Summary

Interdepartmental Meeting - Polychlorinated Biphenyls

May 22, 1970

Polychlorinated biphenyls consist of isomeric configurations of chlorinated biphenyls having a range of chlorine content. They are used in a variety of industrial applications such as asphalts, transformer fluids, tiles, paints, varnish, heat transfer fluids, and pesticide formulations. The full extent of use is not known. The total production figures are not available, but substantial tonnage (millions of pounds) is distributed annually.

Worldwide occurrence of the chemicals in wildlife has been reported. Contamination is related to industrial development. Residues of polychlorinated biphenyls have been reported in fish, wildlife, food, and humans.

Environmental magnification through the food chain has been observed. Throughout the world, the aquatic environment contains these chemicals. In the United States, industrial use of the compound was associated with the contamination of a river and bay in 1969.

Experimental studies of PCB's have shown toxic effects on oysters, shrimp, fish, birds, and mammals. Studies submitted with a petition for a food additive regulation showed enlarged livers and decreased growth rate in rats and dogs. There are no sanctioned uses or levels in foods. Regulatory action may be taken when found in foods at levels deemed hazardous. Toxicological information is limited and incomplete. Investigations are continuing.

Polychlorinated biphenyls are recovered and detected by the multi-residue methods used to detect chlorinated organic pesticides. They interfere with the gas-liquid chromatography analysis of some pesticide chemicals. Separation of the two classes of chemicals is necessary for the proper analysis. The composition of the original mixture of chlorinated biphenyl compounds may be changed by weathering or metabolism. Much progress has been made in the analytical procedures for PCB's. Completely satisfactory methods for measuring these compounds in environmental substrates have not been developed.

In summary, the polychlorinated biphenyls having unregulated use for several decades are compounds of ill-defined toxicity widely distributed through water, fish, wildlife, food, and man. The boundaries and significance of the problem are not known.

Monitoring Panel
Research Panel
Working Group Subcommittee on Pesticides
President's Cabinet Committee on the Environment