1973 Type #7 Incident #5

B.F.GOODRICH CHEMICAL COMPANY
Avon Lake General Chemical Plant

TO: W. T. Gunning

FROM: J. R. Shellenberger

LOCATION: ALGCP

DATE: January 3, 1974

SUBJECT: Near Miss - Separation of Speed Line Flanges on Wash Down Line Bldg. 461

INCIDENT:

At approximately 0400 hours on December 28, 1973, a speed line flange on the wash down lines for polys 149-156 separated while under steam pressure. The wash down line from poly 152 had been plugged and was in the process of being cleared by the use of high pressure (185 psig) steam. When the flange separated the 3" wash down line moved approximately 18" into a 110 volt light fixture and the light fell to the floor. There were no injuries and there was no damage other than to the deflected wash down line and the light fixture. The uninsured loss that occurred was $400.

A Board of Review comprised of the following people was held on January 2 at 1600 hrs:

- Blow Down Operator
Donald Guggenbiller - Geon Shift Foreman
Gene Krupp - Safety Inspector
Ronald Mather - Product Manager Polyvinyl Resins
John Shellenberger - General Foreman

DETAILS:

The charge in poly 152 could not be blown down by the normal method since the blow down valve appeared to be plugged. The blow down valve is in the line between the reactor and the blowdown tank. The blowdown operator, , indicated that since he could not drop the charge to the blowdown tank, he would drop it directly from the poly to the blend tank via the wash down lines. (The charge was already recovered in the poly). As he prepared to do this he discovered that the wash down lines were also plugged. He then tried to clear the wash down lines with D.M. water (100 psig) but was unsuccessful. He then started using steam to blow out these lines. The steam was turned on and off intermittently, after a period estimated to be 5-15 minutes, the operator heard a loud bang which was found to be the result of the line separating at the flange and hitting the light fixture.

NGC 15790

FACTS FOUND AFTER THE INCIDENT:

1. A piece of hard resin 3" in diameter and about 8" long was found on the floor. This was the line obstruction.

2. The blowdown valve on poly 152 was plugged solid and explained the inability to drop the charge to the blowdown tank.

(3) Flanges on the wash down lines were not backwelded. These lines had been generally in low pressure (100psig with D.M. water) service and was one area that was not felt to be critical a year ago when the problems with rolled flanges were revealed. It was not felt that lines vented to the atmosphere as these were through the tanks would become a pressure system, however, when these lines are plugged this is not the case.

REDACTED

RECOMMENDATIONS:

1. All flanges on the wash down lines were immediately backwelded to prevent additional separations.

2. The practice of using steam to clear the plugged wash down lines will be discontinued immediately.

3. A GPO has been written to revise the wash down lines with an adequate slope to facilitate better drainage.

4. The incident is being publicized within the department.

J. R. Shellenberger
General Foreman

JRS/bu

cc: H.Waltemate
J.Gressler
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
B.A.Healy
R.A.Kelley
Department Managers
General Foremen

1973 Type #9 Incident #3

TO: W. T. Gunning

FROM: R. M. Yurovich

LOCATION: ALGCP - Safety

DATE: April 4, 1973

SUBJECT: Near Miss Repetitive Accident Type #9 - Machinery in Operation - Pinch Point Accidents - No Lost Time

ACCIDENT DESCRIPTION:

On April 1, 1973 at approximately 0800 hours, Millroom East First Class Mill Operator sustained abrasions to the back of his right hand and right index finger while attempting to clear jammed transparent compound from #2 cuber slitter rolls and the strip guide on discharge side of slitter rolls leading to feed rolls.

The jammed condition of the cuber had occurred on the previous shift and at that time the product flow and size reduction operation diverted to #1 cuber. Upon arriving at his work station learned of #2 cuber condition through shift change communications and set his first priority to unjamming the cuber to make it operational as the standby unit for immediate use if and when necessary. After observing the extent and condition of the cuber, fed several small strips of compound into the cuber in an attempt to force and dislodge the jammed material through the introduction of the small strips. Several attempts by this method only succeeded in loosening the jammed material. (The feeding of small strips in this manner is safe, operating procedure and practice. No "back" feeding was attempted). Observing the jammed material loose, raised the hinged plate between the discharge side of the slitter roll and the feed roll leading to the fly knife blades. This action exposes the bed area where the compound, cut by the slitter role, travels to the now exposed feed roll, leading into the covered fly knife action. The cuber at this time was operating, but no product was being sized reduced. grasped the loosened material at the base of the slitter roll discharge chute with his gloved hand (mill glove) and attempted to pull this material free. While pulling the material in this manner, he lost his grasp and with the subsequent momentum the back of his gloved hand struck the turning exposed fly knife feed roll. The feed roll immediately grasped the loose fitting mill glove. pulled his hand from the glove sustaining the abrasions. The mill glove was fed through the fly knife action by the feed roll gear. shut the cuber down, reported the incident to the Shift Foreman, and received medical attention for his injury.

The accident was initially investigated by Curt McClung, Shift Foreman, and the report of injury accident report completed. At 1330 hours on April 2, a complete review of the accident was held with the following in attendance.

R.N.Rylands - Plant Manager
R.M.Sandfry - Compound Manager
W.T.Gunning - Sr. Safety Engineer
R.F.Gascoigne - Safety Engineer
R.M.Yurovich - Millroom East General Foreman
C.McClung - Millroom East Foreman
- Mill Operator

REDACTED

NGC 15792

APR 5 1973

DISCUSSION:

A guard had been installed to cover the feed roll and the area between it and the slitter roll cover. The slitter roll is frequently jammed with material. There is presently no effective method to remove the jammed material.

CONCLUSIONS OF REVIEW:

Unsafe Act

1. Apparently it has been the practice of the cuber operators to lift the guard between the rolls in order to pull the material from the slitter roll.
2. In discussing the practice we find a misinterpretation of operating procedure.
3. The exercise of complete awareness to the possible and eventual circumstance was not demonstrated.
4. The present practice must immediately cease to eliminate any possible recurrence of this nature.
5. The uninsured cost of this accident is estimated at $56.30.

