

Manufacturing Chemists' Association, Inc.

(FOUNDED 1872)

1825 Connecticut Avenue, N. W.
WASHINGTON 9, D. C.

January 1964 Issue

TO THE EXECUTIVE CONTACTS OF MEMBER FIRMS

SUBJECT: Case Histories of Accidents (including Fires and Explosions).

Member firms are urged to send the MCA Washington Office an account of accidents (or near accidents) which they believe should be included in this report. Factual information on such occurrences is desired whether or not occupational injuries are actually involved, and regardless of the exact nature of their results.

NON-APPROPRIATE MATERIAL REDACTED

CONFIDENTIAL
Subject to Protective Order in
Ross v. Conoco, Inc., No. 90-4837
14th Judicial District Court
Calcasieu Parish, Louisiana

CMA 015557 A

NON-RESPONSIVE MATERIAL REDACTED

CASE HISTORY NO. 960

Explosion - Sight Glass Failure

Description: Trying to repair a leaky sight glass on a vessel under pressure was the primary cause for a chemical plant explosion and fire that resulted in 7 deaths, 2 critical injuries and property damage exceeding \$4 million.

The 85' x 85' building with drying and packaging area attached contained 20 - 2,000 gallon reactors used in the manufacture of polyvinyl chloride, (PVC). All electrical equipment was explosion-proof and the building was ventilated at 20 air changes an hour.

One reactor had trouble with the 6 inch

CONFIDENTIAL

Subject to Protective Order in
Ross v. Conoco, Inc., No. 90-4837
14th Judicial District Court
Calcasieu Parish, Louisiana

CMA 015558

sight glass which had a light above it. The lead and asbestos gasket and sight glass were replaced and the vessel put on stream. The foreman noted that at 140°F. and 140 p.s.i.g., the system was tight, but while the maintenance men were in the building to repair a valve on another reactor, they were asked to check the sight glass. A small leak was observed and a maintenance man tightened the nuts with an open end wrench (not a torque wrench). On the second round of tightening, a one inch ribbon stream of water and vinyl chloride suddenly shot out and knocked the man down. He was bleeding from the face and escorted out of the building. Regular emergency procedures were started immediately, e.g., windows and doors were opened, steam to reactor shut, additions stopped, and the manual vent to the reactor opened.

An operator was overcome by vapors and carried out. Five minutes later a tremendous explosion occurred, ripping the building to pieces. The contents of 18 reactors were dumped but there was very little fire in the building. The explosion wrecked the sprinkler system and the Post Indicator Valve could not be reached. Pressure dropped to zero in critical locations. There evidently wasn't a sprinkler line loop on this area. A warehouse, laboratory and office building 150' x 800', was 60 feet south of the building. A wall was blown down, several small fires started and propagated along the roof. The roof caved in and the building burned several days, to complete destruction. The sprinkler pressure was zero in this area. The boiler and maintenance building 80 feet to the north, was extensively damaged and other surrounding buildings also were damaged to varying degrees. Windows in homes were shattered and some homes evacuated.

Of the dead, one was found in the dryer room attached to the building. Four bodies were found outside, between the building and the warehouse, indicating that conditions had changed from emergency to evacuation within a five minute period. One fatality occurred in the boiler room, 80 - 100 feet away.

Cause: The investigators feel that the 6 inch sight glass shattered completely, causing a sudden build-up of flammable vinyl vapors which found an unknown source of ignition. Possibly glass fragments broke the ceiling lights.

NON-RESPONSIVE MATERIAL REDACTED

CONFIDENTIAL

Subject to Protective Order in
Ross v. E. I. du Pont de Nemours & Co. No. 99-4837
14th Judicial District Court
Calcasieu Parish, Louisiana

CMA 015559

Accident
Case
Histories



MANUFACTURING
CHEMISTS
ASSOCIATION

1825 CONNECTICUT AVENUE, N. W.

WASHINGTON, D. C. 20009

(202) 483-6128

1972 A CENTURY OF SERVICE 1972

April 1972 Issue

NON-RESPONSIVE MATERIAL REDACTED

CMA 015559 A

NON-RESPONSIVE MATERIAL REDACTED

CASE HISTORY NO. 1818

Employee Overcome During Tank Entry

Description: A dryer technician was overcome by VCl as he was cleaning inside a "poly." The poly had been properly prepared with respect to isolation of piping, lock-out requirements, ventilation, and a vessel entry permit was issued. Because the charge had set up and VCl pockets were present, the man was required to wear an airline respirator. The man, wearing the airline respirator, entered the poly and within three minutes he was overcome. The standby noticed the man's condition and immediately notified building personnel for help. The man who was overcome was removed within 40 seconds and immediately revived.

Cause: An investigation revealed that the demand flow regulator had been tampered with to make it a constant flow regulator. (Two large washers had been inserted on top of the diaphragm.) It is thought that the washers had moved out of place causing the needle valve to open partially. It was also noted that the diaphragm had two small holes. With this situation present it is

possible that the VCI entered the mask through the regulator casing.

Preventive Measures:

1. Require checking the airline respirator and regulator prior to each use.
 2. Use a constant flow regulator rather than a demand flow regulator.
 3. Issue an airline respirator to each work shift.
 4. Conduct safety meetings with personnel covering the incident and proper operation of the airline respirator.
-

NON-RESPONSIVE MATERIAL REDACTED