

Interoffice Communication

To G. G. Draper
 From J. V. Uptain ✓
 Date September 10, 1976
 Subject VCM EMERGENCY
 SEPTEMBER 8, 1976

I. SYNOPSIS

At 2:05 p.m., September 8, 1976, the double safety disc of the D-600 Large Reactor unexpectedly relieved at 151 p.s.i.g., releasing VCM vapor into the atmosphere. The release was immediately noted, the reactor placed under total recovery, and the plant-wide vapor-release alarm sounded. All plant personnel not essential to emergency control were evacuated from the endangered areas, per established procedures. Release of VCM stopped by 2:25 p.m. All plant areas were cleared for safe entry at 2:45 p.m. One employee was overexposed for four minutes, without suffering narcosis or similar effects during or after the incident. Outside assistance in bringing the emergency under control was not required and the situation was abated safely and efficiently by plant personnel.

II. DISCUSSION

At the time of the release, D-600 reactor was charged with 5305 type product. The reactor was at 149°F batch temperature with a pressure of 151 p.s.i.g. The adjacent reactor, D-500, was being rinsed out at the time. Personnel present in the release area were: Bobby Chaffin, Vinyl Lead Operator; Harold Sanders, Vinyl "A" Operator; Sammie Stokes, Vinyl "A" Operator; and their immediate supervisor, Bobby Hawkins, Vinyl Reactor Shift Supervisor.

When the safety disc ruptured, Chaffin immediately sounded the plant-wide vapor release alarm, announced the nature of the emergency over the P.A. system, instructed the vinyl dryer operations area to stop all dryer burners, and placed D-600 on total recovery. He noted that the D-500 reactor was available for use as a blowdown vessel and began evacuation of the reactor for that purpose. With D-500 under vacuum, the contents of D-600 were then fed into D-500, with the result that D-600 pressure was reduced to zero p.s.i.g. at 2:25, venting being terminated at that time.

When the release began, Stokes manually activated the area fire protection sprinkler system, the VCM concentration in the area being insufficient at that point to activate the system automatically, since the release was into the atmosphere above the reactors. Stokes then donned a Scott Air Pak and checked the operating area to confirm that no one but operations personnel were present.

Personnel in other parts of the plant were, upon the alert, moved to their primary assembly points, and then to plant evacuation areas as an added precaution. Exceptions to this were: Dryer Area operators, who remained in the Dryer Control room, where they were protected, the Dryer Area being under no threat at the time; Butch Bryan, Vinyl Dryer Operations Supervisor, donned a Scott Air Pak and began surveying the area north of the Vinyl areas, using a Century Organic Vapor Analyzer; Charles Flynn, Quality Control Supervisor, remained in the Laboratory to monitor the VCM levels in the more northerly parts of the plant, via the Continuous Monitoring System for these areas; and James White, Mechanical Engineer, who was overexposed as explained below.

As personnel were being evacuated, plant traffic into and out of the plant was stopped and the effect on neighboring areas assessed. The slight wind present at first was from east to west, and then shifted back and forth between that and north to south, carrying the release material into unpopulated areas adjacent to and west and south of the plant. Because of this, available, outside assistance was not required or requested.

As the D-600 pressure reached zero at 2:25 p.m., the reactor operations personnel present in the reactor control room noted an increase in the VCM content of the control room air. Those personnel not required since the emergency had been abated evacuated the control room leaving Sammie Stokes, who was wearing a Scott Air Pak, to observe the control panels and monitor VCM levels in the area. (It is notable that these personnel chose their actions with care to not only abate the situation, but to insure their personal exposures were known at all times).

As in the Reactor Control Room, Dryer personnel noted VCM contamination of their Control Room supplied-air at approximately 2:25, having seen no dryer area VCM concentration elevations up to that point, and left the Control Room, assembling in a group between the dryer area and the "V-12" reactor building, this location being upwind of the release and offering them two escape routes, should changing conditions prevent their movement back through the dryer area. They later returned to the Dryer Control Room, after Butch Bryan (mentioned above) had returned to the area to verify that the room concentration had dropped to less than 1 ppm.

It is now evident that the source of the Control Room contaminations was intake of release material into the fresh air supply stack located west of the reactor area.

Bryan, who monitored the VCM levels within the plant and north of the Vinyl areas, found detectable concentrations as far as the VCM tank farm and near the guard house, approaching 12-13 ppm at times, especially along the walkway and toward the tank farm. He continued to monitor the in-plant area and verified abatement of danger prior to plant re-entry by evacuated personnel, which was permitted at 2:45 p.m. by the Reactor Shift Supervisor.

