


Bioassays of

**Stone Container Corporation**

Jacksonville, Duval County, Florida

NPDES #FL0000400

Sampled 4/5/99

June 1999

**Biology Section**

**Division of Administrative & Technical Services**

Comprehensive Quality Assurance Plan #870346G

Bioassays of

# Stone Container Corporation

Jacksonville, Duval County, Florida

NPDES #FL0000400

**Biology Section**
**Bureau of Laboratories**
**June 1999**

## Introduction

Stone Container Corporation, 9469 Eastpoint Road, Jacksonville, Duval County, Florida, NPDES #FL0000400, tests performed on 6 to 8 April, 1999.

This paper mill functions as a recycle mill deriving its raw material from recycled paper products. The facility's wastewater treatment system has a design flow of 20 MGD and an annual average flow of 8 MGD. The wastewater treatment process includes grit removal, primary clarification, and then aeration in two 3.5–acre unlined ponds and one 60–acre unlined aeration-stabilization basin. Effluent is discharged to the St. Johns River (facility summary provided by Heather Wehry, FDEP, Jacksonville).

The toxicity tests discussed in this report were performed in accordance with methods described by Weber, 1993, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 4th Edition, EPA/600/4-90/027F.

## Results and Discussion

The FDEP Biology Section performed two 48-hour static acute screening toxicity bioassays on a sample of effluent from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. Test results did not show toxicity (Table 1).

Total residual chlorine (TRC) was not measured in the field and was <0.03 mg/L in the laboratory. Total ammonia was not detected in the sample. Further chemical analyses were performed on the sample and several metals were identified (Table 2).

## Conclusion

The sample of effluent collected from this facility on April 5, 1999, did not show toxicity.

**Table 1.** Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Stone Container Corporation Paper Mill, Jacksonville, Duval County, Florida, NPDES Permit #FL0000400, performed on 6 to 8 April, 1999.

| | | | | | |
|---|---|---|---|---|---|
| Facility: | Stone Container Corporation | | NPDES # | FL0000400 | Facility Type: Paper Mill |
| Location: | 9469 Eastpoint Road, Jacksonville | | Contact/District: | Heather Wehry/Northeast | |
| County: | Duval | | Test type: | static acute screen | |
| Sample Collection Date: | 4/5/99 | Time: 1300 | # tests: | 2 | Receiving Water: St. Johns River |
| Test Beginning Date: | 4/6/99 | Time: 1500 | Chlorination Type: | nonchlorinated | |
| Test Ending Date: | 4/8/99 | Time: 1500 | | | Page 1 of 1 |

Organism: *Ceriodaphnia dubia* Life stage: < 24 hours old

| Concentrations | Sample/Diluent Volume(mL) | SURVIVAL # Alive 0 hr | 24 hr | 48 hr | pH 0 hour | 24 hour | 48 hour | Temperature[A] 0 hour | 24 hour | 48 hour | Dissolved Oxygen 0 hour | 24 hour | 48 hour | Conductivity µmhos/cm 0 hour | 48 hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control A | 0/20 | 5 | 5 | 5 | 8.1 | - | 7.8 | 24.8 | - | 24.6 | 7.6 | - | 7.3 | 166 | 200 |
| Control B | 0/20 | 5 | 5 | 5 | - | - | 7.8 | - | - | 24.5 | - | - | 7.3 | - | 200 |
| Control C | 0/20 | 5 | 5 | 5 | - | - | 8.0 | - | - | 24.4 | - | - | 7.4 | - | 185 |
| Control D | 0/20 | 5 | 5 | 5 | - | - | 8.1 | - | - | 24.3 | - | - | 7.4 | - | 190 |
| 100% A | 20/0 | 5 | 5 | 5 | 8.1 | - | 8.4 | 25.1 | - | 24.7 | 6.9 | - | 7.0 | 1617 | 1480 |
| 100% B | 20/0 | 5 | 5 | 5 | - | - | 8.5 | - | - | 24.6 | - | - | 6.8 | - | 1575 |
| 100% C | 20/0 | 5 | 5 | 5 | - | - | 8.5 | - | - | 24.5 | - | - | 6.5 | - | 1555 |
| 100% D | 20/0 | 5 | 5 | 5 | - | - | 8.4 | - | - | 24.4 | - | - | 6.5 | - | 1580 |

[A] Temperature of test incubator #2 and test room were continuously recorded on strip chart recorders.
Incubator #2 temperature range for the test period was 24.5-25.5°C.
Test room temperature range for the test period was 24.0-25.0°C.

