

Bioassays of

John's Manville Manufacturing

Green Cove Springs, Clay County, Florida

NPDES #FL0000493

Sampled 2/28/00

November 2000

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Introduction

John's Manville Manufacturing, 965 Highway 16 East, Green Cove Springs, Clay County, Florida, NPDES #FL0000493, tests performed on 29 February to 2 March 2000.

This extruded PVC pipe manufacturing facility's wastewater treatment plant has a design flow of 5,000 GPD and an average flow of <1,000 GPD. The flow during the last inspection was very low. Treatment of wastewater includes aeration, clarification, aerobic digestion, chlorination for disinfection and dechlorination. Treated effluent is discharged into the Class III waters of the St. Johns River.

The production portion of the plant has been closed. The facility may be maintained as a storage/distribution center but will not have employees on site (facility summary prepared by Kathleen Gerard, 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 less than the minimum detection limit (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 February 28, 2000, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the John's Manville Manufacturing Facility WWTP, Green Cove Springs, Clay County, Florida, NPDES Permit #FL0000493, performed on 29 February to 2 March, 2000.

Facility:	**John's Manville Manufacturing WWTP**			**NPDES #**	**FL0000493**	Facility Type:	Wastewater
Location:	965 Highway 16 East			Contact/District:	Pat O'conner		Treatment Plant
County:	Clay			Test type:	static acute screen		
Sample Collection Date:	2/28/00	Time:	1015	# tests:	2	Receiving Water:	St. Johns River
Test Beginning Date:	2/29/00	Time:	1340	Chlorination Type:	chlorinated		
Test Ending Date:	3/2/00	Time:	1345		Sample collected after plant dechlorination unit		**Page 1 of 1**

Total Residual CL2	mg/L	Method
100% sample Field:	not measured	
100% sample Lab:	<0.03	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

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity umhos/cm	
Concentration	Volume(mL)	0 hr	24 hr	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 A	0/20	5	5	5	8.2	-	8.2	24.4	-	24.4	7.9	-	7.6	170	230
Control B	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.8	-	210
Control C	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.9	-	210
Control D	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.9	-	205
100% A	20/0	5	5	5	7.1	-	7.8	25.0	-	24.3	7.4	-	7.8	560	640
100% B	20/0	5	5	5	-	-	7.8	-	-	24.3	-	-	7.8	-	675
100% C	20/0	5	5	5	-	-	7.7	-	-	24.3	-	-	7.9	-	670
100% D	20/0	5	5	5	-	-	7.7	-	-	24.3	-	-	7.9	-	640

[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 26.0-27.0°C.
Test room temperature range for the test period was 23.0-25.5°C.

Alk & Hardness	kalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	142	127
Control Water (20% DMW) (cladocerans):	86	83
100% Sample:	37	158

Salinity[C]	(ppt) estimated
Control Water (fish):	0
Control Water (20% DMW) (cladocerans):	0
100% Sample:	0

[C] Salinity based on conductivity and temperature measurements.

Organism: ***Cyprinella leedsi*** Age: 11 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity umhos/cm	
Concentration	Volume(mL)	0 hr	24 hr	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 A	0/500	5	5	5	7.8	8.2	8.3	25.2	24.7	24.2	7.6	7.4	7.7	255	265
Control B	0/500	5	5	5	7.9	8.3	8.4	25.3	25.7	24.3	7.7	7.4	7.7	260	275
Control C	0/500	5	5	5	7.9	8.3	8.4	25.6	25.0	24.9	7.6	7.5	7.8	260	265
Control D	0/500	5	5	5	7.9	8.3	8.5	26.0	25.1	24.1	7.6	7.6	7.5	260	265
100% A	500/0	5	5	5	7.1	7.4	7.6	25.1	25.5	24.3	7.6	6.8	7.8	570	580
100% B	500/0	5	5	5	7.1	7.3	7.6	25.1	24.9	24.2	7.5	6.8	7.4	575	595
100% C	500/0	5	5	5	7.1	7.3	7.5	25.1	25.0	24.3	7.5	6.8	7.5	565	600
100% D	500/0	5	5	5	7.1	7.3	7.5	25.1	24.6	24.3	7.4	6.7	7.2	575	615

[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 24.5-25.5°C.
Test room temperature range for the test period was 23.0-25.5°C.

