PROGRESS REPORT

TECHNICAL SERVICES DEPT. - W. G. KRUMMRICH PLANT

JOB NO.	REPORT NO.	DATE
91341:4119	(2)	12,11,6

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TITLE: WATER POLLUTION: AROCLOR CONTROL

PERSONNEL: M. Pierle (C. F. Buckley)

PROBLEM: Report status of measurement and control work.

SUMMARY

The analytical results on wastewater samples indicate that total plant aroclor losses equal 700#/day. Additional samples are being taken to verify the above number and to determine the major source of losses.

Additional possible sources of aroclor not discussed in Report 1 are rip track car washings, Department 248 therminol system, Department 246 HCl off-gas purification by activated carbon (218) and acid scrubbing (217), and maintenance of electrical transformers. The sampling program has been expanded to cover these sources.

The overall sampling program is now directed to determine:

1. Aroclor losses from Department 246.
2. % aroclor removal at waste treatment plant.
3. Aroclor losses to the Mississippi River.
4. Contamination extent of Mississippi River bank.

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SCOPE

This report details the work and progress accomplished in aroclor control since September, 1969. Analytical data and sampling modifications are included.

STATUS

A. Analytical Results

The analytical results of initial samples were received from Scott Tucker on 11/24/69. A copy of the results is included in the Appendix.

The results indicate that the influent to the Sauget Village treatment plant (Log. No. 16, 17, 19, 21, 95, 98, 100, 102) contained an average of 700#/day aroclor. Samples (Log. No. 14, 15, 18, 19, 20, 96, 97, 99, 101) taken downstream of the aroclor manufacturing department (Dept. 246) contained an average of 4#/day aroclor. These results would indicate that the aroclor is not coming from Dept. 246. However, sample No. 19 indicates that the aroclor is being concentrated in the light oils present in the sewers. Therefore, it is possible that either the department samples contained only the aroclor in solution or in water emulsion or the aroclor losses are originating elsewhere than at Dept. 246. The sampling program must be altered to determine the actual losses from Dept. 246.

B. Additional Sources

Sources of aroclor not enumerated in Report 1 are as follows:

1. Rip Track - Aroclor tank cars are washed at the rip track. Some cars are equipped with bottom plugs instead of bottom valves. Thus, when the plugs are removed, aroclor can drain to the sewer until the cleaning equipment is attached and the bottom hole is plugged.

2. Electrical Transformers - Leaks or system change out.

3. Dept. 218 Carbon - The activated carbon used to purify HCl off-gas from Dept. 246 is sewered.

4. Dept. 217 Acid Scrubber - Dept. 246 off-gas when used in Dept. 217 is scrubbed with chlorosulfonic acid. The scrubber liquor is sewered.

5. Dept. 248 will use an aroclor furnace in their expansion.

C. Control Measures

1. Rip Track - The procedure for cleaning tank cars is as follows:

   a. Heat contents and blow to waste receiving tank.

   b. Attach cleaning equipment to bottom valve or plug.

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c. Transfer all wash and rinse material to waste receiving tank.

d. Haul contents of waste receiving tank to landfill.

This procedure eliminates losses from tank car cleaning except for attaching equipment to bottom plug. Drainage from plug occurs only if contents are not completely removed by Step(a) above.

2. Electrical Transformers

a. During maintenance, pyranols are drummed off either for re-use or disposal in the landfill.

b. Leaks, if present, are not at this time controllable and justification does not exist at this time to dike existing transformers.

3. Dept. 246 - Approval has been received to proceed with part of the settling basin project to entrap aroclor and remove it from the sewer at the department.

D. Sampling Locations

The sampling program has been modified as follows:

1. Grab Samples

a. Village treatment plant oil scum and sludge to determine if aroclor is removed in either of these layers.

b. Activated carbon sample from Dept. 218 to determine amount adsorbed from 246 HCl gas.

c. C/S acid scrubber liquor to determine amount of aroclor removed by scrubbing 246 gas.

d. Mud samples from Mississippi River bank as per Report 1.

e. Free aroclor in Dept. 246 trench sewers is pumped to receiver and measured. Overflow gates were installed in each trench sewer so that the free aroclor could be retained and removed. The information gathered by this work should be useful in designing the settling basin project. (Section B-3)

f. Mississippi River water sample from Monsanto loading dock.

All composite samples will be representative of 24 hour samples. If analytical results are high from any of the sources, the sampling frequency will be increased from approximately one sample/week to whatever is dictated by the results. S. Tucker's suggestions as to sampling are appreciated and will be incorporated into the program.

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2. Composite Samples

   a. Influent to treatment plant.

   b. Effluent from treatment plant.

   c. Effluent from all Department 246 sewers.

Conclusions

1. Initial analytical results indicate that 700#/day aroclor is lost to the sewer. This is in excess of previous predictions. (Report 1)

2. Additional possible sources of aroclor are the Rip Track, Dept. 246 off-gas purification, Dept. 248, and maintenance of electrical transformers.

Future Work

1. Measure losses from Dept. 246.

2. Determine % removal of aroclor by waste treatment plant.

3. Report upon analysis of samples from Mississippi River bank.

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APPENDIX

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RESULTS

WGK WATER SAMPLES

OR Log No.	Sample Identification	Date Taken	Amount Found (Reported As ppm Aroclor 1242 Except Where Noted)	
14 WGK	24N, #1, Sewer	7/69	0.05	.05
15 WGK	24N, #2, Sewer	7/69	1.40	1.40
16 WGK	SVO, #1, Sewer	7/69	~~0.86~~ .86	
17 WGK	SVO, #2, Sewer	7/69	~~0.67~~ .67	
18 WGK	24N, #1	7/18/69	1.87	1.87
19 WGK	MVO, #1	7/18/69	~~6.00~~ 6.00	
19 WGK	MVO, #1, Oil Layer	7/18/69	0.17%	
20 WGK	24N, #2	7/15/69	1.71	1.71
21 WGK	MVO, #2	7/15/69	~~0.08~~ .08	
95 WGK	MVO	10/2/69 -10/7/69	6 da. ~~0.53~~ 3.18	
96 WGK	24N	9/25/69 -9/30/69	6 da. 0.20	1.20
97 WGK	24N	10/2/69 -10/7/69	6 da. 0.45	2.70
98 WGK	SVO	9/25/69 -9/30/69	6 da. ~~0.67~~ 4.06	
99 WGK	24N	7/28/69 -8/3/69	7 da. 0.04	.28
100 WGK	MVO	7/28/69 -8/3/69	7 da. ~~5.88~~ 41.16	
101 WGK	24N	7/21/69	0.03	.03
102 WGK	MVO	7/21/69	~~15.3~~ 15.3	9.24
			71.27	
			Avg. ~3	Avg = .4

Total of 24 da. each sampling station

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