Organism: *Cyprinella leedsi* Age: 12 days

| Concentrations | Sample/Diluent Volume(mL) | SURVIVAL # Alive 0 hr | 24 hr | 48 hr | pH 0 hour | 24 hour | 48 hour | Temperature[B] 0 hour | 24 hour | 48 hour | Dissolved Oxygen 0 hour | 24 hour | 48 hour | Conductivity µmhos/cm 0 hour | 48 hour |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Control A | 0/500 | 5 | 5 | 5 | 7.8 | 8.4 | 8.5 | 24.8 | 24.0 | 23.5 | 7.1 | 7.5 | 8.0 | 243 | 295 |
| Control B | 0/500 | 5 | 5 | 5 | 7.8 | 8.4 | 8.5 | 24.7 | 23.8 | 23.5 | 7.1 | 7.8 | 8.0 | 249 | 280 |
| Control C | 0/500 | 5 | 5 | 5 | 7.8 | 8.4 | 8.5 | 24.7 | 23.8 | 23.3 | 7.2 | 7.8 | 8.0 | 250 | 290 |
| Control D | 0/500 | 5 | 5 | 5 | 7.8 | 8.4 | 8.5 | 24.6 | 23.8 | 23.4 | 7.3 | 7.9 | 8.0 | 250 | 290 |
| 100% A | 500/0 | 5 | 4 | 4 | 8.1 | 8.5 | 8.3 | 24.6 | 24.4 | 23.8 | 6.6 | 7.1 | 6.6 | 1621 | 1725 |
| 100% B | 500/0 | 5 | 5 | 5 | 8.1 | 8.5 | 8.4 | 24.6 | 24.3 | 23.5 | 6.6 | 7.0 | 7.0 | 1673 | 1720 |
| 100% C | 500/0 | 5 | 5 | 5 | 8.1 | 8.5 | 8.4 | 24.6 | 24.2 | 23.5 | 6.5 | 7.1 | 7.0 | 1670 | 1755 |
| 100% D | 500/0 | 5 | 5 | 5 | 8.1 | 8.4 | 8.4 | 24.6 | 24.0 | 23.5 | 6.4 | 7.1 | 7.0 | 1679 | 1755 |

[B] Temperature of test incubator #3 and test room were continuously recorded on strip chart recorders.
Incubator #3 temperature range for the test period was 25.5-26.5°C.
Test room temperature range for the test period was 24.0-25.0°C.

| Total Residual CL2 | mg/L | Method |
|---|---|---|
| 100% sample Field: | not measured | |
| 100% sample Lab: | 5.75 | DR-100 |

| Ammonia | Total (mg/L) | Unionized (mg/L) |
|---|---|---|
| Control Water (fish): | <0.017 | <0.017 |
| Control Water (20% DMW) (cladocerans): | <0.017 | <0.017 |
| 100% Sample: | <0.017 | <0.017 |

| Alk & Hardness | Alkalinity (mg/L) | Hardness (mg/L) |
|---|---|---|
| Control Water (fish): | 130 | 125 |
| Control Water (20% DMW) (cladocerans): | 80 | 85 |
| 100% Sample: | 375 | 200 |

| Salinity* | (ppt) |
|---|---|
| Control Water (fish): | 0 |
| Control Water (20% DMW) (cladocerans): | 0 |
| 100% Sample: | <1 |

*Salinity based on conductivity and temperature measurements.

**Table 2. Results of chemical analyses on the sample of effluent from the Stone Container Corporation Paper Mill sampled on April 5, 1999.**

### Metals

| | | |
|---|---|---|
| Aluminum | 278 | µg/L |
| Calcium | 143 | mg/L |
| Copper | 3.8 | µg/L |
| Iron | 130 | µg/L |
| Lead | 0.27 | µg/L[I] |
| Magnesium | 25.6 | mg/L |
| Zinc | 19 | µg/L[I] |

### Base, Neutral, & Acid Extractable Organics

None Detected

### Pesticides

None Detected

[I] Value reported is less than the practical quantitation limit and greater than or equal to the minimum detection limit.

# FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Stone Container Corp.
County: Duval
Contact / District: H. Wehry / Northeast
NPDES Permit #: FL0000406
LIMS Sample #: 372491 LIMS Job #: TLH-1999-04-06-01
sample log 4/13/99 DW
Test Type: (Screening) Definitive
(Static) Static Renewal | Flow-through
Test Number: 1 of 1
Incubator #2 Temperature Range 24.5-25.5 °C
Room Temperature Range 24.0-25.0 °C

Sample Collection: Date 4/5/99 Time 13:00
Test Beginning: Date 4/6/99 Time 15:00
Test Ending: Date 4/6/99 Time 15:00
Organism Batch #: 20 Diluent Batch #: 14
Organism Age: <24 hrs SRT toxicant batch #: N/A
Test organism: Ceriodaphnia dubia

Remarks: Initial D.O. was 1.2 mg/L. After aeration for 30 minutes aeration D.O. was 6.4 mg/L.

| | | Number Live | | | pH | | | Temperature (°C) | | | D.O. (mg/L) | | | UNCORRECTED Cond. (mmhos/cm) Cond. (µmhos/cm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conc. | Chamber # | 0 hr | 24 h | 48 h | 0 hr | 24 h | 48 h | 0 hr | 24 h | 48 h | 0 hr | 24 h | 48 h | 0 hr | 24 h | 48 h |
| C+L | A | 5 | 5 | 5 | 8.1 | | 7.8 | 24.8 | | 24.6 | 7.6 | | 7.3 | 166 | | 200 |
| C+L | B | 5 | 5 | 5 | | | 7.8 | | | 24.5 | | | 7.3 | | | 200 |
| C+L | C | 5 | 5 | 5 | | | 8.0 | | | 24.4 | | | 7.4 | | | 185 |
| C+L | D | 5 | 5 | 5 | | | 8.1 | | | 24.3 | | | 7.4 | | | 190 |
| 100% | A | 5 | 5 | 5 | 8.1 | | 8.4 | 25.1 | | 24.1 | 6.9 | | 7.0 | 1617 | | 1480 |
| 100% | B | 5 | 5 | 5 | | | 8.5 | | | 24.6 | | | 6.8 | | | 1575 |
| 100% | C | 5 | 5 | 5 | | | 8.5 | | | 24.5 | | | 6.5 | | | 1555 |
| 100% | D | 5 | 5 | 5 | | | 8.4 | | | 24.4 | | | 6.5 | | | 1580 |
| | | | | (*) | D.O. fell to 4.6 after sample loading. FW 4/6/99 | | | | | | | | | | | |
| measured by: | | AS | AS | mf | AS | | CH | AS | | CH | AS | | CH | AS | | CH |
| recorded by: | | FW | AS | mf | FW | | AS | FW | | AS | FW | | AS | FW | | AS |

Investigators' Signatures
Tom Wenholt
Amber S. Sumrall
Marshall Faircloth
Courtesy Hold

| | Salt Water / Well Water | Water Quality Parameters: 20% Min Water | Sample | Method | Measured by | Verified by |
|---|---|---|---|---|---|---|
| Field Total Residual Cl2 (mg/L): | | | Not measured | | | FW |
| Lab Total Residual Cl2 (mg/L): | — | <0.03 | <0.03 | DR-100 | CH | FW |
| Alkalinity (mg/L as $CaCO_3$): | — | 80 | 35 | Hach | CH | FW |
| Hardness (mg/L as $CaCO_3$): | — | 85 | 200 | Hach | CH | FW |
| Total ammonia (mg/L as N): | — | <0.017 | <0.017 | Denver | MF | FW |
| Salinity: | — | — | 0 | YSI | AS | FW |

reviewer form updated 5/22/98

# FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Stone Container Corp
County: Duval
Contact / District: H. Wehry / Northeast
NPDES Permit #: FL0000400
LIMS Sample #: 37749 / LIMS Job #: TCH-1999-04-06-01
sample log 4/5/99 DO

Sample Collection: Date 4/5/99 Time 13:00
Test Beginning: Date 4/6/99 Time 15:00
Test Ending: Date 4/9/99 Time 15:00
Organism Batch #: 24 Diluent Batch #: Well
Organism Age: 11 days SRT toxicant batch #: N/A

Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 2
Incubator # 3 Temperature Range 25.5-26.5°C
Room Temperature Range 24.0-25.0°C

Test organism: Cyprinella leedsi

Remarks:
Initial D.O. was 1.2 mg/L. After aeration for 30 minutes D.O. was 6.4 mg/L

