

TO	FIELD POINT OR DEPT. & BLDG. NO.	DATE YOUR LETTER
R. J. Grahek		
FROM	FIELD POINT OR DEPT. & BLDG. NO.	DATE THIS LETTER
L. Diana Friesz		3/29/88
SUBJECT		

1987 INDUSTRIAL HYGIENE SUMMARY - HENRY PLANT

During 1987, Henry Plant personnel were monitored for exposure to noise, vinyl chloride, benzene, toluene, acetonitrile, formaldehyde, heavy metals and dust (total PVC and total unspecified). The following exposure summaries reflect the results of this monitoring.

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

DuPont Mark I noise dosimeters were used to spot check monitor 39 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 accumulative noise exposure in percent dose.

Nineteen (49%) of the monitored employees exceeded the BFGoodrich exposure limit of 50% dose. Only nine (23%) exceeded the OSHA exposure limit of 100% dose. Hearing protection usage was 100% for all employees exceeding 50% noise dose who were working in posted areas.

NOISE EXPOSURE AVERAGE BY BUILDING

Building	No. of Personnel Monitored	Average Personnel Exposure
Polymer Chemicals (712)	13	37.69%
Wastewater Treatment	3	38.52%
Accelerator Building (725)	4	35.34%
Poly Building (731)	8	81.30%
Compounding Building (741)	4	108.51%
Dryer Building (732)	6	109.61%

- 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 EXPOSURE

Type	Building	No. of Personnel Monitored	Average Personnel Exposure
Unspecified	Polymer Chemicals/712	11	1.37 mg/m ³
Unspecified	Compounding/741	4	1.60 mg/m ³
Unspecified	Accelerator Expansion/725	7	0.63 mg/m ³
Unspecified	3114 Building/722	1	0.28 mg/m ³
PVC	Dryer Building/732	8	1.49 mg/m ³

III. BENZENE (EFG Permissible Exposure Limit = 1 ppm)
(OSHA Permissible Exposure Limit = 1 ppm)

Due to changes in the X-70 and Geltrol processes, the use of benzene was discontinued at the Henry Plant during the last quarter of 1987. However, monitoring for benzene exposure was done prior to this time and included a monthly representative operator on the X-70/Geltrol processes, and an annual representative from each other job classification where there was the potential for benzene exposure. Representative operators at the Wastewater Treatment plant and the Laboratory were also monitored. There were two benzene exposures at 1 ppm, but none that exceeded this level.

1987 BENZENE EXPOSURE AVERAGE (PPM) BY BUILDING

Building	No. of Personnel Monitored	Average Personnel Exposure
Polymer Chemicals (712)	24	0.24 ppm
PC Maintenance (713)	2	0.20 ppm
Wastewater Treatment (721)	4	0.10 ppm
Laboratory (718)	1	0.20 ppm

IV. TOLUENE (Permissible Exposure Limit = 100 ppm)

Toluene was substituted for benzene in the X-70 and Geltrol processes at the end of October. Due to this change, monitoring for toluene was started in the Polymer Chemicals building 712 to determine if there was an exposure problem. The monitoring results indicate that toluene exposure is very low. Spot-check monitoring will be done on a monthly basis for a representative operator on the X-70/Geltrol process, and monthly for a representative operator from each other job classification which may be subject to Toluene exposure.

TOLUENE EXPOSURE IN BUILDING 712

No. of People Monitored	Average Personnel Exposure	Maximum Personnel Exposure
18	0.24 ppm	1.0 ppm

V. ACETONITRILE (Permissible Exposure Limit = 40 ppm)

For 1987, the acetonitrile exposure average in the 3114 building (722) was 14.2 ppm. A quarterly spot-check monitoring is done of a representative operator in the area. Only one sample taken during 1987 exceeded the permissible limit. An operator received an exposure of 51.7 ppm on a day when the building sewers were being steamed out. This unusual activity, which will now be listed as a "respirator-required" task, apparently caused higher Acetonitrile levels in the building. The maximum exposure from other personnel monitorings for Acetonitrile exposure was 2.1 ppm.