CORRECTIVE ACTION:

1. An immediate review and corrective action taken with all shift operating and supervisory personnel.
2. The operating procedure will be rewritten to specifically prohibit exposing any moving equipment on the cuber until after the cuber is locked out.
3. A comprehensive engineering study to develop a possible safe practical method of clearing slitter roll of jammed material.
4. Until this method can be developed and operational, the unjamming of cubers will be completed following the Lockout Safety Procedure, SA-2, Rev. 4. If this method is not successful, the clearing of the cuber will be accomplished with the aid of Maintenance personnel by removing the top slitter roll or whatever is necessary to clear the equipment in a safe manner.

R. M. Yurovich
General Foreman
Millroom East

RMY/alm

NGC 15793

cc: H. Waltemate
D.L.Dowell
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
R.A.Kelley
R.N.Rylands
R.M.Sandfry
Department Manager
General Foremen

Each plant is to check their casing operation to see if this is occurring.
W. Waltemate
4-16-73

~~Hec~~ Jwg

J.W. Gressler	Cleveland	
FROM: T.B. Johnson	FIELD POINT OR AKRON DEPARTMENT & BLDG. NO.: Pedricktown	DATE THIS LETTER: December 27, 1973

SUBJECT

1973 TYPE #6 INCIDENT #11

NEAR MISS - REPETITIVE ACCIDENT #6 — CHEMICAL EXPOSURE

BACKGROUND:

On December 24, 1973 at approximately 6:00 p.m., a Technician Trainee with 13 months experience, was found unconscious over the manway of #1 Pearl Poly. As a Contract Serviceman, entered Building 513 through the north door, he saw a hose spewing water and whipping about in the vicinity of #1 Pearl Poly. turned off the water and then saw slumped over the vessel manway. had one hand under his forehead resting on the rim of the manway. noticed was bleeding from the back of his head as he lowered Whipkey to the floor. then summoned , the Area Lead Technician. assessed the situation and quickly sounded the gas alarm, since it was the nearest alarm device. regained consciousness as returned stating that he was okay and asking what had happened. told to remain on the floor and lie still. , a Technician who had responded to the alarm, then placed on an emergency stretcher and transported him to the Laboratory for first aid. Laboratory personnel applied a compress to Whipkey's head and drove him to the Salem County Hospital. received 12 stitches and head x-rays. He was released after a 2-hour observation period and returned to the plant.

COULD HAVE BEEN ACTIVATED HOWEVER FIRE ALARM

On December 27, 1973, a meeting was held with the following personnel to review this incident:

	- Area Lead Technician
Jc	- Serviceman
John W. Goetsch	- Area Manager
Bart Johnson	- Safety Engineer
Bill Riley	- Personnel Manager
Joe Smith	- Plant Engineer
	- Technician Trainee

Results of this meeting are as follows:

FACTS:

1. The computer had released #1 Pearl Poly for unheading.
2. The vessel was unheaded by
3. An evacuation hose was placed in the manway prior to transfer. It was removed before washdown to facilitate effective use of the water hose.
4. For the last 3-4 months the procedure has specified that a short evacuation hose will be placed in poly manways immediately after unheading. This hose will remain in the manway until the H.R.C. unit is installed.
5. mounted a platform adjacent to the vessel and proceeded to wash down the interior through the open manway.
6. Demineralized water at approximately 100# pressure was used.
7. The 1" hose used for washdown was equipped with a steam hose clamp and Chicago fitting at the nozzle.
8. The combustible content of the vessel after the accident was 15% L.E.L. without agitation and 35% L.E.L. with agitation.
9. hard hat was found inside the vessel.

JAN 2 1974

REDACTED

NGC 15794

10. only remembers washing down the interior of the vessel then regaining consciousness on the floor.

SUPPOSITION:

1. 100# D.M. water applied inside the vessel pushed vinyl vapors up through the open manway.
2. breathed these vapors while peering into the manway as he washed down the interior.
3. W lost his grip on the hose. The nozzle then came out of the vessel.
4. The hose knocked his hard hat off and into the vessel.
5. The whipping effect of the hose caused the nozzle to hit and cut the back of his head.

CORRECTIVE ACTION:

(1.) The procedure of placing a short evacuation hose in the manway of a poly immediately after unheading and keeping it there through the washdown until the H.R.C. unit is installed will be followed.

(2.) This accident and the above procedure is being related to personnel through:
   a. Immediate discussion between the Area Manager and Lead Technicians.
   b. Weekly building sessions.
   c. Shift meetings conducted by the Area Manager.

(3.) Modifications being evaluated on the exhaust assembly are as follows:
   a. Installation of 90° elbow at end of hose.
   b. Use of more flexible hoses.
   c. Use of a clamp at manway to keep hose in place.

T.B. Johnson

TBJ/rdr

cc: J.W. Gressler - H. Waltemate
J.L. Nelson - R.D. Scott
W.E. Brodine - G. Pow
E.W. Harrington - P.D. Terry
D.R. Gray - B.A. Healy
R.A. Kelly (Akron Bldg. 24-A)
Area Managers
File

J.W. Gressler
1/4/74

NGC 15795

1973 Type #10 Incident #4

B.F.GOODRICH CHEMICAL COMPANY
Avon Lake General Chemical Plant

TO: L. V. Goode

FROM: W. T. Gunning

LOCATION: ALGCP

DATE: March 6, 1973

SUBJECT: Vinyl Chloride Release at Tank Farm - Repetitive Accident Type #10

On Friday, March 2, 1973, an estimated 5000 gallons of vinyl chloride escaped into the tank farm area when an Ever-Tite coupling in the unloading line from a railroad tank car uncoupled. The plant gas escape alarm and then the plant evacuation alarm were sounded. A Geon Polymerization Area Foreman and the Tank Farm Operator entered the area and closed the valves on the tank car to stop the flow of vinyl chloride. There were no injuries nor damage to equipment as a result of the VCl escape.

INCIDENT:

At about 7:35 A.M., Latex Operator telephoned the Latex Office to inquire about the noise he heard coming from the vicinity of the railroad tank car at the vinyl chloride unloading station. The Latex Foreman went outside the office building to investigate. The VCl tank farm is located approximately 125 yards West of the Latex office building. The foreman stated he could see VCl vapors surrounding the railroad tank car dome and throughout the area adjacent to the unloading station. The foreman immediately went to the Latex building where he sounded the gas escape alarm.

