

Interoffice Communication

To J. A. DeBernardi ✓
From C. E. Gremillion
Date January 7, 1976
Subject Unexpected VCM Release

Summary

December 30, 1975 approximately 9:00 - 9:30 am, an unexpected release of vinyl chloride to the atmosphere occurred from the plant's VCM vent stack resulting from liquid VCM entering the vent stack from over-filling a tank car during loading operations. The spillage resulted in approximately 20 gallons of VCM being released. Five employees were exposed to VCM concentrations at 30 ppm or higher for approximately 10 - 15 seconds. The area was cleared of personnel, fire monitors were used to contain and disperse the vapors and the area checked for combustibility after the vapors were dissipated. Positive steps are currently in progress to prevent a recurrence of this incident in the future.

DETAILED DESCRIPTION

A. Background

On the 1st shift, December 30, 1975 approximately 3:00 am, pumper/loader R. Handy was in the process of loading vinyl chloride tank cars. During the loading operation of ACFX - 80472 tank car, owned by Tenneco, the pumper/loader noticed a liquid vinyl leak at the connection between the car's vapor valve and the hose on the vent header. The pumper/loader immediately shutdown the vinyl loading pumps and closed off the automatic block valve in the loading arm connected to that tank car. Upon investigation, the magnetic float on the liquid level gauging device was found to be stuck in the down position. Upon raising the gauging device manually, the float indicated the liquid level to be 11 inches short of liquid full. The vent hose was then depressurized and disconnected from the tank car. The car was then off-loaded to the proper liquid level of 15 inches by pressuring the excess material back to the storage sphere.

Approximately 8:30 am, December 30, 1975, pumper/loader L. Thierry hooked up an empty tank car which contained 60 psi nitrogen pressure. The vent hose was tied into the piping which is connected to the vent stack. Upon opening the vapor valve from the tank car, liquid VCM was observed to be coming out the top of the vent stack. The vapor valve was immediately closed and the liquid discharge from the stack stopped. L. Thierry notified the control room shift supervisor that a vinyl chloride release had occurred.

B. Probable Cause

ACFX 80472 tank car was over-filled due to the magnetic float malfunctioning and failing to indicate the true liquid level of the tank car. The vent re-

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covery system had been by-passed directly to the vent stack and liquid VCM had flowed through tank car vapor valve into the vent stack piping. The VCM liquid in the vent stack was not detected until nitrogen pressure from the empty tank car forced the liquid VCM out of the stack to the atmosphere.

C. Immediate Corrective Action

Two employees and two supervisors arrived at the contaminated area approximately 9:00 am. The contaminated area consisted of approximately 60 square feet around the base of the vent stack located at the south west corner of the plant immediately north of the VCM loading rack. The area was cleared of non-essential personnel and two - 600 gpm fire monitors were activated and directed toward the vinyl chloride spill to help dissipate the liquid/vapor. Within approximately 20-30 minutes the vinyl chloride had evaporated and vapors had dissipated from the area. The area was checked using the J&W GPK oxygen and gas detection instrument. No combustible gas or oxygen deficient reading was detected. Remaining VCM in the vent stack was allowed to weather off from the stack opening (148 feet above ground).

D. Weather Conditions

Wind direction was from the NNW at 5-10 pmh; Temperatures were approximately 40°F and raining.

Employee Exposure

Six personnel were temporarily exposed to vinyl chloride vapors as a result of this incident. Estimated 10-15 seconds was the maximum exposure time of four of the employees. VCM concentrations taken at the nearest fixed point monitoring located at the vent recovery structure indicated 30 ppm during this period. The gas chromatograph maximum setting has been established at 30 ppm. Therefore, the employees involved may have been exposed above 30 ppm. All employees stated they did smell VCM before they got out of the area or upwind from the VCM vapor cloud. No respiratory protection was worn by the employees involved.

Mr. L. Thierry was on the loading rack when the initial release occurred and was located down wind of the vapor cloud but quickly exited away from the VCM cloud after notifying the shift supervisor of the spill on the plant communication system.

A paint contractor employee was exposed while walking in the vicinity of the vent stack when the VCM was released. He immediately left the area when the VCM vapor cloud started to form.

The other four employees R. Fox, C. Brown, J. Friend and J. A. DeBernardi were also exposed to some degree while controlling the spill. The two operators involved were exposed approximately 10-15 seconds.

Medical Surveillance

Because of the personnel's short time of exposure and the absence of any physical effects combined with their routine blood tests twice a year and physical examination once a year, our Medical Division recommended that no additional medical attention was warranted. The contractor employee's employer provides the same type medical

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surveillance as our employees. Their management was notified of the incident and our Medical Division's recommendations.

Corrective Action

A. Interim Action

Pumper/loaders were re-instructed in the proper procedures to load the VCM tank cars through the vent recovery unit. The magnetic gauging device problem has been reported to the owner, Tenneco, for repair.

B. Preventive Measures

A sensing device designed to alarm at the control room will be installed on the knock out pot located in the line to the vent stack. This design will detect a liquid level in the stack, automatically shutoff the VCM loading pumps and shut a valve leading to the stack. Estimated completion date is March 15, 1976.



C. E. Gremillion
Safety Director

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cc:
RDG

VVC 000020695