats to K. Willings.
- 84-3. Review past two years of VCM personnel monitoring data and compare the results with the VCM physical exam requirements contained in BFC OHP 5.02. The Environmental Health Department in Akron must be informed of deviations from these requirements.
- 84-4. Discontinue audiometric exams for polymer chemical employees as noise exposures are not above 50%.
- 84-5. Ensure that the plant physician is noting in employees' medical record that the employee has been medically approved to wear a respirator. If there are any restrictions, these also must be recorded in the employees' medical records.

26006002

IH Survey Recommendations: 1984 (con't)

- 84-6. Update MSDS book that is kept in the PVC compound office to ensure that all MSDS are available for all chemicals used in the compound operation.
- 84-7. Indicate on recipe card used by weighman which compound codes are toxic and need special handling.
- 84-8. Sample for asbestos by conducting personal monitoring on Henry plant employees each time they remove asbestos-containing insulation. See Section 9 of BFG OHP manual for procedure.
- 84-9. Reduce benzene personnel monitoring to once per month per exposed job class when running X70/Geltrol process.
- 84-10. Reduce acetonitrile monitoring to once per year per exposed employee.
- 84-11. Reduce polymer chemical dust monitoring to twice per year per exposed employee.
- 84-12. Obtain personnel samples for toxic dusts during weighing and Henschel loading in compound. Compounds to sample for are chromates, nickel and cadmium. Sample three times per exposed employee. See BFG OHP, Section 9 for procedure.
- 84-13. Conduct personnel monitoring for nickel and hexavalent chrome during metal spraying operation being conducted in maintenance shop. Obtain three samples per exposed employee. See BFG OHP, Section 9 for procedure.
- 84-14. Require that employees conducting metal spraying operation wear a high efficiency particulate respirator until lathe is ventilated and monitoring does not show the existence of a problem. I am forwarding to D. Friesz a copy of the American Welding Society "Recommended Safe Practices for Thermal Spraying".
- 84-15. Conduct semi-annual ventilation flow checks and/or maintenance on compound weigh booth. Ventilation rates may need to be improved if personal monitoring recommended (see 84-12) indicates that significant exposures exist.
- 84-16. Modify plans to ventilate resin reclaim press dryer by providing for draft curtains on top and sides from the wall to the back side of the press. Such a "modified enclosure" would ensure that air exhausted from the press dryer area would be drawn through the press and out of the building.
- 84-17. Until resin reclaim press is ventilated, reduce bagger's exposure through use of respirators or improved work practices.
- 84-18. Require that employees engaged in blend tank cleaning wear an airline respirator (Sample #3, Appendix I).

26006002

Industrial Hygiene Audit Checklist

Attachment I is the completed checklist for the 1984 Henry plant IH survey. The checklist is a guide that is used during the survey to ensure all areas of a plant's industrial hygiene program are addressed. The checklist is based on the BFG Chemical Group industrial hygiene program standard IH-101.

Overall, the Henry IH program is satisfactory with 75 satisfactory areas (including the 24 satisfactory items from the hearing conservation checklist) and seven areas that need attention. In the first part of this report I detailed my recommendations to address these seven areas. In the following discussion I will elaborate on the recommendations that are not self-explanatory.

Discussion:

The administration of the Henry plant's IH program is functioning smoothly, but needs enhancement. The plant IH coordinator has developed skills through work experience, but has not attended a training course in industrial hygiene. There is a vast amount of fundamental knowledge of toxicology, engineering, ergonomics and chemistry which the science of industrial hygiene requires of the practitioner that can only be obtained through formal training. Courses are offered by NIOSH, Natsisco and others in IH fundamentals and sampling procedures.

The monthly environmental report issued by Henry plant was eliminated in December 1983. With the elimination of this report, the plant has no mechanism for informing Chemical Group management or Environmental Health Department of employee exposure problems or control successes. A periodic report of industrial hygiene efforts is a valuable tool for getting the attention of upper management and keeping them attuned to Henry's unique industrial hygiene problems.

The Henry plant industrial hygiene coordinators do an excellent job of issuing a year-end summary of plant IH activities. The coordinators have also been very diligent in establishing goals for the following year.

One item identified under OVA as a possible cost savings was to eliminate the physical exams of employees that the plant is not required by law or BFG policy to examine. To help Henry achieve that goal, the plant nurse, along with the IH coordinator, must review the past two years of VCM personnel monitoring data and determine the jobs that expose workers to VCM above 0.5 ppm, the OSHA cut-off for the vinyl chloride physical exam requirement. People working on these jobs must, by law, be provided examinations. BFG OHP 5.02 also requires that employees who were exposed in the past (prior to 1967) on a routine basis to VCM above 0.5 ppm be provided a VCM physical exam regardless of their current VCM exposure.

