Monsanto

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POLYCHLORINATED BIPHENYLS

Monsanto Company's program of restricted sales and controlled manufacturing practices.

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History and Background

The chemical structure of polychlorinated biphenyls (PCBs) has been known for nearly 100 years. It was not until the late 1920s that a use for PCBs was found -- as a dielectric fluid in transformers. The properties of PCB -- inertness, fire resistance and a non-conductor of electricity -- are perfectly suited to those electrical applications where high-voltage arcing could occur; possibly resulting in serious fires, damage to the equipment or a hazard to people.

Commercial production of PCBs began in 1929. As the unique properties of the material became known, new uses were found. For example, their fire-resistant nature made them excellent choices for use in heat-transfer fluids. Their inertness gave long-lasting qualities to lubricants. Their use in surface coatings improved waterproofing characteristics.

Handling of the product at the manufacturing level has not presented problems as long as normal industrial hygiene practices were followed. PCBs have always been considered less hazardous than many other chemicals in everyday use.

Therefore, it appeared that PCBs were a unique product which met important needs of industry.

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A unit of Monsanto Company

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When questions about the effect of PCBs on the environment first surfaced, Monsanto Company reviewed its product line and the applications for these products. As more data was developed concerning the effect of PCBs, Monsanto took steps to reduce the entry of PCB into the environment. The Company stopped the sale of PCBs for use in various applications, except where no acceptable alternatives were available. Today, PCBs manufactured by Monsanto Company are sold only to the electrical industry for use in closed systems as a dielectric fluid in transformers and capacitors -- applications for which there exist no acceptable substitutes.

Thus the situation today is drastically different from conditions which existed only three years ago. Today, about 40 million pounds per year are being carefully used in the United States by less than 50 Monsanto customers in the manufacture of sealed electrical equipment. Prior to 1971, close to 80 million pounds per year were used by thousands of customers. This lends perspective to the current debate over losses of PCBs to waterways.

Our manufacturing and sales reduction program was a unilateral action taken by Monsanto and was based on our evaluation of developing environmental data.

The Program

Limited Sales

We limited sales of PCB for use in many, many applications where there was a danger of it getting into the environment. Today, PCB manufactured by Monsanto Company is sold only to the electrical industry, where it is used in closed systems as a dielectric fluid in transformers and capacitors - applications where there are no known substitutes of acceptable quality and none that are fire resistant.

In addition, representatives of the transformer and capacitor industries, utilities and governmental agencies (under the initial auspices of the National Electrical Manufacturers Association) formed the American National Standards Institute Committee C-107. This committee issued guidelines for handling and disposing of dielectric fluids. They reflect the industry's understanding of the need for proper control.

Manufacturing Practices

Since 1969, we have invested more than 22 man years of work and millions of dollars in this program.

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prevention of PCBs to the environment

In our manufacturing area, we have taken a number of significant steps to ~~contain PCBs~~. In essence, we have made the department a "concrete bathtub." 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.

We have also installed an incinerator to safely dispose of PCBs. This is accomplished through incineration at or above 2000° +F.

When small quantities of PCBs are collected into the settling basins in the manufacturing area they are later pumped into drums, and eventually incinerated. In the incinerator area itself, drainage is directed to trenches and piping which flow into a 10,000-gallon basin. Recovered PCBs are periodically pumped to storage, or incinerated.

In the manufacturing area, we have also rerouted relief valve lines and atmospheric vents through catch tanks, or redirected them to settling basins.

We also provide nitrogen blanketing on storage tanks to eliminate any "breathing" of the tanks and resultant PCB escape.

We have installed mist eliminators in vapor lines - once again to eliminate the possibility of PCBs leaving the manufacturing area through these lines.

Finally, we have replaced underground sewers with above-ground sewers, and repaired or combined others, so that we can monitor the effluent from the department. In addition, this will prevent any unknown buildup of PCBs in our sewer systems or any contamination of PCBs into other sewers.

Much of the success of our efforts also depends on maintaining a high housekeeping level in the department itself. Among the housekeeping responsibilities our operators have assumed are these:

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

--All leaks are reported and documented so that corrections can be made and settling basins observed.

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--"Floor Dry" is used to absorb any liquid PCBs that have spilled or leaked. If it becomes necessary to flush PCBs to the settling basin, a minimum amount of water is used.

--Sampling drums and scrap-PCB drums are quickly palletized, labeled and transferred to the incineration area.

Through these kinds of programs, we feel we have literally built a "concrete bathtub" to catch and safely dispose of PCBs at our manufacturing location.

We will continue this voluntary policy and cooperation of restricting sales worldwide. We are confident that the dielectrics industry, which represents both capacitor and transformer manufacturers and users, will continue to support and enforce strict environmental control of PCBs.

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