VI. METHYLENE CHLORIDE (Permissible Exposure Limit = 100 ppm)

A quarterly spot-check sample is also done in the Accelerator Expansion Building for Methylene Chloride exposure. The 1987 monitoring results show the average exposure to operators in the 725 building to be 1.4 ppm. Monitoring will continue at the spot-check frequency unless problems occur.

VII. HEAVY METALS (Permissible Exposure Limits:

Antimony = 0.5 mg/m³
 Cadmium = 0.5 mg/m³
 Chromium = (Hexavalent = 0.05 mg/m³)
 (Trivalent = 0.5 mg/m³)
 Nickel = 1 mg/m³

The operators in compounding who weigh up pigments and empty the mix into the henschel are monitored periodically for heavy metal exposure. The 1987 monitorings continued to show that there is no exposure problem in this area.

HEAVY METAL EXPOSURES IN COMPOUNDING

<u>Heavy Metal</u>	<u>No. of People Monitored</u>	<u>Average Personnel Exposure</u>
Antimony	6	0.005 mg/m ³
Cadmium	6	<0.001 mg/m ³
Chromium	6	0.007 mg/m ³
Nickel	4	<0.001 mg/m ³

VIII. 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 0.5 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.

The 1987 VCl personnel monitoring results are summarized below:

VINYL CHLORIDE MONITORING (POLY AND DRYER BUILDING)

Year	No. of People Monitored	Average (ppm)	% Greater Than 1 ppm	% Less Than 0.5 ppm
1985	231	1.58	38	34
1986	315	1.79	40	30
1987	248	1.06	21	58

RESPIRATOR COMPLIANCE (POLY BUILDING)

Year	No. of Exposures Greater than 1 ppm	No. of Exposures Greater than 1 W/O Respirator	Respirator Compliance
1985	87	33	62%
1986	131	49	63%
1987	53 49	15	72%

Of the exposures greater than 1 ppm without respirator protection, seven each were from LoSope charge and Recovery job classifications. No other explanations for the exposures were given. The remaining exposure was to a Pearl Charge Operator.

There were also four exposures in the Dryer Building during 1987 that were greater than 1 ppm. Respirators were not worn during these exposures.

Operator	Date	Exposure	Explanation
Heredia	3/31	1.7 ppm	Ran Resin Reclaim on 178 B, changed out transfer pump in Poly Building.
Keegan	3/31	1.0 ppm	Bagged 178 B from Resin Reclaim for two hours.
Heredia	4/1	1.3 ppm	Ran Resin Reclaim on 178 B.
Jason	8/12	1.4 ppm	Dryer operator (Resin Reclaim ran 178 B on this date)

Even with the above exposures included, the Dryer Building exposure average for 1987 was less than the action level (0.5 ppm).

VINYL CHLORIDE EXPOSURE BY JOB CLASSIFICATION

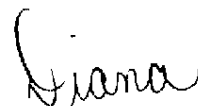
<u>Job Class</u>	<u>No. of People Monitored</u>	<u>Average (ppm)</u>
Helper/HRC Poly Cleaner	27	2.59
PVC Tank Farm Operator	2	2.41
Recovery Operator	27	1.56
Paste/LoSope Charge Operator	34	1.50
Pearl Charge Operator	44	1.19
PVC Foreman	16	0.69
Dryer Operator	37	0.34
Dryer Building Bagger	24	0.30
Valve Cleaner	8	0.28
Catalyst Make-up	2	0.20
Dryer Building Foreman	9	0.19
S&E Operator	3	0.13
*Wastewater Treatment Operator	8	0.13

* The wastewater treatment operators have been spot check monitored for vinyl chloride exposure because of several area monitorings that were above 1 ppm in the sludge dewatering building. However, it seems that the wastewater treatment operator does not spend enough time in the sludge dewatering building for his exposure to become significant.

IX. CONCLUSION

Overall, there are no serious industrial hygiene problems in most areas of the Plant. In fact, with the removal of benzene from the Polymer Chemicals building, the tasks that previously required respirator usage for benzene exposure now do not require any protection for toluene.

