Occidental Chemical Corporation

PVC Resins/PVC Fabricated Products

MEMO

To T. S. Masife Date October 25, 1984

From C. MacCary

Subject Vinyl Chloride Safety Association Meeting

cc: [redacted]
R. Arnold
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The meeting of VCSA in Scotsdale, Arizona, was attended on October 11 and 12. There were 50 attendees from 14 countries from 21 companies.

A review of the 1983 report on Runaway Reaction Control was presented by J. R. Wallace of Esso Chemical. There were a total of 36 plants responding to the survey. The major causes of runaway reaction were charge error, mechanical failure, instrument failure, agitator loss, and to a lesser degree, cooling loss and formulation error. Most plants use a liquid inhibitor if cooling water fails to control the reaction. Ten plants use inhibitor, but continue to run the reaction if it is brought under control. There were 6 plants satisfied with their short stop system, but 22 were not satisfied. The major problem was in dispersing the inhibitor in the vessel. There was a range of 0-250 runaways/year from the respondents with a mean of 48. Of the runaways, 8.0% resulted in vents. There were several comments made about the effectiveness of NO systems. Apparently NO is pH sensitive, being less effective at high pH. There was also an indication from the survey that having emergency power doesn't reduce the chances of a release. However, this indication may have resulted from the wording of the question on the survey.

A review of the Short Stop Efficiency was presented by J. T. Vaughan of I.C.I. There were 20 replies with 12 from the U.S. There were two responses who had no S.S. system, both from the U.S. Four respondents used a phenolic inhibitor, 6 used an aromatic, and two used a combination of phenolic and aramotic. In order to dispense the short stop, eleven relied on the agitator, four also had a "burp" procedure, and three utilized N_2 injection. The level of inhibitor varied from 200 ppm of VCM to .5% volume. There was also a wide variation on how often the system is checked from every batch to never. This disposition of the product also had a wide range of answers with 25% sending it to off-spec, 20% using it for all but food applications, 25% having no restriction, and 12.5% considering it scrap because of odor. The general feeling of effectiveness, ranged from adequate to foolproof.

Dr. B. Bennett of I.C.I. presented an update on Angiosarcoma and current VCM Medical Research. He mentioned that in addition to VCM, other potential causes of angiosarcoma, arsenic, thorostat, anabolic sterioid, cooper, and oral contraceptives. To date, there have been 110 reported cases of VCM related angiosarcoma. There are 3 cases still alive. There is no effective method of diagnosis or treatment. Life expectancy is 6-9 months after diagnosis. In the U.S., there is a clustering of cases with 4 plants accounting for 86% of the reported cases. Dr. Bennett reviewed several cases indicate the exposure level and latency period. In the U.S., the

latency period is an average of 25 years. Most cases involved long exposures to moderate to high levels. However, there was one potential case of a secretary with very low exposure. This case is still being investigated.

Mr. Ray McConkey gave a presentation of "Fire Fighting Techniques for VCM Fire". He recommended creating a logic check sheet to be used in the event of a major spill. This check sheet could be used during an emergency to insure that all potential solutions are considered. Some of the items to be considered are: 1) Can all ignition sources be eliminated? 2) Can vapor cloud be dispersed with a water fog? 3) Is there an adequate supply of foam, (Hi Expansion or Protein), to extinquish the fire?

An update on EPA/OSHA regulatory activities was presented by W. C. Hollbrook of BFG. In January, 1985, it is expected that the EPA will publish proposal changes. Most of these changes are administrative, however, there is change in the standard for relief valve discharges. It is being proposed that reactors be limited to .035 discharges/100 batches and non-reactor to 0.025 discharges/100 batches. Suspension plants also may not exceed 4 discharges/year and non-reactors may not exceed 3 discharges/year. There is also a proposal to allow reports of discharges quarterly rather than within 10 days of a release.

B. Barton gave a report on current litigation on emergency discharges. There are currently 10 cases outstanding with the federal EPA. The basic issue is what constitutes a preventable release. The federal EPA contends that only "acts of God" are not preventable. The 5th district court has ruled that EPA doesn't have the right to promulgate work practice regulation, however, other courts have decided that emergency releases are covered as an emission standard rather than work practice.

An update on the activities of the Vinyl Institute was presented by T. Gottesman. He reviewed the purpose of the V.I. and its member companies.

W. J. McDonald reviewed the results of a survey on oxygen levels and hazards. A total of 18 plants from 13 companies responded. Eleven of the 18 plants monitor for O_2, 6 of which are on line. The normal levels ranged from less than 100 to 10,000 ppm. The trigger point for action ranged from 2,000 to 20,000 ppm. The major response to high O_2 levels was to find the leaks. Of the 18 plants, 8 test for peroxides, and 6 take special precautions before entering a storage vessel. Twelve plants also stated that they add an inhibitor of 5-10 ppm hydroquinon or phenol.

Several companies presented incidents in their plants. Diamond Shamrock-Alberta Gas related an incident in which a dumpster caught fire. Fire fighting was difficult because of the location of the dumpster near the reaction building. The fire was probably caused by not properly rinsing initiator bottles and these bottles coming in contact with a drum containing Sodium Hypochlorite.

BFG related an incident in which an initiator charge cylinder blew up. Initiator was being added to a charged reactor by pressurizing the cylinder with N_2. During the transfer the N_2 cylinder went empty allowing Vinyl Chloride to back up into the cylinder. The cylinder was rated at 400 psi but had no rupture disc and was not an ASME approved container.

Union Carbide related an incident in which a 6,000 gal bulk reactor exploded in September, 1977. The plant used a semi-continuous process in which a 25% solution of IPP was continuously added to the reactor. The vessel was equipped with two 3" safety relief valves, two 3" rupture discs, and one 3" manual vent line. Normally a charge of 6 lbs of the IPP solution was added to start the heatup process. It is believe that between 120 and 480 lbs of initiator was actually added. This probably happened because of an operator shortcut. This error was compounded by the failure of the agitator. This resulted in the reaction mass becoming superheated because of the absence of nucleation sites.

A phenomena known as homogeneous nucleation resulted in the tank rupture and explosion. Some pieces of the vessel and struction were blown 1600 feet away.

An incident in which a Vinyl Chloride charge pump exploded was also related. This was apparently caused by dead heading the pump by closing block valves on the inlet and discharge of the pump. The VC overheated rupturing the pump housing.

John Andersen was elected Vice Chairman of the VCSA and Tampa, Florida, was chosen as the site of next year's meeting.

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