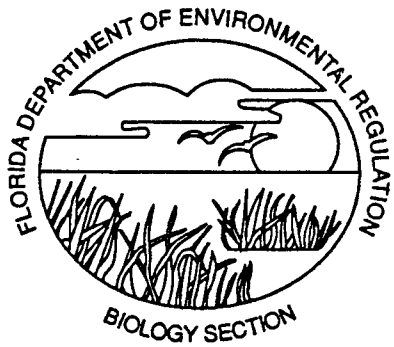



Bioassays of

**Champion International Corporation**

Cantonment, Escambia County, Florida

NPDES #FL0002526

Sampled 8/6/91

August 26, 1991

**Biology Section**
**Division of Technical Services**

Bioassays of

# Champion International Corporation

Cantonment, Escambia County, Florida

NPDES #FL0002526

**Biology Section**
**Bureau of Laboratories**
**August 26, 1991**

## Introduction

Champion International Corporation, Cantonment, Escambia County, Florida, NPDES #FL0002526, on 6 to 8 August, 1991.

Formerly the St. Regis Paper Company, this bleached kraft pulp and paper mill is located at the intersection of US 29 and SR 184 in Cantonment. The mill's wastewater treatment system consists of primary and secondary treatment. Components of this system include: sedimentation, aeration lagoons, stabilization ponds, and sludge lagoons. Outfall 001 is the discharge point for 28 MGD (design flow) of treated process wastewater, non-contact cooling water, and stormwater from the industrial areas of the mill.

A polymer to reduce color, and $CO_2$ to increase pH, are added to the wastewater prior to its entering the primary treatment pond. All process wastewater is discharged into a primary treatment pond and then, to a series of four ponds for secondary treatment (aeration and settling). A concrete weir has been constructed in the first aeration pond to optimize mixing and retention time. Retention time in the ponds is 10-12 days. Treated effluent is discharged into Eleven Mile Creek which empties into the northern portion of Perdido Bay.

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

The FDER Biology Section performed static acute screening toxicity bioassays on a sample of effluent from this facility. The bioassay organisms used for these tests were the water flea, *Ceriodaphnia dubia*, and the fish, *Notropis leedsi*. The test results indicated that the effluent was not toxic to the test organisms.

Total residual chlorine was not detected in the sample. The total ammonia and unionized ammonia concentrations were 7.20 and 0.21 mg/L, respectively.

## Conclusion

The sample of effluent from this facility was not toxic on 5 August, 1991.

**Table 1. Concentration Series and Volumes Used in the Static Acute Screening Bioassays on effluent from Champion International Corporation, on 6 to 8 August, 1991.**

*Ceriodaphnia dubia* (water flea)

| Concentration | Dilution Water | Sample | Total Volume |
|---|---|---|---|
| Control | 20 mL | 0 mL | 20 mL |
| 100.0% | 0 mL | 20 mL | 20 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 collected during the static acute screening bioassays of a sample of effluent from Champion International Corporation, Cantonment, Escambia County, Florida, NPDES# FL0002526, on 6 to 8 August, 1991.

| | | | | | |
|---|---|---|---|---|---|
| Facility: | **Champion International Corporation** | | **NPDES #** | **FL0002526** | **Facility Type: paper mill** |
| Location: | US 29 & SR 184, Cantonment | | Contact/District: | Glen Butts / NW | |
| County: | Escambia | | Test type: | static acute screening | |
| Sample Collection Date: | **8/5/91** | Time: 1015 | # tests: | 2 | Receiving Water: Eleven Mile Creek |
| Test Beginning Date: | 8/6/91 | Time: 1115 | Chlorination Type: | **Unchlorinated** | |
| Test Ending Date: | 8/8/91 | Time: 1045 | | | **Page 1 of 1** |

| **Total Residual Cl2** | mg/l | Method |
|---|---|---|
| Field: | 0.0 | Hach |
| Lab: | 0.0 | Hach |

| **Ammonia** | Total (mg/l) | Unionized (mg/l) |
|---|---|---|
| Control Water (fish): | 0.00 | 0.00 |
| Cond. Control Water (daphnids): | 1.32 | 0.06 |
| 100% Sample: | 7.20 | 0.21 |

| **Alk & Hardness** | Alkalinity (mg/l) | Hardness (mg/l) |
|---|---|---|
| Control Water (fish): | 130 | 140 |
| Cond. Control Water (daphnids): | 75 | 105 |
| 100% Sample: | 300 | 100 |