There is, however, still an occasional vinyl chloride exposure in the Dryer Building that exceeds 1 ppm. And since this area is not regulated for VCl exposure, no respiratory protection is worn. Although the exposure levels fluctuate and there are many very low exposures between pop-outs, there does seem to be a correlation between the higher exposure and "B" grade (Blend Tank 5) material running in Resin Reclaim. Additional ventilation is being considered around the second floor press area of the Resin Reclaim building in order to lower VCl emissions. OVA readings in this area during press dropping and water flushing have shown increased VCl levels.



Diana Friesz

Distribution:

M. E. Guyer
D. E. Giffin
D. L. Rys
J. P. Griffin
J. A. Bernardi
K. J. Willings
R. C. Linneman
V. D. Marquis
F. V. Zemanek
R. D. Webber
S&E Operators (2)
T. S. Bialke - Cleveland
C. K. Andersen - Cleveland
File

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		11/13/87
SUBJECT		

INDUSTRIAL HYGIENE UPDATE FOR THE THIRD QUARTER OF 1987

Henry Plant personnel monitoring results for the third quarter of 1987 are summarized as follows:

I. NOISE (BFG Permissible Exposure = 50% Dose)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Dryer Building	6	110%
Compound Building	4	108%

Both of these work areas are posted as "High Noise" areas. Compliance with hearing protection requirements was 100% for the monitored employees.

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

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Compound Building	2	1.46 mg/m ³
Polymer Chemicals (712)	3	1.00 mg/m ³
Accelerator Building (725)	3	0.68 mg/m ³

III. HEAVY METALS (Permissible Exposure Limits:

Antimony = 0.5 mg/m³
 Cadmium = 0.05 mg/m³
 Chromium = (Hexavalent - 0.05 mg/m³)
 (Trivalent - 0.5 mg/m³)
 Nickel ■ 1 mg/m³

Periodic spot-check monitoring is done to determine Compounding Operator exposure to heavy metals. The results continue to show there is no heavy metal exposure problem during pigment weighing and/or emptying pigment to the henschel.

<u>Heavy Metal</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Antimony	3	<0.001 mg/m ³
Cadmium	3	<0.001 mg/m ³
Chromium	3	<0.001 mg/m ³
Nickel	3	0.000 mg/m ³

IV. BENZENE (Permissible Exposure Limit = 1 ppm, 0.5 ppm Action Level)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Polymer Chemicals (712)	7	0.28 ppm
Maintenance (Polymer Chemicals)	1	0.20 ppm

Of the benzene samples taken in Building 712, one was at the action level and one was at the permissible exposure limit. Both exposures occurred to operators performing non-routine jobs while wearing respirator protection.

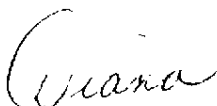
V. ACETONITRILE (Permissible Exposure Limit = 40 ppm)

A quarterly spot check was done in the 3114 building for Acetonitrile exposure. The result (1.80 ppm) continues to show that there is no exposure problem in this area.

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

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Poly Building	22	0.76 ppm
Dryer Building	21	0.37 ppm

There were 43 VCl personnel monitoring samples taken in the Poly and Dryer Buildings during the third quarter of 1987. Of these, six samples (13.9%) exceeded one ppm. Twenty-nine (67%) of the total VCl samples were below the 0.5 ppm action level. Three of the samples that were greater than one ppm occurred without the use of respirator protection. Respirator compliance for this period was 93%.


Diana Friesz

rdm/E80

cc: R.J. Grahek
K.J. Willings
T.S. Bialke (Cleveland)
J.A. Bernardi
E.V. Zemanek
V.D. Marquis
R.C. Linneman
J.P. Griffin
M.A. Ackerman
C.K. Andersen (Cleveland)
R.D. Webber
D.E. Giffin
D.L. Rys

NGC 01304

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		7/29/87
SUBJECT		

INDUSTRIAL HYGIENE UPDATE FOR THE SECOND QUARTER OF 1987

Henry Plant personnel monitoring results for the second quarter of 1987 are summarized as follows:

I. NOISE (BFG permissible exposure = 50% dose)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Poly Building	8	81.30%
Polymer Chemicals (712)	6	31.36%
Accelerator Building	1	28.20%

II. DUST/TOTAL (Permissible exposure limit = 10 mg/m³)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Compounding	2	1.75 mg/m ³
Polymer Chemicals (712)	1	1.55 mg/m ³
*Accelerator Building	3	0.45 mg/m ³
3114/3125 Building	1	0.28 mg/m ³

*Two of these samples were sent to the Brecksville Laboratory for determination of the Cure-Rite 18 content of the total dust sample. The amounts of Cure-Rite 18 detected were 0.012 mg/m³ and 0.006 mg/m³. The current BFGoodrich established exposure limit for Cure-Rite 18 dust is 0.1 mg/m³.

