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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: TB Project No. 7-0988 Tox Chem No. 641
EPA ID No. 063001
Pentachlorophenol: Canadian Report on Pentachlorophenol

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The Pesticides Directorate of Agriculture Canada has submitted "Discussion Document: Pentachlorophenol, Wood Preservative." TB is asked to assess the Document for impact on the OPP Toxicology Data base on pentachlorophenol.

The Report contains a summary of numerous studies and reports on the overall toxicity of penta. Of the 15 reports and assessments on the acute and long-term toxicology of penta to humans, none have been reviewed by OPP. The emphasis at OPP has remained basically on the specific RPAR triggers (from animal studies) of the fetotoxicity of penta and of the fetotoxicity and oncogenicity of hexadioxin.

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In the area of developmental effects, the Report mentions a study by J.J. Welsh et al., op. cit., showing a NOEL of 4 mg penta/kg/day for embryo- and fetotoxic effects in unspecified laboratory animals. This study has not been reviewed by TB. The Report also mentions the 1-generation study of Schwetz et al., which demonstrated a NOEL of 3 mg penta/kg/day for general reproductive effects in rats. The Schwetz study was used by OPP for fetotoxicity risk analysis prior to issuing a Registration standard for penta. This latter Document listed developmental effects as a Data Gap.

The Report notes that the chronic toxicity and carcinogenicity of penta are under study by the U.S. National Toxicology Program, with results expected in 1988. In addition, the Report mentions the NCI Bioassay (1980), showing carcinogenicity (female rats; male and female mice) of an isomer mixture of hexadioxin, a contaminant of penta. This is the study which was used by EPA for oncogenic risk analysis.

In the area of human carcinogenicity the Report states that "a study is being planned in British Columbia." Epidemiologic studies, according to the Report, suggest that humans having mixed exposure to chlorophenols, dioxins, or pesticides contaminated with these chemicals, may have an increased risk of soft-tissue sarcomas, lymphomas, and respiratory tract and liver cancers. These epidemiologic data have not been reviewed by TB.

Mutagenicity of penta, noted by the Report, is evidenced by positive results in two yeast and one mammalian cell assays. Negative results include in vitro mammalian and bacterial cell assays (one each), and a mammalian in vivo assay. Some of the mutagenicity data have not been reviewed by TB.

Below are listed data (mentioned in the Report) which should be reviewed by TB.

1. Welsh, J.J. et al. (1987). Food Chem. and Toxicol. 25(2): 163-172.

2. NTP carcinogenicity study on penta, expected completion in 1988.

3. Hattula, M.L. and Knuutinen, J. (1985). Mutagenesis of mammalian cells in culture by chlorophenols, chlorocatechols and chloroguaicols. Chemosphere 14 (10) : 1617-1625.

4. Szejnwald Brown, H. et al. (1986). A methodology for assessing mutagenic hazards of chemicals, Toxicol. Industr. Health 2(3) : 163-182.

In addition, we are requesting RD to provide (when available) a copy of the human carcinogenicity study "being planned in British Columbia."

We are also requesting EAB (Health Statistics) to comment on the epidemiologic studies, which the Report states as providing evidence of carcinogenicity for those occupationally exposed to mixtures of chlorophenols, dioxins, and pesticides containing these chemicals.

None of the other toxicology data sets mentioned by the Pesticide Directorate impacts on the TB position regarding penta

We will keep special Review Branch informed of the toxicological impact of any of the above items when review is complete.