Organism: ***Ceriodaphnia dubia*** Life stage: < 24 hours
**LC50:** - Binomial: - Moving Average: - Probit: -

| | SURVIVAL | | | Dissolved Oxygen | | | pH | | | Temperature | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | Live at 24 hr | Live at 48 hr | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 48 hour |
| Control | 5 | 5 | 5 | 8.6 | - | 9.0 | 8.0 | - | 8.2 | 20.2 | - | 21.0 | 173 | 188 |
| Control | 5 | 5 | 5 | - | - | 9.0 | - | - | 8.2 | - | - | - | - | - |
| Control | 5 | 5 | 4 | - | - | 9.0 | - | - | 8.2 | - | - | - | - | - |
| Control | 5 | 5 | 5 | - | - | 9.0 | - | - | 8.2 | - | - | - | - | - |
| 100% | 5 | 5 | 4 | 6.4 | - | 8.7 | 7.8 | - | 8.7 | 19.7 | - | 21.0 | 1870 | 1950 |
| 100% | 5 | 4 | 4 | - | - | 8.7 | - | - | 8.7 | - | - | - | - | - |
| 100% | 5 | 5 | 5 | - | - | 8.8 | - | - | 8.7 | - | - | - | - | - |
| 100% | 5 | 4 | 4 | - | - | 8.8 | - | - | 8.7 | - | - | - | - | - |

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

| | SURVIVAL | | | Dissolved Oxygen | | | pH | | | Temperature | | | Conductivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Concentrations | # at 0 hr | Live at 24 hr | Live at 48 hr | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 24 hour | 48 hour | 0 hour | 48 hour |
| Control | 5 | 5 | 5 | 8.4 | 8.1 | 8.7 | 7.8 | 8.1 | 8.3 | 21.1 | 21.0 | 21.0 | - | - |
| Control | 5 | 5 | 5 | 8.4 | 8.1 | 8.7 | 7.8 | 8.1 | 8.3 | - | - | - | 246 | 250 |
| 100% | 5 | 5 | 5 | 5.8 | 8.0 | 7.8 | 7.8 | 8.3 | 8.4 | 19.3 | 21.0 | 21.0 | - | - |
| 100% | 5 | 5 | 5 | 5.8 | 7.9 | 7.8 | 7.8 | 8.3 | 8.5 | - | - | - | 1953 | 2110 |

# DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: CHAMPION INTERNATIONAL PAPER
Address/City: CANTONMENT
County: ESCAMBIA
Contact/District: GLEN BUTTS / NW
NPDES Permit #: FL0002526 Outfall #: 001

Sample Collection: Date 8-5-91 Time 1015
Test Beginning: Date 8-6-91 Time 1115
Test Ending: Date 8-8-91 Time 1045
Test Organism: CERIODAPHNIA DUBIA
Life Stage/Age: < 24 HOURS

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

Remarks:

Instrument Calibrations:

| | pH | DO | Cond | Temp |
|---|---|---|---|---|
| 0 hr | 7@7.00 | 9.1@20.5 | 133 @22.9 @1351 | 20.9@23.5 |
| 24 hr | | | @24.5 | |
| 48 hr | 7.07.09 | 8.5@22.0 | 1379 1394 | 22.9@24.6 |

