APPENDIX II

PCB'S—A CASE STUDY [1]

A brief review of the occurrence, recognition, and handling of PCBs as environmental contaminants illustrates the considerations that have led to proposals for toxic substances legislation.

1. Development of a problem.—PCBs were first manufactured commercially in 1929. In the U.S., they have been produced by one company, Monsanto. By 1970, total annual production in the U.S. exceeded 70,000 tons, with an estimated cumulative total of 500,000 tons.

PCBs are stable and nonflammable. Their major uses, as of 1970, were (in descending order of amount used): as insulating fluids in capacitors, plasticizer applications including carbonless carbon paper, transformer fluids, hydraulic fluids and lubricants, and heat transfer fluids.

Until the late 1960s, no particular care was taken in the uses made and disposal of PCBs, as no health or contamination problems were recognized. The first identification of PCBs as potential food contaminants came in 1966. Leakages of PCBs from heat transfer systems in food and feed establishments were one source: in one case, the contamination of chicken feed was identified only after the hatchability of eggs markedly dropped; in another, several Japanese were stricken ill, with some fatalities. PCBs in silo sealants leached into feed and were transferred to milk. Transfer to foods of PCBs from recycled paper used as packaging materials also occurred. Residues of PCBs in freshwater fish from environmental contamination range from 1 to 10 parts per million, while other foods of animal origin have lower levels. It has been estimated that over the past 40 years, total loss of PCBs to the U.S. environment approaches 30,000 tons in the atmosphere, 60,000 tons in water, and 300,000 tons to dumps, with remaining residues of 20,000 tons in air, 30,000 tons in water, and 250,000 tons in dumps. Water is believed to be the principal transport system and sink of PCBs. At present environmental levels, "PCBs do not appear to present an imminent hazard" to human health. Adverse effects on fish and wildlife, however, may have occurred. An interagency panel on PCBs concluded, "Although fully conclusive data are not available, the evidence for toxic and physiological effects indicates that PCBs must be viewed as potential problems at present environmental levels."

2. Responses.—The Food and Drug Administration and the USDA have authority over food contaminants. FDA proposed regulations for food packaging materials and foods to deal with this aspect of

[1] This case study is based on Interdepartmental Task Force on PCBs, *Polychlorinated Biphenyls and the Environment* (Washington, D.C., May 1972.)

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the problem. Prevention of accidental spillage contaminating food has been dealt with by the FDA and USDA monitoring and removing from commerce food contaminated. However, monitoring is accomplished by sampling a low percentage, perhaps 2–3 percent of lots of foods, so contaminated materials may remain a problem. Environmental pollution, also a source of food contamination, is not subject to any one agency responsibility, nor is there any statutory basis for controlling such environmental contamination. In 1971 an interdepartmental task force reviewed the problem. It recommended restricting PCBs use to essential closed-system capacitors, and noted the need for toxic substances control legislation.[6] In 1969–1970, the Monsanto Company voluntarily restricted its sales of PCBs to those essential, closed-system uses. This action will minimize contamination.

3. Problem illustrated.—The PCBs problem illustrates a number of circumstances needing attention.

(a) First, it demonstrates that toxic substances legislation is directed at a real problem. PCBs contamination was serious, and similar or worse problems of contamination could be occurring.

(b) Second, it demonstrates the need for better information systems on toxic substances. PCBs were used for 35 years before they were identified as a potential hazard. For five more years, the U.S. producer declined to release figures on production and distribution, so the scope of the problem could not be delimited; in 1971 the figures were released.[7] Even yet, however, little is known of the effects of PCBs on human beings or the ecosystem. Of the few experiments done, most have been on reagent grade samples not representative of the commercial products. If the data on effects are so poor for a substance known for several years to be a problem, the lack of data on other problems can be imagined.

(c) Third, it demonstrates the inadequacy of present regulatory mechanisms to deal with the problem. Entering the environment in several ways, cycling through the ecosystem, and contaminating foods and feeds, no single authority could come to grips with the problem once it was identified. The USDA and FDA could address only limited aspects of the problem, and then only remedially. No statutory authority existed to control the source. Monsanto Co. fortunately took the responsibility of voluntarily limiting sales of PCBs to those essential closed-system uses which would not add to environmental contamination.

[6] Ibid., p. 8.
[7] See the remarks of Rep. William F. Ryan in the *Congressional Record* (Dec. 16, 1971), p. H12693 (daily ed.).