



TO P. S. Trew

DATE September 7, 1982

FROM M. G. Carver

SUBJECT Vent Sampling and Ambient Air
Data Summary

MC.

The VDC Plant Scrubber Vent has been characterized for chlorinated hydrocarbon emissions. The scrubber has a 0.5 ft diameter stack and a variable flow rate depending on operating conditions.

In the past the vent was comprised of the DH still, VDC storage, VDC reactor, VDC still, day tanks, and HQMME tank vents. As of 3/19/82, the DH still vent and the VDC storage vent are being incinerated. The vents cannot, however, be incinerated during a No. 3 Incinerator outage or during abnormal conditions. Samples were taken under various operating conditions and minor changes were made between samples in an effort to reduce chlorinated hydrocarbon emissions below the 100 tpy limit.

Attached is a series of evaluations with pertinent operating parameters.

Operations has suggested that minor changes be made in an effort to reduce VDC emissions, such as moving the VDC reactor vent stream to the lower portion of the scrubber instead of the upper portion where it is currently feeding, thus allowing more effective removal of VDC from the vent. More sampling is planned if changes are made.

In reference to a memo written August 30, 1982, by L. C. Davis, the memo stated that 69 ppm VDC was detected at Sheraton Chateau Charles and current conditions could not account for that high of a concentration. The figure reported, however, was 69 $\mu\text{g}/\text{m}^3$ which is equivalent to 17.4 ppb.

Attached is the data as reported.

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Attachments

cc: H. J. Hoenes, Jr.
C. P. LeBlanc
M. Wood ✓
E. J. Tullier/R. P. Byars
E. F. Parsons/L. C. Davis
Environmental File

VDC Scrubber Vent

Sample (Date/Time)	Flow Rate (ft ³ /min)	ClHC conc. (V%)	PMR*		Operating Conditions			Notes
			lb/day	tpy	VDCM prod	EDC prod	Vents	
7-7-82/9:45 a.m.	8.8	3.2	94.6	17.3	37 tpd	200 tpd	Normal**	No. 1 and No. 2 reactors reworking material
7-9-82/10:30 a.m.	6.6	55.5	1304	238	37 tpd	200 tpd	Normal	
7-13-82/2:00 p.m.	26.5	12.2	1177	214	49 tpd	0	Normal	
7-15-82/2:00 p.m.	23.9	15.1	1281	234	49 tpd	0	Normal	
8-11-82/9:00 a.m.	107.3	0.4	178	33	49 tpd	400 tpd	Normal	Condensors cleaned week of 8-2-82
8-17-82/9:20 a.m.	50.2	1.52	279	51	49 tpd	0	Normal	
8-19-82/9:30 a.m.	113.5	20.3	8272	1510	49 tpd	0	Abnormal	DH still vent to scrubber
8-23-82/10:00 a.m.	19.1	8.53	577	105	49 tpd	125 tpd	Normal	
8-30-82/10:00 a.m.	26.6	7.7	728	133	31 tpd	150 tpd	Normal	
8-30-82/1:45 p.m.	24.5	6.4	560	102	37 tpd	150 tpd	Normal	Water feed to vent scrubber was doubled
9-1-82/9:00 a.m.	30.7	6.6	724	132	49 tpd	150 tpd	Normal	VDCM reactor pressure was raised thus reducing vent pressure

*PMR = pollutant mass rate

**vents, normal - DH still vent and VDC storage vent to incinerator

SL 043656

PPG INDUSTRIES, INC.
INDUSTRIAL CHEMICAL DIVISION
LAKE CHARLES, LOUISIANA

		$\mu\text{g}/\text{M}^3$							
SAMPLE NO.		1	2	3	4	5	6	7	8
Chloroethene	(VC)								
1,1-Dichloroethene	(VDC)		69						
<u>trans</u> -1,2-Dichloroethene	(<u>trans</u>)								
Chloroethane	(EC)								
Dichloromethane	(MeCl_2)								
Tetrachloromethane	(CCl_4)								
Trichloromethane	(CHCl_3)								
<u>cis</u> -1,2-Dichloroethene	(<u>cis</u>)								
Trichloroethene	(Trichlor)								
1,1-Dichloroethane	(DCE)								
1,1,1-Trichloroethane	(MC)								
Tetrachloroethene	(Perchlor)								
1,2-Dichloroethane	(EDC)		58						
1,1,2-Trichloroethane	(TCE)								
1,1,1,2-Tetrachloroethane	(Unsym)								
1,1,2,2-Tetrachloroethane	(Sym)								

