PCB-Water

Monsanto

FROM (NAME & LOCATION): A. E. Peterson, JFQ

DATE: November 30, 1971

SUBJECT: Potential PCB Contamination - JFQ

REFERENCE:

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There are three general sources of potential PCB contamination in JFQ products:

1. Leaks from heat transfer systems.
2. Carry over from compressor fluids.
3. Impurities in process chemicals.

A program to minimize PCB losses from heat transfer systems and compressor fluids has been underway since September 1970 and is essentially complete. The program consisted of eliminating one unnecessary system, changing exchange medium to non PCB containing fluids in six systems, and changing to less persistent Aroclor 1242 from 1240 in three systems. In addition, necessary equipment modifications have been made to both minimize and contain aroclor emissions to the atmosphere and sewer. All Aroclor from leaks and change out of fluid is collected and sent to WGK for incineration.

1. Heat Exchange Systems.

High PCB content Aroclors are still used in three heat exchange systems. Two of the systems are in the W building and the other in Phthalyl Chloride.

a. W Bldg. - Aroclor 1242

Only one of the two units is in use. The other unit has been cleaned and shutdown. The pump on the active unit has been panned and leaks collected for disposal at WGK. Approximately one year ago consideration was given to the use of non PCB containing fluids in these systems. Both units are gas fired. The increased safety hazard and expense of elaborate protective systems that would be required for other fluids did not appear warranted at that time.

No leaks have been experienced in the vessels using aroclor as the heating medium. During the past year the following products have been produced in the aroclor heated units.

Product	Uses
OS-124	Lubricant, vac pump fluid
2 phenyl aminopyridine } thenyl pyramine base }	Intermediates for methapyalines (antihistamines)
Trimethoxy benzaldehyde	Drug intermediate

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b. Department 32 - (Phthalyl Chloride) - Aroclor 1242

The following products made in this unit and their uses are:

Product	Uses
Phthalyl chloride	Intermed. for diphenyl phthalate an FDA approved plasticizer, paper binding, Astroturf
Benzyl esters	Perfumes for soap, FDA approved for foods
OS-59	Hydraulic fluid, dielectric coolant
OS-128	Hydraulic fluid
OS-140	Hydraulic fluid

Aroclor is used as heat transfer fluid in a nickel lined reactor which is heated by electric calrod units brazed to the jacket surface. The fluid is circulated through an external heat exchanger cooled with City water during a portion of the cycle. A leak in the jacket would contaminate the product, however, no leaks to the vessel contents have ever been experienced.

Consideration was given to the use of non PCB containing fluids about one year ago. The potential fire hazard from the use of calrod units in a non fire safe fluid precluded the change at that time.

2. Compressor Fluids

Low PCB content (1%) Pydraul ACA is used in one plant air compressor. A long range program has been established to convert all plant air compressors to Pydraul ACA by 1976. The entire plant air system is tied together distribution-wise. Any product using compressed air directly for processing could be contaminated by fluid carryover.

3. Process Chemicals

a. Chlorosulfonic Acid produced at WGK is used as a raw material in TSCl and is believed to contain PCB impurities. No determination of PCB level has yet been made. All TSCl family products could be contaminated with PCB from the CS acid.

The following TSCl Family products and their uses are:

Products	Uses
TS Amides	Intermed. for Saccharin and oral diabetic agent, Plasticizers, Paint
Saccharin	Sweetner
Santicizer 3, 8, 9, 1-H	Plasticizers

b. CLHS used reformulated terphenyls which still contain low levels (about 1%) PCB impurities. Cross contamination with subsequent blends could result if equipment is not cleaned out properly. No food related blends are made in these systems.

Elimination of Aroclor Fluids

The use of aroclor fluids has been discontinued in the following places:

1. WW Bldg. - Research

   All units using Aroclor 1248 have been switched to Therminol 66.

2. TSCl

   The two heating systems have been switched from Aroclor 1248 to HB40.

3. TSCl

   Nash compressor has been switched from Aroclor 1232 to Santicizer 140, a phosphate ester.

The following program will be undertaken to minimize potential PCB contamination at JFQ.

1. Heat transfer systems - Determine the feasibility and cost of safely using a non-PCB fluid in all three systems.

2. Compressor Fluids - Determine the feasibility and cost of switching to a fire resistant non-PCB fluid in all plant air compressors.

3. Process Chemicals - Request WGK to provide CS Acid guaranteed not to contain PCB's.

Memo to F. J. Holzapfel 11/30/71

In addition, we will consult with Bill Papageorge to determine the frequency and analytical accuracy required to measure PCB content in the following materials.

1. All products exposed to Aroclor heat transfer systems.
2. Plant air system on a spot basis.
3. TSCI family
4. Food related products blended at CLHS which follow Aroclor blends.

A sewer monitoring program for PCB's has been in operation for the past year. Recently PCB's have been found in the dirty acid sewer which is connected to departments with no known PCB usage. A special sampling program has been undertaken to locate the source.

A. E. Peterson

M. T. Schade

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