| 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 | | 5 | 5 | 5 | 8.6 | | 9.0 | 8.0 | | 8.2 | 20.2 | | 21.0 | 173 | | 188 |
| Control | | 5 | 5 | 5 | | | 9.0 | | | 8.2 | | | | | | |
| Control | | 5 | 5 | 4 | | | 9.0 | | | 8.2 | | | | | | |
| Control | | 5 | 5 | 5 | | | 9.0 | | | 8.2 | | | | | | |
| 100% | | 5 | 5 | 4 | 6.4 | | 8.7 | 7.8 | | 8.7 | 19.7 | | 20.0 | 1970 | | 1952 |
| 100% | | 5 | 4 | 4 | | | 8.7 | | | 8.7 | | | | | | |
| 100% | | 5 | 5 | 5 | | | 8.8 | | | 8.7 | | | | | | |
| 100% | | 5 | 4 | 4 | | | 8.8 | | | 8.7 | | | | | | |

21279 91-AUG-06-06-02

BIOLOGY Matrix: W-EFFLUENT
Date Collected: 5-AUG-1991 10:15:00.
Champion International
BSY-SN-CLD BSY-SN-FSH

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Measured/Loaded by | -- | -- | AJ | MF | AJ | MF | AJ | MF | AJ | MF | | AJ | MF | | AJ |
| Recorded by | -- | | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | | AJ | AJ | | AJ |

Investigators' Signatures

Reviewer

Water-quality Parameters

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | | | 0.0 | HACH | G. BUTTS |
| Lab Tot. Resid. Cl2: | | | 0.0 | HACH | MF |
| Alkalinity: | 130 | 75 | 300 | Hach | AJ |
| Hardness: | 140 | 105 | 100 | Hach | AJ |
| Total Ammonia: | 0.0 | 1.32 | 7.2 | Hach | AJ/MF |

Ammonia meter slope: _____

# DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: CHAMPION INTERNATIONAL
Address/City: CANTONMENT
County: ESCAMBIA
Contact/District: GLEN BUTTS / NW
NPDES Permit #: FL0002526 Outfall #: 001

Sample Collection: Date 8-5-91 Time 1015
Test Beginning: Date 8-6-91 Time 1115
Test Ending: Date 8-8-91 Time 1045
Test Organism: NOTROPIS LEEDSI
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 | 10/7909 | 9.1@20.5 | 1331@22.9 @1351 | 20.5@23.5 |
| 24 hr | 7@7909 | 8.9@21.5 | 1379@24.0 1400 | 22.0@24.7 |
| 48 hr | 7@7909 | 8.8@22° | 1374@24.5 @1347 | 22.2@24.6 |

| 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 | 86 | 5 | 5 | 5 | 8.4 | 8.1 | 8.7 | 7.8 | 8.1 | 8.3 | 21.1 | 21.0 | 21.0 | | | |
| Control | 42 | 5 | 5 | 5 | 8.4 | 8.1 | 8.7 | 7.8 | 8.1 | 8.3 | | | | 246 | 246 | 250 |
| 100% | 3 | 5 | 5 | 5 | 5.8 | 8.0 | 7.8 | 7.8 | 8.3 | 8.4 | 19.3 | 21.0 | 21.0 | | | |
| 100% | 50 | 5 | 5 | 5 | 5.8 | 7.9 | 7.8 | 7.8 | 8.3 | 8.5 | | | | 1953 | 2070 | 2110 |
| Measured/Loaded by: | | MF | AJ | AJ | MF | AJ | AJ | MF | AJ | AJ | MF | MF | AJ | MF | MF | AJ |
| Recorded by: | | [illegible] | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ | AJ |

Investigators' Signatures

Reviewer

Water-quality Parameters

| | Well Water | Cond. Water | Sample | Method | Measured by |
|---|---|---|---|---|---|
| Field Tot. Resid. Cl2: | LAB BLANK TR Cl2 = 0.0 | | 0.0 | Hach | C.B. |
| Lab Tot. Resid Cl2: | | | 0.0 | Hach | MF |
| Alkalinity: | 130 | 75 | 103 | Hach | AJ |
| Hardness: | 140 | 105 | 103 | Hach | AJ |
| Total Ammonia: | 0.0 | 1.32 | 7.2 | Hach | MF/AJ |

Ammonia meter slope: _____