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Because the Arcas system shares the display print r with the OHC reactor vent GC system, it is easy to confuse alarm messages. The sample below shows the differences between an OHC message and an Arcas message:

GC 02 INDICATES T/E ARCAS ALARM

ST/CP = "STREAM/COMPONENT"
T/E HAS 4 STREAMS, 1 COMPONENT
OHC HAS 1 STREAM, 5 COMPONENTS

INDICATES ARCAS ALARM AT SAMPLE POINT 7, (1 COMPONENT IS VC)

CONCENTRATION LEAK IN #1

DATE 03/06/83
TIME GC STRM 02 N2 CO CO2 C2H4
09:57 1 01 2.84 8.12 7.09 51.21 26.50

ALARM TIME 10:12 DATE 03/06/83 GC 02 ST/CP 07/01 CONC 7.51

ALARM TIME 10:14 DATE 03/06/83 GC 01 ST/CP 01/04 CONC 51.09

10:07 1 01 2.87 7.99 6.98 51.09 26.88

GC 01 INDICATES OHC VENT ANALYZER

INDICATES THAT ALARM IS ON 4TH COMPONENT (CO2)

CONCENTRATION IN #4

An alarm occurs whenever a VC concentration greater than 5 ppm is detected at one of the monitor points. Two alarms in a row at the same point will generate a "leak" message.

Operator Responsibilities

Whenever an Arcas alarm is received, it should be investigated promptly. Whatever is discovered should be noted on the printer page (even if nothing was found). If the alarm is real, action must be taken to correct the situation and eliminate the VC emission. This action should also be noted on the printer page. Remember that at low ppm levels, VC may not be visible or detectable by smell.

If a "leak" message is received after nothing was found on the initial check, the area should be rechecked, using the HNU meter to find the leak source. Non-operations personnel should be cleared from the area, and the operator conducting the search should wear a Comfo II respirator or an air-pack.

The Arcas system must be kept functioning properly at all times. The air, nitrogen and hydrogen bottles must be checked routinely and replaced when the supply pressure is below 500 psig. On rounds the VC operator should check the analyzer building and make sure all 11 rotameters are showing a purge. (Possibly one may be down if the GC is injecting a sample.)

As part of the L.O. checklist, the lead operator should check the last Arcas shift report for the three items shown below:

① CHECK THAT SHIFT TIME IS CORRECT

OHC RECYCLE GAS

DATE	03/23/83	TIME		06:46	SHIFT TIMES:		22:45 - 06:45
		O2	N2	CO	CO2	C2H4	
AVG. CONC.	2.41	10.20	.03	.00	.01	.00	
# READINGS	47	47	47	46	46	0	
# ALARMS	0	0	0	0	46	0	

VINYL CHLORIDE AMBIENT AIR MONITOR, TE-II

DATE	03/23/83	TIME		06:46	SHIFT TIMES:		22:45 - 06:45
STREAM		1	2	3	4	5	6
AVG. CONC.		.01	.01	.01	.01	.02	.02
# READINGS		22	22	22	22	22	22
# ALARMS		0	0	0	0	0	0
# LEAKS		0	0	0	0	0	0
STREAM		9	10	11	12	13	14
AVG. CONC.		.01	.04	.01	.00	.00	.00
# READINGS		21	22	22	0	0	0
# ALARMS		0	0	0	0	0	0
# LEAKS		0	0	0	0	0	0

② CHECK THAT NUMBER OF READINGS AT EACH POINT IS OK.

