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ORGANIC CHEMICALS DIVISION, R&D LABORATORIES, ST. LOUIS

PHYSICAL CHEMISTRY ANALYTICAL CHEMISTRY SPECTROSCOPY INSTRUMENT RESEARCH
COMPUTER TECHNOLOGY STATISTICS

MONTHLY SUMMARY

March, 1970

For

Functional Fluids

Distribution

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AROCLOR ENVIRONMENTAL PROGRAM

Wisconsin Alumni Research Foundation (WARF) extracts of fish (4) from Lake Michigan which were collected as part of the Lake Michigan Pesticide Investigations were examined by GC/Mass. Polychlorinated aromatics containing 3 through 6 chlorine atoms per molecule with mass numbers corresponding to chlorinated biphenyls were found in two of the four extracts. One sample produced 10 GC peaks corresponding to the major peaks in Aroclor 1248 and 1254 which were all identified as PCB's by mass. DDE was also identified in these samples. Two unidentified chlorinated aromatics not associated with PCB's were also found in one of the extracts. It is not known whether these are pesticide related. High levels of organic interfering components and instrument malfunction prevented identification of PCB in the other extracts.

No detection was made for PCB's in an extract of human fat from WARF. Insufficient sample size gave a detection limit of 2 micrograms in the total extract or 20 ppm in the fat. About 10 ppm PCB had been estimated from the electron capture chromatograms. DDE was also identified in the human fat extract.

Analytical support was provided for incineration tests carried out by John Zink Company at Tulsa, Oklahoma. Aroclor 1242 and 1260 and Intereen were burned at 1600°F, 1800°F and 2000°F. Continuous measurement of percent organics in stack gases by Zink and good flame burning characteristics indicated that disposal of these products through combustion is feasible. Stack gas samples (54) were collected and returned to St. Louis for analysis. PCB, HCl and Cl_2 content are being determined.

Mississippi River and WGK Plant effluent water samples (34) were analyzed by GC for PCB's during the month. Downstream river water received on December 9 contained PCB typical of Aroclor 1242 at the 5 ppm level.

Laboratory distillation cuts of Aroclor 1130 and 1142 were analyzed by flame GC for isomer distribution. A more accurate GC method is being developed through use of known PCB's (from SRC and other sources) as standards. It is hoped that this will provide more accurate weight percentages of the chlorinated biphenyl isomers.

The semi-continuous activated sludge units being fed Arobrom 1228, Aroclor 1242, and a mixture of Aroclor 1242 and biphenyl have been sampled. The samples are being analyzed by GC to show biodegradation.

Seven laboratory prepared chlorinated diphenyl ethers were sent to Ruabon, U.K. for biodegradation studies. The materials were prepared in the Fluids group as potential Aroclor substitutes.