III. BENZENE (BFG Permissible exposure limit = 1 ppm;
OSHA exposure limit = 10 ppm)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Maintenance	1	0.2 ppm
Polymer Chemicals (712)	9	0.18 ppm

Only one Benzene exposure during the second quarter was above the action level of 0.5 ppm. There were no exposures exceeding 1 ppm.

NGC 01305

IV. VINYL CHLORIDE (Permissible exposure limit = 1 ppm)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Poly Building	39	1.21 ppm
Dryer Building	18	0.34 ppm

There were 57 VCL personnel monitoring samples taken in the Poly and Dryer Buildings during the second quarter of 1987. Of these, 13 samples (22.8%) exceeded one ppm. Thirty-seven (65%) of the total VCL samples were below the 0.5 ppm action level. Four of the samples that were greater than one ppm occurred without the use of respirator protection. Respirator compliance for this period was 93%.

V. ACETONITRILE (Permissible exposure limit = 40 ppm)

A quarterly spot check of the 3114 process was done for Acetonitrile exposure. The result (2.1 ppm) continues to demonstrate that there is no Acetonitrile exposure problem in this area.

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

Area samples for Methylene Chloride have shown very low exposure in the Accelerator Expansion Building while the Cure-Rite 18 process is running. A MeCl_2 personnel monitoring sample taken during second quarter was analyzed at 0.6 ppm.

VII. ASBESTOS (Permissible exposure limit = 0.2 fibers/cc;
Action level = 0.1 fibers/cc).

Personnel monitoring for asbestos fiber exposure is being done for each asbestos removal job performed by Cardinal Insulation and for our Plant Audit team while sampling insulation. An open-face, extended cowl cassette with a 25 mm, 0.8 μm mixed cellulose ester filter is used for this monitoring. The pump flow rate is set at 3 Lpm.

To date, asbestos fiber exposure for both groups have been well within the accepted limits. Out of 45 monitorings the asbestos fiber exposure average for Cardinal during abatement work was 0.02 fibers/cc. All exposures for the Plant employees auditing asbestos-insulated pipes/equipment were below the limit of detection (0.01 fibers/cc).

VIII. NEW PROJECTS

1. Sample for Morpholine exposure during Cure-Rite 18 manufacturing.
2. Perform area and personnel monitoring for toluene exposure during X-70/Geltrol conversion and revise PC Environmental Floor Procedure.
3. Monitor PC bagger for MBTS exposure per Tom Bialke's request.

Diana

Diana Friesz

rdm/E68

cc: R.J. Grahek
K.J. Willings
T.S. Bialke (Cleveland)
J.A. Bernardi
F.V. Zemanek
V.D. Marquis
R.C. Linneman
J.P. Griffin
M.A. Ackerman
~~C.K. Anderson (Cleveland)~~
R.D. Webber
D.E. Giffin
D.L. Rys
N.L. Kuchenmeister

C. K Andersen (Cleveland)

NO PERIOD
AFTER K SINCE THIS
IS HIS ^{MIDDLE} ~~LAST~~ NAME

MU Boesch

R. MARTIN

TO
M. E. Guyer

FIELD POINT OR DEPT. & BLDG. NO.

DATE YOUR LETTER

FROM
D. G. Friesz

FIELD POINT OR DEPT. & BLDG. NO.

DATE THIS LETTER
5/19/87

SUBJECT

INDUSTRIAL HYGIENE UPDATE FOR THE FIRST QUARTER OF 1987

Henry Plant personnel monitoring results for the first three months of 1987 are summarized as follows:

I. NOISE (BFG permissible exposure = 50% dose)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Polymer Chemicals (712)	1	69.60% *
Wastewater Treatment	3	38.52%
Accelerator Bldg. (725)	1	23.04%

* Geltrol process alarms going off during work period.

