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M E M O R A N D U M

March 17, 1977

State of Washington
Department of Ecology

To: Gary Rothwell

From: Douglas Houck

Subject: ALCOA (Vancouver) Class II Inspection

On April 28, 1976, Mike Morhous and I arrived at the ALCOA aluminum plant in Vancouver for the scheduled Class II Inspection.

At the sanitary treatment plant we installed an automatic sampler to take a 250 ml alequot every 30 minutes from the chlorinated effluent. We could not install a sampler on the influent due to the nature of the plant. When we returned on the 29th the sampler had not operated properly so that a grab sample of the chlorinated effluent was also taken.

The chlorinated effluent is measured through a 90 degree v-notch weir which was well constructed. A flow of 53 gpm was measured while the flow recorder was reading 72 gpm. On the 29th we measured a flow of 29 gpm while the plant recorded 35 gpm. Due to the nature of the plant the flow through the plant is very intermittent and is therefore very hard to measure and compare accurately.

The following table gives the results of DOE's composite and grab sample along with ALCOA's results from our composite and their NPDES daily maximum effluent limits.

Parameter	DOE (Comp.)	DOE (Grab)	ALCOA	NPDES
BOD_5 (mg/l)	10	10	7	45
T.S.S. (mg/l)	18	14	13	45
Fecal Coliform (colonies/100 ml)		10		400
Chlorine Residual		3.0*		0.5 - 2.0

* measured DPD kit.

The above table shows that except for the chlorine residual limitation the sanitary treatment plant was well within their permit limitations.

Although it is very hard to control the chlorine residual because of the intermittent flow, I feel that the chlorine dosage was too high.

ALCOA's industrial waste treatment consists of two lagoons whose effluent is combined before entering the Columbia River. We installed another automatic sampler at this point to take a 250 ml alequot every 30 minutes. During the survey grab samples were taken for cyanides and total oils from the south lagoon. At the time of the survey ALCOA was taking their samples for cyanides and total oils from their composites. This is not an acceptable technique.

The flow from both lagoons was measured by sharp-crested weirs. Although the construction of the weirs was not exact they are adequate. On the 29th we measured a total instantaneous flow of 5.67 MGD while ALCOA was recording a total instantaneous flow of 4.99 MGD. This is an acceptable error.

The following table shows DOE's and ALCOA's results along with their NPDES daily maximum limitations.

Parameter	DOE	ALCOA	NPDES
Fluorides (lbs/day)	48	39	21,000
T.S.S. (lbs/day)	726	600	1,400
Oil and grease	ND	19	290
pH	7.1	7.1	
Temperature °F	64	64	
Flow (MGD)	5.8	5.8	

The above table shows that at the time of the inspection ALCOA was well within their permit limitations.

In summary, at the time of the inspection ALCOA's aluminum plant met their NPDES permit discharge limitations except for total chlorine residual. Their laboratory results compared with ours very well. It should be noted that they use the Hach BOD manometer instead of the dilution method. They claim that they have gotten good correlation with other labs with their procedures. Their permit should be modified, if it already hasn't, so that cyanides and total oils are taken from grab samples and not a composite. They also reported that they have completed the testing for permit requirement S5a and found 100 percent survival.

DH:ee

cc: Dick Cunningham
Central Files

State of Washington
Department of Ecology

OLYMPIA LABORATORY

DATA SUMMARY

ORIGINAL TO: D.H.
COPIES TO:
LAB. FILES

Source ALCOA @ VANC.

Collected By Houck & Markhous

Date Collected 4-28/29-76

Log Number: 76- 1388 89 90 91 92

Station:	SANIT. CL. EFF COMP	→@1110 GRAB	INDUS. EFF. COMP.	SOUTH LAGOON GRAB	SANIT. CL. EFF GRAB @ 1040
pH	7.6	7.4	7.3		
Turbidity (NTU)					
Sp. Conductivity (umhos/cm)					
COD	55	40			
BOD (5 day)	10	10			
Total Coliform (Col./100ml)					
Fecal Coliform (Col./100ml)		<10			<10
NO3-N (Filtered)	11.6	12.2			
NO2-N (Filtered)	0.20	0.04			
NH3-N (Unfiltered)	9.5	7.3			
T. Kjeldahl-N (Unfiltered)					
O-PO4-P (Filtered)	2.8	2.4			
Total Phos.-P (Unfiltered)	3.1	4.0			
Total Solids	361	343	292		
Total Non. Vol. Solids	246	222	236		
Total Suspended Solids	18	14	15		
Total Sus. Non Vol. Solids	6	5	10		
CYANIDES				<0.02	
T. OILS				ND	
FLUORIDES			1.0		

Note: All results are in PPM (mg/L) unless otherwise specified. ND is "None Detected"
"<" is "Less Than" and ">" is "Greater Than"

ECY 040-2-32

Summary By Stephen P. Roth Date 5-17-76