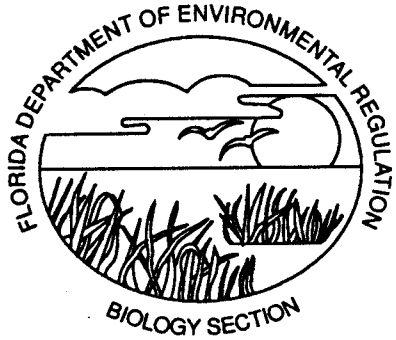


Bioassays of

Champion International, Inc.

Cantonment, Escambia County, Florida

NPDES #FL0002526

Sampled 8/21/89

October 26, 1989

Biology Section
Division of Administrative and Technical Services

Bioassays of

Champion International, Inc.

Cantonment, Escambia County, Florida

NPDES #FL0002526

Biology Section
Bureau of Laboratories
October 26, 1989

Introduction

Champion International, Inc., Cantonment, Escambia County, Florida, NPDES #FL0002526, on 22 to 24 August, 1989.

This company, formerly the St. Regis Paper Company, is located at the intersection of U.S. Highway 29 and State Road 184 in Cantonment. According to the NPDES permit (issued in June, 1979), this facility operates continuously, processing 1,000 tons per day of pulpwood into paper products. Raw materials required for this operation include: pulpwood (pine or hardwood), salt cake, lime, caustic soda, chlorine, salt, sodium chlorate, rosin size, alum, sulfuric acid, and cornstarch.

Prior to discharge to the headwaters of Eleven Mile Creek, the wastewater is treated by a clarifier, a series of mechanically aerated lagoons, and final settling in an additional lagoon. A flocculation process has been added to the treatment system to provide color removal from the recovered water prior to discharge. This system is designed for a 28 MDG wastewater flow. Champion's outfall #001 is located at State Road 186, approximately 2 miles from the plant site. Eleven Mile Creek eventually empties into the northern portion of Perdido Bay approximately 12 miles downstream of the plant outfall.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

To evaluate potential toxicity from the flocculation process, two static screening bioassays, using the bioassay test organisms, the water flea, *Ceriodaphnia dubia* and the fish, *Notropis leedsi*, were performed on a sample from this facility. The two screening bioassays indicated that the sample after the flocculation process was not toxic. The total ammonia concentration in the sample was 1.30 mg/l. The calculated unionized ammonia concentration was 0.08 mg/l. No further chemical analyses were performed. The most recent bioassays performed (27 to 29 June, 1989) on a sample from this facility without the flocculation process indicated that the sample was not toxic to the bioassay organisms, *C. dubia*, *Daphnia pulex*, and *N. leedsi*.

The controls for these two static screening bioassays were the controls for the city of Cape Canaveral STP bioassays which were performed concurrently with these bioassays. The pertinent raw data sheets from the Cape Canaveral tests are included in this report.

Conclusion

The sample of discharge from this facility was not toxic on 21 August, 1989.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 ml	0 ml	500 ml
100.0%	0 ml	500 ml	500 ml

Table 2. Data recorded during the 48 hour static screening bioassay of a sample of discharge from the Champion International, Inc., facility, Cantonment, Escambia County, Florida, NPDES #FL0002526, on 22 to 23 February, 1989.

Facility: **Champion International, Inc.** NPDES # **FL0002526** Facility Type: **Paper Mill**
Location: Intersection of US29 & Fl. Rd. 184, Cantonment Contact/District: J. Williams / NW
County: Escambia Test type: static screen
Sample Collection Date: **8/21/89** Time: 1430 # tests: 3 Receiving Water: Eleven Mile Creek
Test Beginning Date: 8/22/89 Time: 1130 Chlorination Type: **unchlorinated**
Test Ending Date: 8/24/89 Time: 1130 **Page 1 of 1**

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	0*	0*	8.4	-	8.5	8.4	-	8.4	21.7	-	21.9	-	-
Control	5	4	4	8.5	-	8.6	8.4	-	8.4	-	-	-	-	-
Control	5	5	5	8.4	-	8.6	8.4	-	8.4	-	-	-	-	-
Control	5	5	5	8.5	-	8.6	8.4	-	8.4	-	-	-	220	245
10%	5	5	5	7.8	-	8.0	8.1	-	8.7	21.5	-	22.0	-	-
10%	5	5	5	7.8	-	8.0	8.1	-	8.7	-	-	-	-	-
10%	5	5	5	7.8	-	8.0	8.1	-	8.7	-	-	-	-	-
10%	5	5	5	7.8	-	8.0	8.1	-	8.7	-	-	-	2080	2230

*controls were from Cape Canaveral STP bioassay
pH-probe contamination caused mortality

Organism: ***Notropis leedsi*** Age: 18 days
LC50: - - Moving Average: - Probit: -