The Henry plant has identified all asbestos sources and implemented a removal and disposal procedure. Monitoring for personnel exposure to asbestos during insulation removal was conducted four years ago. As a result of the mounting concern with asbestos exposure, it is in the best interests of the plant to document employee exposures to asbestos fibers each time asbestos is handled.

Henry has reduced the number of personnel monitoring samples collected for benzene, VCM, acetonitrile, PVC dust and polymer chemical dusts. Further reductions are still possible. I have made recommendations to reduce monitoring frequency for some substances. Reductions are possible that will save time and money, but still ensure that employee health is being protected.

25006005

Discussion (con't)

Thermal spraying or spray metalizing is conducted on an unventilated lathe in the machine shop. Depending on the type of metal being sprayed, workers can be exposed to the fumes of nickel, chromium, tin and zinc. Personnel monitoring on workers involved with spray metalizing on an unventilated lathe at the now closed Independence technical center showed exposures to nickel to be above the allowable limit of 1.0 mg/M^3 . Both nickel and chrome compounds are carcinogenic.

As a result of personnel monitoring conducted by the plant, the resin reclaim bagger has been shown to be overexposed to VCM. I collected two personnel monitoring samples on the resin reclaim bagger during this survey; one was above 1.0 ppm, the other below 0.5 ppm (Appendix I, sample numbers 1 and 2). The VCM source causing the reclaim bagger's overexposure is thought to be the resin reclaim press on the second floor. Plans to ventilate the press, with modifications, should reduce the bagger's VCM exposure. Until engineering controls are implemented and monitoring shows that exposures are below 1 ppm, the resin reclaim bagger's exposure must be reduced through use of respirators and work practice/administrative controls (OSHA VCM standard 1910.1017 (f) & (g)).

Samples 3 and 4 in Appendix I were collected on the poly cleaner job class in the PVC building. Both sample results were in excess of the standard. An airline respirator was worn by one employee (#4) during cleaning of two polymerization reactors. The other sample (#3), the employee indicated he did not wear a respirator during cleaning of a blend tank. Respirator usage must be reviewed.

The PVC bagger's result of 0.98 mg/M^3 (#5, Appendix I) is low and demonstrates adequate control of PVC dust exposures.

Samples collected in the polymer chemicals bagging area have not yet been analyzed. As soon as I receive the results I will forward them to you.

Feedback:

The following comments were made during the feedback session:

1. We need BFG employee exposure standards for OBTS, MBTS, Superflex and Vanlube.
2. BFG needs an expert ventilation and noise control engineer.

TSB

25006005

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APPENDIX I.

PERSONNEL MONITORING RESULTS
Henry - April 1984

No.	Date	Name/SS#	Job	Sampling Time (min)	Respirator	VCM (ppm)*
1.	4/24		Helper, bagging reclaimed resin	422	No	1.5
2.	4/25		"	430	No	0.4
3.	4/24		poly cleaner (cleaned blend tank)	385	No	5.1
4.	4/25		poly cleaner (cleaned 2 polys)	465	airline half-mask	2.3
						<u>Total Dust** (mg/M³)</u>
5.	4/25		PVC bagger	387	No	0.98
6.	4/24		Compound operator	445	No	4.93

*VCM samples collected on standard size charcoal tubes with MSA C210 pumps operating at 22-24 cc/minute followed by G.C. analysis by Brecksville Environmental Laboratory.

** Total dust samples collected on 5.0 μ PVC 35¹ mm filters using duPont P-2500 pumps operating at 1.5 Lpm with gravimetric analysis.

REDACTED

26000000

NGC 01280

TO	FIELD POINT OR DEPT & BLDG NO	DATE YOUR LETTER
FROM	Henry	JUL 13 1984
SUBJECT	Henry	DATE THIS LETTER
		July 6, 1984

INDUSTRIAL HYGIENE UPDATE FOR THE FIRST HALF OF 1984

Henry Plant personnel monitoring results for the first six months of 1984 are summarized as follows:

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
I. <u>NOISE</u> (BFG Permissible Exposure = 50%)		
Poly Building (731)	11	66.7 %
Dryer Building (732)	23	59.5 %
Polymer Chemicals (712)	35	23.2 %
MBT-C Building (711)	5	19.9 %
3114 Building (722)	4	20.8 %
Boiler House (719)	1	31.7 %
Weld Shop (723)	5	49.47 % *
* Area monitoring in the weld shop indicates that personnel are receiving noise exposure while working in other high noise buildings and not in the Weld Shop itself.		

II. DUST/TOTAL (Permissible Exposure Limit = 10 mg/m³)

Polymer Chemicals (712)	22	2.18 mg/m ³
Compounding (714)		
(025) Weighman	4	0.73 mg/m ³
(023) Henschel Operator	3	2.11 mg/m ³

DUST/RESPIRABLE (Permissible Exposure Limit = 5 mg/m³)

Dryer Building (732)	6	1.25 mg/m ³
There were no single exposures exceeding the total or respirable exposure limits.		