He was soon met by Geon Polymerization Area Foreman, Louis Carballada, on the roadway which parallels the VCl tank farm railroad track and is located 75 yards East of the track. Carballada stated that he could readily smell the vinyl chloride and in viewing the extent of the area enveloped in vapors, he sounded the plant evacuation alarm. Carballada requested the Dryer Building Foreman, who was carrying a two-way radio unit, to radio the guardhouse and have the guard inform Art Fox, the tank farm operator to return to the tank farm. The tank farm operator had been at the scale house to weigh a tank truck when the alarms sounded. When contacted he was proceeding toward the front gate in accordance with the evacuation procedure. He returned to the tank farm where he was met by Carballada and the second Geon poly area foreman, Dale Gregus. Gregus had obtained Scott Air-Paks which were worn by and Carballada to enter the tank farm area enveloped in the VCl vapor cloud. They proceeded via the catwalk to the unloading station where the VCl was escaping. with assistance from Carballada closed the two valves on top of the tank car and the liquid and vapor lines for #5 station. This stopped the release of vinyl chloride.

When Carballada and returned to the roadway, the Foreman radioed the guardhouse informing the guard that the escaping VCl had been stopped. He requested that plant personnel be kept from the plant until the vapors could be dissipated. The All Clear was sounded at 8:15 A.M.

Safety Department personnel who were just reporting to work proceeded to the area where they monitored VCl concentrations traveling North in a ditch toward the Boiler house. Concentrations in the ditch in the flammable range were noted at a distance of 150 yards from the subject unloading station. At this point they were approximately 75 yards from the boiler house.

REDACTED

MAR 12 1973

NGC 15796

The ground area other than in the ditch was clear of flammable concentrations within a few minutes of the time when the Tank Car valves were closed. The boilers and draft fans had been ordered shut down by the boiler house foreman when he learned of the extent of the VCl release and that the wind was causing the vapors to move in the direction of the boiler house. The Safety Department personnel requested a fire hose crew to apply a water fog pattern close to the ditch to initiate air movement. This helped considerably in dissipating the VCl concentration in the ditch. The Safety Department requested that the boilers not be restarted until they could be assured the movement of the VCl vapors in the railroad ditch had been halted and the concentration was reduced to below a flammable mixture. Approval to restart the boilers was given at about 8:30 A.M.

A Board of Review convened at 9:00 A.M. with the following persons in attendance:

L.V.Goode - Acting Plant Manager
W.K.Pember - Industrial Relations Manager
L. Carballada - Geon Area Foreman
D.P.Gregus - Geon Area Foreman
E.C.Foreman - Latex Foreman
Tank Farm Operator
W.T.Gunning - Sr. Safety Engineer

Depositions were received from the tank farm operator and the foremen involved. (See attachments). Subsequently an investigation was conducted at the scene of the incident by Fred Hess from the Plant Engineering Department and W.T.Gunning, Sr. Safety Engineer.

A second meeting was held at 3:00 P.M. In attendance were:

L.V.Goode
D.E.Fisk - Plant Engineer
A.J.Hess - Engineering Department
W.L.Weitzel - Warehousing Supervisor
R.W.Vanek - Tank Farm Supervisor
E.W.Hemke - Sr. Purchasing Agent
W.T.Gunning

From the investigation and meetings the following facts were established:

1. The tank farm operator had connected the tank car GATX 55311 located on station #5 for unloading to the sphere at 7:00 A.M.
   a. In making the hook up he had wired down the Ever-Tite coupling clamp handles. It has been a practice during the last 8 - 10 years to use additional restraints on the Ever-Tite coupling handles for extra protection. This was initiated by tank farm operators because of an experience with a tank truck company transporting plasticizer whose hose coupling parted because of excessive wear. The wire used on the coupling in question was broken.

2. The Ever-Tite coupling that was uncoupled and permitted the VCl escape, was inspected and found in good condition.

3. When the Ever-Tite company was contacted they agreed that under certain conditions of vibration, the coupling can part. The tank farm operator stated that in many instances while unloading tank cars, the excess flow valves in the cars will chatter excessively and with a violence that shakes the car and transfer lines.

4. The tank farm operator estimates he left the unloading station to go to the scale house at 7:20 A.M. The Latex foreman was alerted and sounded the gas escape alarm at 7:35 A.M. The coupling parted within this 15 minute period. The valves on the tank car were closed at 8:00 A.M. The VCl release time was from 35 to 50 minutes in duration.

5. In approaching the tank car to close the valves, the tank farm operator and foreman both noticed the vinyl chloride being emitted in spurts from the rigid pipe connected to the tank car (male end of Ever-Tite coupling). The flexible hose with the female end of the coupling was also emitting VCl with enough pressure to make the flex hose whip violently. (See attached drawing).

6. The gas escape alarm was sounded at about 7:35 A.M followed by the evacuation alarm a few minutes later. The All Clear to re-enter the plant was sounded at 8:15 A.M. and the boilerhouse restarted boilers at 8:30 A.M.

7. No VCl entered the plant sewer lines.

ACTION TAKEN:

(1.) The tank farm operators have regularly used DuPage screw type hose clamps to retain the 2" Ever-Tite coupling handles, but had started to use wire on the 3" couplings when they were installed last year. The operators have been instructed to discontinue use of wire and to use the hose clamps on all coupling clamp handles. This will be incorporated in the Tank Farm Unloading Procedure.

(2.) The Ever-Tite Company has developed a new coupling which they assure us will eliminate separation of the male and female sections. This coupling will be evaluated.

(3.) The GATX Company has been contacted and will furnish additional information about their excess flow valves. They have been requested to inspect the excess flow valves on GATX 55311 and submit a report.

(4.) a. The VCl unloading system transfer lines must be studied to determine if the design prevents the excess flow valves on the tank cars from operating per design.

b. An engineering study will be made to determine if additional check valves in the system will be an advantage.

c. A report of the Engineering Department's study will be distributed when completed.

5. Will review staffing of tank farm operating personnel with regard to attention time during unloading operations.

6. Notified Division Safety by phone.

Uninsured costs of this incident are estimated at $14,566.

