

Conoco Chemicals Company
Division of Conoco Inc.
P O. Box 91, New Highway 25
Aberdeen, MS 39730

October 26, 1981

CONFIDENTIAL

Mr. Charles R. Jeter
Regional Administrator
Region IV
United States Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, GA 30308

Dear Mr. Jeter:

At approximately 11:05 p.m. on October 16, 1981, our plant experienced a relief valve discharge. Pursuant to the National Emission Standard for vinyl chloride (40 CFR, Part 61, Subpart F, paragraph 61.65 a) we are reporting this incident to your office. This discharge was reported to the National Response Center under the Comprehensive Environmental Response Compensation and Liability Act of 1980.

The vessel involved was a surge tank, T-201, in the VCM railcar unloading area of the plant. The vessel relieved through a 2½" X 3½" relief valve which had a 2" rupture disk between it and the surge tank. The rupture disk was rated at 150 psig at 72°F. The relief valve setting was 150 psig. The pressure rating of the surge tank is 150 psig at 366°F. The stack from the relief valve is sixteen feet above grade.

The release occurred during the unloading of VCM from railroad cars into the VCM storage sphere. The operator inadvertently did not open a valve on the discharge of one of the VCM unloading compressors. As a result of operation of the compressor in a blocked in condition the pressure at the compressor discharge increased and relieved through the relief valve on the compressor into the surge tank. This resulted in overpressuring the surge tank causing the relief valve on the surge tank to discharge. The operator then shut the compressor off and the relief valve reseated. The operator estimates the relief valve discharged for approximately two and one-half minutes.

The weather conditions from the plant weather station at the time of the release were as follows:

Barometric Pressure - 29.96 in. mercury
Temperature - 64°F
Wind Direction - From Northeast
Wind Speed - Trace
Sky - Cloudy

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The amount of vinyl chloride released is estimated to be 357 pounds. This is based on a two and one-half minute release and on a relief valve capacity calculational procedure provided by Consolidated, the relief valve manufacturer. Relieving conditions of 150 psig and 158°F are used in the calculation. A copy of the calculation is attached.

To minimize the possibility of future discharges of this type, the operators at the VCM unloading area will be reinstructed in the proper unloading procedures with special emphasis placed on not operating a compressor blocked in. Also high temperature switches will be installed on the compressors to shut them down if they are started up in a blocked in condition. A high pressure switch* will be installed on the surge tank to trip an alarm and shut down all of the unloading compressors in case of high pressure in the surge tank.

The reporting requirements of the Standard pertaining to relief valve discharges are summarized below:

Source: Surge Tank, T-201

Nature: Discharge through relief system on surge tank, T-201

Cause: Overpressure of surge tank, T-201, due to operation of a VCM unloading compressor in a blocked in condition.

Date: October 16, 1981

Time: 11:05 p.m.

Approximate
Discharge: 357 pounds of vinyl chloride

Method of
Determining
Discharge: Relief valve calculation

Action Taken
To Prevent
Discharge: Compressor shutdown

Measures Taken
To Prevent
Future Discharge: 1. Operators reinstructed in proper VCM unloading procedures.
2. A high temperature shutdown will be installed on each unloading compressor.
3. A high pressure switch which will shutdown all VCM unloading compressors will be installed in surge tank, T-201.

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If there are any questions concerning this report, please contact me at
(601) 369-8111, extension 2239.

Sincerely,

R.A. Frohreich

R. A. Frohreich

tap

c: Jerry Banks, Bureau of Pollution Control
bc: JF, CRM, PEM, SJV, DLM, JJH

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Relief Valve Discharge CalculationSurge Tank, T-20111:05 P.M. - October 16, 1981

From: Consolidated Safety Relief Valves Catalog
No. 1900 B, page 46

$$A = \frac{W \sqrt{T} \sqrt{Z}}{C P \sqrt{M}}$$

Where:

A = Orifice area, in², G orifice = 0.503 in²
W = Relieving Rate, lb./hr.
T = Inlet Relieving Temperature, °R = 618°R
Z = Compressibility Factor, = 0.82
C = Nozzle Gas Constant, page 48, = 295
P = Relieving Pressure, psia = 164.7 psia
M = Molecular Weight of Vapor = 62.5

Then:

$$W = \frac{(0.503) (295) (164.7) \sqrt{62.5}}{\sqrt{618} \times \sqrt{0.82}}$$

$$= 8580 \text{ lb./hr.}$$

Vinyl chloride discharged in 2.5 minutes =

$$\frac{8580 \text{ lb.}}{\text{hr.}} \times \frac{1 \text{ hr.}}{60 \text{ min.}} \times 2.5 \text{ min.} = 357 \text{ lb.}$$