

W.T. Gunning/
M.D. Rider

Avon Lake General Chemical Plant

J.L. Steiniger

Avon Lake General Chemical - Geon West

Repetitive Accident Type #10 - Relief Valve Discharge from
South Recovered VCL Monomer Tank

Summary:

On Friday, December 14, 1979, at 0210 hours, the relief valve assembly on the south recovered monomer storage tank relieved for about 3 minutes. Approximately 800 pounds of vinyl chloride was released to the atmosphere.

Board of Review:

A preliminary investigation of the release was held at 0750 on December 14, 1979, and a formal Board of Review was held on December 17, 1979 at 0830 hours. The following people were in attendance:

*Claude Bayard-----Acting Product Manager
Frank Costantino-----Senior Engineer
Glen Evans-----Geon West Maintenance Coordinator
Elmer Fischer-----Area Engineer
*Ed Galant-----Refrigeration Operator
*Don Guggenbiller-----B/451 Foreman
*Bill Gunning-----Sr. Safety Engineer
*Ken Kaminski-----Professional Services Manager
Hal Loebick-----Instrument Engineer
*Doug Rider-----Environmental Engineer
*John Steiniger-----B/451 Supervisor

*NOTE - Also attended preliminary investigation

Description of Incident:

1. Refrigeration Operator, Ed Galant was taking readings on the high pressure recovery system at approximately 0135 when he noticed that the chilled water condensers were reading 78 psig pressure instead of the normal 60 psig.
2. Galant diagnosed the problem as vinyl chloride backing up into the high pressure recovery system from the monomer storage tanks.
3. He immediately went down to the monomer storage area on the north side of building 451 and checked the west (approx. 5,000 gallons) and the south (approx. 1,800 gallons) tanks which were in service at the time.
4. Galant noted high pressure on the west storage tank and immediately went to valve in the north spare tank. He opened the inlet fill line to the north tank to equalize pressure from the south and west tanks as well as drain any liquid vinyl from the high pressure recovery system.

3. The pressure and liquid level did not equalize with the north tank for some reason. We believe that there is a plug in the line between it and the other tanks or an excess flow valve slammed shut when the south tank was equalized with the north tank.
4. Neither the vapor equalizing line or the discharge line between the north and south tanks were opened.
5. Considerable work has been done in the past to obtain a reliable level on the recovered monomer storage tanks. Frank Costantino spent two months researching different level control systems for the these tanks back in early 1979 (February and March). An Engineering Request was written on March 9, 1979 by Costantino, ER-2358 to get an estimate for the dp cell arrangement he finally selected.

Glen Evans wrote an Engineering Request on May 18, 1979, ER-2425, to equip these tanks with pressure alarms. This was the result of a venting we experienced on May 12, 1979, when the south tank experienced an auto-polymerization.

During the first week of August, the recovery system was analyzed by the operating personnel of building 451. A letter was written on August 10, 1979 describing the problems associated with this system. The level indicators for the recovered monomer tanks were mentioned as a problem area. A collect cost GPO was issued to cover initial works. This GPO was later merged with a VGA collect cost GPO so that money would be more readily available to work on the system. The new GPO, #15754, was approved on October 5, 1979, for \$40,000. Dp cells for the new level indicating system were ordered in October by Elmer Fischer. They are a 14-16 week delivery item.

6. Building 451 was using all fresh vinyl chloride during the time of the venting and building 461 was charging recovered monomer. Building 461 reduced their charging rate on 12/11 to 6 charges per day versus their normal 14, because of a sipex supply problem. This may have allowed the recovered monomer tanks to build-up a level. Building 461 also recovered an unreacted charge on 12/13. Theoretically we charged enough recovered monomer on 12/13 to bring the tank levels back down, but since the level indicators don't work, there is no positive way of knowing.
7. The north recovered monomer tank was taken out of service and cleaned during the last week of September. The level indicator was repaired and certified as working.
8. Based on the amount of recovered vinyl chloride charged to the premixes, in excess of 6,000 gallons, the recovered monomer tanks were probably over-filled.

Probable Cause of Discharge:

The probable cause of the relief valve discharge on the south recovered monomer tank was over-filling of the tank and backing up into the recovering system. The new equalizing procedure should have prevented this discharge, if the line was not plugged (?) and/or the excess flow valve did not slam shut. (At the time of this writing, we do not know which occurred. We are in the process of recovering the system so the line can be inspected).

cont'd . . .

OSHA and EPA Considerations:

Based on an engineering estimate, 800 pounds of vinyl chloride was discharged to the atmosphere.

The following building lights were noted for building 451:

<u>Area</u>	<u>Greater than 100 PPM</u>	<u>Greater than 3 PPM</u>
3rd floor inlet air	4	42
3rd floor west	4	52
2nd floor east	14	37
1st floor south	20	36
3rd floor east	4	44
2nd floor west	15	32
1st floor inlet air	1	19
Control Room	0	17
3rd floor north	6	37
3rd floor stairwell	16	26

Action Plans:

1. Install new liquid level indicator system on recovered monomer tanks. Foxboro has been contacted and dp cells should be received in 3 to 4 weeks. All three tanks will be equipped with the new system. The tank levels will be recorded on a 3 pen recorder. A high level alarm module will also be provided for each tank. Job should be completed by the end of January, 1980. We will repair the existing Varec level indicators until the new system becomes operational.
2. Pressure alarms will be ordered for the three recovered monomer tanks. These should be installed by the middle of February, 1980.
3. A pressure alarm will be installed in our high pressure recovery system between the compressor and the chilled water condensers by the end of December, 1979.
4. Both poly buildings will use recovered monomer in each charge to minimize the possibility of building a level in the storage tanks. Recipes will also be adjusted to charge greater amounts of recovered monomer during potential upset periods. We are presently charging recovered monomer at 20% in B/451 and 33% in B/461.
5. The recovered monomer tanks will be emptied each Monday and Thursday to check the existing level indicators, and to insure that minimum recovered monomer levels are being carried. This is presently being done.
6. This incident will be stressed at each shift safety meeting and the importance of proper communications between poly buildings will be emphasized. Should be completed by end of January, 1980.

NGC 17426

cont'd . . .

Repetitive Accident Type #10 - Relief Valve
Discharge from South Recovered VCL Monomer Tank

Page 5

7. A new procedure for equalizing the recovered monomer tanks in times of emergency will be written. This procedure should be completed by the middle of January, 1980.

J.L. Steiniger
Geon West

JLS/bjc

NGC 17427