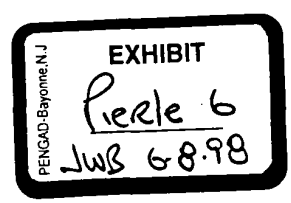
Keeping PCB's Out of the Environment

—a status report

- on what we've done,
- what we're doing,
- what we will do

MONS 047691

Wm. G. Krummrich plant
Sauget, Illinois
October, 1972



2. Steps to eliminate losses of PCB's

Past Efforts

We have spent $170,000 to modify equipment in the manufacturing department. Programs include the following:

- Installing settling basins and directing all flow to these basins by improved paving, curbing, and sloping. In the manufacturing area, drainage is directed to trenches and piping, and then to one of two 3,000-gallon settling basins. This insures PCB containment in case of accidental spill or equipment failure. The heavier, virtually insoluble PCB's will settle to the bottom of the basin, are later pumped into drums, and eventually incinerated.

  In the incinerator area, drainage is directed to trenches and piping which flow into a 10,000-gallon basin. Recovered PCB's are periodically pumped to storage, and later incinerated.

- Rerouting of rupture disc lines and atmospheric vents through catch tanks, or redirecting them to settling basins. This insures that if a rupture does occur, PCB's will not get into the environment, but will be contained in a controlled area.

- Providing nitrogen blanketing on storage tanks to eliminate any "breathing" of the tanks and resultant PCB escape.

- Installing mist eliminators in vapor lines - once again to eliminate the possibility of PCB's leaving the manufacturing area through these lines.

- Replacing underground sewers with above-ground sewers, and repairing or combining others, so that we can have accurate monitoring of the effluent from the department. In addition, this will prevent any unknown buildup of PCB's in our sewer systems or any contamination of PCB's into other sewers.

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2. Steps to eliminate losses of PCB's (continued)

In the plant, we have replaced all PCB fluids in Therminol units and hydraulic systems with non-PCB fluids. Cost of this program was $80,000.

— Extensive Education/Housekeeping Effort —

We have conducted an extensive education program with our operating personnel to emphasize - and re-emphasize - the need for control and containment of PCB's within the department.

Much of the success of our efforts depends on maintaining a high housekeeping level in the department. Below is a listing of the kinds of housekeeping responsibilities our operators have assumed:

- All pumps are checked for leakage on every shift. Drip pans that collect leaks are emptied into scrap Aroclor drums.
- All leaks are reported and documented so that corrections can be made and settling basins observed.
- "Floor Dry" is used to absorb any liquid Aroclor that has spilled or leaked. If it becomes necessary to flush PCB's to the settling basin, a minimum amount of water is used.
- Sampling drums and scrap-Aroclor drums are quickly palletized, labeled, and transferred to the incineration area.

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2. Steps to eliminate losses of PCB's (continued)

Future Plans

As a result of past programs and present efforts, our operations take place in essentially closed equipment, run by personnel following specific operating instructions. Key operating controls are monitored and recorded. All product transfers are within closed piping systems.

We believe that PCB losses from the operating department can be controlled to meet the expected EPA guideline as stated in the "Polychlorinated Biphenyls and the Environment" report of May 1972 by the Interdepartmental Task Force on PCB's. Average values will consistently be below 0.01 ppb as calculated in the receiving water.

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3. Use of sophisticated systems to monitor our effluent

Past Difficulties

Monitoring effluent streams for PCB's is not an easy effort. PCB measurement can be changed dramatically -

- by taking the sample at different places along the sewer main,
- by changing the level at which the sample is taken (top, middle, bottom of sewer line or box),
- by changing the speed at which the sample is taken,
- by the varying velocity of the effluent.

Through exhaustive study, we feel we have installed the best sampling facilities and flow instrumentation, so we can continuously and accurately sample the stream and determine any PCB content in it.

In addition, to analyze the stream samples, we have purchased laboratory equipment which enables us to determine PCB content in the parts-per-billion range.

Present Monitoring Program

Process waters from the Aroclor manufacturing department, as well as any overflow from one of the settling basins, enter the plant sewer system at one point. (Plans are to direct overflow from the other settling basin to this same point.)

The stream (200 to 300 GPM) passes through a Parshall flume, where instruments measure the quantity. A continuous sample of department effluent is taken at the flume. These samples are analyzed twice a week, and losses are calculated (in terms of concentration in the receiving water, the Mississippi River) from the flow measurements and laboratory analyses.

The Technical Services Department and department supervision review loss data to determine if corrective action is needed.

A similar procedure is followed to measure effluent from the incinerator area.

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4. Loading and Shipping Safeguards

In the plant

During loading operations, we follow very specific operating procedures, based on very specific written instructions, to prevent accidental spills. The same is true for filling drums.

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

Aroclor in transit

For additional insurance, we have substituted a safer drum for shipping Aroclors. The metal thickness was increased by 26% (18-gauge drum to 16-gauge drum), and double chimes were added to give strength to the heads.

In addition, we have added specific instructions to our Aroclor labels, as follows:

> "This product contains polychlorinated biphenyls, which some studies have shown may be persistent, an environmental contaminant and, possibly, injurious to certain forms of bird, aquatic and animal life. Extreme care should be taken to prevent any entry into the environment through spills, leakage, use, disposal, vaporization or otherwise."
>
> "WASTE DISPOSAL Used plychlorinated biphenyl fluids may be returned freight prepaid for proper incineration at 3¢ per pound. Ship to: Supervisor, Dept. A-246, MONSANTO COMPANY, SAUGET, ILLINOIS 62201"

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4. Loading and Shipping Safeguards (continued)

"ATTENTION - DO NOT USE IN ANY SYSTEM INVOLVING PROCESSING OR HANDLING OF: Food or food-related products; Food wrapping or container materials; Pharmaceuticals or animal feed stuff. ANY CONTACT MAY CONTAMINATE THESE ITEMS TO THE EXTENT THEY MUST BE DESTROYED."

"IN CASE OF LEAK OR SPILL, CALL COLLECT 618-271-5835."

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5. Safe disposal of used PCB's

We can now dispose of liquid-waste Aroclors

- assuming the organic solvent in which the Aroclors are contained is "incinerable", and
- which are delivered to us properly in tank cars, tank trucks, or drums.

This is accomplished through incineration at 2000°+F. Cost of the incinerator was $790,000.

An installation permit has been received from the Illinois EPA for this Aroclor incinerator. The unit meets all requirements specified by the EPA.

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CONCLUSION

We feel we have a dynamic program to keep PCB's from the environment - one which has produced excellent results.

We are reducing discharges to the lowest technically achievable level - and will continue to do so.

The expected EPA guideline would restrict PCB losses to an amount less than 0.01 ppb in the receiving water. We are consistently meeting this expected EPA guideline as stated in the "Polychlorinated Biphenyls and the Environment" report of May 1972 by the Interdepartmental Task Force on PCB's. All our efforts are directed toward continuing to meet the guideline.

This, we feel, is proof of our sincerity and effectiveness in the effort to control losses of PCB's in the environment.

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