RESEARCH AND DEVELOPMENT REPORT
ANNISTON PLANT

Report No. C
Job No. 416-514
Date April 15, 1971

OTHER LOCATIONS	GENERAL OFFICE	ANNISTON PLANT
*W. G. Engman - WGK	D. Danna (2)	J. T. Bell
*P. O. deGarmo - So. 2nd	*P. B. Hodges	J. L. Corder
*A. E. Leisy - WGK	*F. J. Holzapfel	J. L. Etheredge
*A. Rasmussen - WGK	R. M. Kountz	V. R. Haupt
*E. S. Tucker - So. 2nd	*W. B. Papageorge	G. L. Jessee
	*W. R. Richard	J. C. Landwehr/W. F. Taffee
	*J. R. Savage	G. W. Miller /E. G. Wright

Title: Aroclor Pollution Study

Personnel: Ishmeal Ransaw and Andrew Nelson (J. L. Brown)

Problem: Evaluate the removal of Aroclor from the Anniston Plant effluent by carbon adsorption

Justification: Pollution Abatement

Summary: In a 107 day pilot run, approximately 287,000 liters of waste water from the Aroclor sump were treated by passing through a series of four (4) packed-bed adsorbers (each adsorber was a five (5) inch diameter tube packed to a bed depth of 5.5 ft. with Pittsburgh's carbon type Filtrasorb 300). Test runs were made at 2 gpm/ft.^{2}, 4 gpm/ft.^{2} and 6 gpm/ft.^{2} flows. During the first 20 days of this study there were periodic indications of breakthroughs[2]. This problem disappeared after backwashing was initiated on a periodic basis regardless of the pressure drop across the columns.

The following conclusions may be drawn from this study:

1. The Aroclor level of waste water containing average concentrations of 4,795 ppb[1] of Aroclor 1221, 1,525 ppb of Aroclor 1242 and 95 ppb of Aroclor 1254 can be reduced to <10 ppb total Aroclor upon passing through the first carbon bed at a 6 gpm/ft.^{2} flow with an expected carbon loading capacity of 25% (based on the first column).

2. Backwashing frequency will have to be based on a factor other than pressure drop alone. This factor is necessary to prevent the migration of small Aroclor-containing particles

[1] ppb = parts per billion

[2] Breakthrough indicated by effluent concentrations >10 ppb Aroclor.

*Appendix sections not included.

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Summary: (cont'd.)

2. through the carbon bed. The backwash water contains an unacceptable Aroclor concentration; hence will have to be treated before disposal.

3. Based on an experimentally determined 25% loading capacity and 6 gpm/ft.^{2} flow, the capital cost for treating a 200 gpm and 600 gpm is \$25,000 ± 30% and \$45,000 ± 30%, respectively. This cost does not include pumps, engineering or other indirects. The total cost becomes \$99,000 ± 30% for 200 gpm flow and \$129,000 ± 30% for 600 gpm with the inclusion of a carbon reactivation system.

Recommendations:

It is recommended that Aroclor be removed from waste streams that contain 60 mg/l or less solids and Aroclor concentrations not exceeding 10,000 ppb by adsorption in a fixed carbon bed.

Future: A study is presently in progress to evaluate the removal of Aroclor by adsorption on a less expensive adsorbent and then removing the adsorbent by flocculation.

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