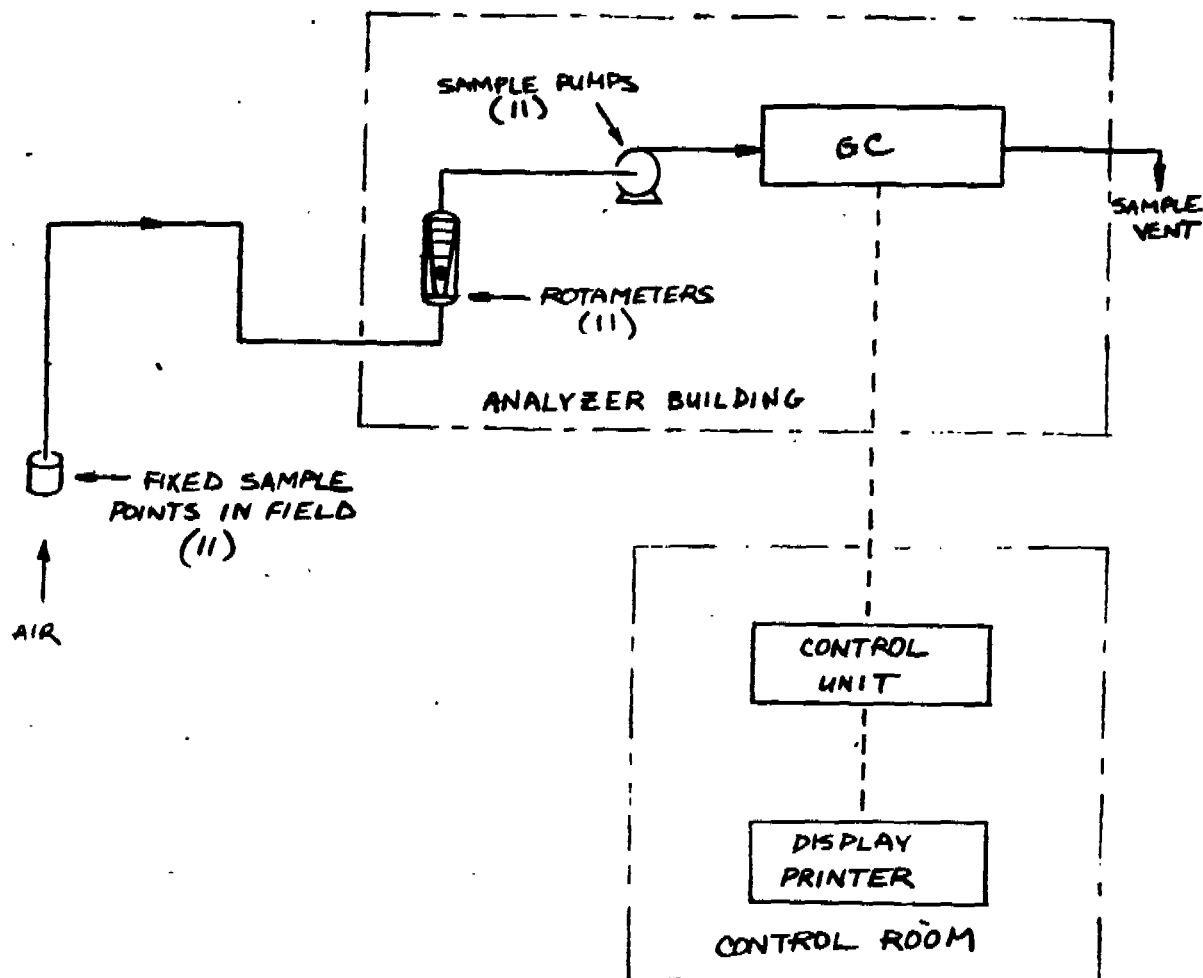
③ CHECK THAT CONC AT EACH POINT IS LESS THAN 0.5 PPM.

