File	✓	
Destroy		
CDB		
JTG	✓	
WHH	✓	✓
MRJ	✓	
REK	✓	✓
RAM		
EPW	✓	✓

May 14, 1970

Dr. William H. Drury
Research Director
Massachusetts Audubon Society
Hatheway School of Conservation Education
Lincoln, Massachusetts 01773

Dear Dr. Drury:

Dr. Gordon has referred to me your inquiry concerning PCB's. Here is a brief summary of the history.

Monsanto manufactures polychlorinated biphenyls under their trademark Aroclors. The term Aroclor refers both to polychlorinated biphenyls and polychlorinated terphenyls. The chlorination varies from monochlor compounds to five chlorine atoms and above.

In recent years, European scientists have found that certain unidentified interferences in the chromatographic analysis of DDT were polychlorinated biphenyls. Swedish scientists working with mass spectrometry attachments to the gas chromatographic equipment specifically identified polychlorinated biphenyls of five chlorine atoms and above in certain specific samples. Since the Swedish work, work in England, the Netherlands, and the United States has indicated that the higher chlorinated biphenyls are probably in fact long-term contaminants in certain ecological systems. None of the European data nor United States data, nor any of the thousands of samples that we have analyzed shows any residues of chlorinated biphenyl compounds in this series of less than five chlorine atoms per biphenyl molecule. These data indicate that the tetrachlorobiphenyl and the lower chlorinated homologs in this series degrade in the natural environment. Actually, some work done at the University of Utrecht shows that certain bird species metabolize the trichlorobiphenyl completely.

Monsanto has inaugurated long-term mammalian toxicity studies and it appears roughly that the toxicity of the Aroclors is in the same magnitude of DDT. Studies of the hatchability of eggs and the toxicity to avian species have been carried out in a minor way by us but rather extensively by some government agencies, and it appears to be definite that PCB shares with DDT the quality of interfering with the calcium metabolism pathways necessary for hatchability.

It is also true that certain of the polychlorinated biphenyls are biologically degradable, especially those with the lower chlorination.

A not yet understood factor is that the majority of the reports of PCB contamination in the ecosystem shows them along with DDT. This we cannot explain, as PCB's are not intended to be widespreadly scattered as is DDT. At any rate, Monsanto is withdrawing PCB from sale for those uses where it cannot be controlled. In other areas where no such substitute can be obtained as, for example, the electrical industries, we are instituting a close-loop system in which the material will be brought back to our plant for either degeneration or incineration. This phasing out of uses in which the PCB's can enter the ecosystem will be completed in great part during the current year.

A further complicated factor is that while Monsanto is the sole producer of PCB's in the United States, there are manufacturers in Japan and on the continent.

If you have any further questions, please write me directly.

Sincerely,

R. Emmet Kelly, M. D.
Medical Director

REK/ln