

JAN 1970

Lake Michigan Pesticide Investigations

The WARF Institute study was designed to support other monitoring work being conducted or planned by various State and Federal agencies, already described by Mr. Leuschow. It included one-time mid-summer sampling of stream water, stream sediment, stream plankton, off-shore water and off-shore plankton at over 60 sites along the Lake Michigan shoreline. Fish samples were collected at 18 locations and water and sediment samples were obtained at sites of obvious municipal and industrial outfalls. In addition, 25 samples of water were collected at sites of industrial input into stream water and sewers in the cities of Racine and Kenosha. Other miscellaneous water samples were obtained and analyzed.

All samples were analyzed by the electron capture gas chromatographic method (FDA Pesticide Analytical Manual, 1968). Modifications were employed as required for each type of sample: sample size, method of preparation, method of extraction and cleanup. A number of samples were also analyzed after hydrolysis (dehydro chlorination). All injections were made into gas chromatographs with columns packed with 5% DC-200 on Cromport XXX, 80-90 mesh.

The results of the analyses of these samples will be compared to the results of fish, water, invertebrate, clam and soil analyses by the State and Federal agencies. Some conclusions can then, perhaps, be drawn

concerning the value of each of the different types of sampling and the degree to which Lake Michigan is being or has been possibly contaminated with chlorinated hydrocarbon insecticide residues.

From the results reported to date by various agencies and our own findings, it would appear that any possible contamination consists of low levels of apparent DDT and metabolites, very low levels of apparent dieldrin and very little occurrence of any other chlorinated hydrocarbon insecticide. Of great concern to us, however, is the finding of apparent polychlorinated biphenyls in many samples of water, plankton, sediment and fish, particularly at locations in the southern end of the lake. Also of great concern to us is the occurrence in many samples of other G. C. peaks which may not be insecticides but could easily be considered to be such. These peaks, as in the case of the apparent PCB type compounds, interfere with the interpretation of results for DDT, DDD and DDE. The identity, toxic potential, and metabolic fate in fish of these interfering compounds is not yet known. We are recommending extensive analytical and biological studies to determine these facts.

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January 5, 1970

MONS 036137