| Conc. | Chamber # | Number Live 0 hr | 24 h | 48 h | pH 0 hr | 24 h | 48 h | Temperature (°C) 0 hr | 24 h | 48 h | D.O. (mg/L) 0 hr | 24 h | 48 h | UNCORRECTED Cond. (mmhos/cm) (Cond. (µmhos/cm)) 0 hr | 24 h | 48 h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C+1 A | F1 | 5 | 5 | 5 | 8.1 | 8.4 | 8.5 | 24.5 | 24.0 | 23.5 | 7.1 | 7.5 | 8.0 | 243 | 290 | 295 |
| C+1 B | F2 | 5 | 5 | 5 | 8.1 | 8.4 | 8.5 | 24.7 | 23.8 | 23.5 | 7.1 | 7.8 | 8.0 | 249 | 260 | 280 |
| C+1 C | F3 | 5 | 5 | 5 | 8.2 | 8.4 | 8.5 | 24.7 | 23.8 | 23.3 | 7.2 | 7.8 | 8.0 | 250 | 270 | 290 |
| C+1 D | F4 | 5 | 5 | 5 | 8.2 | 8.4 | 8.5 | 24.6 | 23.8 | 23.4 | 7.3 | 7.9 | 8.0 | 250 | 270 | 290 |
| 100% A | F5 | 5 | 4 (10) | 4 | 8.1 | 8.5 | 8.3 | 24.6 | 24.4 | 23.8 | 6.6 | 7.1 | 6.6 | 1621 | 1630 | 1725 |
| 100% B | F6 | 5 | 5 | 5 | 8.1 | 8.5 | 8.4 | 24.6 | 24.3 | 23.5 | 6.6 | 7.0 | 7.0 | 1673 | 1660 | 1726 |
| 100% C | F7 | 5 | 5 | 5 | 8.1 | 8.5 | 8.4 | 24.6 | 24.2 | 23.5 | 6.5 | 7.1 | 7.0 | 1670 | 1650 | 1755 |
| 100% D | F8 | 5 | 5 | 5 | 8.1 | 8.4 | 8.4 | 24.6 | 24.0 | 23.5 | 6.4 | 7.1 | 7.0 | 1679 | 1690 | 1755 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | 7.8 | (A) | wrong readings | | | | | | | | | |
| | | | | | 7.8 | | written. Correct | | | | | | | | | |
| | | | | | 7.8 | | readings are | | | | | | | | | |
| | | | | | 7.8 | | written here. | | | | | | | | | |
| | | | | | | | FW - 4/6/99 | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | (*) | D.O. fell to 4.6 mg/L after loading. | | | | | | | | | | | |
| | | | | | Sample was placed on continuous aeration. FW 4/6/99 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| measured by: | | FW | CH | AS | AS | CH | CH | AS | CH | CH | AS | CH | CH | AS | CH | CH |
| recorded by: | | MF | CH | AS | FW | AS | AS | FW | AS | AS | FW | AS | AS | FW | AS | AS |

Investigators' Signatures

Tara Marshall
Amber E. Stumpf
Marshall Fairbell
Courtesy Head

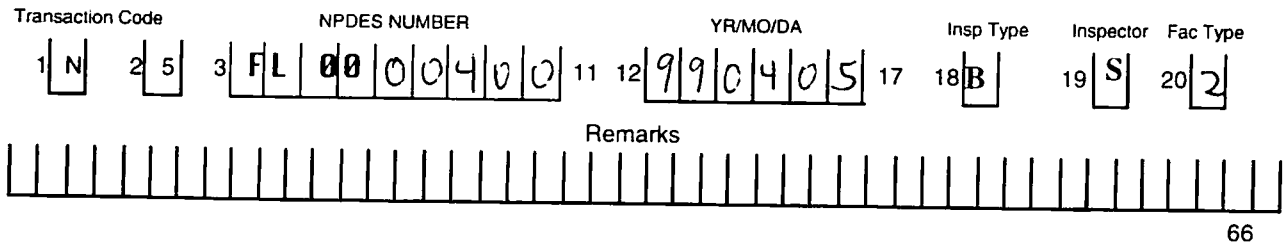
reviewer

form updated 5/22/98

| Water Quality Parameters | Salt Water: Well Water | 20% Min Water | Sample | Method | Measured by | Verified by |
|---|---|---|---|---|---|---|
| Field Total Residual Cl2 (mg/L): | | | Not measured | | | FW |
| Lab Total Residual Cl2 (mg/L): | <0.03 | — | <0.03 | DR-700 | CH | FW |
| Alkalinity (mg/L as $CaCO_3$): | 130 | — | 375 | Hach | CH | FW |
| Hardness (mg/L as $CaCO_3$): | 175 | — | 200 | Hach | CH | FW |
| Total ammonia (mg/L as N): | <0.017 | — | <0.017 | DENVER | MF | FW |
| Salinity: | — | — | 0 | YSI | AS | FW |

**The Bioassay of the Stone Container Corporation effluent sampled on April 5, 1999, NPDES #FL0000400.**

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)




**The Priority Pollutants Analysis for Bioassay of the Stone Container Corporation effluent sampled on April 5, 1999, NPDES #FL0000400.**

Fill Out This Section For All Surface Water Discharger Inspections (CEI, CSI, CBI, PAI, XSI - RI Optional)