III. BENZENE (Permissible Exposure Limit = 1)

Polymer Chemicals (712)	50(total)	0.44 ppm
X-70 Operator	10	1.00 ppm
OBTS Operator	7	0.51 ppm
PC Maintenance	2	0.72 ppm

All other job classifications monitored were exposed less than 0.5 ppm Benzene over 8 hours. There were no single exposures exceeding 10 ppm (OSHA current PEL).

IV. ACETONITRILE (Permissible Exposure Limit = 40 ppm).

3114 Building (722)	32	7.6 ppm
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There were no single exposures exceeding 40 ppm.

V. VINYL CHLORIDE (Permissible Exposure Limit = 1 ppm)

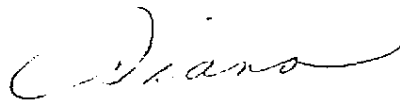
PVC (Poly and Dryer Building)	80	0.76 ppm
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Fifty-four percent of the Vcl personnel monitoring results were less than .5 ppm, 23.7% were greater than 1 ppm.

Nearly one-half of the exposures greater than 1 ppm were from monitoring resin reclaim baggers. However, there may be an interference in the area which appears as vinyl chloride during analysis. Investigation of this problem is continuing.



Diana Friesz

DGF:rdm

Distribution: R.J. Grahek
W.W. Bispeck
R.V. Tebbutt
K.J. Willings
T.S. Bialke
File

25007002

NGC 01282

KDR
JJP *NIR DES*

Revised & commented 3/11

TO	C. B. Cooper	FIELD POINT OR AKRON DEPARTMENT & BLOC. NO.	Henry Plant	DATE YOUR LETTER
FROM	D. E. Giffin	FIELD POINT OR AKRON DEPARTMENT & BLOC. NO.	Henry Plant	DATE THIS LETTER
SUBJECT	OSHA Audit Action Items			

3/20

On January 19-20, Cleveland individuals - E. W. Harrington, W. E. Brodine, H. Waltemate and T. R. Linak - audited the Henry plant. From this audit, T. R. Linak generated a list of projects which the plant was to pursue. This letter attempts to answer the progress on each item.

1. Resolve concern that inclusion of recovery vent in common stack may approach explosive limit (Brodine - Bixby).

diplomacy in action

Action: A report was issued by Calsing which did not answer the total question concerning explosive potential. Based on THA monitoring, the plant determined that explosive limits in fact probably do occur. Steps to humidify and to control emissions with the aid of the THA unit are presently being pursued.

2. Resolve if fire escape near stripping columns can be used as a safe haven (Giffin).

Action: Six hour sampling is presently being conducted to determine the actual vinyl chloride concentrations. This monitoring will be concluded March 31,

3. Resolve problem with safe havens by April 1, 1976 (Giffin).

Action: The D.J. has been estimated (\$5,000) to provide positive pressure in the north stairwell of the Poly Building. The recovery vents have been tied into the common stack to insure that first floor office area is safe. And the duct work has been fabricated and will soon installed to extend the third floor control room air intake.

4. Confirm safety of air line masks in high VCM levels found in Paste polys (Giffin).

Action: Activity has not been strong. Recently the plant received a special mask so that the monitoring can be done. K. D. Konter is setting up to do dual short term monitoring.

5. Reduce breathing air header pressure and install individual regulators at stations (Giffin - Ehnle - Waltemate).

Action: Present plans are underway to install a separate breathing header system throughout the Building. Each main header will be regulated. However, individual stations will not.

More extensive mask exercises will be held within the next two to three weeks with alarm at 2 ppm and some in-mask sampling (Giffin).

*Request that
RPL order
Special chp.
He is pursuing*

*More mask
exercises*

NGC 01283

Action: None. Presently, the alarm is at 5 ppm and will be set down to 1 ppm on March 15.

7. Exchange meeting minutes and pertinent data with other four plants (Giffin).

Action: Each plant was sent the OSHA Review Manual and current reports are being shared.

8. Make recommendations regarding breathing air humidification (Giffin).

Action: No humidification being planned until new breathing air system is installed. Based on future experience with new system, recommendations will be pursued.

9. Go ahead with breathing-instrument air system design as agreed with W. E. Brodine (LaCosse).

Action: E.A. has been submitted for approval.

10. Provide H. Waltemate with VCI Floor Procedure (Musselman).

Action: Complete.

11. Investigate and recommend system for continuous VCM monitoring at Tank Farm (Giffin).

Action: Plan to use THA unit that will be freed up when Bendix 6000 chromatograph is installed to monitor Poly Building.

12. Furnish Cleveland Manufacturing with ACSP versus Lupersol 223 clean poly reaction time data (Prather).

Action: Complete.

13. Check reason for delay in delumper installation and give to W. E. Brodine (Kemp).

Action: Contract has been issued and work is in progress.