Table 2. Results of chemical analyses on the sample of effluent from the John's-Manville Manufacturing WWTP sampled on February 28, 2000.

Metals

Aluminum	72	µg/L[I]
Cadmium	0.073	µg/L[I]
Calcium	39.7	mg/L
Chromium	2.4	µg/L[I]
Copper	7.3	µg/L[I]
Iron	429	µg/L
Lead	0.66	µg/L[I]
Magnesium	16.9	mg/L
Nickel	2.3	µg/L[I]
Zinc	65	µg/L

Base, Neutral, and Acid Extractable Organics

None detected

Semi-volatile Organics

None detected

Pesticides

None detected

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

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: John Manville
County: CLAY
Contact / District: Pat O'Connor / NE-DIST
NPDES Permit #: FL00 00493
LIMS Sample #: 437838 LIMS Job #: TLH2000-02-29-54-01
sample log 2-2-00
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 1 of 2

Sample Collection: Date 2/28/00 Time 1015
Test Beginning: Date 2/29/00 Time 1340
Test Ending: Date 3/2/00 Time ~~1400~~ 1500 ?
Organism Batch #: 14 Diluent Batch #: Well
Organism Age: 11 days SRT toxicant batch #: N/A
Test organism: C. dubia

Remarks: 3/2/00 DPH LC50 > 100%

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
CTRL A	D1	5	5	5	7.8	8.2	8.3	25.2	24.7	24.2	7.6	7.4	7.7	255	275	265
CTRL B	D2	5	5	5	7.9	8.3	8.4	25.5	25.7	24.3	7.7	7.4	7.7	260	270	275
CTRL C	D3	5	5	5	7.9	8.3	8.4	25.6	25.0	24.9	7.6	7.5	7.8	260	260	265
CTRL D	D4	5	5	5	7.9	8.3	8.5	26.0	25.1	24.1	7.6	7.6	7.5	260	260	265
100 A	D5	5	5	5	7.1	7.4	7.6	25.1	25.5	24.3	7.6	6.8	7.8	570	590	580
100 B	D6	5	5	5	7.1	7.3	7.6	25.1	24.9	24.2	7.5	6.8	7.4	575	575	595
100 C	D7	5	5	5	7.1	7.3	7.5	25.1	25.0	24.3	7.5	6.8	7.5	565	590	600
100 D	D8	5	5	5	7.1	7.3	7.5	25.1	24.6	24.3	7.4	6.7	7.2	575	590	615
measured by:		DPH	SG	SG	SG	SG	DPH	SG	SG	DPH	SG	SG	DPH	SG	SG	DPH
recorded by:		SG	SG	DPH	DPH	DPH	SG	DPH	DPH	SG	DPH	DPH	SG	DPH	DPH	SG

Investigators' Signatures
Shannon Gerardi
Debra Parker Hayes
Marshall Faircloth

Temperature Range °C
Incubator # 3 24.5°-25.5°C
Room B246 23.0°-25.5°C

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			—	—	N/A	SG
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR-100	DPH	DPH
Alkalinity (mg/L as $CaCO_3$):	172		37	HACH	SG/DPH	DPH
Hardness (mg/L as $CaCO_3$):	127		158	HACH	SG/DPH	DPH
Total ammonia (mg/L as N):	<0.017		<0.017	Orion	MF/DPH	DPH
Salinity:	0		~20	YSI	DPH/SG	DPH

reviewer form updated 3/3/99

DPH 2/22/00

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: John-Manville
County: CLAY
Contact / District: Pat O'Connor / NE-DIST
NPDES Permit #: FL00 00493
LIMS Sample #: 437838 LIMS Job #: RH2000-02-29-54-01
sample log 3-2-00
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 2 of 2

