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Several points are important to keep in mind about PCBs — those polychlorinated biphenyls that are causing concern for public health, threatening the paper recycling industry, threatening commercial and sport fishing, and forcing changes in certain manufacturing and industrial operations.

For one, PCBs are not all alike.

For another, they are persistent in the environment, but the degree of the persistency varies with the kind. It is also important to know that production of PCBs has been greatly reduced, and further reductions are in process.

It has been established that PCBs have toxic effects on humans as well as lower animals. But science has not determined what levels of PCB environmental contamination can be tolerated over the long term without adverse consequences for various forms of life.

Finally, keep in mind that the contribution of PCBs to the environment by the paper recycling industry appears to be relatively very low.

PCBs are used as a dielectric fluid in closed electrical systems, primarily in transformers and capacitors where they minimize the risk of fire and explosion. Prior to 1971, they were used in great quantities in the manufacture of such products as paints, dyes, lubricants, adhesives and coatings on carbonless copy paper.

MAJOR PRODUCER of polychlorinated biphenyls in the United States is Monsanto Company, the firm which accounts for about half of the total world production.

Monsanto got into the PCB act in 1929. It is estimated that the firm produced about 400,000 tons of various kinds of PCBs between 1948 and 1973.

PCBs are described as a family of partially or wholly chlorinated isomers of biphenyls. There are 209 possible kinds of PCBs, according to a Monsanto report.

Monsanto has marketed its PCB products under the trademark names of Aroclor 1016, 1221, 1232, 1242, 1248, 1254, 1260 and 1268. The first two digits, 12 or 10, indicate that the parent molecule is biphenyl, while the last two digits specify the chlorine percentage in the different formulations.

At the National Conference on Polychlorinated Biphenyls in Chicago last November, Monsanto reported that it had discontinued the manufacture of Aroclor 1232, 1248, 1260, 1262 and 1268, but was still producing Aroclor 1221, 1016, 1242 and 1254.

Remember the big debate that led to the ban on the pesticide DDT several years ago? Like DDT, PCBs are chlorinated hydrocarbons. DDT may persist in the environment for up to 15 years or more, depending on conditions. PCBs are said to have a much longer life than DDT.

Aroclor 1242 is the only PCB that was used in the production of carbonless copy paper, and the one currently making trouble for the recycling industry. National Cash Register was the exclusive user of this paper. Its use was discontinued in 1971, but it is still dribbling into the recycling stream

DIFFERENCES BETWEEN Aroclors were delineated in a brief filed on behalf of the Wisconsin Paper Council followiong a state Department of Natural Resources hearing in August, 1975. This point was made:

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"Arocior 1242 has significantly different structural characteristics, whereby its stability and persistence are less and its degradeability appears to be significantly higher than its comparatively more highly chlorinated Arocior relatives . . . Predominantly it is Aroclor 1254 that is found in the environment. In terms of degradation and degradeability, there is a definite difference between Arociors 1242 and 1254."

Stanton Kleinert, chief of the DNR's surveillance section, Bureau of Water Quality, testified at the hearing that it is the more highly chlorinated PCBs that are commonly found in Wisconsin fish — Arociors 1254 and 1248, although he was finding "a lot of" Arocior 1242 in the ambient waters.

Gilman Veith, research chemist with the U.S. Environmental Protection Agency at Duluth, Minn., testified that Arocior 1242 bioaccumulates on the order of eight times less than the more highly chlorinated Arociors.

IT APPEARS THAT PCBs, like DDT, are ubiquitous, which is a fancy way of saying that they are everywhere. Dr. George Harvey of the Woods Hole Oceanographic Institution says PCBs enter the environment from sewage outfalls, industrial and municipal wastes, leaching from dumps and the burning of refuse.

"The atmosphere is the major pathway of global transport," Harvey has stated. "PCBs have been found in all organisms analyzed from the North and South Atlantic oceans, even in animals living under 11,000 feet of water . . . Based on available data it seems safe to conclude that PCBs are present in varying concentrations in every species of wildlife on the earth."

Next: Still more on PCBs. Comments are invited.

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