W. ENGMAN

MONSANTO COMPANY
Sauget, Illinois

March 29, 1972

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TO: Mr. G. L. Bratsch

NEAR-MISS ACCIDENT INVESTIGATION

L-6-1-72

Date of Incident:	March 23, 1972
Location:	Dept. 245
Nature of Incident:	Fire
Cause of Accident:	Equipment Failure

INVESTIGATING COMMITTEE: Jim Shafer
Ollie Mertzweiller
Mike Jennings

Dale Schillinger, Chairman

/ghw

DSW 355631

STLCOPCB4085409

Near-Miss Accident Investigation
L-6-1-72

DISCUSSION:

Examination of the therminol piping system after the incident revealed a hole in the charge line to the transfer pump. The hole was approximately 1/4" in diameter and was caused by corrosive attack. The system was pressure tested after the fire and no other sources of leakage were apparent. The line was connected to the transfer pump. At the time of the incident the line was in the vapor space and subjected to an approximate pressure of 10" of water.

A sample of the therminol was analyzed. The sample contained approximately 5% kerosene and the flash point was 290 Deg. F. The flash point of the therminol 66 charged was 350 Deg. F.

The ignition source was believed to be either the burner on the furnace or the kerosene vapor. Kerosene has an auto ignition temperature of 444 Deg. F. The temperature of the therminol system was 575 Deg. F. The furnace flame is approximately 15' from the source of the emission. The burner was off at the time of the ignition but residual heat could still have caused the combustion of the vapor cloud.

The fire was not caused by a therminol spill. Fluid level in the surge tank was still at normal level after the fire.

CO_2 is purged into the therminol system. This prevented the fire from flashing back into the surge tank and the seal drum.

The committee found that a fire had occurred in the system years ago when kerosene was used to wash out the aroclor system in Dept. 245.

Subsequent to the investigation, a separate section of the therminol system was placed on stream. Apparently water had contaminated the system. When the therminol contacted the water a violent pressure release occurred. The release vented back through the therminol seal drum. Another small hole became visible in the surge tank. It is not known whether this hole was undetected previously or was caused by the pressure build up.

SUMMARY:

Extensive damage could have been caused by this incident. Spills of therminol around a furnace represent a dangerous fire hazard which will burn vigorously if ignited. Spills in chat, gravel or soil represent the greatest hazard. The rapid application of water will play a major part in limiting the damage. In this specific incident the fire was extinguished approximately 3 minutes after water was applied.

DSW 355633

STLCOPCB4085410

Near-Miss Accident Investigation
L-6-1-72

SUMMARY: (continued)

The committee believes there is a definite hazard contaminating a therminol system with kerosene or any other material which has an auto ignition temperature below the operating temperature of the system.

Mr. Bennett and pipefitters Robert Neal and Melvin Valentine are to be commended for their efforts during the fire.

The incident subsequent to the investigation highlights the need for proper venting and keeping therminol systems free of water contamination.

As a result of this incident the committee makes the following recommendations.

SPECIFIC RECOMMENDATIONS:

1. The contaminated therminol 66 should be replaced.

   Status - Complete

2. The organic contaminated chat should be removed and the area cleaned up.

   Status - Complete

3. A monitor nozzle should be installed on the fire hydrant on the east side of the department.

   Responsibility - Production
   Completion by May 15, 1972

4. Answer the need for eliminating the burner as a source of ignition.

   Responsibility - Production
   Completion Date - April 15, 1972

DSW 355634

GENERAL RECOMMENDATIONS:

1. Kerosene should not be used in therminol systems.

2. Access to fire hydrants should not be restricted.

3. The rapid application of water should be considered for all furnaces which operate above the flash point.

INVESTIGATING COMMITTEE

Jim Shafer
Ollie Mertzweiller
Mike Jennings

Dale Schillinger, Chairman

/ghw

DSW 355635

STLCOPCB4085412