14. Check Delumper needs for G-90 job (Goode - Harrington).

Action: G-90 project has been placed on Hold.

NGC 01284

15. Change steam entry point to stripping columns by March 1 (Plant)

Action: Other priorities have delayed this project.

16. Install permanent ventilation at VCM strainers and recovery pumps (Giffin).

Action: Special contractor has installed duct work to all needed emission sources (blend tank catch strainers and homogenizers). Special exhausting of recovery pumps has been postponed pending installation

Handwritten note at top of page:
 All valves should be double sealed
 that has control valves - these are the
 unapproved device. Also new maintenance
 schedule we would review.
 Reviewed with plants, - until we get better
 info will take our chances. D

17. Try double seals on one recovery compressor (Kemp).

Action: Double seals have been received for one unit and work to install seals has begun.

18. Provide Cleveland Manufacturing with data regarding AVCM exposure problem associated with cleaning of Lo-Sope resin strainers (Edwards).

Action: Complete.

19. Pipe VCM compressor relief valves to east side of Poly Building; however, find more permanent solution to pressure surges on recovery pumps (Goode).

Action: Relief valve project has been completed. Changes in the Recovery system are being made to prevent such emissions.

20. In Minutes of Ambient Task Force meeting of January 9, 1976, set target dates for projects 12 and 13 (Plant).

Action: Complete.

21. Provide rupture disc assemblies on stripping columns with Gajdos flag device (LaCosse).

Action: At present no work has been done.

22. Present leak detection program will be adjusted to identify and correct fugitive emission sources (Giffin).

Action: None. Plant initiated histogram report. Therefore such identifications, etc., has been in use continually.

23. Henry Production-Engineering-Environmental representatives will visit the Avon Lake and Pedricktown plants for information exchange (Linak).

Action: Complete. R. K. LaCosse and D. E. Giffin visited both plants.

24. Fire-Safe Teflon O-Rings and plug valve liners will be tried to reduce valve leakage (Plant).

Action: Plant is presently pursuing the installation of butterfly valve for vinyl chloride applications

Hopefully, the above will provide an up-date on the projects outlined during the Audit.

D. E. Giffin

DEG:vck

cc: E. W. Harrington
 T. R. Linak
 W. E. Brodine
 H. Waltemate
 L. V. Goode

C. E. Kemp
 R. L. Ehle
 W. A. Edwards
 R. K. LaCosse
 K. E. Messigman

NGC 01285

Handwritten note on left margin:
 AKE Followed
 up 3-17 &
 removed plug

Handwritten note on left margin:
 Fire safe
 valve liners
 cost 11 times as
 much as
 normal
 liners

TO: P. Donataccio

FROM: D.G. Friesz

3/17/89

1988 INDUSTRIAL HYGIENE SUMMARY-HENRY PLANT

During 1988, Henry Plant personnel were monitored for exposure to noise, vinyl chloride, toluene, acetonitrile, formaldehyde, heavy metals, dust (total PVC and total unspecified, and silica). The following exposure summaries reflect the results of this monitoring.

- I. Noise (OSHA Permissible Exposure Limit = 100% dose/90 decibels)
(EFG Permissible Exposure Limit = 50% dose/85 decibels)

DuPont Mark I noise dosimeters were used to monitor 82 employees in different job classifications for noise exposure. The noise dosimeter is worn by the employee to measure his total exposure to noise over the work shift. All continuous, intermittent and impulsive sound levels are integrated during the monitoring period to provide the accumulative noise exposure in percent dose.

Fifty-two (63%) of the monitored employees exceeded the EFGoodrich exposure limit of 50% dose. Only fourteen (17%) exceeded the OSHA exposure limit of 100% dose.

NOISE EXPOSURE BY AREA

AREA	JOB CLASS	NO. OF MONITORINGS	EXPOSURE AVERAGE(%)	NO. >50% DOSE WITHOUT HEARING PROTECTION	HEARING PROTECTION COMPLIANCE FOR AREA
*Poly Bldg	HRC Poly Cleaner	4	100.98	1	
	Blending Resin Operator	1	68.40	0	
	Poly Bldg Foreman	4	60.42	1	
	Pearl Charge Operator	12	55.06	1	
	Paste/LoSope Operator	8	54.14	0	
	Valve Cleaner	2	47.85	0	
	Recovery Operator	7	44.79	0	
					86%
*Dryer Bldg	Dryer Operator	10	114.58	0	
	PVC Bagger	2	110.40	1	
	Dryer Foreman	4	31.41	0	
	Silo Operator	2	30.78	0	
					91%
*Compound Bldg	Relief Operator	3	115.24	0	
	Mill Operator	5	102.05	0	
	Henschel Operator	3	82.24	0	
	Comp. Packager	3	34.92	0	
	Silo Operator	2	30.78	0	
					100%

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NOISE EXPOSURE BY AREA (Continued)

AREA	JOB CLASS	NO. OF MONITORINGS	EXPOSURE AVERAGE (%)	NO. >50% DOSE WITHOUT HEARING PROTECTION	HEARING PROTECTION COMPLIANCE FOR AREA
*Utilities	Coal Boiler Operator	2	54.64	0	100%
	Gas Boiler Operator	2	54.40	0	
Polymer	PC Bagger	1	62.60		
Chemicals	OBTS Operator	3	48.52		
(712)	Stalite/VanLube Operator	1	19.08		

*Indicates areas that are currently posted as "High Noise" and hearing protection required. Only the mill and henschel areas are affected in Compounding.