W. T. Gunning
Sr. Safety Engineer

WTG/alm

cc: H.Waltemate
D.L.Dowell
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
R.A.Kelley
R.N.Rylands

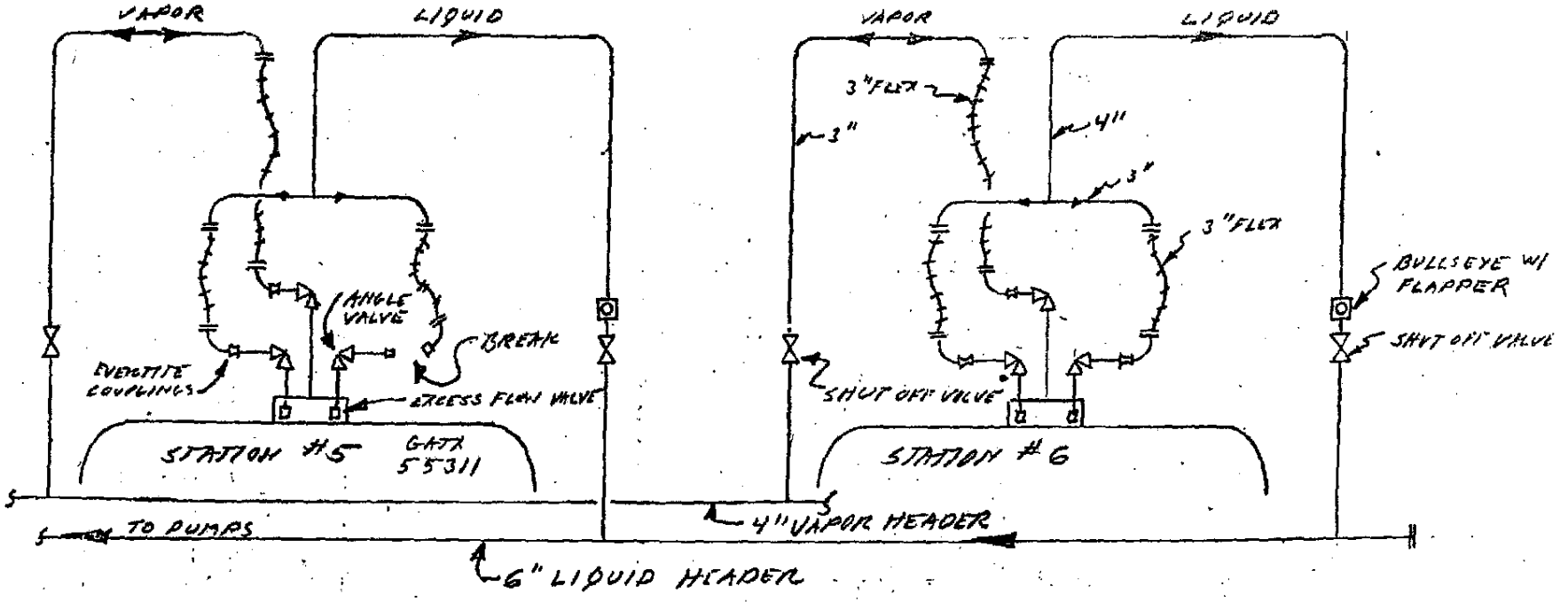
The plant evacuation was very well handled because this plant had several evacuation drills. Is your plant prepared for an evacuation?

All plants should be sure that they are using some type of clamp to secure these Ever-Tite couplings. Information will be sent after the new coupling is evaluated.

Information will also be sent on the inspection of the excess flow valves and on the study on the VCl unloading piping system.

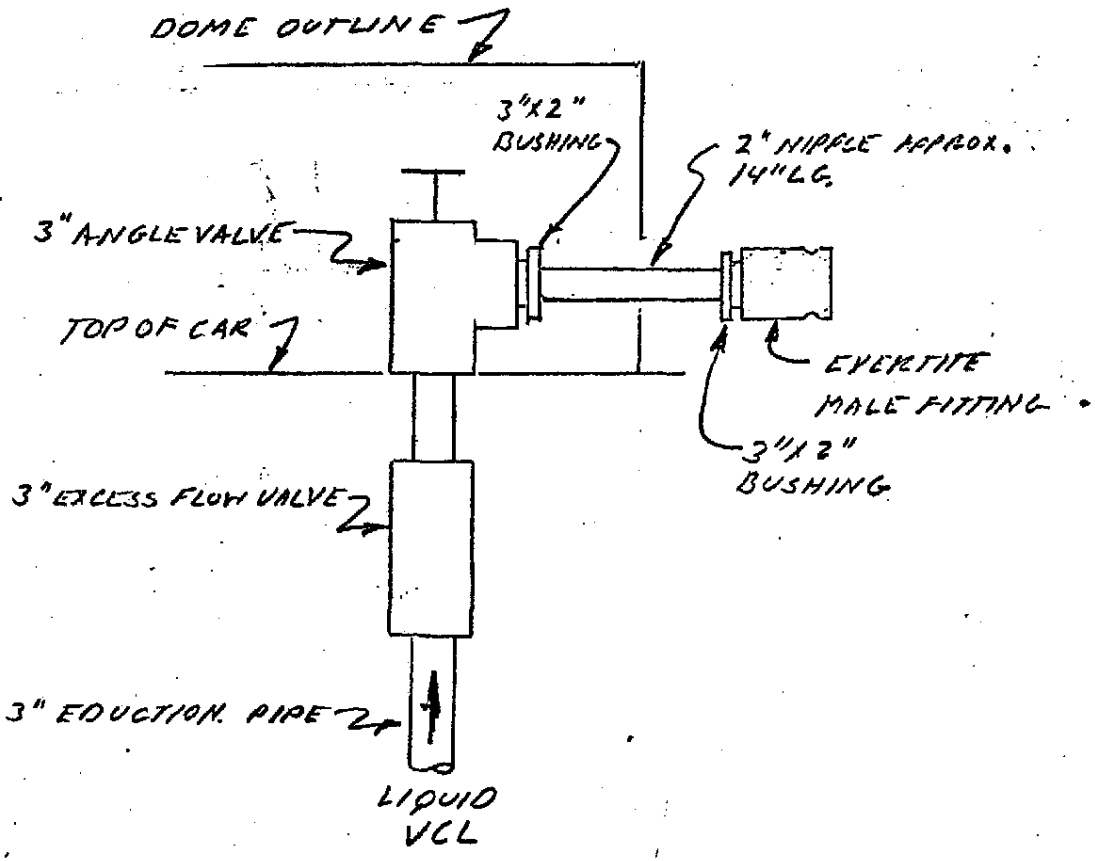
N. Waltemate
3-13-73

NGC 15799



PIPING SCHEMATIC OF
VCL UNLOADING STATIONS
J. H.
3/6/73

NGC 15800



NGC 15801

PIPING DETAIL
@ R.R. CAR DOME
9.H. 3/6/73

1973 Type #10 Incident #5

B.F.GOODRICH CHEMICAL COMPANY

Inter-Organization Correspondence

To	H. Waltemate	Date	April 27, 1973
Location	Cleveland, Ohio	From	R. A. Spurlock

Late

Subject Near Miss Incident - Calvert City Plant

Rep. Accident #10 "Fill Building or Area with Explosive Mixture"

