

TEXAS CITY PLANT
UCAR SOLUTION VINYL COMPLEX

VINYLS AREA
S.O.P.

TOTAL AREA
NO. 2 (Revised)
PAGE: Cover Sheet
EFFECTIVE: May 15, 1981

SUBJECT: Vinyl Chloride Exposure Protection

This S.O.P. is a Revision of two S.O.P.'s combined: S.O.P. No. 2 three pages issued August 23, 1976 and S.O.P. No. 26 issued January 16, 1979, eight pages for Bldgs. 115 and 117. Please take those two S.O.P.'s from your Manual and insert this new Revised S.O.P. No. 2 for TOTAL AREA, effective May 15, 1981.

It contains the following:

- A. POLICY
- B. MONITORING EQUIPMENT
- C. LEAK DETECTION
- D. RESPIRATORY EQUIPMENT
- E. EMERGENCY

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A. POLICY

1. UCC Policy is to fully comply with the OSHA Regulation for Exposure to VC1 (1910.1017) reference letter by D.L. Engle dated 3/1/76 to all employees, Texas City Plant.
2. The OSHA standard for VC1 requires that no employee may be exposed to VC1 in concentrations greater than 1) 1 ppm averaged over any 8-hr period, 2) 5 ppm averaged over any period exceeding 15 minutes, & 3) may not be exposed by direct contact with liquid VC1 (1910.1017c).
3. At any time the allowable levels are exceeded in an area, personnel working in the area must wear respiratory protection and rain suits if required.
4. All Visitors to the Regulated Area will register at Bldg. 114 or Bldg. 119 Control Room. The Regulated Area is shown on an attached plot.
5. All Operations & Maintenance personnel regularly assigned to the Regulated Area will be registered on Rosters kept by the Chief Operators & Leadmen. The Contract Division will keep Rosters on contract personnel entering the area. The UCAR Vinyls Staff Roster will be maintained by the Vinyls Secretary. These Rosters (Logsheets) must be forwarded to Bldg. 197 on a regular basis for filing.
6. The Regulated Area will be monitored by three continuous vapor fraction analyzers (VFA's) with sample points scattered throughout the area.

B. MONITORING EQUIPMENT

1. Continuous Vapor Fraction Analyzer (VFA)

Two continuous vapor fraction analyzers are currently in service in the Unit and located in Bldg. 115. A third unit will be added during 1981. Each analyzer consecutively analyzes sample points requiring 40 minutes to complete a scan (2 minutes/point). The analyzer is designed to analyze for VC1 only. Results are

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recorded on a strip chart and stored in a Micro-Computer for further processing. After each 20-point cycle, the stored information is printed out showing VC1 concentrations for each of 19 sample points. The 20th point is a 10 ppm calibration point. The first analyzer covers Tank Area 1, Bldgs. 115 & 117. The second analyzer covers Bldgs. 121, 122, & 114. The location of the sample points are shown in the attached lists. The third analyzer will be located at Bldg. 113 and cover Bldg. 119 and the VC1 Tank Car Unloading Rack.

Calibration samples are taken every 40 minutes. Whenever the calibration samples read out of the specified range (10 ppm $\pm$ 1 ppm), the analyzer must be reported to Maintenance for repair.

The Bldg. 115 Operator & Bldg. 113 Operator when VFA is installed, are responsible for monitoring the VFA, requesting Maintenance for repairs if required, ordering & replacing the printout sheets, and removal of completed sheets each Monday Day Shift. The completed sheets should be placed in the DPS's box with other charts. A file is maintained at Bldg. 115 for filing the VFA printout sheets.

2. Portable Organic Vapor Analyzer (OVA)

Portable OVA Units (Century) are currently available at Bldg. 115 for pin-pointing leaks in the unit. One unit will also be located at Bldg. 113. The analyzers can be used to measure total organic vapors, or specifically for VC1. The analyzer is accurate to 1 ppm.