II. DUST (Total Dust Exposure Limit = 10 mg/m³)

Operators in the Compounding Building, Dryer Building, PC 712, Accelerator Expansion Building 725, and 3114 Building were monitored for total dust (unspecified or PVC). Most of these individuals were bagging finished product, but some of them were process operators. There were no individual dust exposures exceeding the specified limits. An MSA Flow-Lite sampling pump (set at 2 lpm flow) equipped with a PVC-5 filter inside of a three-piece cassette was used as the sampling device.

TOTAL DUST EXPOSURES

Type	Job Class	No. of Monitored	Average Personnel Exposure
PVC	Dryer Operator (732)	4	1.08 mg/m ³
PVC	PVC Bagger (732)	3	0.74 mg/m ³
Unspecified	Henschel Operator (741)	2	0.69 mg/m ³
PVC	Contract Employees (732)	2	0.57 mg/m ³
Unspecified	PC Bagger (712,722,725)	1	0.46 mg/m ³
Unspecified	Mill Operator (741)	2	0.38 mg/m ³
Unspecified	OBTS Operator (712)	2	0.24 mg/m ³

III. CRYSTALLINE FREE SILICA (Respirable Fraction Exposure Limit = 0.1 mg/m³)

Analysis of the coal boiler fly ash disclosed a crystalline free silica content of 28% in the combustion chamber fly ash. Because long-term exposure to crystalline silica can cause a chronic fibrogenic lung disease known as silicosis, several boiler house operators were spot checked for silica exposure while loading fly ash from the silo to the disposal trucks. A monitoring pump (drawing air at 1.7 lpm flow) was set up to capture only the respirable fraction of the dust using a cyclone collector and a PVC-5 filter. The filters were then laboratory analyzed for silica content. The results (as 10-hour TWA's) were 0.04 and 0.16 mg/m³.

Since one of the samples exceeded the permissible exposure limit, a sign warning of silica exposure has been posted at the entrance to the silo unloading area. Boiler House personnel have routinely used the 3M - 8710 dust mask for protection from fly ash dust. This mask is also rated for protection against silica at the exposure level found and will continue to be worn during fly ash exposure.

IV. TOLUENE (Permissible Exposure Limit = 100ppm)

During 1988, personnel monitoring for Toluene exposure was done in the Polymer Chemicals Bldg. 712, the MBT-Crude Bldg., the Laboratory, and at Waste Treatment. The monitoring results continue to show that there is little Toluene exposure. Spot check monitoring will be done on a monthly basis for a representative operator from the X-70/Geltrol processes, and quarterly for a representative operator from each other job classification that may be subject to Toluene exposure.

TOLUENE EXPOSURE

<u>AREA</u>	<u>NO. OF MONITORINGS</u>	<u>AVERAGE PERSONNEL EXPOSURE (PPM)</u>
MBT-CRUDE	2	1.00
Polymer Chemicals (712)	8	1.63
PC Laboratory	1	1.00
Wastewater Treatment	5	1.00
PC Maintenance (in 712)	1	1.00

Several Toluene monitorings were also done as area samples in the sludge dewatering building at wastewater treatment to check for off-gasing from the sludge. The average exposure detected for the area was 5.20 ppm.

V. ACETONITRILE (Permissible Exposure Limit = 40 ppm)

For 1988, the acetonitrile exposure average in the 3114 Building (722) was 9.4 ppm. A quarterly spot-check monitoring is done of a representative operator in the area. Additional monitoring will be done whenever there is a process change or unusual situation that could cause acetonitrile exposure.

VI. METHYLENE CHLORIDE (Permissible exposure limit = 50 ppm)

The American Conference of Government Industrial Hygienists (ACGIH) has lowered the permissible exposure limit for Methylene Chloride from 100 ppm to 50 ppm. A quarterly spot-check sample is done in the Accelerator Expansion Building for Methylene Chloride exposure. The 1988 monitoring results show the average exposure to operators in the 725 building to be 1.55 ppm. Monitoring will continue at the spot-check frequency unless problems occur.

