

*File
Room*

B. F. Goodrich Chemical Company

Inter-Organization Correspondence

To R. W. Modrell

Location Akron

Date July 20, 1972

From W. T. Gunning

Subject Vinyl Chloride Samples

Please analyze the Vinyl Chloride concentrations in the four vacutainer samples. The samples were taken on Monday July 17 when a poly cleaner was preparing a 3300 gallon poly #154 in B/461 for hydraulic reactor cleaning. All samples were taken just inside the manhole.

Sample #1 Taken immediately after the manhead was opened. The evacuation hose had not yet been inserted.

Sample #2 Taken immediately after insertion of the evacuation hose.

Sample #3 Taken two (2) minutes after evacuation hose was in the poly. Poly cleaner had reached inside the poly and was using a water hose to wash down poly walls.

Sample #4 Taken five (5) minutes after the evacuation hose was inserted. The poly cleaner had completed washing down the poly walls with the water hose.

Note: Prior to opening the poly, it had been evacuated to 18 inches of vacuum per instrument chart reading.

W. T. Gunning /alm

W. T. Gunning
Sr. Safety Engineer

WTG/alm

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W. T. Gunning

Avon Lake General Chemical Plant

R. W. Modrell

Dept. 0020, Bldg. 5-H

7/26/72

The following, for the record, are results on the Vinyl Chloride analyses of the four samples you sent on 7/20/72:

Sample #1	38 ppm
Sample #2	49 ppm
Sample #3	49 ppm
Sample #4	61 ppm

All of these, of course, are very low and I see no personnel exposure problem with any of them. It is surprising that #1 was not considerably higher than the 38 ppm.

R. W. Modrell

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Sample Description	Vinyl, Chloride Concentration <u>ppm</u>
General Atmosphere	
West Side	
Southwest corner, near Poly 146.	<1.
Center, near Poly 106.	<1.
Northwest corner, near Poly 139.	3.
East Side	
North end, near Poly 131.	16.
Center, near Poly 119.	<1.
South end, near Poly 135 (Poly being opened).	41.
Poly 135 opened. Sample near open manhole.	660.

Poly 154

Poly has been hydro cleaned and exhausted for
25 minutes.

Water charge started; sample just inside manhole.	340.
Water at midpoint; sample just inside manhole.	360.
Water at midpoint; sample just outside manhole.	22.
Water charging completed; sample just inside manhole	99.
Water charging completed; sample just outside manhole.	6.

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Avon Lake

R. W. Modrell
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Dept. 0020 - Bldg. 5-H

July 14, 1972

Following, are results of the organic tin and vinyl chloride measurements undertaken at ALGCP on June 29, 1972.

Two atmospheric samples were collected along the No. 1 Banbury line during processing of compound 85134 Black 288. This compound contains approximately 1% dibutyl tin dilauryl mercaptide (E20). One sample (5.5 minutes; 147 liters) was collected over the dump mill rolls directly in the visible fume. The atmospheric tin concentration at this point was found to be less than 0.06 mg/m^3 . A second atmospheric sample (10 minutes; 281 liters) was collected at the strip mill, in the mill operator's breathing zone. The atmospheric tin concentration indicated by this sample, was less than 0.04 mg/m^3 . Neither sample gave a positive test for tin and the concentrations reported above are only for showing the sensitivity limitation of the method. The recommended TLV for organotin is 0.1 mg/m^3 and the atmospheric concentrations found during this run were well below this limit. No inhalation health hazard from organotin existed at the time these samples were obtained.

You will recall, at the time of my visit, we discussed the apparent inadequacy of regular chemical cartridge respirators in providing relief from fume and odor generated by this compound. If employee complaints of irritation continue, during the processing of this compound, I would suggest you give a trial evaluation to MSA Custom Comfo Aerosol Filter Respirator with either an "S" or "H" filter cartridge. The MSA catalogue numbers are 10-86431 ("S" filter) and 10-86432 ("H" filter).

The attached Table presents results of the vinyl chloride sampling, performed on the third floor of Building 461 (Poly charging area).

General atmospheric concentrations of vinyl chloride were found to be very low (<1 to 16 ppm). Significant amounts of vinyl chloride were detected in the vicinity of Poly 135 during, and immediately after, the Poly was opened. This is believed to be only a transient condition but emphasizes the need for promptly exhausting Polys as soon as they are opened.

The special study of Poly 154 (bottom half of Table) was conducted to determine vinyl chloride concentrations in the manhole region during water charging of the Poly. Although the initial samples taken inside the manhole show significant amounts of vinyl chloride (340 ppm; 360 ppm), the concentrations are below the current TLV ceiling

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of 500 ppm. Samples taken outside the manhole are well below the 500 ppm limit. Exposure conditions at this operation present no significant risk to personnel. However, it is anticipated that the current recommended exposure limit of 500 ppm will shortly be lowered to 200 ppm, in which case, it is likely that the vinyl chloride concentrations prevailing in the manhole region will be regarded as exceeding the TLV.

