Sy Prod. Mo. Detail
December 1970

HB-40 and MIPB Biodegradation (E. S. Tucker)

A brief sampling period of the HB-40 and MIPB semi-continuous activated sludge (SCAS) units was completed 11/28/70. UV analysis of the hexane extracts gave mean disappearance rates of 58%/cycle for MIPB and 44%/cycle for HB-40 based on the total material present. A 3X cycle gave disappearance rates of 66% and 55% respectively while a 5X cycle gave 77% and 62% respectively. SCAS work with these materials will be concluded with an extended sampling period in January.

River die-away tests on HB-40 and MIPB are nearing completion. After a three week exposure at the 1 ppm level to the normal level of micro-organisms in Meramec river water the MIPB concentration has decreased by a total of 85%, of which 54% can be attributed to microbial degradation. Similarly for HB-40, the total concentration has decreased by 66% of which 57% can be attributed to microbial degradation.

Aroclor 1221 (E. S. Tucker)

Feeding of the Aroclor 1221 SCAS unit continues but with only limited sampling of the unit. No quantitative data is available yet but qualitatively there appears to be a rapid disappearance of the lower homologs with a build-up of the higher ones. This unit is scheduled to be sampled for an extended period in January.

Aroclor 5432 Liquid-Liquid Chromatographic Analysis (E. S. Tucker)

The liquid-liquid chromatography method for the analysis of SCAS samples containing Aroclor 5432 has been optimized. The liquid-liquid system consists of a 3 ft. column packed with Zysan Permaphaze as the stationary phase and water/methanol (75%/25%, v/v) as the mobile phase. The ultraviolet detector response is linear between 0 and 50 μg of Aroclor 5432, absolute, with a lower detection limit of about 1 μg absolute. Analysis time is 40 minutes. Optimization of the system to other halogenated terphenyls will be made.

Aroclor Pollution Study - Anniston Plant (I. Ransaw)

Carbon Adsorption Studies

The pilot unit continues to operate with minimum difficulties at an average flow rate of 6 gpm/ft^2. Effluent quality, at the present flow rate, is <10 ppb Aroclor for average influent concentrations in the range 100-2000 ppb and for occasionally high concentrations of up to 11,000 ppb. There has been no indication of a breakthrough. Present plans are to operate the unit until 12/30 at the present flow. If there is no indication of a breakthrough at that time, all data will be compiled for an evaluation and recommendation by a Pittsburgh carbon consultant.

Filtration Studies

The study conducted to remove the Aroclor containing solids from the effluent of the new neutralization pit by filtration through a sand bed has been completed. At flows greater >200 cc/min. the filter tended to blind with the fine solids. The solids could not be successfully washed from the filter. A report will be issued by 12/28 on all the filtration studies.

Solids-Aroclor Removal by Flocculation and Flotation

The clarifier unit from Biodize has been received. Plans are now being made for some necessary alterations on the unit. The complete installation is scheduled to be completed by 1/29/70.

Denver Equipment has completed their study on the removal of solids by flocculation and flotation. The most satisfactory flocculation results from these studies were obtained by conditioning with (200 ppm) CAO, and (10 ppb) $Al_2(SO_4)_3$ to preflocculate the solids and then intensifying the floc with (4 ppm) Separan MGL. Initial solids concentrations in the range (100-1000 ppm) were reduced to 19 ppm in a 120 min. settling time.

Flotation of the same material using 56 ppm of Armac T and 30 ppm of Aerofroth 65 produced a final effluent of 34.5 ppm of solids. Solids removal is more dramatic by flocculation, however, the froth may be more effective in removing the organics.

Betz is scheduled to complete their evaluation and recommendation by 12/21 on the floc study.

A tentative work plan will be issued by 1/4/71.

Applied Science Section (RFBrooks, MWDietrich, EMEmery, LFowler, JDHinchen, REKeller)

AROCLOR ENVIRONMENTAL PROGRAM

Analysis of a second set of Mississippi River fish collected above and below the WGK plant has been completed. The levels found in fillets from these fish ranged from 0.2 ppm to as high as 8 to 9 ppm total PCB's.

All the necessary equipment, with the exception of two gas meters, required to sample the Enviro-Chem St. Charles incinerator for PCB's has been assembled and laboratory tested. The PCB burn is now scheduled for 12-1-70. Additionally, analysis of background samples taken at the site 10-29-70 for PCB has been completed. Low levels of apparent PCB's were observed in all cases.

The PCB analysis of the JFQ September and October sewer water composites has been completed. The levels found, 77 ppb and 70 ppb respectively, were higher than in previous months.