Attachment 4

MONSANTO - ANNISTON

PR&D WORK PLAN

BCC: G. L. Arnett
J. T. Bell
J. L. Brown
J. L. Corder
J. L. Etheredge
V. R. Haupt
G. L. Jessee
J. C. Landwehr
W. F. Taffee
E. G. Wright
P. O. DeGarmo - G.O.
P. B. Hodges - G.O.
W. B. Papageorge - G.O.
W. R. Richard - G.O.
J. R. Savage - G.O.

DATE: January 11, 1971

SUBJECT: Aroclor Pollution Study

DEPARTMENT: 916.07

JUSTIFICATION: Pollution Abatement

COST:

Estimated Per Diem PR&D Cost	$100
Experimental Expense	$11,000
PR&D Cost to-date (1970)	$16,083
Estimated PR&D Cost 1971	$10,000

BACKGROUND: The filtration and column adsorption phases of the work plan issued 9/9/70 have been completed. A report on the filtration study will be issued by 1/15/71. The data generated in the column study is being compiled for a cost estimate.

The following conclusions were drawn from the filtration study:

a. Aroclor levels of the plant effluent were reduced to 10 ppb by filtration of the neutralization pit solids on which Aroclor was adsorbed and by adsorption on the filtering media.

b. The removal of 200-1000 ppm of solids in the plant effluent is a primary concern in any final clean up system.

The line of research proposed in this work plan is based primarily on these conclusions. In the flocculation jar test run on the plant effluent, 15 ppm of SPV bentonite clay(1) and 1.5 ppm of Betz's 1170 polyelectrolyte gave the best settling floc.

Experimental: I. Define the following parameters in a flocculation study on the plant effluent.

a. Flow rate
b. Height of sludge blanket
c. Bentonite clay feed

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(1) Product of American Colloid Company

STLCOPCB4084158

Object: To determine the operational parameters at which the solid and Aroclor concentrations are reduced to a minimum (i.e. 0-20 ppm solids & 10 ppb Aroclors). Since the bentonite clay is only a weighting agent for the floc, its concentration will be increased to some practical limit if necessary, in order to provide more surface area for adsorption.

Estimated Beginning Date:	2/1/71
Mandays	40
Target Completion Date:	4/1/71

Experimental II. Demonstrate Aroclor removal in a semi-continuous adsorption study. Define optimum conditions:

a. Retention time
b. Adsorbent loading capacity
c. Recycle

Object: To utilize some less expensive adsorbents than carbon and provide an alternate design. The same reactor clarifier (Part I) will be used in this study. Provision will be made to recycle the settled adsorbent to premix area.

Mandays	40
Target Completion Date:	5/28/71

SAFETY: The HCl and H_3PO_4 in the plant effluent are normally neutralized in the limestone pit. Occasionally, there is some residual acidity which should be guarded against. Any area exposed to the waste water should be washed thoroughly with copious amounts of water. This will also remove any Aroclor present.

The flocculating agents (Betz polymer 1170 and American Colloid's SPV bentonite clay) are neither flammable, corrosive, or toxic. Hence, their handling requires no particular precautionary measures.

An operation manual containing all safety procedures will be issued to personnel operating the clarification unit.

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