At 2:45 AM on April 12, 1973 a full blowdown tank of carbopol slurry was discharged to the second floor and the mezzanine floor above the second floor of the Acrylic Acid building. This charge contained approximately 1200 pounds of carbopol and 8000 pounds of benzene.

The next morning, April 13, 1973 the Plant Manager's Safety Committee and people involved in the accident met to discuss the incident. People attending were:

J. K. Koster, F. R. Carvell, V. S. Wyatt, W. Butler,
D. R. Hise, R. W. Edwards, F. Lynn, R. Ivy,
N. S. Grove, H. W. Compton, I. Jones

Mr. Koster opened the meeting by stating the spillage of benzene had created a very serious safety hazard to personnel and the plant. This meeting was being held, not to try to place blame on anyone, but to determine the cause for the accident and to list corrective actions which would prevent a recurrence.

Production General Foreman W. Compton stated that the carbopol slurry was lost during a pipeline transfer from No. 2 blowdown tank to No. 6 rotary dryer. A section of two inch piping that had been removed for cleaning permitted the slurry to discharge to the atmosphere instead of the intended dryer.

There is a complicated piping system that interconnects the seven blowdown tanks and the seven slurry dryers. Three operators per shift have responsibility for specific blowdown tanks and dryers and, in normal operation, can use transfer piping which keeps each man's operation isolated.

On the shift when the accident occurred, a blowdown tank was out of service for repairs and it was necessary to use cross-over lines and one blowdown tank to charge two dryers. Plugging of transfer lines had been a big problem for several days because of having shortened the reactor holdup time and one section of piping had been removed for cleaning. While the Maintenance men, the operator and the foreman involved in cleaning the line were gone from the area, a second operator opened a valve on the second floor to start a slurry transfer to No. 6 dryer. He was not aware a cross-over valve had been opened and a section of down stream pipe removed. He went to the third floor to watch the filling of his dryer. After a short time he noticed the dryer charging had not started but the odor of benzene had became very strong. About the same time another operator saw the slurry escaping and tried to close the valves. The benzene in the area was too strong for entry and the fire alarm was activated. The fire brigade responded but no water was used because of the nature of carbopol.

In about forty-five minutes most of the building had been cleared of benzene vapors through natural ventilation and the use of additional fans. The next day the carbopol was kept covered with foam as it was shovelled into drums and hauled to the dump.

Recommendation to prevent a recurrence of the accident include:

1. Keep operators informed of any changes that may affect their operations.
2. Stream line and simplify the transfer piping so it can be more easily identified and traced by operators.
3. Eliminate permanently installed cross connections so the systems of various operators are isolated from each other.
4. Change the polymerization procedure to correct the plugging problem.
5. Upgrade the building ventilation to increase the number of air changes per hour.

Estimated uninsured cost for this spill is $2,477.00.

R. A. Spurlock

RAS/jfr

cc: C.L.Woods
J.K.Koster
F.R.Carvell
G.E.Evens
P.E.Sanderson
N.S.Grove
D.R.Hise
D.B.Schrock
R.W.Edwards
R.A.Spurlock
W.C.O'Brien
J.R.Render
C.M.Fischer
D.L.Dowell
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
R.A.Kelley (Akron)
B.A.Healy

Maintenance work has to bean closely coordinated with productio and operators must be aware of the situation.

W. Waltemate
5-4-73

NGC 15803

1973 Type # 10 Incident # 6

B.F. Goodrich Chemical Company

Inter-Organization Correspondence

To P. A. Wagner	**Date** April 30, 1973
Location Louisville	**From** Louisville

Late

Subject Gas Escape, Repetitive Accident Type No. 10

On April 23, 1973, at approximately 6:40 p.m., no. 3 reactor in Building 111 was charged with 250 gallons of vinyl chloride with the bottom valve and sewer valve open. The sewer hose was still connected to the reactor drain line, and an estimated 1,000 pounds of the vinyl chloride drained to the water recovery system on the first floor. Although a serious hazard was created by this spill, no one was injured, and no equipment damage resulted.

An investigation of the accident was conducted and revealed the following:

Polys 2 and 3, which are cleaned and charged as a pair, were the first to be cleaned by the 4-12 shift. , a helper with approximately eleven months' experience, was working with the HRC operator on the east side of Building 111. It was job to rinse the polys with DM water after they were HRC cleaned, then close the bottom valve and disconnect the hose. He related that he normally waits until both polys of each pair are cleaned before closing the bottom valve, but that in this instance he had gone to the second floor and closed off the bottom valve on no. 2 poly while the HRC unit was running in no. 3. He stated that he then put the initial charge water in no. 2 poly at approximately 4:55 p.m. and then proceeded to other work while waiting for no. 3 poly.

At about 5:20 p.m., sometime after the HRC operator had finished with no. 3, he stated that he returned to this poly thinking that he had already closed the bottom valve at the same time that he had closed no. 2. He then put the initial charge water into no. 3 poly and continued to other polys. Since the initial water is charged to the reactors through a meter, it is not necessary to check the level.

Asia Page, charging operator with approximately two years' experience, was charging the polys on the east side of the building on the evening of the accident. He stated that prior to charging polys 2 and 3 he proceeded to the second floor to check the bottom valves on the two polys and hang the "Do Not Open" tags on the valves. He stated that he hung the tag on no. 2 poly but saw that the valve was open on no. 3 and returned to the third floor. Then at approximately 5:45 p.m. he put the pigments into no. 2 poly and headed it up. At that time he also noted that was putting water into no. 3 reactor.

