COMPARATIVE EFFECTS OF POLYCHLORINATED BIPHENYLS AND ORGANOCHLORINE PESTICIDES IN INDUCTION OF HEPATIC MICROSOMAL ENZYMES. J.C. Street, F.M. Urry, D.J. Wagstaff, and A.D. Blau. Dept. of Animal Science, Utah State University, Logan, Utah 84321

Polychlorinated biphenyls (PCBs) are of interest because of their recent identification with residues of organochlorine pesticides in tissue samples of fish and certain birds where their presence causes some interference with routine GLC analysis of the pesticide residues. Moreover, some PCB products have been reported to induce liver microsomal enzymes, as do many organochlorine pesticides. The microsomal enzyme inducing activity of a series of PCB products (Arochlors) has been evaluated and compared to that of many organochlorine pesticides. The 10 products ranged from 21 to 68 percent chlorine and included two chlorinated triphenyls. Female rats were fed the test products at levels of 50 and 100 ppm in the diet for 15 days. Microsomal enzyme activity was assayed with liver homogenates using p-nitroanisole, aniline, EPN and progesterone as substrates. In addition, indirect measurements of hexobarbital and dieldrin metabolism, in vivo, were made. Administration of each PCB product induced metabolism of all substrates; the amount of stimulation measured increased regularly with percentage chlorination of the product. Products containing over 50% chlorine were as potent in enzyme induction as DDT, heptachlor epoxide and other highly active pesticides. Since certain hazardous aspects of pesticide residues in the environment toward wildlife may derive from their induction of hepatic microsomal enzymes, the presence and equally high activity of some PCB materials in mixed residues is of greater significance than merely a source of analytical interferences.

STLCOPCB4004850