Monsanto

COMPANY CONFIDENTIAL

FROM (NAME & LOCATION) E. E. Stewart, W. G. Krummrich Plant

DATE : September 12, 1972

SUBJECT : POLYCHLORINATED BIPHENYLS AND THE ENVIRONMENT

REFERENCE :

TO : Mr. Paul Heisler
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Control at W.G.K.

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At present, a dynamic action control program is being implemented at the W. G. Krummrich manufacturing facilities to restrict and reduce "knowing" losses of polychlorinated biphenyls (PCB) into the environment.

Our objective is to control the Aroclor manufacturing operations in such a manner to restrict knowing discharges of PCB's to the lowest technical achievable level. Expected guidelines from the EPA will limit PCB discharges to an amount not more than an amount that will result in 0.01 ppb in the receiving water.

I. Current Status

Current PCB control data have been reviewed to determine how we comply with the expected guideline. Current "knowing losses" from the Aroclor manufacturing department and the Incinerator area are < 0.001 ppb as calculated in terms of resultant concentration in the receiving water (Mississippi River). This amount is less than 10% of the guideline. A concentration of 0.001 ppb in the receiving water is equivalent to about 1.1 # PCB/day from the combined manufacturing department and the incinerator area.

II. Future

Continuing vigilance, good housekeeping and utilization of existing facilities will permit operating personnel to restrict and contain knowing losses at the current level.

Contemplated equipment venting alteration and the addition of facilities to filter effluent streams from settling basin will make possible further reductions of knowing losses. It is believed that knowing losses will be reduced an additional tenfold from the current low levels. Knowing losses from the Manufacturing department and the Incinerator area as calculated in terms of resultant concentrations in the receiving water (Mississippi River) could be as low as 0.1 part per trillion.

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II. Future (Continued)

The ultimate control of "knowing losses" to essentially zero can be realized in mid 1973.

An outline of the existing control program is attached. Also, current "knowing losses" from the Aroclor and Incinerator departments as calculated in terms of river concentration are presented on an attached graph.

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att.

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POLYCHLORINATED BIPHENYL (PCB)

CONTROL PROGRAM

CONTAINMENT

Aroclor Manufacturing Department -

The manufacturing area is paved, curbed and sloped such that all drainage within the area is directed to trenches and piping that flow to either one of two 3000 gallon settling basins. The purpose of the containment system is to collect and contain PCB's within the settling basins in the event of an accidental spill or equipment failure. The heavier and virtually insoluble PCB's will settle to the bottom of the basin. The recovered PCB's are pumped into drums and subsequently incinerated.

The normal flow of water from the manufacturing area that flows through the settling basin to the sewer is about 5 GPM.

Incinerator Area -

The incinerator area is paved, curbed and sloped such that all drainage within the area is directed to trenches and piping that flows to a 10,000 gallon settling basin. Recovered PCB's that are collected in the basin are periodically pumped to storage and subsequently incinerated.

HOUSEKEEPING -

The importance of maintaining a high level of housekeeping in the manufacturing department is recognized by the operating personnel. All are aware that knowing losses of PCB's into the environment must be restricted. All have specific housekeeping responsibilities per specific assignments and schedules.

Pumps - All pumps are checked on every shift for leakage. Drip pans that collect leaks are emptied into scrap Aroclor drums.

Leaks - All must be reported and documented so that corrections can be made and settling basins be observed.

Clean-up - Floor dry used to absorb liquid Aroclor that may have resulted from a leak or a spill. Minimum water is used to flush PCB's to the settling basin.

Drums - Sampling drums and scrap Aroclor drums with lids attached are palletized, labeled and transferred to the incineration area for incineration.

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OPERATIONS

Operations take place in essentially closed equipment per specific operating instructions based on a standard manufacturing process. Key operating controls are monitored and recorded. All transfers of product are made within closed piping systems.

PACKAGING

Tank car and tank truck loading operations are an extremely important part of the operations. Specific operating procedures per written instructions are followed to prevent accidental spills during the loading operations. The same is true for filling drums.

All loading operations and drum filling operations take place in areas where the drains and sewer systems are connected to settling basins.

Special labeling is placed on the containers for the customers to reflect possibilities of environmental contaminant, restrictions for use as Therminol and opportunities for waste disposal by incineration.

MONITORING

Aroclor Manufacturing Department -

All process waters from the department plus the overflow from one of the settling basins (plans are to include overflow from the other settling basin) enter the plant sewer system at one point. The entire stream (200 to 300 GPM) passes through a Parshall flume where the quantity is totalized by related installed instrumentation. Continuous flow recording is to be provided. A continuous sample of the department effluent is taken at the Parshall flume. The effluent sample is analyzed twice a week and PCB knowing losses are calculated from the flow measurements and laboratory analyses. Losses are calculated in terms of PCB concentration in the receiving water (Mississippi River). The loss data trends are reviewed by the Technical Services Department and department supervision to determine what corrective actions need be taken, if any, to restrict knowing losses to the lowest achievable level.

Incinerator Area -

All process waters from the area plus the overflow from the settling basin enter the plant sewer system. A continuous sample is taken from the effluent stream from the incinerator area. The effluent sample is analyzed twice a week and PCB knowing losses are calculated from an estimated flow rate and laboratory analysis. The loss data is reviewed by the Technical Services Department and department supervision to determine what corrective action need be taken, if any, to restrict knowing losses to the lowest achievable level.

LOSS REDUCTION PROGRAM

The attached table summarizes the program for further reduction and/or elimination of knowing PCB losses from the manufacturing department and the incinerator area.

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SOURCE OF LOSS	CURRENT LOSS	PLAN FOR REDUCTION	RESULTANT LOSS	EDC
1. Aeration process step	≃0.8 #/day	Elimination or scrubbing	0 #/day	7/1/73
2. Aroclor Dept. South Settling Basin	≃0.05 #/day	Filter or Adsorb on Carbon	Essentially Zero	4/1/73
3. Aroclor Dept. North Settling Basin	≃0.05 #/day	Route Piping to South Settling Basin	0 #/day	1/1/73
4. Incinerator Catch Basin	≃0.3 #/day	Filter or Adsorb on Carbon	Essentially Zero	4/1/73
5. Incinerator Scrubber	≃0.05 #/day	None	≃0.05 #/day	

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7 X 10 INCHES MADE IN U.S.A.
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FIGURE I
PCB "KNOWING LOSS" CONTROL
AROCLOR & INCINERATOR DEPARTMENTS

