PCBs

Recently, we were informed that liver carcinomas were observed in female Sherman strain rats fed AROCLOR 1260 for 20-1/2 months. This prompted us to re-exsmine livers from male and female rats of the Charles River strain which had been fed AROCLOR 1242, AROCLOR 1254 and AROCLOR 1260 for 2 years in earlier studies conducted for Monsanto Company. In sddition, we have discussed our findings and those reported to us with scientists working in the field of carcinogenicity.

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There sre 4 elements which sre closely interwoven in this matter: (1) differences in test procedures, (2) differences in results obtained by various investigators, (3) definition of whst is a cancer, and (4) evaluation of potential risks, if any, to man. These will be summarized briefly.

(1) Several animal studies have been conducted with various brands of PCBs. In some studies, the test material has been identified by trade name (AROCLOR, KANECLOR). In others, there was just a general reference to PCB. Consequently, the quality of test material with respect to the amounts and nature of contaminating impurities or by-products cannot be determined in all case. In addition, several strains of test animals were used, the duration of the experimental periods varied, and there was a wide range in the depth of detail with which the observations were reported. Consequently, it is difficult to make comparisons between these studies.

(2) In general, studies have shown mice to be more suaceptible than rats and females to be more sensitive than males to the liver effects of PCBs. Beyond these generalizations, the results have not been consistent. Some investigators have reported liver carcinomas. Others have observed only benign tumors. Several have noted changes in liver tissue without detecting tumor formation. For the reasons just cited, it is difficult to determine the bases for these different results. The most direct comparison can be made between the 2 studies on AROCLOR 1260 since the same high dosage level of the same lot of AROCLOR 1260 was employed in both experiments. In the studies reported to us, liver carcinomas occurred in approximately 8% of female rats of the Sherman strain (the only sex used). In Monsanto's study, none of the liver lesions had progressed beyond the stage of benign tumors (hematomas) despite a slightly longer duration of feeding of AROCLOR 1260 to rats of Sprague Dawley, Charles River strain. The Monsanto study employed rats of both sexes and it did confirm the previously noted greater sensitivity of female rats to liver effects of PCBs.

(3) In the traditional pathologic sense, liver alterations seen with all 3 AROCLORS in Monsanto's studies were benign in character.

After a review of all information available to us, we understand that recent data has shown AROCLOR 1260 to be a carcinogen in one strain of rat. Our data indicates it is not carcinogenic in the traditional meaning of that word to all commonly used strains of laboratory test animals. Our overall interpretation of the available data is that AROCLOR 1260 may have

a carcinogenic potency which has not been fully proven.

AROCLORS 1242 and 1254 have not been shown to be carcinogens.

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