Concentrations	SURVIVAL # at 0 hr	Live at 24 hr	Live at 48 hr	Dissolved Oxygen 0 hour	24 hour	48 hour	pH 0 hour	24 hour	48 hour	Temperature 0 hour	24 hour	48 hour	Conductivity 0 hour	48 hour
Control	5	5	5	8.0	9.0	8.0	7.8	8.1	8.2	22.8	20.5	20.8	-	-
Control	5	5	5	8.0	9.0	8.0	7.8	8.1	8.2	-	-	-	235	230
100%	5	5	5	7.3	7.1	6.7	8.0	8.2	8.3	21.1	20.4	20.9	-	-
100%	5	5	5	7.3	7.1	6.7	8.0	8.2	8.3	-	-	-	2140	2130

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	-	-
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.00	0.00
100% Sample:	1.30	0.08

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	123	118
Cond. Control Water (daphnids):	128	114
100% Sample:	396	130

Salinity (ppt)	
Control Water:	0
100% Sample:	0

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Champion International, Corp.
Address/City: Cantonment, Fl
County: Escambia
Contact/District: John Williams North West
NPDES Permit #: FL0002526 Outfall #: 001

Sample Collection: Date 8-21-89 Time 1430
Test Beginning: Date 8-22-89 Time 1130
Test Ending: Date 8-24-89 Time 1050
Test Organism: Ceriodaphnia dubia
Life Stage/Age: Neonate

Test Number: 1 of 2 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks: Control same as Cape Canaveral

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.7, 8.9	8.7@23C	1370@1362 @23.3°C	23.2@23.1
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	100%	5	5	5	7.8	|	8.0	8.1	|	8.7	21.5	→	22.0			
Control	100%	5	5	5	7.8	|	8.0	8.1	|	8.7						
Control	100%	5	5	5	7.8	|	8.0	8.1	|	8.7						
Control	100%	5	5	5	7.8		8.0	8.1		8.7				2080	-	2230
100%								SKIP								
100%																
100%																
100%																
Measured by:		mf	mf	dhw	sfw		dhw	sfw			sfw		dhw	sfw		
Recorded by:		mf	mf	dhw	mf		dhw	mf			mf		dhw	mf		

Investigators' Signatures

Marshall Faircloth

Steven H Wolfe

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			—	—	—
Lab Tot. Resid. Cl2:			—	—	—
Alkalinity:	123	125	396	Hach(25)	dhw
Hardness:	118	114	130	Hach	dhw
Total Ammonia:	0.0	0.0	1.30	ION PROBE	dhw

Slope = -58.2

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Champion International, Inc. Sample Collection: Date 8-21-89 Time 1430

Address/City: _____ Test Beginning: Date 8-22-89 Time 1130

County: _____ Test Ending: Date 8-24-89 Time 1130

Contact/District: _____ Test Organism: Notropis leedsi

NPDES Permit #: _____ Outfall #: 001 Life Stage/Age: 18 days

Test Number: 2 of 2 Test Type: Screening | Definitive

Static | Static Renewal | Flow-through

Remarks:

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control		Same as Control														
Control	5															
100%	62	5	5	5	7.3	7.1	6.7	8.0	8.2	8.3	21.1	20.4	20.9			
100%	69	5	5	5	7.3	7.1	6.7	8.0	8.2	8.3				2140	-	2130
Measured by:		MT	MF	MF	SHW	JMF	JHW	SHW	JMF	SHW	SHW	JMF	JHW	SHW		
Recorded by:		MT	MF	MF	MF	JHW	JHW	MF	JHW	MF	MF	JHW	JHW	MF		

Investigators' Signatures

Marshall Faircloth

Steven J Wade

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: City of Cape Coral STP
Address/City: Cape Coral, Fl,
County: Brevard
Contact/District: Louis Ley / Central
NPDES Permit #: FL0020541 Outfall #: 001

Sample Collection: Date 8-21-89 Time 1300
Test Beginning: Date 8-22-89 Time 1130
Test Ending: Date 8-24-89 Time 1130
Test Organism: Ceriodaphnia Dubia
Life Stage/Age: <24 hrs

Test Number: 1 of 3 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: Aerated O2 limitance upon del at plant

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.0 7.09	8.2@23°C	1320 1360	23.0@23.1
24 hr	7.0, 7.09	8.8@22°C	1350	22.0@22.1
48 hr	7.0; 7.09	8.5@22.0°	1350 23.1@1350	22.2@22.3

