Sp. Prod. Mo Detail
April 1971

Biodegradation-Ruabon (Mainprize/Vodden)

Improvement in analytical techniques using capillary column GLC has yielded further results on degradation residues which suggest that MCS 1016 may be a bigger improvement over Aroclor 1242 than we had previously estimated. We have also had access to other workers' results which have enabled better identification of chromatogram peaks to be made. We also have some results of feeding trials which show that degradation of many isomers in animal organs is different from that induced by micro-organism of the types we have so far studied. On the basis of these results we conclude that residues from MCS 1016 would be very small and our present view is that MCS 1016 does provide a very significant improvement over Aroclor 1242 from the environmental viewpoint. Further work is planned to substantiate these views during the next few weeks.

Aroclor Pollution Study-Anniston (I. Ransaw)

Carbon Adsorption Study

PR&D Report No. 2 covering the evaluation of Aroclor removal from waste streams by carbon adsorption was issued under Job #446-514. (copy attached)

Pilot Clarification Study

The pilot clarification unit has been operating since March 15 with minimum mechanical difficulties. Initial test runs were made with optimum coagulant concentrations -- 15 ppm of bentonite clay and 1.5 Betz polyelectrolyte 1170 (determined in lab by jar test) -- at a 5 gpm flow to the clarifier. Results (Table I) indicate that the floc is not consistent in reducing the Aroclor level to 10 ppb, although the expected solids level is realized. Of interest here is the fact that solids in the plant effluent averaged approximately 50 ppm during the test period. These levels are considerably lower than the 100 to 1000 ppm values recorded when this study was initiated. As a result, more bentonite clay is being added to provide more surface area for Aroclor to be adsorbed.

Table II contains the results of the study in which the clay concentration in the feed was increased to 30 ppm without a significant reduction in the Aroclor levels.

At this point it was felt that a close approximation of the optimum clay concentration could be realized in a less time-consuming, batch type adsorption operation in the premix tanks (i.e., whose walls were believed to be saturated with Aroclor from continuous exposure). This effort proved fruitless except there were some indications that clay would reduce the Aroclor level to the desired value.

TABLE I

AROCLOR REMOVAL BY FLOCCULATION CLARIFICATION

Test Conditions:

Clay conc. in feed - 15 ppm
Polymer conc. in feed - 1.5 ppm
Flow through clarifier - 5 gpm

	Avg. Influent Concentration				Avg. Effluent Concentration			
Volume Treated (gal.)	Suspended Solids	A-1221	A-1242	A-1260 or A-1254	Suspended Solids (ppm)	A-1221	A-1242	A-1254
9,600		446	240	70		31	11	6
16,800		22	16	--		15	23	--
25,800		210	60	--		NDA	1	--
		--	--					
		--	--					
41,600	29	100	14	--	18	72	8	--
48,800		196	38	--		100	10	--
52,400	52	146	30	--	2	110	12	--
57,600	40	560	.7	--	11	66	6	--
64,800	14	105	28	--	2	58	9	--

TABLE II

AROCLOR REMOVAL BY ADSORPTION-FLOCCULATION

Test Conditions:

Avg. flow - 5 gpm
Bentonite clay concentration in feed - 30 ppm
Betz polymer 1170 in feed - 1.5 ppm

	Avg. Influent Concentration				Avg. Effluent Concentration			
Volume Treated (gal.)	Suspended Solids (ppm)	A-1221	A-1242	A-1254	Suspended Solids (ppm)	A-1221	A-1242	A-1254
1,500	24	86	18	--	50	41	7	--
13,200	46	320	40	--	7	64	5	--
20,400	314	236	117	--	8	19	15	--
27,600	65	146	54	--	10	63	7	--
34,800	13	290	160	--	3	88	7	--
42,000	9	154	10	--	5	17	4	--
49,200	38	73	25	--	22	25	4	--

TABLE III

AROCLOR REMOVAL BY ADSORPTION-FLOCCULATION

Test Conditions:

Clay concentration in feed - 120 ppm
Polymer concentration in feed - 1.5 ppm

	Avg. Influent Concentration				Avg. Effluent Concentration			
Volume Treated (gal.)	Suspended Solids (ppm)	A-1221	A-1242	A-1254	Suspended Solids (ppm)	A-1221	A-1242	A-1254
1,650		480	380	--		80	30	--
8,850		210	13	--		6	2	--
16,050		52	42	--		11	9	--

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