Noise levels on the first floor of Polymer Chemicals (712) have been reduced due to the installation of a noise barrier curtain around the OBTS bagger blower. The OBTS operator standing at the bagger nozzle is now exposed to 83 decibels as compared to 88 - 90 decibels before the curtain was in place.

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

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Polymer Chemicals (712)	2	2.59 mg/m ³
Accelerator Bldg. (725)	1	1.08 mg/m ³

III. BENZENE (BFG Permissible Exposure Limit = 1 ppm, OSHA Exposure Limit = 10 ppm)

<u>Building</u>	<u>No. of Personnel Monitored</u>	<u>Average Personnel Exposure</u>
Wastewater Treatment	3	0.13 ppm
Laboratory	1	0.20 ppm
Maintenance	1	0.20 ppm
Polymer Chemicals (712)	7	0.27 ppm

IV. HEAVY METALS (Permissible Exposure Limits:

Antimony - 0.5 mg/m³
Cadmium - 0.05 mg/m³
Chromium (Hexavalent - 0.05 mg/m³),
(Trivalent - 0.5 mg/m³)
Nickel - 1 mg/m³

HENRY PLANT NOISE EXPOSURE HISTORY

BUILDING	NO. EMPLOYEES MONITORED	PERCENT EXPOSURE AVERAGE BY YEAR				
		1987	1986	1985	1984	1983
*Compounding	36	108.5%	58.6%	133.5%	91.8%	79.3%
*Dryer Building	57	109.6%	67.6%	--	70.2%	47.15%
*Poly Building	101	81.3%	51.4%	50.1%	56.9%	61.1%
A/E Building	8	35.3%	49.3%	--	--	--
3114 Building	21	52.6%	48.1%	41.0%	24.9%	29.4%
PC Building 712	196	37.7%	39.9%	29.1%	24.9%	25.3%
*Boiler House (719)	21	--	24.8%	36.3%	42.2%	38.3%
MBT-C/NaMBT	23	--	21.9%	--	19.9%	11.2%

*Noise Regulated Areas

50% Dose = BFG Exposure Limit for Noise
100% Dose = OSHA Exposure Limit for Noise

VINYL CHLORIDE PERSONNEL MONITORING

POLY AND DRYER BUILDINGS

<u>YEAR</u>	<u>NO. OF SAMPLES TAKEN</u>	<u>NO. > 1 PPM</u>	<u>NO. < 0.5 PPM</u>	<u>NO. >1 W/O RESP.</u>	<u>RESP. COMPLIANCE</u>
1988	146	27 (44%)	69 (47%)	15*	44%
1987	261	57 (21.8%)	153 (58.6%)	19	67%
1986	315	131 (41.5%)	95 (30%)	49	63%
1985	229	87 (38%)	79 (34.5%)	35	60%
1984	168	32 (19%)	96 (57%)	15	53%

*FOUR OF THESE EXPOSURES OCCURRED IN DRYER BUILDING

NGC 01310

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)
(BFG 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 BFGoodrich 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%

NGC 01311

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	
	Gas Boiler Operator	2	54.40	0	
					100%
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.

NGC 01312

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
1989	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.

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

Dist: P. Donatuccio
K. J. Willings
V. D. Marquis
R. C. Linneman
M. W. Reynolds
M. A. Ackerman
J. P. Griffin
D. L. Rys
D. E. Giffin
R. D. Webber
W. J. Grudzinski
D. D. Moriarty
J. D. Krumholz
T. C. Patterson
M. E. Guver
S. Wiedman
Dan Gleghorn (Cleveland)
File

NGC 01317

DIANA, THE SECOND SECTION IS FOR
CONTRACTOR'S HAZ COMM.

TO: HAZARD COMMUNICATION DISTRIBUTION

FROM: T. S. BIALKE

DATE: 4/9/86

Ken W.

INDUSTRIAL HYGIENE PERIODIC PROGRAM STATUS REPORTS

K
Please add Chris Andersen, Geon Vinyl International Division in Cleveland
to the distribution of your periodic Industrial Hygiene Status Reports.

Thank you.

T.S. Bialke

Tom S. Bialke

TSB/kp
8148q

cc: C. Andersen/P. Marason
H. Waltemate

NGC 01318