NGC 15804

REDACTED

MAY 3 1973

Page said that at about 6:15 p.m. he looked in no. 3 reactor and saw that it had water in it, and he proceeded to add the pigments and head it up. He stated that he then pulled vacuum on no. 3 reactor for a period of about ten minutes and obtained a 23 in Hg vacuum on the reactor. At approximately 6:40 p.m. he started the vinyl chloride to the poly. Page said that when he started the vinyl chloride to no. 3 poly the HRC operator was cleaning no. 11 reactor and that when cleaning of the reactor was complete he noticed vinyl chloride blowing upwards out of no. 15 reactor. At this point he said he realized what had happened and immediately shut off the vinyl chloride and proceeded to the second floor to shut off the bottom valve on no. 3 reactor. When he arrived on the second floor, he found his foreman, John Baker, and the recovery operator, , were already closing the bottom valve.

The specific cause of this accident lies in the failure of the helper to close the bottom valve on no. 3 poly and the failure of the charging operator to check and tag the bottom valve prior to charging it. However, there are several things about the accident that remain unexplained, such as:

1. Page stated that he saw the helper putting water into no. 3 reactor at 5:45 p.m. and that there was still water in it at 6:15 p.m. when he put the pigments in. This was evidenced by a visual inspection and by the fact that the agitator was not banging on the bottom steady bearing as is does in an empty poly. How could the water still be in the poly thirty minutes after it was put in with the bottom valve open?

2. Page stated that he obtained a 23 in Hg vacuum on the poly over a ten-minute period. How is this possible with the bottom valve open? He did not say that he held the vacuum for the specified time.

3. Page stated that he charged no. 2 poly on time (6:15 p.m.) but because of problems could not get no. 3 charged until 6:40 p.m. He couldn't say what the problems were. All operators have been instructed not to charge a poly more than ten minutes past its charging time (6:25 p.m. in this case). What were the problems which delayed the charging of no. 3 poly?

Corrective action taken:

① The helper was reprimanded for failure to close the bottom valve on the reactor.

② The operator was suspended for five working days for failure to check and tag the bottom valve before charging the reactor. This suspension followed a reprimand on 1-18-73 for the same offense.

③ The operator, who has a history of repeated safety violations, was transferred to the packer classification.

④ The poly tagging system has again been strongly emphasized to all charging operators.

⑤ This accident will be reviewed in all departmental safety meetings, and we will again emphasize the rule that no poly is to be charged more than ten minutes late, in order to prevent accidents caused by hastiness.

R. S. Kinnamon

ru

Leaving the drain valve open on polys is occurring too frequently.

K Walter
5-4-73

1973 Type #10 Incident #7

B.F.GOODRICH CHEMICAL COMPANY
Avon Lake General Chemical Plant

TO: W. T. Gunning FROM: J. R. Shellenberger

LOCATION: Safety Department DATE: May 25, 1973

SUBJECT: Near Miss - Repetitive Accident Type #10 - Fill Building with Explosive Mixture

INTRODUCTION:

On May 21, 1973 at 1440 hours, 370 gallons of Vinyl Chloride monomer discharged into the Geon West Pearl Building and filled the building with vapors. The building was evacuated for 10 minutes while the source of the discharge was found, stopped and the building cleared of the vapors. The discharge was the result of an operator error. He charged the wrong poly.

A departmental Board of Review was held immediately after the "all clear" was sounded. The Board of Review was composed of:

- Charge Operator
Larry Kemer - B/461 Foreman
Gerry Rodgers - B/461 Day Supervisor
John Shellenberger - General Foreman

INCIDENT:

At 1440 when the incident occurred, the Charge Operator, was in the process of charging polys 101 and 102. The condition of these two polys along with the third reactor involved is as follows:

A. Poly 101 - reactor had been charged in the normal manner by addition of pigments and water, closing the manhead, pulling vacuum, and charging 450 gallons of vinyl chloride.

B. Poly 102 - reactor was charged with water and pigments, the manhead closed, and the poly under vacuum. This is normal to the point of VCl addition.

C. Poly 103 - reactor was dirty and had been recently blown down. The manhead was closed while the bottom valve and wash down lines were open. This is the normal state for a poly that needs to be cleaned. The wash down lines drain from the bottom of the poly and are open to the blend tank on the first floor.

stated that he had charged Poly 101 without incident. After he added the VCl to Poly 101, he closed the VCl charge valve on this poly. He then opened the VCl charge valve on Poly 103 rather than on Poly 102. (The attached sketch shows the floor plan relationship of the three polys). He then pumped 370 gallons of VCl monomer into poly 103. All of the vinyl chloride charged into poly 103 flowed down the wash down lines and into the blend tanks on the first floor. The gas alarm was sounded from the first floor by the blowdown operator. When heard the gas alarm he shut off the vinyl chloride meter with 80 gallons to go and evacuated from the building.

NGC 15807

REDACTED

MAY 29 1973

ADDITIONAL FACTS:

1. The charge Operato admitted the incident was the result of his error. He stated that he had Poly 103 on his mind, although he also knew he was charging Poly 102.

2. The uninsured loss from this incident was $292.

RECOMMENDATIONS:

1. We will change the blowdown and recovery procedure to require the VCl charge line inspection plate to be removed immediately after blowdown and recovery are completed. The poly will then be recorded "ready for cleaning". With this change, the Charge Operator will be alerted that the poly is not ready for charging as he approaches the vinyl chloride valve.