3. Drager Gas Detector

The Drager Unit consists of a hand operated bellows pump and a detector tube. The tubes come in three detection sizes: 0.5 - 3ppm, 1 - 50 ppm, 100 - 300 ppm. The tubes are specific for vinyl chloride.

Three units will be available - one each at Bldgs. 115, 121 & 197.

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C. LEAK DETECTION

1. Vinyl Chloride Leak (Defined)

A leak, other than one that can be detected by sight, sound, or smell, is defined as a single reading of 10 ppm or greater, or two consecutive readings of 5 ppm or greater on the VFA.

2. Leak Detection Procedure (North Area)

- a. The Bldg. 115 Operator is responsible for monitoring the continuous analyzer (VFA) printouts and determine if there is a leak as previously defined.
- b. The North Area Chief Operator must be notified immediately when a leak is indicated. Other personnel in the affected area must also be notified immediately over the public address (PA) system. The Chief Operator will notify the Shift Production Supervisor.
- c. The Chief Operator, or the Operator if delegated, will determine the source of the leak using the portable organic analyzer (OVA) or the Dräger Detector. The Operator searching for the leak must wear respiratory protection (MSA Pack). It must be assumed that he will be exposed to levels higher than the permissible exposure limits when the source of the leak is discovered.
- d. When the source has been determined, corrective action must begin immediately to stop the leak. If Maintenance is required to repair the leak, the request should have a high priority, normally 2A unless the leak is very large or a vapor cloud release, then 1A. See Emergency Section. Maintenance personnel repairing the leak must also wear respiratory protection and rain suits if danger of exposure to liquid.

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- e. Non-essential personnel shall be withdrawn from the area of the leak. Personnel required to remain in an affected area are required to wear respiratory protection when spending 15+ minutes in an area where the latest reading is 5 ppm, or anytime the individuals 8-hr TWA is forecast to be over 1 ppm.
- f. If, for any reason, repairs cannot be made immediately, the area must be isolated until the leak is fixed and VFA monitor indicates a return to normal conditions (< 1 ppm).
- g. The Chief Operator will notify personnel in the area over the PA system when the VCl level is back to normal.
- h. All leaks, as defined, must be recorded on the forms provided (copy attached) with a description of the action taken to eliminate the leak. The completed form should be routed to the SPS, DPS, and Vinyls Dept. Head.

3. Leak Investigation Procedure (Bldg. 113 Area)

- a. The Bldg. 113 Operator is responsible for monitoring the VFA printouts and determine if there is a leak as previously defined.
- b. The Bldg. 113 Chief Operator must be notified immediately, as well as any other personnel in the affected area, when a leak is indicated.
- d. Other steps of procedure same as procedure for North Area and as listed above.

4. Procedure For High Levels At Bldg. 121

- a. The Bldg. 115 Operator is responsible for monitoring the VFA for the Bldg. 121 area. When a high level (10 ppm or greater for a single point, or two consecutive readings of 5 ppm or greater) is detected in Bldg. 121, he will notify the North Chief Operator.

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- b. The North Chief Operator will notify the South Chief Operator and the Shift Prod. Supervisor.
- c. If the Control Room (Point 5) is indicated by the VFA to be high, the South Chief Operator will use the Drager Detector to confirm the level in the Control Room and make the decision on proper respiratory protection (canister respirators or MSA Air Packs) for the Operators.
- d. The South Chief Operator, or the Operator if delegated, will use the Drager to determine the source of the VCl. He must wear respiratory protection while searching for the source. The most likely source is the varnish and a check of each impregnator must be made to determine the specific varnish involved.
- e. The South Chief Operator will communicate the results of his search to the North Chief Operator who will take corrective action in the Stripping Area, if required.
- f. The Bldg. 115 Operator will continue to monitor the VFA and report areas of Bldg. 121 affected.
- g. The North Chief Operator will communicate areas affected to the South Chief Operator who will decide on areas to be cleared of personnel and notify Staff.
- h. The North Chief Operator will notify personnel in the area over the PA system when the VCl level is back to normal.
- i. The North Chief Operator will fill out the Leak Detection Log Report.

