Monsanto

FROM (NAME & LOCATION) General Offices - St. Louis

DATE January 24, 1969

SUBJECT Project Loss Prevention
Report 69-7

REFERENCE CEA 2080

cc R. E. Howard
G. O. Hunt
P. K. Ward - Anniston
S&PP Project File
S&PP Location File

TO : Mr. R. S. Yates

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R. J. Green
W. B. Howard
R. M. Kountz
W. E. Voss - Anniston
R. S. Yates

DATE AND PLACE OF MEETING January 23, 1969, Creve Coeur, Missouri.

CEA 2080 Expand Solid Arochlors, Anniston Plant, Anniston, Alabama.

This project is increasing the plant capacity for manufacture of solid arochlors from 9.6 to 29.6M ppy. The project capital is approximately $1.03M. Completion target is December 15, 1969.

PERSONNEL

1. Chlorinated Biphenyl Content of Product An overall project objective is to minimize chlorinated biphenyl content in the solid arochlor 5460. This is needed for FDA approval of the material, since it is used in hot-melt adhesives in food packaging. It is also used in plasticizers.

2. Elevator It is planned to install an elevator to handle both freight and passengers. The elevator will have the capacity for 5000 pounds and will likely be hydraulically operated. It was agreed that the project manager will review the elevator design and safety controls with Mr. George Gorbell.

3. Lime Addition Lime is added to the still pot from 50 pound bags. This size bag is considered safe for personnel handling.

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MECHANICAL An external gas-fired heater is used for the still pot. Combustion safeguards are planned by the project; these will include a Honeywell protecto-glow unit. There will also be a pilot interlock. The combustion safeguards should be reviewed with Mr. George Ostroot when the heater design is further along.

In addition, some process safety provisions will be incorporated in the heater. A high temperature sensing unit on the process material coming out of the furnace will shut down the burner on high temperature. If the circulation through the heater stops, an alarm will sound. Standard instrumentation will be employed for these functions.

PROCESS

1. Alarms and Interlocks The operation of the chlorinators will be sequence controlled. Chlorination starts at a temperature of about 150°C. As the batch progresses the sequence controller steps the temperature upward so that, at the conclusion of chlorination of a batch, the temperature is in the range of 250-255°C. The temperature will be recorded in the chlorinator; an alarm will be actuated at high temperature. It was agreed that the project will consider use of a differential temperature alarm, based on the desired temperature at any stage of the batch, rather than a high temperature alarm which must function at a temperature higher than the maximum batch temperature. It was believed that this type of alarming would be a better investment of money than the addition of a second high temperature alarm on the reactor, and located in the vapor discharge from the reactor.

   There will also be temperature detection in the arochlor circulating line on the chlorinator. A high temperature in this line will give an alarm and will also close the chlorine supply valve. The complete closure of the chlorine supply valve will not be possible because chlorine will come from tank cars rather than from the chlorine unit.

   If flow should cease in the arochlor circulating line there will be an alarm and the chlorine valve will be closed.

   There will also be an alarm if the therminol circulation should stop.

APPENDIX "C"

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Other alarms include the following: a scale alarm to prevent overcharge of the weigh tank; a low temperature alarm on the chlorinator at 120°C; water coolant to the therminol cooler to prevent too low a water temperature; a signal when the batch is 80% chlorinated in order to signal the time to initiate sampling; high (80°C) and low (60°C) temperature on the circulating therminol. The project is also considering installation of a nuclear instrument on the process circulating line at the chlorinator to determine density; it is hoped that this density figure can be correlated with softening point. If the correlation works out on a present plant test, the equipment will be installed.

2. Operating Time The operating time of the present unit is only about 74%. Downtime on a chlorine plant has been a part of the problem; the new purchased chlorine arrangement should help this. Another part of the problem has been maintenance. It is also hoped that this can be improved in order to improve the on-stream factor.

3. HCl Scrubber In order to minimize the HCl venting to the atmosphere the project will add equipment for improved HCl absorption and scrubbing.

4. Gas Fired Heater Operation The firing rate on the heater is manually indexed on a flow controller on the gas to the burner. This type of control has proved adequate with the present plant installation and is believed to be adequate for the new heater. The project will also try to design the heater coils in such a manner as to simplify coil removal for the furnace. The furnace coils can be expected to burn out approximately annually. This is considered a normal maintenance item and presents no major problems.

5. Residue Removal If the residue is removed from the system in the manner used at present, the fume hood venting provisions will be improved over those at present. The project also plans to try to develop a system for flaking the residue.

BUILDING AND FIRE PROTECTION An 18' x 90' x 2 level bay will be erected adjacent to the north wall of Building No. 27. The construction will be open steel frame with reinforced fiber glass polyester wind-breaks, concrete slab roof and steel grate flooring at the first level above ground level.

Hydrant #13 with hose house and hydrant #19 with attached monitor nozzle are adequate fire protection. No sprinklers or fireproofing are needed.

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A 20' x 30' extension to the existing control room will be erected at the 16 ft. level. The construction will be concrete block walls and non-combustible roof. No fire protection is needed.

LOSS EXPOSURE The maximum probable loss was considered to come from loss of the heater for the still pot as a result of explosion in the fire box. It was considered that approximately six days will be required to re-brick and repair the heater. A spare coil will be kept in stock.

It was estimated that the repairs would cost about $10M. Six days were estimated to be sufficient for the repairs. The business interruption loss during this period of time would be approximately $45M.

LOSS PREVENTION REVIEW CHECK LIST Attached to R. S. Yates' copy of this report is a copy of Form G-1425, Loss Prevention Review Check List, which can be used as a safety check list for this project.

LOSS PREVENTION REVIEW BY PLANT The S&PP Branch of CED cannot review design prints and construction steps in detail as this project progresses. S&PP requests plant personnel, including plant safety personnel, to hold additional safety reviews at the plant, to follow the development of design prints, and to check the progress of construction in order to make maximum contributions from their experience with these operations to the CED personnel involved in execution of this project.

SAFETY MANAGER G. O. Hunt will be Safety Manager for this project. Please contact him for additional safety reviews needed during design.

R. J. Green

W. B. Howard

bjr
Attachment

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