2. We have publicized the incident throughly within the department.

3. The operator was given a letter of poor performance for his error. The letter will be placed in his personnel file.

John R. Shellenberger
General Foreman

JRS/alm

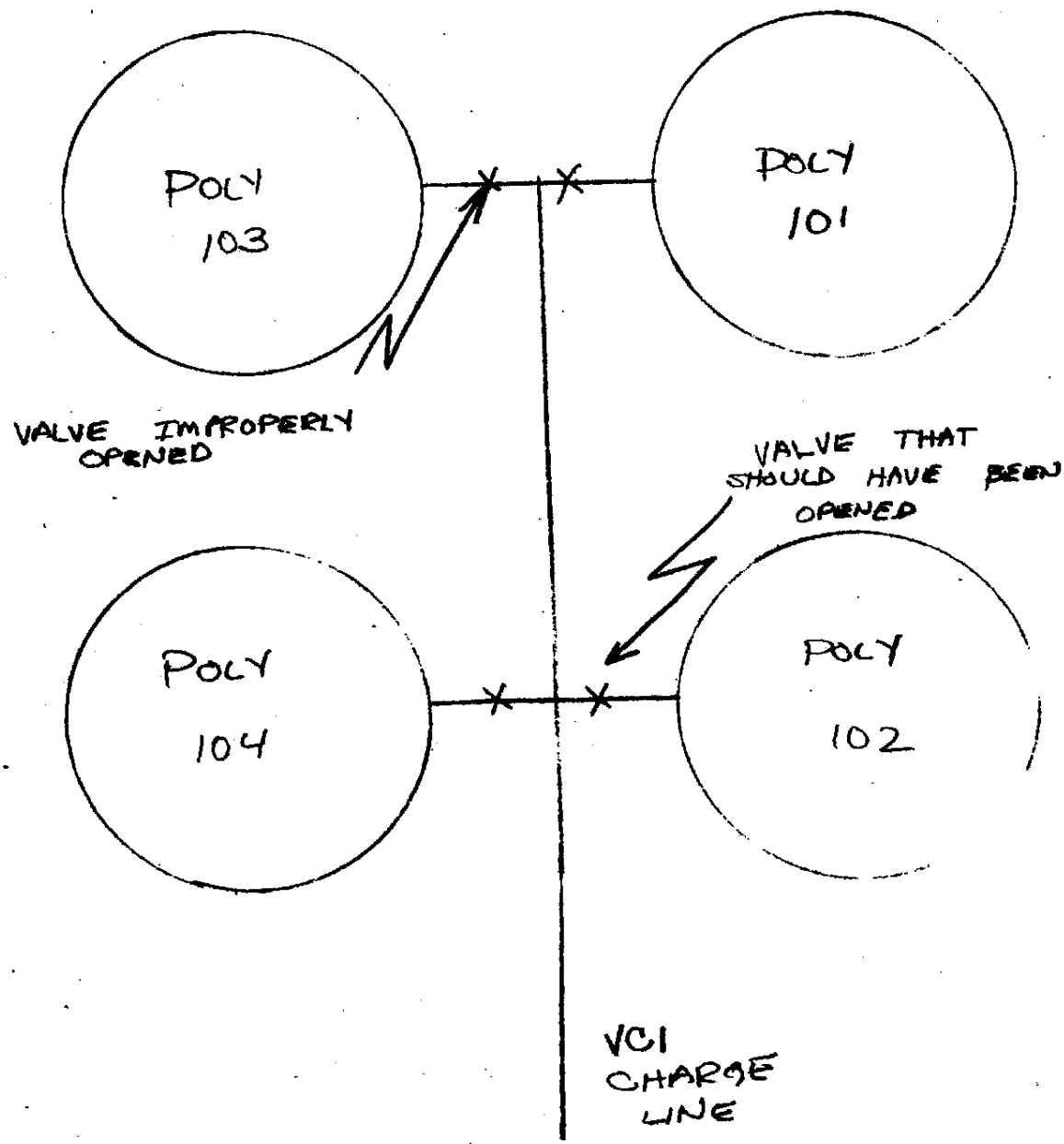
cc: H.Waltemate
D.L.Dowell
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
R.A.Kelley
R.N.Rylands
Department Managers
General Foremen

A serious operator error.

H. Waltemate
6-1-93

NGC 15808

B/461 THIRD FLOOR
IN AREA OF INCIDENT



NGC 15809

1973 Type #10 Incident #10

TO	FIELD POINT OR AKRON DEPARTMENT & BLDG. NO.	DATE YOUR LETTER
R. S. Mather	ALGC Plant	
FROM	**FIELD POINT OR AKRON DEPARTMENT & BLDG. NO.**	**DATE THIS LETTER**
R. C. Kaminski	ALGC Plant - Geon West	July 18, 1973

SUBJECT

Near Miss - Repetitive Accident Type #10

Vinyl Chloride Release Into Building 461

On Sunday, July 15, 1973 at 0625, approximately 500 pounds of vinyl chloride was discharged into an open, cleaned 3300 gallon reactor in the Geon West Pearl building. The vinyl escaped the open reactor to within a distance of 30 feet of the poly. A gas alarm was sounded and within 5 minutes the source of the vinyl chloride emitting from the open manhead was identified and corrected.

The incident occurred when a G-92 charge in Poly 142 was having the water pumped in for phase inversion. Vinyl chloride from Poly 142 backed through the water inversion line to Poly 141 which had the water valve and top charging valve open. (See attached sketch.)

A Board of Review was held on Monday at 0800 and also at 1615. The following people reviewed the incident:

R. Rylands
W. T. Gunning
R. S. Mather
D. Gregus
L. Kemer
Glen Evans

Incident

On July 14, 1973, Poly 141 was charged at 1640 by operators ___ and ___. At approximately 1900, the batch inversion water was started into Poly 141 and finished at 2000. The operators stated that both the water inversion valve and top charge valve were closed. The charge in Poly 141 was blown down at 0300, and the poly was HRC cleaned from 0410 to 0510 by Chemical Operator helpers ___ Poly 141 was set up for cleaning by ___ He stated he didn't note whether the water inversion valve was open or closed. He stated that if the poly was being prepared for entry, all the valves in the charge header would have been checked closer. After the HRC cleaning, ___ went to the second floor to clean out chips from the bottom valve while ___ back flushed the charge header. M. ___ stated he tried to flush water in through the top charge valve. The water trickled in indicating either a plugged valve or possibly low header pressure. The operating people stated that the batch water line isn't used for header flushing.

At 0545 batch water was started into Poly 142, it usually takes an hour. At 0625, a plug of PVC 3" diameter x 7" long blew out of the Poly 141 charge valve permitting the pressure on Poly 142 to bleed VCl back through the batch water line and valve on Poly 141, then through the open charge water valve, into the poly and out the manhead. Operator ___ who was nearby heard and saw the escaping gas and turned in the gas alarm. He put an evacuation hose in the poly and then went to the second floor to check to see if the bottom

REDACTED

valve was left open. Foreman D. Gregus returned to the third floor and found the open water valve and closed it. About 5 minutes lapsed, and an appreciable concentration of VCl was evident within 30 feet of the poly. It is estimated less than 500 pounds of vinyl chloride were released. The majority of this VCl was evacuated from Poly 141 through the evacuation hose inserted into the manhead. The charge in Poly 142 reacted normally.