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5. Routine Check For Leaks

A weekly check will be conducted to find small leaks in the area. The Bldg. 116 Operator and the Bldg. 113 Chief Operator will be responsible for conducting the checks for their areas each Saturday on Day Shift. Areas to be checked using the OVA include:

North Area (Bldg. 116 Operator)

- a. Autoclave steam pumps
- b. Autoclave safety relief devices and manual vents
- c. Centrifugal pumps in the Stripping Unit
- d. Reciprocating (steam) pumps in the Stripping Unit
- e. The second and third levels of the Stripping Unit
- f. Safety relief devices in the Stripping Unit
- g. The compressors (unloaders and packing)
- h. Centrifugal pumps in Tank Area 1
- i. Reciprocating pumps in Tank Area 1
- j. The second level of Tank Area 1
- k. Safety relief devices in Tank Area 1
- l. Scrubber vent to atmosphere in Stripping Unit.

VCl Tank Car Rack (Bldg. 113 Chief Operator)

- a. First level - transfer pump
- b. Second level - four hookup spots.

Building 119 (Bldg. 113 Chief Operator)

- a. First level - compressor, reflux pump, cycle tank, knockout pot
- b. Second level - condenser
- c. Third level - stripper feed motor valve

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Tank Area 4 (Bldg. 113 Chief Operator)

- a. Transfer pump
- b. Acetone purge pump

All leaks discovered should be recorded on the forms provided at the Chief Operator's desk at Bldg. 115 and Bldg. 113. Action should be taken to eliminate any leaks as soon as possible.

D. RESPIRATORY EQUIPMENT

1. The approved respiratory equipment in the Unit for protection from exposure to VCl are (1) the MSA self-contained 30-minute Air Pack, (2) the Breathing Air Systems and (3) Canister Masks.
2. One or more MSA Air Packs are located at each building in the Vinyls Area. A list is attached showing the number and location. Each Operator should know the location of the respiratory equipment in his/her working area. The MSA Air Pack contains a clean MSA Mask and a full air bottle. Anytime an Air Pack is used, it must be reported to the Safety Dept. Ext. 6027 or 5199, for refilling the bottle and cleaning the Mask.
3. The Breathing Air System consists of a Mask and Hose connected to a cylinder of "breathing" air. Some buildings have cylinders connected to a manifold with several take-off points for hose use. Clean Masks should be stored conveniently located to each Breathing Air Station or in the Control Rooms.

When a Mask has been used, it should be cleaned or the Safety Dept. should be called (Ext. 6827 or 5199) and they will pick up the Mask for cleaning.

Breathing Air Systems are located at Bldgs. 113, 115, 116, 117, 122 and the VCl Tank Car Rack.

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4. Canister type respirators are available from a storage container located on the west side of Fifth Street about midway between Bldgs. 115 and 121. The container is painted green and marked "Vinyl Chloride Canister Respirators". These respirators can be worn only in areas where the VCl level is less than 25 ppm. The canister is good for four hours use.

E. EMERGENCY

A vinyl chloride emergency occurs when there is a massive VCl release threatening a vapor cloud hazard. In this case, the Flammable Vapor Cloud Release S.O.P. (Vinyls Area S.O.P. No. 1) should be followed.

The main steps of that procedure are as follows:

1. Actuate the deluge system for the affected area.
2. Evacuate the endangered area (upwind or crosswind of the leak).
3. Activate the Plant Fire Alarm and/or the Toxic Gas Alarm.

