

W. G. Krummrich Plant

MONSANTO COMPANY

November 13, 1970

W. ENGMAN

cc: Messrs.
B. W. Corlew
B. R. Williams
D. J. O'Toole
W. B. Papageorge - G.O.
J. R. Savage - G.O.
P. B. Hodges - G.O.

TO: Mr. G. L. Bratsch

MAJOR SPILL INVESTIGATION No. S2-2-70

Product: Therminol

Date of Incident: October 23, 1970

Location: Rip Track

Nature of Incident: Loss of a heel of Therminol from a tank trailer to sewer

Cause of Incident: Operating error. The heel of material was being heated up to facilitate discharge to a hold tank. The trailer was imperfectly vented and the discharge valve was open. Expansion of air discharged the material.

Secondary Cause: Additional material was ordered to ensure that there was sufficient material to rinse and fill the Therminol unit. However, there was insufficient follow up to ensure that the excess material was either returned or used to complete another shipment.

Consequence: The loss of material to the sewer presents a serious pollution problem with prolonged effects which are difficult to follow or to control. Value of the material loss was \$550 (manufacturing cost).

INVESTIGATING COMMITTEE:

T. Carrico
M. Foresman
C. King
W. Parker
C. Buckley, Chairman

MONS 099044

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SUMMARY OF THE INVESTIGATION:

Aroclor is a valuable product which is important to the future of the Monsanto Company and especially so to the W. G. Krummrich Plant. However, its continued production is dependent on the success of our control measures to prevent loss to the environment. This is because it is unaffected by biological action and can become concentrated in the "food chain" until irreversible changes in the ecology occur.

Thus, in addition to the installation of control equipment, we must train people to avoid operating errors which can cause such a loss and we must also maintain sufficient control of the material at all times that the chance of error is minimized. It is evident from the sequence of events leading up to this incident that our control falls short of our needs. Had the material been another product than Aroclor, the loss could have passed unnoticed. In this case, the personnel involved were well aware of the serious nature of an Aroclor spill and immediately informed all the key personnel needed to deal with the situation.

SEQUENCE OF EVENTS:

- 10/13/70: Department 239 emptied its Therminol unit into Rogers trailer.
- 10/13/70: Department 239 ordered approximately 2000 gallons Aroclor 1248 from Department 246.
- 10/16/70: Department 239 Therminol unit was flushed with kerosene. Kerosene rinse pumped to Rogers trailer.
- 10/15/70 8:30 AM: Trailer #432 loaded with 1976 gallons Aroclor 1248.
- 9:16 AM: Trailer weighed - 49,440 lbs. gross.
- 10/15/70: at Department 239. 500 gallon 1248 from trailer #432 used to flush remaining kerosene from the Therminol unit - pumped to Rogers trailer. 1000 gallon 1248 from trailer #432 used to fill the Therminol system. Trailer #432 was then released to distribution services with a telephone message that it contained a heel of material. Trailer #432 was weighed again - however, this weight gave no indication of the amount of heel left in it and no special arrangements were made to dispose of the heel.

The Rogers trailer was unloaded to the waste Aroclor storage tanks to be held for incineration.

SEQUENCE OF EVENTS (continued)

10/23/70: Trailer #432 was sent to the Rip Track for cleaning. Rip Track personnel knew it had contained Aroclor but had no other information on the size or nature of the heel left in it. On inspection, it appeared to be black tarry material but was, in fact, colorless Aroclor 1248. The cover of the vessel was closed, but not fastened, in order to minimize fuming. This was sufficiently air tight, however, to cause the spill when the vessel was heated.

DISCUSSION:

This incident highlights three principles of process control which are essential to efficient operation.

1. A complete check of the equipment must be made before starting an operation.
2. An operation is incomplete until all material has been accounted for and the equipment restored to the starting condition.
3. Material in vessels must be positively identified before it is used in any operation.

SPECIFIC RECOMMENDATIONS:

1. Rip Track operators should be cautioned about the need to check the discharge valves on all tank vehicles for correct position according to the operation to be performed and on the need for adequate venting during heating.
2. Warehousing and Shipping and the Accounting Departments should review the handling of weight tickets with the objective of ensuring correct transfer weights and a record of heels remaining in vehicles.
3. Warehousing and Shipping should decide what to do when a vehicle is known to contain a large heel.
4. Production Departments 239 and 246 should devise a procedure which could have been followed to dispose of the heel in the trailer with minimum financial loss as well as no loss to the environment.
5. Department 239 should review the Therminol change out procedure with the objective of cleaning the system at minimum cost and without leaving a heel in the trailer.

Status reports are due January 1, 1971, and monthly thereafter until complete.

GENERAL RECOMMENDATIONS:

1. All groups review the truck loading and unloading procedures re-emphasizing the precautions to be taken and indicate if revisions are needed in light of the above incident.
2. The need to account for all containers of Aroclor or Aroclor based material (hydraulic fluids as well as Therminol) should be explained to all personnel.

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