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PROGRESS REPORT

JOHN F. QUEENY PLANT
TECHNICAL SERVICES DEPARTMENT

ESTIMATE NO.

JOB NUMBER 370-E-820

REPORT NO. 1

DATE December 4, 1970

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TITLE: PCB - Review Systems in Plant

PERSONNEL: E. Gruetzemacher/E. Hargens

PROBLEM: Considerable emphasis has been focused recently on polychlorinated biphenyl losses to the environment. All systems must be reviewed to ensure compliance with loss limitations.

SUMMARY: PCB type Aroclors are used or handled in 5 departments at JFQ. Losses to the plant waste effluent greatly exceed Monsanto's self-imposed limitation of 10 ppb and immediate corrective action is required to meet the 12/31/70 deadline for compliance. Every means possible must be taken to prevent these Aroclors from entering our waste effluent or being absorbed in the ground. Tank washings will be sent to the toxic dump and used material will be destroyed by incineration at WGK. Volatile losses to the atmosphere must be eliminated.

Monsanto is taking decisive action based on evidence that PCB is a persistent chemical which builds up in the environment. One of the PCB's, Aroclor #1248, is highly resistent to degradation. This product is used in two electrically heated units in the "WW" Building; Organic Research Pilot Plant. These units are portable and are used on many different kettles. Therefore, in addition to the normal stuffing box leakage, there are problems with leakage and/or spillage when the piping is changed and when the kettle jackets are cleaned.

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Acceptable soultions are:

1. A completely "closed" system.
2. An alternate fluid.

The "WW" Building systems have been reviewed with Dr. W. G. Knapp and other involved personnel. Due to the demand pattern, it is impossible to change to a "closed" system. A substitute fluid for Aroclor #1248 is Therminol 66 (HB-40).

HB-40 has an operating temperature to up to 650°F (343°C) which is above the design temperature of the "WW" Building system, namely 300°C. With slight modifications HB-40 can be used. Since HB-40 will support combustion, it is recommended that the expansion tank be operated under an inert atmosphere of N_2 or CO_2. Stuffing box should be in good condition and piping tight to minimize leakage.

RECOMMENDATION

The only practical way to comply with the PCB loss limitations is to discontinue the use of Aroclor. It is recommended that HB-40 be used and that the systems be reviewed and modified as necessary to assure safe handling.

FUTURE WORK

Since this is a Research facility, it is suggested that Mr. Marchand arrange for the modifications and change of heating fluid. It is also requested that he advise A. E. Peterson when the transfer is complete.

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