



Interoffice Communication

To G. G. Draper
From A. H. Sather
Date April 10, 1978
Subject VCM INCIDENT - MARCH 15, 1978

SYNOPSIS

At approximately 12:15 p.m., Wednesday, March 15, 1978, an unknown quantity of vinyl chloride monomer (VCM) was released to the process sewer during startup operations in the Small Reactor Capacity Replacement Project. The release occurred when process water from the blowdown tank was being drained following vacuum recovery. (The blowdown tank is used to collect VCM laden process water streams for steam stripping under vacuum in order that unit discharge of VCM in process water is less than the 10 ppm EPA VCM limit.) Sixteen (16) contractor personnel and nine (9) plant employees may have been exposed to VCM vapor in excess of 100 ppm VCM while traveling to safe locations north and east of the unit. Upon discovery of the release, the blowdown tank drain valve was closed. Operations and Safety personnel cleared the process sewer of VCM vapor with fire monitor streams. Normal operations were resumed at 1:05 p.m. All persons that may have been overexposed to VCM are currently under medical surveillance.

NARRATIVE

At approximately 12:05 p.m., Harold Sanders, Large Reactor Operator, with six (6) years experience, opened the blowdown tank drain valve following vacuum recovery of the vessel. (Steam stripping was not attempted due to a liquid full condition in the tank.) Vacuum was broken in the vessel by momentarily opening one of the VCM receiver drain valves to the blowdown tank. Once flow was established to the sewer, Sanders left the area to restock the unit's supply of polymerization initiator which is stored in freezers southwest of the new reactors. When he reached the freezers, he noticed personnel leaving the area in a hasty manner. He then closed the drain valve stopping flow to the sewer, turned in the vapor release alarm and placed the tank on vacuum recovery.

J. R. McCrimon, Process Engineer and Unit Startup Shift Supervisor; R. E. McGhee, Large Reactor Shift Supervisor; and A. H. Sather, Safety Director, then entered the area with Scott Air Paks in the pressure demand mode to correct the upset. The primary source of high levels was VCM trapped in the process sewer. This was cleared by fire water streams from the unit's stationary fire monitors. The area was surveyed with a HNU Photoionizer calibrated for low level VCM concentrations and declared safe to resume normal operations by 1:05 p.m.

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INVESTIGATION TEAM FINDINGS

At 4:00 p.m., March 15, 1978, an incident investigation team met to determine the cause of the incident and corrective measures to prevent a reoccurrence. The team consisted of:

J. R. McCrimon	-	Process Engineer & Startup Shift Supervisor
D. E. Michels	-	Chief Process Engineer
E. L. Kieschnick	-	Operations Superintendent
A. H. Sather	-	Safety Director

The following is a brief synopsis of the facts related to the incident:

1. Several blowdown tank components were not functioning correctly. they were:
 - a. The steam sparger pipe was plugged with resin which carried over from the recovery system during the recovery of several reactors during initial unit startup.
 - b. Due to an oversight in the pre-startup instrument checkout, the blowdown tank high pressure alarm was set at an unrealistically low value of approximately five (5) pounds. The alarm's function is to initiate the steam stripping/recovery process at a productive pressure with minimal recovery system time demand. With the alarm level set so low, it had little or no meaning. This condition resulted in filling the tank to the point where there was no room for steam condensate from the stripping process. Steam stripping was therefore not attempted. (The vessel is rated for 150 psig working pressure.)
2. Following vacuum recovery of the blowdown tank, the sewer drain valve was opened. Harold Sanders noted that the flow to the sewer was minimal. He therefore directed Charles Holcomb, Lead Operator, to break the vacuum to facilitate drainage. This was done by momentarily opening the drain valve on one of the VCM receivers to the blowdown tank vapor space. (Under normal circumstances, the vacuum would have been broken by isolating the recovery system from the blowdown tank and maintaining steam flow to the vessel. Due to plugging in the steam sparge pipe however, VCM was the only medium that could break the vacuum.)

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3. The blowdown tank operating procedures call for the contents to be pumped to the sewer following the stripping operation. The resin accumulation mentioned in 1.a. above, however, plugged the pump's suction filters thereby preventing its use to remove tank contents. In this instance, the tank contents were drained to the sewer via a pump by-pass line.

RECOMMENDATIONS

Based upon the facts outlined above, the following recommendations were agreed upon by the incident investigation team and instituted as noted below.

1. Vinyl Operations personnel recovered and drained the blowdown tank contents for Maintenance to revise the steam supply header and remove the steam sparge pipe on March 17, 1978. The system is now being operated in accordance with design and operating procedures.
2. Plant Process Engineering recommended that the high pressure alarm set-point on the blowdown drum be reset for 20 psig. This recommendation was made in order that the sounding of the alarm to have specific meaning (i.e. start the blowdown tank steam stripping and recovery process). This was completed on the second shift, March 15, 1978.
3. All Vinyl Department reactor operating personnel have received additional instructions concerning the correct operation of the blowdown tank.

AREA DIRECTOR NOTIFICATION

Due to the possibility of overexposure to personnel working in the unit during the release, the incident was reported to Mr. Don Harvey of the Jackson, Miss. OSHA field office at 10:00 a.m., March 16, 1978.