VII. HEAVY METALS (Permissible Exposure Limits:)

Cadmium = 0.5 mg/m³
Chromium = (Hexavalent = 0.05 mg/m³)
(Trivalent = 0.5 mg/m³)
Copper = 0.2 mg/m³
Lead = 0.05 mg/m³
Nickel = 1 mg/m³

Personnel in the Weld Shop, Maintenance Shop, and the Laboratory were monitored for exposure to heavy metals. A personnel monitoring pump (2 lpm flow rate) with an 0.8 micron, mixed-cellulose ester filter in a 3-piece cassette was used. samples were sent to an outside laboratory for analysis.

There were no exposures exceeding permissible exposure limits.

HEAVY METAL MONITORING

AVERAGE EXPOSURE (mg/m³)

<u>JOB CLASS</u>	<u>CADMIUM</u>	<u>CHROMIUM</u>	<u>COPPER</u>	<u>LEAD</u>	<u>NICKEL</u>
Service Shop Welder	0.00016	0.00032	0.017	0.00013	<0.01
Maint. Shop (Lathe Operator)	--	0.00051	--	--	0.15
Lab Worker (Making up Premix)	--	--	--	0.00026	--

VIII. FORMALDEHYDE (Permissible Exposure Limit = 1ppm)

The OSHA has established a new permissible exposure limit for formaldehyde which is set at 1 ppm. Because of formaldehyde off-gasing from the paraformaldehyde used to manufacture 3114, eleven representative monitorings were done in the 722 building. The average formaldehyde exposure to 3114 process operators is 0.13 ppm. Warehouse operators in building 712 were also monitored because of the paraformaldehyde skids that are stored in the area. This group's average exposure is 0.05 ppm.

Formaldehyde monitoring as area samples in the warehouse gave an exposure average of 0.24 ppm. The only area that is currently posted with the OSHA warning sign for formaldehyde (required for area above 1 ppm) is the paraformaldehyde storage room on the 2nd floor of building 722.

IX. VINYL CHLORIDE (Permissible Exposure Limit = 1 ppm)

All operators in the Poly and Dryer Building as well as the PVC Tank Farm are monitored for vinyl chloride exposure at least once per year. The schedule of monitoring then follows the OSHA VCl standard which requires monthly monitoring for any exposure greater than 1.0 ppm until two consecutive monitorings are less than 0.5 ppm. The employee need not be monitored again during the year if his annual monitoring result or the two consecutive monitorings are below 0.5 ppm. All VCl monitoring samples were collected on Reiszner gas badges.

VINYL CHLORIDE MONITORING (Poly and Dryer Building)

<u>Year</u>	<u>No. of People Monitored</u>	<u>Average (ppm)</u>	<u>% Greater Than 1 ppm</u>	<u>% Less Than 0.5 ppm</u>
1986	315	1.79	40	30
1987	248	1.06	21	58
1988 1988	314	1.15	27	48

RESPIRATOR COMPLIANCE (POLY BUILDING)

<u>Year</u>	<u>No. Of Exposures Greater than 1 ppm</u>	<u>No. of Exposures Greater than 1 w/o Respirator</u>	<u>Respirator Compliance</u>
1986	131	49	63%
1987	53	15	72%
1988	72	24	67%

The job class breakdown is as follows for Poly Building employees exposed to greater than 1 ppm VCL without the use of a respirator.

<u>JOB CLASS</u>	<u>NO. OF EXPOSURE</u>
Lo Sope Charge Operator	11
Recovery Operator	09
Pearl Charge	03
Poly Bldg. Foreman	01

There were 13 vinyl chloride exposures in the Dryer Building during 1988 that were greater than 1 ppm (since the last exposure on 11/09/88, there have been no new non-compliance exposures in this area). The job class breakdown is as follows:

<u>JOB CLASS</u>	<u>HIGHEST EXPOSURE LEVEL</u>	<u>NO. OF EXPOSURES</u>
Dryer Operator	3.1 ppm	09 *
Bagger	1.7 ppm	03
Dryer Foreman	1.2 ppm	01

*Three of these employees had entered the Poly Building during their work shift.

Since several of the Dryer Operators who were exposed to VCL above 1 ppm had opened and flushed out BT 9 and/or 10 during the monitoring period, airline hookups have been installed on the 2nd floor near the manheads of these tanks. Two short-term VCL exposure samples that were taken during this task (with BT exhaust in operation) showed only 0.67 ppm and 0.53 ppm. However, prior exposure checks using an OVA gave readings exceeding 1000 ppm at the open manheads when the BT exhaust was off. If BT 9/10 exhaust is inoperable, opening these tanks should be a respirator require task.

For the year 1988, the overall Dryer Building VCL exposure average out of 93 samples was 0.51 ppm. During 1987, 74 samples gave an exposure average of 0.35 ppm.

