PCB Company Cooris

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

PHYSICAL CHEMISTRY ANALYTICAL CHEMISTRY SPECTROSCOPY INSTRUMENT RESEARCH

COMPUTER TECHNOLOGY STATISTICS

MONTHLY SUMMARY

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For

Functional Fluids

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AROCLOR DEFENSE

As per our earlier agreement, the Wisconsin Research Alumina Foundation has submitted to us, for mass confirmation, five cleaned up extracts of composite fish samples taken from the Manistee River (Michigan), Burns Ditch (L. Michigan), Manitowoc River (Wisconsin) and the Kewaunee River (Wisconsin). The fifth sample is a human biopsy fat specimen. All samples are estimated to contain ppm levels of PCBs along with other chlorinated hydrocarbons (DDT, DDD, DDE, BHC, and Dieldren).

An effluent sample taken from the fifth settling pond at the BMC Central Foundry Division was analyzed for PCBs. The effluent contained about 10 ppm of apparent PCBs which were not identical to either Aroclor 1242 or Aroclor 1248 but like a mixture of tne two. The alteration of the electron capture chromatogram could be due to the use of 1248 as make up in reclaimed 312, some biological alteration of 1242, or the presence of other electron capturing materials in the sample. It was suggested that more samples be examined.

The initial biologically populated river water (Meramec River) degradation study of Aroclors 1221, 1242, 1248, and 1254 has been completed. The results indicated that only Aroclor 1221 was significantly degraded. Aroclors 1242, 1248, and 1254 were unaffected after an exposure period of eight weeks. A report will be issued.

The semi-continuous activated sludge degradation studies carried out in St. Louis confirm the river water results in that the major isomers in Aroclor 1221 were readily degraded. Additionally, some slight degradation of the lower chlorinated isomers in Aroclors 1242 and 1248 was observed. The Aroclor 1221 and 1248 exposures have been discontinued to free two of the four semi-continuous units, being operated, to study the effect of biphenyl accumulation on the degradation of Aroclor 1242 and the degradation of Arobrom 1228, a potential Aroclor substitute.

The applicability of extending the analytical techniques developed to monitor Aroclors, Bromo Aroclor 1242, Arobrom 1228, and tri-tetra chlorobenzenes has been established. Only slight modifications are necessary.

Samples of Bromo Aroclor 1242, Arobrom 1228, and two blends of Aroclor 1142 have been sent to Ruabon, U.K., for biodegradation studies.

Plans have been made to determine the feasibility of incineration as a means of disposing of non-reclaimable Aroclor and Aroclor containing waste. Three materials, Aroclor 1242, waste Intereen, and Aroclor 1260, will be tested at 1600°F, and 2000°F. The tests will be carried out by John Zink Company in Tulsa, Oklahoma on March 10th. Provisions have been made to sample the stack gases for PCBs.

A discussion on the analysis of sediment and water samples for PCBs was held with W.G.K. personnel to determine if the plant laboratory could take over this function. Support analysis of W.G.K. plant samples will be continued until they are set up and prepared to do their own analysis.

The Anniston plant analytical laboratory is currently in the process of setting up the equipment to do their own PCB analysis. In support of this, one man week was spent in St. Louis familiarizing Don Turner, who will be doing the analysis at Anniston, with the analytical methods and equipment.

Yellow crystalline solid recovered from W.G.K. process top oil scum was shown by IR to be an inorganic compound, probably a metal halide. No chlorinated biphenyls or chlorinated terphenyls were detected.

GC support was given to the laboratory reformulation of distillation cuts of Aroclor 1130 in an attempt to produce biodegradable species.

SKYDROL 500

IR analysis of hydraulic fluids from two Pan American test flights of Skydrol 500C showed that both were grossly admixed with Oronite Hijet fluid. A/C 320 contained 10-12% Hijet and A/C 321 contained 25-30% Hijet.

Deposits in the brake system of an Eastern Airlines DC-9 are due to a silicone polymer and not decomposition products of Skydrol 500. IR analysis of solids recovered by filtration of the fluid through a 1 μ millipore filter and deposits from the valve and filter showed that only a silicone polymer was present. The solids from the right hydraulic system also contained an inorganic carbonate. Skydrol 500 decomposition products were not detected.

Identification of FC-98, a purchased additive, was made for patent coverage. IR indicates it is a perfluorinated sulfonate salt containing no hydrogen. Atomic absorption indicates the principal metal present is potassium (6.2%). A hydrolyzed portion of FC-98 was analyzed by mass spectrometry using the heated solids probe inlet. The major component appears to be a cyclic perfluorosulfonic acid with a molecular weight greater than 400.

A BAC 111 feel valve spool in a system using Skydrol 500 A/B developed a white deposit. IR shows it to be a hydrated inorganic metal phosphate salt which is water soluble.

Deposit from a Braniff BAC 1-11 aircraft filter bowl was shown by IR to be an inorganic metal phosphate.

The dielectric strength, power factor, dielectric constant, and AC resistivity of Skydrol 500C (Lot QL-2) and Skydrol LD were measured at 25° and 100°C as a customer service for Lockheed.

THERMINOL 66

A. Gross and Company reported a low boiling liquid in their Therminol 66 system. As an aid to determining the source of this liquid, a catch tank sample was characterized by GC/MS. It is a mixture of