Sample Collection: Date 2/28/00 Time 1015
Test Beginning: Date 2/29/00 Time 1340
Test Ending: Date 3/2/00 Time ~~1500~~ 1330
Organism Batch #: 11 Diluent Batch #: DMW #6
Organism Age: < 24 hrs. SRT toxicant batch #: N/A
Test organism: C. dubia

Remarks: 3/2/00 DPH LC50 >100%

Conc.	Chamber #	Number Live 0 hr	Number Live 24 h	Number Live 48 h	pH 0 hr	pH 24 h	pH 48 h	Temperature (°C) 0 hr	Temperature (°C) 24 h	Temperature (°C) 48 h	D.O. (mg/L) 0 hr	D.O. (mg/L) 24 h	D.O. (mg/L) 48 h	UNCORRECTED Cond. (mmhos/cm) (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
CTRL A	A	5	5	5	8.2	—	8.2	24.4	—	24.4	7.9	—	7.6	170	—	230
CTRL B	B	5	5	5	—	—	8.3	—	—	24.3	—	—	7.8	—	—	210
CTRL C	C	5	5	5	—	—	8.3	—	—	24.3	—	—	7.9	—	—	210
CTRL D	D	5	5	5	—	—	8.3	—	—	24.3	—	—	7.9	—	—	205
100 A	A	5	5	5	7.1	—	7.8	25.0	—	24.3	7.4	—	7.8	660	—	640
100 B	B	5	5	5	—	—	7.8	—	—	24.3	—	—	7.8	—	—	675
100 C	C	5	5	5	—	—	7.7	—	—	24.3	—	—	7.9	—	—	670
100 D	D	5	5	5	—	—	7.7	—	—	24.6	—	—	7.9	—	—	640
measured by:		SG	SG	DPH	SG	—	DPH	SG	—	DPH	SG	—	DPH	SG	—	DPH
recorded by:		DPH	SG	DPH	DPH	—	SG	DPH	—	SG	DPH	—	SG	DPH	—	SG

Investigators' Signatures
Shannon Gerardy
J. W. Perkins
Marshall Faircloth

Temperature Range °C
Incubator # 2 26.0° – 27.0°C
Room B246 23.0° – 25.5°C

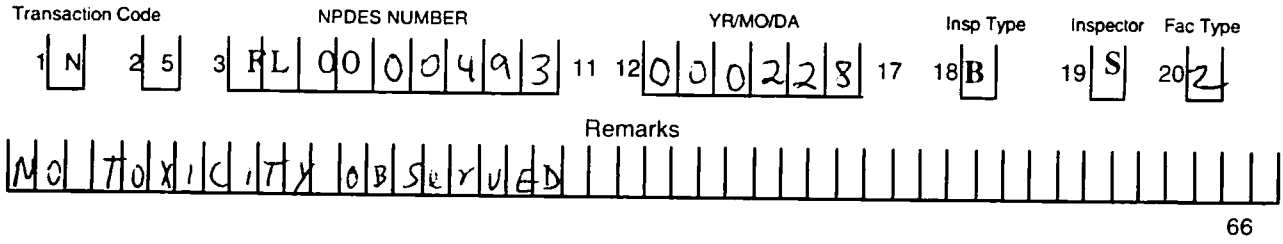
Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):	[redacted]		—	—	N/A	SG
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	HDR-100	MF/DPH	DPH
Alkalinity (mg/L as $CaCO_3$):		86	37	AACH	SG/DPH	DPH
Hardness (mg/L as $CaCO_3$):		83	158	HACH	SG/DPH	DPH
Total ammonia (mg/L as N):		<0.017	<0.017	Denver	MF/DPH	DPH
Salinity:		0	~~20~~	451	SG/DPH	DPH

reviewer
form updated 3/3/99

DPH 3/2/00

The Bioassay of the John's Manville Manufacturing WWTP effluent sampled on February 28, 2000, NPDES# FL0000493.

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



The Priority Pollutants Analysis for the Bioassay of the John's Manville Manufacturing WWTP effluent sampled on February 28, 2000, NPDES# FL0000493.

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

