



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

7272 Cleanwater Lane, LU-11 • Olympia, Washington 98504-6811 • (206) 753-2353

M E M O R A N D U M

October 20, 1986

To: Norm Glenn
Through: John Bernhardt ^{1/2}
From: Don Reif DLB
Subject: Grays Harbor Pulp Mill Survey, June 17, 1986

INTRODUCTION

Historically low survival of salmon smolts from the Chehalis River system has led to concern of toxicity in upper Grays Harbor. For this reason, EPA initiated a limited survey of effluent parameters from both the ITT-Rayonier and Weyerhaeuser pulp mills. Final effluent samples were collected June 17 by Don Reif and John Bernhardt, Washington Department of Ecology (Ecology). The survey objective was to analyze the effluent for chronic toxicity and priority pollutants.

DISCUSSION

Effluent samples from both plants were collected as grabs on the morning of June 17, 1986. Compositing samples were not feasible at either plant for the following reasons:

First, Weyerhaeuser discharges its effluent on out-going tides only, approximately four hours twice daily.

Second, ITT-Rayonier has multiple clarifiers with no sampling access point downstream of their intersection.

ITT-Rayonier samples were collected directly from their sampler feed line. Weyerhaeuser samples were grabbed from the final lagoon at the effluent weir.

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Samples were analyzed at the Manchester EPA lab for priority pollutants. Conventional parameters were analyzed by Ecology staff at Manchester. Bioassays with Ceriodaphnia and fathead minnows were conducted at the USEPA ERL-Duluth, Minnesota, facility.

Results of the analyses are summarized in Tables 1, 2, and 3. Table 2 lists all parameters identified from the priority pollutant scans as being present at detectable concentrations. Criterion levels are listed for those parameters that have established chronic limits. Both effluents contained small amounts of several metals; PTT-Rayonier generally had higher concentrations. Weyerhaeuser effluent contained several organic compounds not found in the ITT-Rayonier effluent, although not at levels considered toxic.

The bioassay results for Ceriodaphnia were invalid due to poor adult survival and young reproduction in the control organisms. Fathead minnow results are shown in Table 3. Both effluents displayed significant chronic effects, with Weyerhaeuser the more toxic of the two.

The results of this survey were incomplete for two reasons:

- o the failure of the Ceriodaphnia bioassay.
- o the ITT-Rayonier plant had been operating for only 2 days after a six-day shutdown.

For these reasons, EPA is currently considering resampling at a later date.

DR:cp

Attachment

Table 1. Conventional parameters: Grays Harbor pulp mill survey, June 17, 1986

<u>Parameter</u>	<u>ITT-Rayonier</u>	<u>Weyerhaeuser</u>
COD (mg/L)	1,450	1,500
TSS (mg/L)	155	190

Table 2. Detected parameters from priority pollutant scan: Grays Harbor pulp mill survey, June 17, 1986

<u>Parameter (ug/L)</u>	<u>ITT-Rayonier</u>	<u>Weyerhaeuser</u>	<u>Criterion</u>
Arsenic	4	ND	36
Cadmium	4.0	0.8	9.3
Chromium (hexavalent)	49	1	18*
Chromium (trivalent)	95	3	50
Copper	29	9	2.9
Thallium	6	5	--
Nickel	23	22	7.1
Zinc	83	38	58
Selenium	ND	2	5.4*
Mercury	ND	0.05	0.025
Acetone	ND	12	--
Trichloromethane	170	ND	--
Methyl Ethyl Ketone	ND	24	--
2,4,6-trichlorophenol	ND	7.9	--
p-cresol	ND	86	--
Phenol	ND	4.0	--

*Saltwater aquatic life criteria, from Federal Register, Vol. 45, #231, 11/28/80. Values are based on 24-hour average concentrations (chronic). All other criteria are from "User's Manual for the Pollutant of Concern Matrix," Puget Sound Estuary Program, Tetra-Tech, Inc., 1986.

Table 3. Fathead minnow bioassay results: Grays Harbor pulp mill survey, June 17, 1986

<u>Effluent</u>	<u>Acceptable Effluent Concentration (AEC)</u>	<u>Lowest Observable Effect Concentration (LOEC)</u>
ITT-Rayonier	44%	65%
Weyerhaeuser	17%	30%