Monsanto

Waste Audit

FROM (NAME & LOCATION) J. C. Landwehr - Anniston, Alabama

DATE December 9, 1969

SUBJECT

REFERENCE

cc R. C. Binning, MRC, Dayton
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TO : W. A. Kuhn

General Offices

The attached Waste Audit includes data sheets for each of four sewers containing Aroclors and related organics and HCl. Analytical results on mud and water samples referred to in the summary are also included.

Aroclor-HCl Sewers

Aroclor Still Room	-	63 GPM, NDA/2 ppm to 11 ppm organics*
Chlorinator Sewer	-	250 GPM, NDA/1 ppm to 11 ppm
HCl Sewer	-	100 GPM, NDA/.1 ppm to 20 ppm
Warehouse Sewer	-	90 GPM, NDA/2 ppm to 32 ppm
	Total flow	503 GPM

*These levels are several orders greater than solubility or emulsion level reported by Dr. Tucker, due to presence of suspended globules.

PLANT EFFLUENT TO SNOW's CREEK

Total normal discharge to Snow's Creek is approximately 1000 GPM: made up of the above 500 GPM, 200 GPM of neutralized phosphoric acid from the Parathion plant, which passes through a limestone pit of its own and then joins the Aroclor sewers in passing through the HCl limestone pit, and 300 GPM miscellaneous drainage most of which bypasses the limestone pit. Major storm drainage has been separated from the HCl limestone pit influent and bypasses around it. Weirs are provided and have recently been repaired for measuring bypass flow and total discharge to Snow's Creek.

After discussions of the proposed grant-supported study here at the plant we feel that the following aspects are important to keep in mind.

1. PLANS FOR GROSS RECOVERY

We will be initiating an Aroclor-HCl waste reduction study in the first quarter of 1970 leading to one or more projects for a sump or sumps to permit settling, skimming, and coalescing recovery of organics from Aroclor-HCl waters. Three locations will be considered: a) at the source sewer, b) after combination - possibly at the inlet end of the HCl neutralization pit, and c) at the discharge end of the neutralization pit. The a) and b) streams are acid, c) is partially neutralized, depending on load to and performance of the HCl limestone pit. (pH is no higher than 4 due to dissolved CO_2). Therefore all streams to be treated are more or less acid. In addition, all streams except the HCl drowning jet sewer will at times contain a detergent used in steam cleaning Aroclor department floors. This material is probably a weak caustic plus phosphate salts.

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2. WATER CONSERVATION

The volume of Aroclor-HCl sewer flow can probably be reduced by 100-200 GPM through reuse of water in 5 still jets, 3 blow tank jets, and 1 HCl drowning jet. This and any other conservation techniques will be included in the Aroclor-HCl waste reduction study.

3. CARBON TREATMENT STUDY

An activated carbon treatment study of Muriatic Acid to eliminate odor and to size carbon treatment facilities for an expansion to handle future production of 8000 lbs./hr. vs present 4000 lbs./hr. HCl is ready to get underway. This work will be done in the HCl department. We are planning to include organics removal from waters in this study, probably using HCl drowning jet effluent. The same equipment and personnel can be used to expand this study to other sewer streams and to evaluation of Acid Clay.

4. ANALYTICAL SERVICES

A major problem in the waste audit, Muriatic odor reduction, and water cleanup work has been and will continue to be analytical services.

a) The same problem exists here as in Dr. Tucker's work: an unknown and widely variable composition or organic materials from biphenyl or lesser molecules up to quaterphenyls and above makes standardization and calibration difficult. The waste audit numbers may be 100% or greater low due to the analytical method used which was calibrated for the biphenyl and monochlorobiphenyl contaminants which predominate in Muriatic Acid.

b) Our local capability at present is limited to UV analysis at one wave length with sensitivity no better than 1 ppm. We are investigating a scanning device at Jacksonville University for use in the Muriatic Acid work in which we will need sensitivity down to 0.1 ppm. (A project is forthcoming for separation and measurement of 0.1 - 0.5% chlorinated biphenyl in Aroclor 5460 - unfortunately this specialized technique is of no help on the PCB problem). Water samples have been sent to our Decatur, Alabama plant where a total organic carbon analyzer will be used - these results will be correlated to corresponding Aroclor samples being analyzed by Dr. Tucker. A strong case is building up for Anniston to procure an EC/GC system such as is used in St. Louis. (Present lag time in getting results back from St. Louis is 6 weeks to 2 months. We presently have in St. Louis 4 sets of samples as follows: 10/13 - 6 water samples at audit sample points after Aroclor was down for 1 week; 10/27 - fish collected from Choccolocco Creek in Fall Biological Survey; 11/20 - 2 Snow's Creek samples during a spill; 12/1 - 6 water/5 mud from Snow's and Choccolocco creeks).

5. PLANNING TARGET DATES FOR 1970

Muriatic Acid Carbon Treatment Study
Waste Water Carbon Treatment Study
Aroclor/HCl Waste Recovery

a) Muriatic Acid and Waste Water on-stream pilot carbon treatment test:

- If Jacksonville University Scanning UV equipment can be used - will know by - Dec. 19, 1969

- Then run plant pilot test on Muriatic Acid - Dec. 22 through January 16

  Report results — January 23

- Then run plant pilot test on Waste Water - January 19 through February 13

  Report results - February 20

- Without local capability for analysis test program will involve sending a one-day set of samples (32 samples) to St. Louis and waiting one week minimum for results before proceeding with test. This would be repeated 10 times during development of carbon bed wave fronts and life tests resulting in a ten week extension of the tests. However, could probably run water and acid tests alternately while awaiting results. - Start December 22 complete April 3.

b) Procure and set up EC/GC analytical equipment for Aroclor analysis in waste water (and Muriatic Acid)

- Approval of AFE - January 1, 1970

- In operation - May 1, 1970

c) Aroclor/HCl Waste Recovery - Normal Project Timing*

1) Evaluate problem, develop alternatives and issue Project Premise in 1st quarter 1970. - issue Premise March 31

2) Prepare estimate and AFE in 2nd quarter 1970 - AFE June 30

3) Design and drafting in 3rd quarter - Design transmittal Sept. 30

4) Maintenance Planning, Scheduling and Installation time - 6 months - Startup March 31, 1971

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*This timetable could be accelerated to 9 months with special manning, but would require a budget overrun to avoid deferral of Cost Improvement Program items.

The above summarizes Anniston data on waste water streams and 1970 plans to start corrective action. Full scale treatment of waste water to reduce total Aroclor discharge to a level corresponding to 10 ppb after dilution with total waters would be the next step. By following up any leads from the initial carbon treatment studies through the second quarter of 1970, and assuming that carbon or acid clay absorption feasibility could be demonstrated in that quarter, we would be able to follow the Aroclor Waste Recovery project with a full scale water cleanup project about one quarter later.

This is probably an over-extended extrapolation of events verging on prophecy, but it does indicate that if Monsanto elected to enter into a demonstration arrangement using Anniston TSD resources and probably using CED for construction, a facility could be started up by mid 1971.

J. C. Landwehr

JCL:kd
Attachments