NGC 01290

VINYL CHLORIDE EXPOSURE BY JOB CLASSIFICATION

<u>JOB CLASS</u>	<u>MONITORINGS</u>	<u>NO. OF AVERAGE (PPM)</u>
Poly Cleaner	11	4.15
PVC Tank Farm Operator	04	1.81
HRC Poly Cleaner	20	1.42
Recovery Operator	41	1.40
Pearl Charge Operator	57	1.12
Past/LoSope Charge	37	0.99
Dryer Operator	46	0.72
Poly Bldg. Foreman	12	0.71
Valve Cleaner	05	0.53
PVC Bagger	38	0.51
PVC Contract Employees (Baggers)	20	0.44
Blending Charge Operator	01	0.43
Silo Operator	12	0.33
Dryer Bldg. Foreman	10	0.28
Catalyst Make-Up	02	0.27
PVC S&E Operator	02	0.12

X. EMPLOYEE TRAINING

As required by the OSHA Hazard Communication Standard (HAZCOM), training is given to employees who may be exposed to hazardous chemicals as new-hires before they start work in the plant, when they transfer to a different work area, when a new chemical hazard is introduced into the Plant, and then on an annual basis as a refresher course. During 1988, 306 Henry Plant Employees were given HAZCOM training. Two employees (PC & Maint.) missed the annual training and could not be scheduled into a makeup session.

Hearing conservation training is given annually to all employees who work in areas where the noise level exceed 85 decibels. There were 158 employees trained during 1988. No employees missed the scheduled training sessions.

XI. CONCLUSION

The most serious industrial hygiene problems in the plant continue to be noise and vinyl chloride exposures greater than 1 ppm without respirator protection, particularly in the Dryer Building which is not a regulated area. In both the Poly and Dryer Buildings these exposures seem to predominate in certain job classifications. Although many of the operators list "no known VCL exposure" for the monitoring period, I think that we need to look closer at the individual tasks that they perform during the work day. Some of these tasks may already be "respirator required". In this case employee review training for respirator use requirements may be beneficial.



Diana Friesz

TO	FIELD POINT OR DEPT. & BLDG. NO.	DATE YOUR LETTER
M. E. Guyer		
FROM	FIELD POINT OR DEPT. & BLDG. NO.	DATE THIS LETTER
Diana Friesz		8/4/88
SUBJECT		

INDUSTRIAL HYGIENE UPDATE FOR THE FIRST HALF OF 1988

Henry Plant personnel monitoring results for the first six months of 1988 are summarized as follows:

- I. NOISE (BFG Permissible Exposure Limit = 50% dose)
(OSHA Permissible Exposure Limit = 100% dose)

<u>Job Classification</u>	<u>No. of Samples</u>	<u>Average % Dose Noise Exposure</u>
Mill Operator	3	111.08
Dryer Operator	4	105.6
HRC Poly Cleaner	3	86.04
PVC Bagger	1	69.00
Poly Building Foreman	4	60.42
Paste/LoSope Charge Operator	8	55.14
Pearl Charge Operator	11	53.00
OBTS Operator - 712	2	55.98
Henschel Operator	1	48.36
Valve Cleaner (5536)	2	47.85
Recovery Operator	7	44.79
Dryer Building Foreman	4	31.41
Compound Packager	2	30.42
Silo Operator	1	30.36
Stalite/VanLube Operator	1	19.08
TOTAL SAMPLES	54	

Of the 54 noise exposure samples taken, 25 (46%) exceeded 50% dose and 3 (6%) exceeded 100% dose. Three of the greater than 50% dose samples occurred without the use of hearing protection. This puts hearing protection compliance at 88% for those areas where it is required. There were no exposures exceeding 115 decibels which is the limit specified by OSHA that should not be exceeded regardless of the exposure duration.

- II. DUST/TOTAL (Permissible Exposure Limit = 10 mg/m³)

<u>Job Classification</u>	<u>No. of Samples</u>	<u>Average Exposure</u>
FC Bagger	1	0.46 mg/m ³
OBTS Operator	2	0.23 mg/m ³

III. TOLUENE (Permissible Exposure Limit = 100 ppm)

<u>Job Classification</u>	<u>No. of Samples</u>	<u>Average Exposure</u>
MBT Crude Operator	1	<1 ppm
X-70 Operator	2	<1 ppm
Geltrol Operator	1	<1 ppm
PC Maintenance	1	<1 ppm
Wastewater Treatment Operator	4	<1 ppm

IV. ACETONITRILE (Permissible Exposure Limit = 40 ppm)

Operators in the 3114 process building were spot checked for Acetonitrile exposure. The average exposure was 9.4 ppm.

V. METHYLENE CHLORIDE (BFG Exposure Limit = 50 ppm)

Operators in the 725 A/E building are spot checked for methylene chloride exposure. The average exposure was 1.55 ppm.

VI. FORMALDEHYDE (OSHA Permissible Exposure Limit = 1 ppm)

OSHA has issued a new standard for formaldehyde which lowers the permissible exposure limit to 1 ppm and requires initial monitoring in areas where formaldehyde may be present. In order to meet these requirements, representative operators were monitored in the 3114 process building and in the PC Warehouse. There were no exposures in either area that exceeded 1 ppm. The maximum exposure was 0.18 ppm received by a 3114 process operator. Remonitoring will be done periodically in order to ensure that the exposure level has not changed.