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	1	5	0	-	8.4		8.5	8.4		8.4	21.7		21.9			
Control	2	5	4	4	8.5		8.6	8.4		8.4						
Control	3	5	5	5	8.4		8.6	8.4		8.4						
Control	4	5	5	5	8.5		8.6	8.4		8.4				220		240
10%	5	5	5	5	8.3		8.6	8.3		8.4	21.8		21.8			
10%	6	5	5	5	8.3		8.6	8.3		8.4						
10%	7	5	5	5	8.3		8.6	8.3		8.4						
10%	8	5	5	4	8.4		8.6	8.3		8.4				305		310
30%	9	5	5	5	8.2		8.5	8.1		8.4	21.9		21.8			
30%	10	5	5	5	8.3		8.5	8.1		8.4						
30%	11	5	5	5	8.3		8.6	8.1		8.4						
30%	12	5	5	5	8.3		8.6	8.1		8.4				470		490
50%	13	5	5	5	8.2		8.5	7.9		8.3	22.0		21.8			
50%	14	5	5	5	8.2		8.5	7.9		8.3						
50%	15	5	5	5	8.3		8.5	7.9		8.3						
50%	16	5	5	5	8.3		8.5	7.9		8.3				640		665
70%	17	5	5	5	8.2		8.4	7.7		8.3	22.0		21.8	[illegible]		
70%	18	5	4	4	8.2		8.4	7.7		8.3						
70%	19	5	5	5	8.2		8.5	7.7		8.3						
70%	20	5	5	5	8.2		8.5	7.7		8.3				810		850
85%	21	5	4	3	8.2		8.4	7.5		8.2	22.0		21.8			
85%	22	6	6	6	8.2		8.4	7.5		8.2						
85%	23	5	5	5	8.2		8.4	7.5		8.2						
85%	24	5	5	4	8.2		8.4	7.5		8.2				935		980
100%	25	5	4	3	8.1		8.4	7.3		8.2	21.8		21.9			
100%	26	5	4	4	8.2		8.4	7.3		8.2						
100%	27	5	5	4	8.2		8.4	7.3		8.2						
100%	28	5	5	4	8.2		8.4	7.3		8.2				1110		1120
Measured by:		mf	mf	MW	SHW		MW	SHW		SHW	SHW		MW	SHW		
Recorded by:		mf	mf	MW	mf		MW	mf		mf	mf		MW	mf		

Investigators' Signatures
Marshall Fairbell
Atanth Wolfe

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:			—	—	—
Lab Tot. Resid. Cl2:			0	Hach	mf *
Alkalinity:	123	125	62	Titr. EDTA	MW
Hardness:	118	114	195	Hach	SHW
Total Ammonia:	0.0	0.0	0.073	Ion probe	MW

* Sample taken after dechlorination
Slope = −55.2

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Cape Coral Central STP (City of) | Sample Collection: Date 8-21-89 Time 1300
Address/City: | Test Beginning: Date 8-22-89 Time 1130
County: | Test Ending: Date 8-24-89 Time 1130
Contact/District: | Test Organism: Mysidopsis bahia
NPDES Permit #: FL0020541 Outfall #: 001 | Life Stage/Age: 1-5 days

Test Number: 3 of 3 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: Peddler at plant

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	68	5	5	5	8.0	9.0	8.0	7.8	8.1	8.2	22.9	20.5	20.5			
Control	174	5	5	5	8.0	9.0	8.0	7.8	8.1	8.2		dw		235		230
10%	87	5	5	5	8.0	8.9	8.0	7.7	8.0	8.2	22.8	20.3	20.7			
10%	19	5	5	5	8.0	8.9	8.0	7.7	8.0	8.2		dw		320		310
30%	76	5	5	5	7.9	8.8	7.9	7.6	7.9	8.1	22.5	20.2	20.6			
30%	66	5	5	5	8.0	8.8	7.9	7.6	7.9	8.1				500		485
50%	160	6	6	6	8.0	8.7	7.8	7.5	7.8	8.0	22.0	20.2	20.6			
50%	2	5	5	5	8.0	8.6	7.8	7.5	7.8	8.0				670		660
70%	18	5	5	5	7.9	8.5	7.8	7.4	7.8	7.9	21.7	20.2	20.5			
70%	3	5	5	5	7.9	8.6	7.9	7.4	7.8	7.9				840		830
85%	164	5	5	5	7.9	8.5	7.8	7.2	7.7	7.9	21.6	20.2	20.6			
85%	43	5	5	5	7.9	8.5	7.8	7.2	7.7	7.9				955		950
100%	186	5	5	5	7.7	8.3	7.9	7.1	7.6	7.8	21.4	20.3	20.5			
100%	16	5	5	5	7.8	8.3	7.9	7.1	7.6	7.8				1015		1075
Measured by:		MF	MF	AHW	SHW	JMF	JHW	SHW	JMF	SHW	SHW	JMF	AHW	SHW		JHW
Recorded by:		MF	MF	AHW	MF	AHW	SHW	MF	AHW	MF	MF	AHW	AHW	MF		AHW

Investigators' Signatures

Marshall Faircloth

Alice H Wells

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					