

Monsanto

— ORGANIC CHEMICALS DIVISION

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*Answer -
Toxicity*

March 27, 1969

Mr. Fred H. Dierker
Executive Officer
State of California-Resources Agency
San Francisco Bay Region
Regional Water Quality Control Board
364 Fourteenth Street
Oakland, California 94612

Ref: File No. 2119-1075

Dear Mr. Dierker:

This letter is written in response to your letter dated March 7, asking several questions concerning polychlorinated biphenyls ("PCB") manufactured by Monsanto. Responses to each of your questions are set forth below, numbered in accordance with your letter.

1. We have recently contracted with a consulting laboratory to undertake fish toxicity studies on PCB's. Because of the low solubility of PCB in water, it may be difficult to obtain a 96-hour TL_m . Depending upon the results of the initial studies, we may conduct 30-day exposure experiments.
2. Attachment A shows the general physical characteristics of PCB. Information set forth on the bottom of these pages shows the results of acute animal toxicity studies showing the oral LD_{50} in rats and the minimum lethal skin dose when applied to rabbits. You will note that these results were obtained using undiluted samples or as a corn oil suspension solution depending on the viscosity and solubility of the materials.

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3. & 5. Attachment B shows the results of studies of chronic inhalation. You will note in the table describing the properties of various PCB's that the liquid materials have extremely high distillation ranges and that waxy or resinous materials have to be distilled under high vacuum. These data attest to the low vapor pressure of the materials at ambient temperatures.

PCB finds primary use in applications requiring chemical stability, good dielectric properties, fire resistance, low volatility and water insolubility. When used in dielectric fluid, PCB is hermetically sealed in capacitors and transformers, designed for 20 to 30 years life at temperatures at or near ambient temperatures.

Plasticizer PCB is found primarily as a plasticizer for surface coatings such as corrosion resistant paints, industrial adhesives and as a sealant such as window sealants. These applications do not include automobile tires, or floor tile. These applications of PCB emphasize its inertness and low volatility to provide long service life for the product without loss of flexibility. In normal use, PCB plasticizer applications are ambient temperature environments presenting no special health problems. In view of PCB's chemical inertness, we would anticipate no problems associated with the environment from refuse dumps.

PCB finds further application in industrial (excluding aviation) hydraulic and heat transfer systems. As in the case of dielectric applications, these systems are designed for essentially indefinite fluid life.

4. PCB is essentially insoluble in water, which is a property valued for most of its industrial applications. The solubility of PCB varies with the number of chlorine atoms. Solubility in tap water at 25°C. is as follows:

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<u>Material</u>	<u>Solubility in Water</u>
PCB - (42% chlorine by weight)	203 $\pm$ 10 ppm
PCB - (48% " " ")	106 $\pm$ 14 ppm
PCB - (54% " " ")	50 $\pm$ 2 ppm

This data indicates that the most highly chlorinated PCB's are the least soluble in water. Annual consumption in the Bay Area is less than 500,000 pounds for all PCB applications.

6. It is a long standing policy at Monsanto not to disclose information concerning our customers, including the customer's name. However, we desire to cooperate with you to the fullest extent practicable in this matter. Should you desire to visit typical PCB users we will be happy to approach our customers to arrange a visit.
7. We advise persons using PCB products to take normal precautions associated with handling most synthetic materials. If accidentally spilled on hands, no serious skin irritation should occur. However, PCB has a solvent action (similar to paint thinner) on the fats and oils of the skin and prolonged contact may lead to drying and chapping of the skin.

In the event of contact, the skin should be washed with soap and water. Saturated clothing should be removed and dry cleaned. Spills may be cleaned up with rags, sawdust or absorbent clay. Eye contact may result in painful irritation but should cause no permanent damage to tissues. In the event of eye contact, the eye should be flushed with large amounts of water. As with all eye first-aid, a physician should be consulted. To relieve irritation, physicians have used a 1% Pontocaine as well as ophthalmic cortisone acetate solution, or castor oil.

Infrequent exposure to PCB vapor should not cause ill effects. However, prolonged exposure to high vapor concentrations should be avoided.

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After many years of experience with PCB, it is our understanding that cases of harmful effects resulting from the industrial use of PCB have been extremely rare. We believe this is due largely to low volatility which reduces possible inhalation at ambient temperatures.

We sincerely trust that this answers the questions contained in your letter. As further information becomes available in which we feel you might be interested, we will pass such information on to you.

Yours very truly,

Howard S. Bergen
for Howard S. Bergen
Director, Functional Fluids

HSB:pep
Attachments

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