<u>Job Classification</u>	<u>No. of Samples</u>	<u>Average Exposure</u>
3114 Operator	5	0.09 ppm
PC Warehouseman	2	0.05 ppm

VII. HEAVY METALS (Permissible Exposure Limits: Copperfume - 0.2 mg/m³
Cadmium - 0.05 mg/m³
Chromium (Hexavalent) - 0.05 mg/m³
(Trivalent) - 0.05 mg/m³
Lead (Inorganic) - 0.03 mg/m³
Nickel - 1.0 mg/m³)

Maintenance personnel in the service shop area were monitored for heavy metal exposure as they were performing routine activities including welding, grinding, and cutting, and spray painting. None of the individual exposures exceeded the permissible exposure limits.

Heavy Metal	No. of Personnel Monitored	Average Exposure
Copper	5	0.017 mg/m ³
Chromium	5	0.003 mg/m ³
Lead (inorganic)	1	<0.001 mg/m ³
Cadmium	4	<0.001 mg/m ³
Nickel	5	<0.01 mg/m ³

VIII. VINYL CHLORIDE (Permissible Exposure Limit = 1 ppm)

Job Classification	No. of Samples	Average Exposure
Poly Cleaner	3	3.47
Pearl Charge Operator	10	1.12
PVC Bagger	7	1.01*
Recovery Operator	8	0.96
Paste/LoSope Operator	5	0.89
HRC Poly Cleaner	2	0.88
Dryer Operator	12	0.74
Silo Operator	4	0.48
Valve Cleaner	1	0.46
Catalyst Make-up	1	0.41
Dryer Building Foreman	1	0.34
Poly Building Foreman	3	0.25
Environmental Operator	1	0.12
Wastewater Treatment Operator	3	0.09
TOTAL	61	

*Exposure of PVC baggers to vinyl chloride is of concern because their work area is not "regulated" for VCL. Of the seven PVC baggers monitored this year, two were exposed above 1 ppm and three were greater than 0.90 ppm. There were also two dryer operators who were exposed to VCL above 1 ppm. All of these exposures occurred without the use of a respirator.

Of the sixty-one personnel monitorings for VCL collected during the first six months of 1988, 38 (62%) were between 0.5 ppm and 1 ppm, and 13 (21%) exceeded 1 ppm. In the Poly Building which is a VCL regulated area, nine samples exceeded 1 ppm. Five of these occurred without the use of a respirator.

IX. SILICA (Permissible Exposure Limit = 0.1 mg/m³)

Two coal boiler operators were monitored for respirable dust exposure. The filters from these samples were then sent to an outside laboratory to determine crystalline free silica content. One sample was analyzed at 0.04 mg/m³ free silica and the second at 0.17 mg/m³ (which exceeds the exposure limit). Disposable 3M-8710 dust masks were worn by the utility operators during exposure to flyash dust. Additional monitoring will be done when the coal boiler starts up following the maintenance shutdown.

X. CONCLUSIONS

Exposure to noise and vinyl chloride, particularly VCL in the Dryer Building, are the main areas of industrial hygiene concern at the Henry Plant. Compliance with hearing protection requirements for employees working in posted areas should be 100%. There continue to be some instances where hearing protection is not being worn.

Most of the high VCL exposures in the Dryer Building still appear to be traceable to the resin reclaim process. All four of the greater than 1 ppm exposures occurred on days when B grade material was run in resin reclaim.

Date	Operator	Job	Exposure	R/S Status
*2/24		Bagged LoSope on #1 and #2 Spray	1.0 ppm	Running 171 (B)
3/2		Bagged 178	1.7 ppm	Running 178 (B) #54 .3
4/22		Worked in UF Bldg. and Spray #2	1.9 ppm	Running 171 (B) was asked for monitor May & Jun July
6/10		R/S Operator, Unplugged head tank four times	1.6 ppm	Running 173 (B) none back yet

*Another Dryer Building Bagger had an exposure of 0.91 ppm on this day.

The other two higher VCL exposures in the Dryer Building (0.95 ppm and 0.99 ppm) occurred when B grade was running in resin reclaim on 3/1/88. This was also the time that the resin reclaim dryer compressor was down and pressed resin was being stored in gaylord boxes in the dryer building warehouse. OVA checks around these boxes several weeks later still indicated higher VCL levels which may have contributed to employee exposure.

In the Poly Building, some of the greater than 1 ppm VCL exposures without a respirator are traceable to the employee performing a task already identified as "respirator required" without wearing the proper protective equipment. These situations are handled by passing the information along to Poly Building management who then discuss the problem with the employee. Since the number of building lights continues to be low, the source of VCL for the remaining exposures is unidentified.

REDACTED



Diana G. Friesz

rdl/B177

NGC 01295

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