Conclusion and Recommendations

1. The batch water valve on Poly 141 was open while waiting to be charged.
2. This valve was to be closed after batching; also all valves on the charge header are to be closed when preparing the poly to be cleaned.
3. Revise the poly cleaning check sheet to more clearly denote closing all valves in the charge header when preparing to enter or HRC.
4. Review this incident with all operating personnel.

R. C. Kaminski

RCK/jdn

Attachment

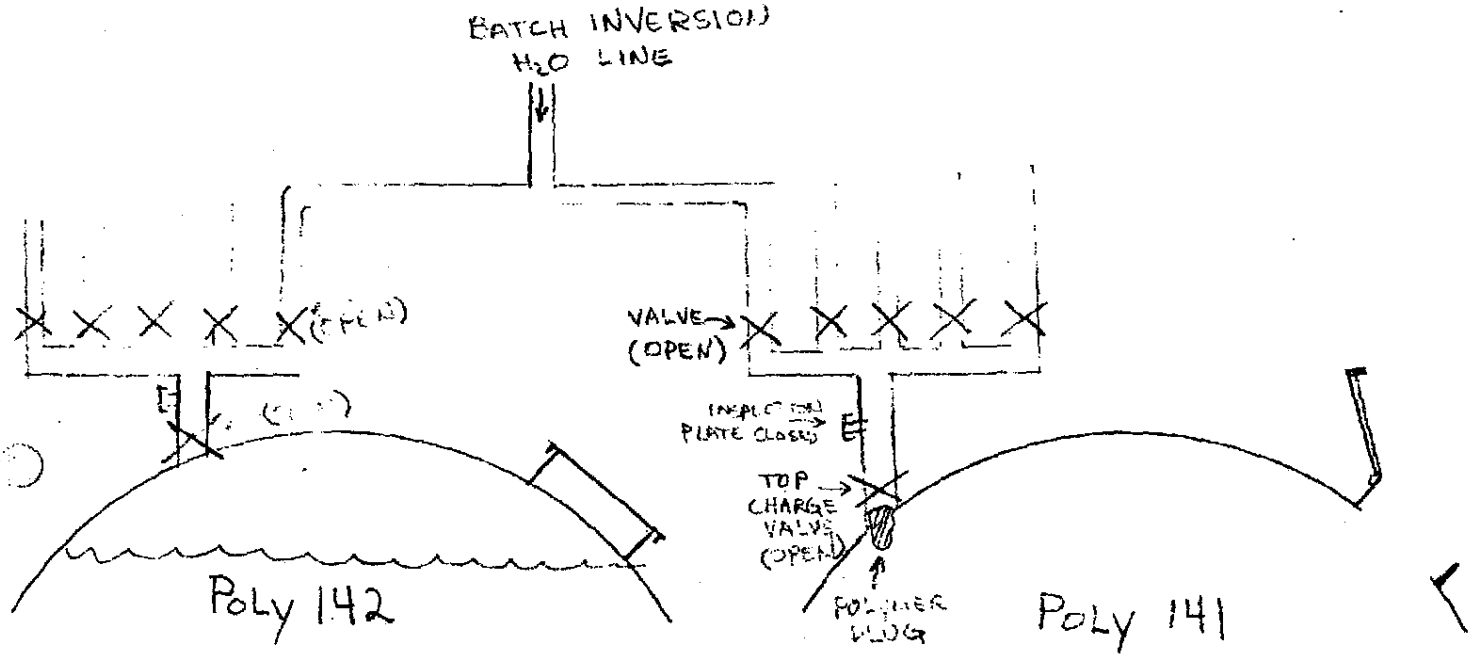
cc: H.Waltemate COPY FOR
J.L.Nelson-R.D.Scott
E.W.Harrington-P.D.Terry
D.R.Gray
W.E.Brodine
G.Pow
R.A.Kelley
R.N.Rylands
Department Managers
General Foremen
Bruce Healy

We are still having too many gas releases. This is the tenth already in 1973 and the seventh involving VCl.

We must take positive action now!!!

H. Waltemate
7-26-73

NGC 15811


BATCH INVERSION
H_2O LINE
VALVE
(OPEN)
TOP
CHARGE
VALVE
(OPEN)
POLY 142
POLY 141

NGC 15812

Herman Waltemate	D/5450 Cleveland	
F.C. Dilley	Safety Long Beach	August 21, 1973

1977 Type # 10 Incident #12

VCL Release into Process Building

Rep Accident #10 Fill Building with Explosive Mixture

Description

At 1:00 PM on August 16, 1973 approximately 100 lbs. of Vinyl Chloride was discharged into the Polymerization Building. The emergency alarm was sounded and the Plant was immediately evacuated.

Investigation

Approximately 100 lbs. of VCL was released into the building from Poly 12 through the bottom Hansen ¼ inch fitting on the rupture disc assembly (see attached drawing). As soon as the leak was detected the building was evacuated. A decision was made, due to the presence of several contractors working in the area, that a plant evacuation was necessary. After a quick employee head count the Resin Foreman and one operator doned Air Cubs and returned to the building to plug the leaking fitting. The all clear was sounded approximately 15 minutes after the evacuation alarm.

Through an operational error Poly 12 was over charged with VCL, and when heated the poly went hydroful and blew the bottom disc. The relief valve vented for only a few seconds before it reseated. At the instant the rupture disc blew, the Hansen fitting uncoupled releasing VCL into the process room. It was determined that the coupling was not properly seated when the rupture discs were last replaced.

Estimated cost of this incident is $200.00

Recommendations

1. Once per shift a check will be made of all rupture disc assemblies, to insure that the Hansen couplings are secure.
2. An evaluation will be made to determine if unions should be installed to replace the Hansen couplings.
3. Proper operating procedures will be reviewed with all charge operators.

cc: A.W. Clements
J.L. Nelson - R.D. Scott
E.W. Harrington
D.R. Gray
W.E. Brodine
G. Pow
R.A. Kelley - Akron
B.A. Healy

NGC 15813

H. Waltemate

8-24-73

AUG 23 1973