Locations of Toxic Gas Alarm boxes:

Box 612 - Pipe rack east of Bldg. 117

Box 623 - Pipe rack east of Bldg. 113

Box 632 - Pipe rack northeast of Bldg. 120

4. Isolate the affected area, roping it off if possible. Do not allow ignition source near area.
5. Do not re-enter the area. Only Fire and Rescue Squad wearing proper protective equipment are allowed in the area.
6. Isolate the leak by remote valve or pumping arrangements, if possible.
7. All available water should be used to disperse the cloud and

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form a water curtain to prevent vapors from reaching an ignition source. Deluge, spray systems, monitor nozzles, and fire hoses should be used.

8. As a last resort, entry to the area shall be made from upwind by Fire/Rescue Squad especially trained to cope with vapor releases, wearing protective clothing and respiratory protection and under a protective water spray. An ignition should be anticipated at any time.
9. If a fire occurs, do not extinguish until the source of the fuel is shut off. A re-ignition could be more hazardous than the fire.

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LOCATION OF VINYL CHLORIDE

CONTINUOUS SAMPLE POINTS - NORTH END

<u>Point No.</u>	<u>Building</u>	<u>Level</u>	<u>Location</u>
1	Tank Area 1	1	North of 602 & 612 tanks
2	Tank Area 1	1	North of 676 tank
3	Tank Area 1	1	South of 615 tank
4	Tank Area 1	1	South of 675 tank
5	Bldg. 117	1	Middle of compressor room
6	Bldg. 117	1	Control Room
7	Bldg. 117	2	Middle of deck
8	Bldg. 117	3	Middle of deck
9	Bldg. 117	1	North of #2 Dilution tank
10	Bldg. 115 //7	3	VENT SCRUBBER VENT North of B-8, 9 autoclaves
11	Bldg. 115	1	South of B-7, 8 autoclaves
12	Bldg. 115	1	South of B-9, 10 autoclaves
13	Bldg. 115	1	Office
14	Bldg. 115	1	Control Room
15	Bldg. 115	1	Lab
16	Bldg. 115	1	North of B-4, 5 autoclaves
17	Bldg. 115	1	North of B-2, 3 autoclaves
18	Bldg. 115	3	North of B-3, 4 autoclaves
19	Bldg. 115	3	B-6 autoclave pump
20	Calibration Point	1	Calibration point

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LOCATION OF VINYL CHLORIDE
CONTINUOUS SAMPLE POINTS - SOUTH END

<u>Point No.</u>	<u>Building</u>	<u>Level</u>	<u>Location</u>
1	121	1	Office - Bldg. 121
2	121	1	West end of building
3	121	1	East end of building
4	121	2	West end of No. 3 Bird chute
5	121	2	Control Room
6	121	2	East end by No. 4 wash tank
7	121	3	Middle of atomizer room
8	121	3	Center north wall of Bird room
9	121	3	Middle of cyclone room
10	Tank Area 2	1	Northeast of 13004 tank
11	122	1	North of structure
12	122	2	Between 013 and 031
13	122	1	North wall of gel tank room
14	122	1	North wall of ionexer room
15	122	2	Middle of floor
16	122	3	Middle of floor
17	121	2	Outside northeast corner of bldg.
18	114	1	Office
19	114	1	Control Room
20	115	1	Calibration point - 10 ppm

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VINYL CHLORIDE LEAK DETECTION LOG

Date: _____

Time: _____

Operator: _____

Please list below the sources or leaks of VCl found in the Solutions Unit
Please list how the source was discovered and the action taken to
eliminate the leak.