The shift time can indicate a programming problem. The correct times are 06:45-14:45, 14:45-22:45, and 22:45-06:45. The number of readings should be 19-22 at each point each shift, possibly less if some calibration work was done. The third item to be checked is the average concentration at each monitor point. Any average over 0.5 ppm should be investigated unless it was due to alarms checked and documented by previous shifts. One should also be suspicious if all the concentrations show .00 as it may be an indication of GC problems. (There is nearly always a background of 0.01 ppm at some point in the unit.)

Report any problems to your supervisor on days and the shift engineer on back shifts. Repairs must be made without delay.

AMBIENT AIR MONITORING SYSTEM S.O.P.

The Arcas ambient air monitoring system consists of a gas chromatograph that analyzes the air sample from each monitoring point and a program control and display unit that controls the G. C. and prints the VC concentration detected at each point. A simple diagram is shown below:



There are 11 fixed points that are monitored:

1. N. W. of VC Dopp Kettles
2. S. E. of Quench Tower
3. S. of Quench Liquor Pumps
4. N. W. of Furnace Feed Dryer
5. W. of VC-HCl Still
6. N. W. of VC-HCl Still Reflux Tank
7. S. E. of VC Stripper Reflux Tank
8. S. W. of DCE Catalyst Pot
9. N. W. of DCE Reactor Pumps
10. Control Room Laboratory
11. Process Sump

VDCM Loading Incinerator 1 up

24 Points

1. Discontinue purging VDCM cars.

1. The VDCM vents will divert to the large stack. Any emissions via this route should be prevented or minimized.

2. Check with EC to determine the nature of the problem

2. EC may trip the vents for problems in their unit with subsequent shutdown of VC rack vent system.

3. If problem is at the incinerator check with UT4 for expected time necessary to resolve problem.

4. If the problem will exist for an extended period, purge the hoses into the can disconnect and secure the rack.

Incinerator Trip

Key Points

VC Loading: Incinerator Trip

1. Discontinue Purging of VC
or EC cars and block the Valves
on the Cars.

2. Check with EC to determine
nature of problem.

3. If the problem is at
the incinerator check with
WTU for expected time
necessary to resolve problem.

4. If problem will exist
for an extended period
purge the hoses into the car
disconnect and secure the rack.

1. Loading May Continue
if equalizer is being used

2. EC may trip
vents for problems
in their unit with
subsequent shutdown
of VC rail vent system

Leaking Truck

1. Discontinue loading.
2. Take appropriate action to prevent injury to personnel
3. Take any immediate action to contain leaking material such that it can be removed.
4. Stop leak if possible.
If not possible to stop leak, have material removed as soon as possible.
5. Notify shift supervisor or day foreman.
6. Have any spilled material removed.
7. Calculate quantity of material lost.

2. Any control room can trip the roadway lights or plant evacuate horn.

4. Return material to tank, into another vessel or into a vacuum truck

Hose Rupture

Key Points

1. Block Nearest Valve.
2. Render first aid if necessary
3. Protect Personnel

3. Have control room
trip roadway lights
or plant evacuation horn.

4. Contain spill
5. Notify Shift Supervisor
6. Remove spilled material
7. Calculate quantity of
material lost.

Material Reacts with Trailer

Key Points

1. Discontinue loading
 2. Secure area
 3. Notify Shift Supervisor & Fireman
 4. Decide consequences of reaction
 5. Determine if trailer can be safely moved to an appropriate unloading site.
 6. Unload the material such that no environmental release occur.
2. Have control room trip roadway lights or plant evacuation horn.
 4. If the possibility of personnel injury is imminent evacuation procedure should be followed
 5. Check tank, valves & fittings

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1. Contact EC control
room to determine if vents
are in the incinerator.

2. Notify WTH that
you will be venting

3. Monitor Vent header
pressure to assure
that the incinerator header
does not overpressurize.

4. If vents trip contact
EC to have them reset

2. Not necessary
if vent flow is minimal

3. Auto valve
will trip at
12 lb.

4. Block Venting
of car until
incinerator reset,