G. G. Draper
September 10, 1976
VCM Emergency
September 8, 1976
Page 3

III. OVEREXPOSURES

One employee, James White, was overexposed. Following the start of the release, he entered the Contractor shop area west of the reactor area at approximately 2:10 p.m. to determine if any contract personnel were present in this area. The contractors had all evacuated when the VCM release alarm was sounded. He was not wearing respiratory protection and detected an odor of VCM until he left the contractor shop area (approximately 4 minutes). At the time, he noted that a fine layer of product had been spread over the area prior to his entry. During the four minutes he was in the area, the large reactor continuous monitoring points did not show any elevation in concentration above normal on the west side of the reactor area approximately 50' from the contractor area.

The probable source of the scent was limited to VCM being evolved from the product on the ground. Mr. White has been instructed that he should have donned the proper respirator protection prior to entry to the area. White experienced no dizziness or similar symptoms while in the area or at a later time.

The overexposure was reviewed with Dr. Lembke, Corporate Medical Director, who advised that no immediate, additional medical surveillance is required since no narcosis or similar side effects has been seen. They will continue to monitor White via our established VCM medical surveillance program.

IV. OSHA AREA DIRECTOR NOTIFICATION

The emergency was verbally reviewed with James Blount, the local OSHA Area Director, and Dr. C. Crowe, also of the area office at approximately 11:30 a.m., September 9, 1976. They have requested a written report of the emergency and will call us if further questions develop.

V. CORRECTIVE ACTION

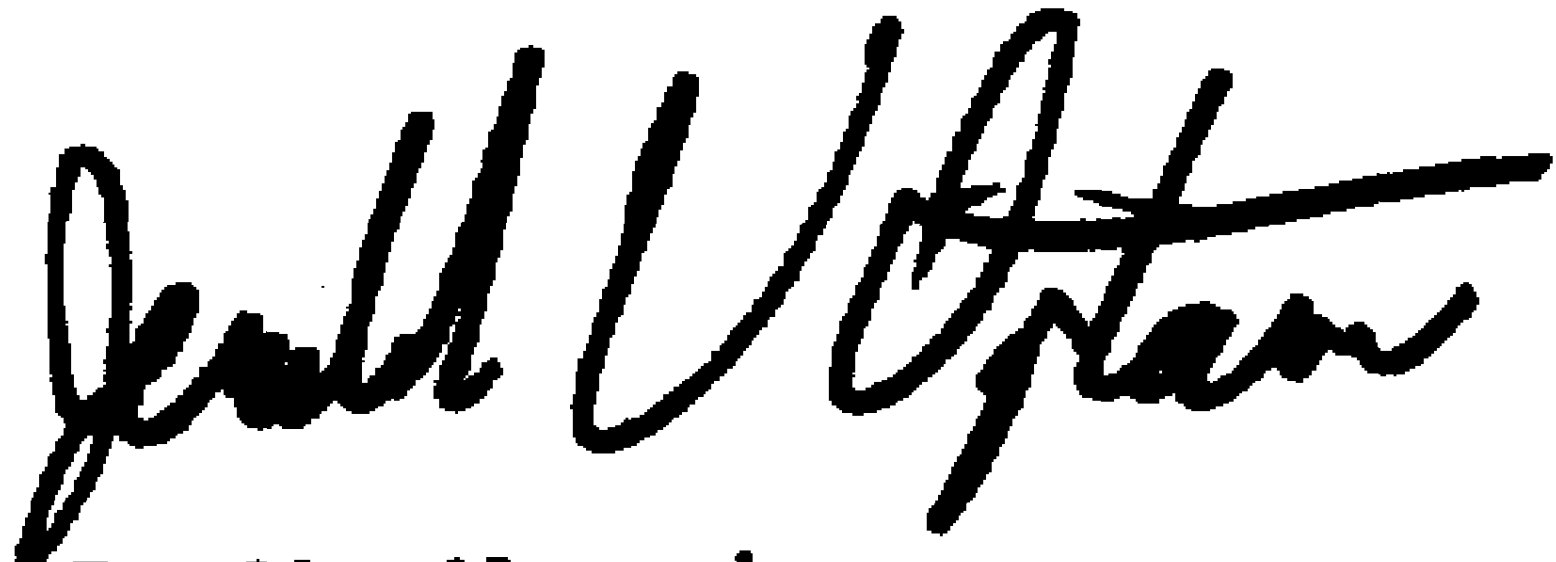
The rupture disc, which failed resulting in the subject release, was an 8" disc rated at 200 psig. The disc failed at a recorded pressure of 151 psig.

Action to prevent a future occurrence of this is:

1. Obtain rupture discs with closer tolerances. Discs are currently available with a +2% tolerance to give better assurance of relieving the reactor at the designed pressure. The existing discs have tolerances of +10%. Conversion of all reactor discs to a closer tolerance disc will be accomplished as soon as discs can be purchased.

G. G. Draper
September 10, 1976
VCM Emergency
September 8, 1976
Page 4

2. Reactor rupture discs will be changed quarterly to help prevent a release due to a fatigued disc.
3. Reactor will be pressure tested with water after discs are changed to be sure discs are holding before initial VCM charge.



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Acting Safety Director

jf

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Department Heads
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