Source + Cause

How Discovered

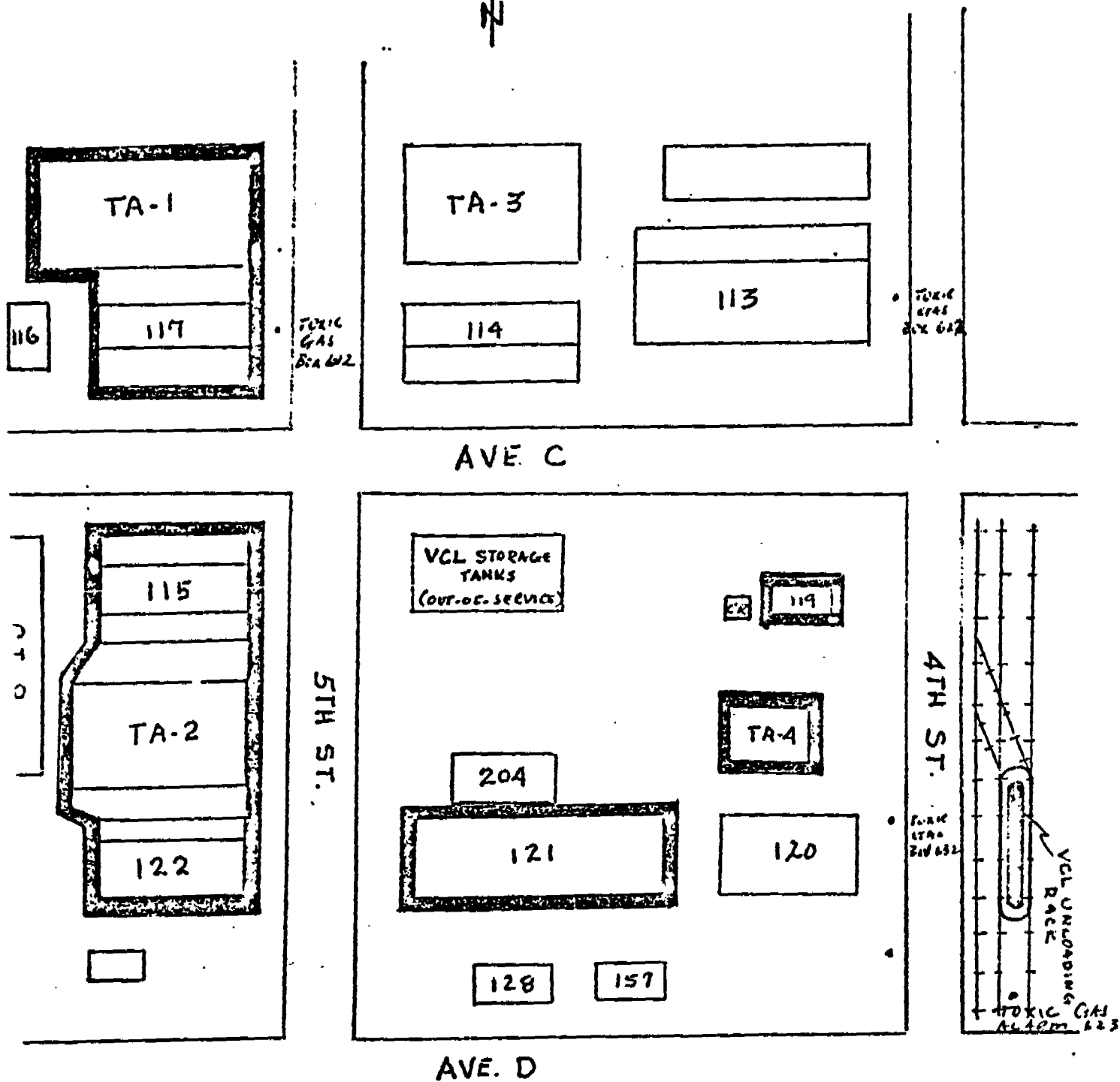
Action Taken

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LOCATION OF RESPIRATORY EQUIPMENT

<u>Bldg. No.</u>	<u>MSA Air Packs (30 Minute)</u>	<u>Breathing Air Systems</u>	<u>Canister Type Respirators</u>
Tank Car Rack	2	Yes	1
Bldg. 113	4	Yes	
Bldg. 114	2		1
Bldg. 115	2	Yes	2
Bldg. 116	1	Yes	
Bldg. 117	2		2
Bldg. 119	1		1
Bldg. 121	4		
Bldg. 122		Y s	

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5th Street
Storage Box