Review of the Bioassay of Aroclor 1254* for Carcinogenicity by the Data Evaluation/Risk Assessment Subgroup of the Clearinghouse on Environmental Carcinogens

November 28, 1977

The Clearinghouse on Environmental Carcinogens was established in May, 1976 under the authority of the National Cancer Act of 1971 (P.L. 92-218). The purpose of the Clearinghouse is to advise on the National Cancer Institute's bioassay program to identify and evaluate chemical carcinogens in the environment to which humans may be exposed. The members of the Clearinghouse have been drawn from academia, industry, organized labor, public interest groups, State health officials, and quasi-public health and research organizations. Members have been selected on the basis of their experience in carcinogenesis or related fields and, collectively, provide expertise in organic chemistry, biochemistry, biostatistics, toxicology, pathology, and epidemiology. Representatives of various Governmental agencies participate as ad hoc members. The Data Evaluation/Risk Assessment Subgroup of the Clearinghouse is charged with the responsibility of providing a peer review of NCI bioassay reports on chemicals studied for carcinogenicity. In this context, below is the edited excerpt from the minutes of the Subgroup's meeting at which Aroclor 1254 was reviewed.

(Aroclor 1254 was tested in rats as part of another study designed to investigate the combined effects of chemicals.) The primary reviewer briefly outlined the experimental design and findings. Although statistically significant increases in the incidence of tumors were not found in the treated rats, a high incidence of liver hyperplastic nodules was observed in both sexes.

The primary reviewer said that in published rat and mouse studies, Aroclor was reported to induce liver neoplasms, although in one rat study only hyperplastic nodules of the liver were found. In regard to the rat pathology, he said that after the proliferative stimulus is removed, the hyperplastic nodules regress and disappear. Stimuli of such liver nodules act more like tumor promoters than complete carcinogens. Based on reports in the literature, he concluded that Aroclor 1254 could pose a risk to the human population as a tumor promotor. A lengthy discussion followed as to whether the evidence was adequate to assess Aroclor's tumor promoting potential.

An NCI staff pathologist pointed out that a number of tumors also were found in the gastrointestinal tract of the treated rats. Although they did not occur in statistically significant numbers, none was observed among the control

MONS 007700

animals. A discussion ensued as to the appropriateness of combining tumors when they occur at different sites along the GI tract.

One Subgroup member opined that the study was deficient because of an inadequate number of animals per group. He suggested that the tumors of questionable significance may have been more meaningful had more animals been used.

A motion was made that the conclusion stated in the report summary be accepted with an addition that Aroclor 1254 may act as a tumor promoter. The motion thus read: It is concluded that, under the conditions of the bioassay, Aroclor 1254 was not carcinogenic in Fischer 344 rats; however, a high incidence of hepatocellular proliferative lesions in both male and female rats was related to treatment. In addition, the carcinomas of the gastrointestinal tract may be associated with treatment in both males and females. Based on the liver proliferative lesions in the treated rats and published reports, it is suggested that Aroclor 1254 may be a tumor promoter. The motion was seconded and accepted by Drs. Wogan, Pitot, Roush, Shimkin, Strong, and Weisburger. Mr. Garfinkel opposed the motion and Dr. Rowe abstained.

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* Subsequent to this review, changes may have been made in the bioassay report either as a result of the review or other reasons. Thus, certain comments and criticisms reflected in the review may no longer be appropriate.

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MONS 007701