R. W. Modrell

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cc: W. E. McCormick

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R. Rylands

Avon Lake

E. B. Katzenmeyer, Jr. Dept. 0020 - Bldg. 3-H

11/9/73

Personal Monitoring Vinyl Chloride

Air sampling to evaluate employee exposures to vinyl chloride was conducted at the Avon Lake General Chemical Plant on October 10, 1973. Serial air samples, employing the use of commercial (Mine Safety Appliances Co.) charcoal adsorption tubes were collected in the breathing zones of two operator classes in building 451. These tubes were returned to the laboratory and were subsequently analysed for vinyl chloride by Gas Chromatography.

Calculated time weighted averages (TWA) for vinyl chloride, as measured during a four hour sampling run, were 26.6 ppm VCl for the job of Change Operator (Table I) and 32.6 ppm VCl for the job of Poly Helper (Table II). These results are below the time weighted average goal of 50 ppm.

Table III has been prepared to show concentrations of vinyl chloride on the third floor of building 451, as measured by the Bendix process analyser, during the period that the charcoal samples were collected.

Additional sampling, utilizing the charcoal adsorption technique, will be necessary in order to thoroughly evaluate the efficiency of this sample system. The current results are regarded as preliminary in nature and are reported to show the progress being made.

E. B. Katzenmeyer, Jr.

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cc: W. Gunning
E. W. Harrington
B. M. G. Zwicker

WCB		
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NU	✓	✓
SGK		
JCP		
CL		
STL		
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Table I

Job of Charge Operator; Results of Personal Monitoring for VC1
from 10:39 a.m. to 2:40 p.m. on October 10, 1973

<u>Sample</u>	<u>Sample Collection Time Minutes</u>	<u>Comments</u>	<u>Concentration VC1 ppm</u>
A	21	7 min. spent on 2nd floor; balance on 3rd (control room & operating floor)	19.4
2	24	5 min. 2nd floor to start pre- mix poly #5	18.6
4	57	Isolated & turned on steam poly #5; 5 min. on 2nd floor to start charge to poly #6	25.5
6	28	5 min. on 1st floor at VC1 cir- culating pumps; 5 min. on 2nd floor to start charge poly #17;	20.2
8	31	Isolate poly #17 & turn on steam 3rd floor;	24.6
12	49	5 min. on 2nd floor to start charges polys 19 & 45; 6 min. on 3rd floor to isolate & turn on steam polys 19 & 45; 5 min. on 2nd floor to start charge poly #32	43.1
17	31	All time spent on 34d floor	21.5
Calculated TWA for 4 hour exposure			26.6

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Table II

Job of Poly Cleaner Helper; Results of Personal Monitoring for VCl
from 10:28 to 2:35 p.m. on October 10, 1973

<u>Sample</u>	<u>Sample Collection Time Minutes</u>		<u>Concentration VCl ppm</u>
B	30	Time spent on 3rd floor closing poly 19 after HRC clean;	23.8
3	67	Time on 3rd floor opening polys 31, 32, 45 includes 20 min. break in smoke shack;	19.3
5	27	Set up to HRC poly #45 3rd floor	27.0
7	14	Set up to enter & clean poly 32; last 5 min. spent inside Poly (OVA 70-100 ppm VCl at poly man- head)	43.2
9	5	Walking inside poly 32 (OVA 70-150 ppm);	52.1
10	11	Walking inside poly 32; sampling stopped when man came out of poly	66.0
11	25	Removed HRC unit from poly #31 and prepared to enter for hard cleaning OVA - 1.0% VCl at manhead when HRC removed;	58.9
13	13	7 min. of time spent inside poly #31 OVA = 100 ppm VCl at manhead;	101.8
14	10	Working inside poly #31 for 7 min. OVA = 100-125 ppm VCl at manhead;	36.3
15	39	Prepared poly #31 for filling - 9 min. Balance of time spent on break in smoke shack;	9.8
Calculated TWA for 4 hour exposure			32.6

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Table III

Average Concentrations Vinyl Chloride as Recorded by
Bendix Process Analyser 10/10/73; 10:30 a.m. to 2:40 p.m.

<u>Time</u>	<u>Concentration VC1 ppm</u>
10:30 a.m.	75
11:00-12:00 (Noon)	80
12:00- 1:00 p.m.	100
1:00- 2:00 p.m.	150
2:00- 3:00 p.m.	140
Average Concentration for 8 Hr. shift*	123

* Sampling probe located in southwest corner 3rd floor building 451
between polys 15 and 21.

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