

Bioassays of

Tenneco Packaging

Clyattville, Lowndes County, Georgia

NPDES #FL0000281

Sampled 11/12/96

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February 1997

Biology Section
Division of Administrative & Technical Services
Comprehensive Quality Assurance Plan #870346G

Bioassays of

Tenneco Packaging

Clyattville, Lowndes County, Georgia

NPDES #FL0000281

Biology Section
Bureau of Laboratories
February 1997

Introduction

Tenneco Packaging, SR 31, Clyattville, Lowndes County, Georgia, NPDES #FL0000281, tests performed on 13 to 15 November, 1996.

This paper mill was formerly known as Packaging Corporation of America. The facility's wastewater treatment process has a design flow of 14 MGD and an annual average flow of 13.9 MGD. The facility has submitted a proposal to increase the design flow to 55 MGD with a concurrent bypass of Jumping Gully Creek through approximately 13,000 linear feet of 48" transmission pipe which would connect to the existing submerged diffusers in the Withlacoochee River. Wastewater receives primary treatment, which includes bar-screening, sedimentation-clarification, and a sludge lagoon, and secondary treatment. Secondary treatment is via seven ponds covering approximately 850 acres. There are four anaerobic/facultative ponds, the first and fourth of which have nutrients added. There is also an aerated stabilization basin, a 350 acre facultative impoundment, and a final polishing pond. Effluent from the polishing pond is discharged to Jumping Gully Creek with final discharge via diffusers to the Withlacoochee River (facility summary provided by Teresa Valdespino, 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. Two additional 48-hour screening bioassays were performed on aliquots of the sample that were dechlorinated in the laboratory by the addition of 0.03 mL of 0.025N sodium thiosulfate per liter of sample.

The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. Neither the chlorinated nor the dechlorinated test results showed toxicity in this sample (Table 1).

Total residual chlorine of the 100% whole effluent sample was 0.03 mg/L in the laboratory and was not measured in the field. Total residual chlorine (TRC) of the dechlorinated aliquot of sample was measured at < 0.03 mg/L. These values are probably the result of interfering substances in the sample and not from chlorine, since chlorine is not used in the manufacturing process or in the wastewater treatment process. Total ammonia was not detected in the sample in the laboratory; however, an ammonia concentration of 0.062 mg/L was detected in an aliquot of sample tested by the FDEP Chemistry section. 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 November 12, 1996, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from Tenneco Packaging (F.K.A. Packaging Corporation of America), Clyattville , Lowndes County, Florida, NPDES# FL0000281, performed on 13 to 15 November, 1996.

Facility:	**Tenneco Packaging**		**NPDES #**	**FL0000281**	Facility Type: **Paper Mill**
Location:	SR 31, Clyattville		Contact/District:	Tim McKelvey/Northeast	
County:	Lowndes County (Georgia)		Test type:	static acute screen	
Sample Collection Date:	11/12/96	Time: 1130	# tests:	2	Receiving Water: Jumping Gully Creek to
Test Beginning Date:	11/13/96	Time: 1450	Chlorination Type:	Non-chlorinated	Withlacoochee River
Test Ending Date:	11/15/96	Time: 1355			**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	0.03	DR-100
Dechlorinated sample:	< 0.03	DR-100

Ammonia	Total (mg/L)	Unionized (mg/L)
Control Water (fish):	<0.017	<0.017
20% Dilute Mineral Water (cladocerans):	<0.017	<0.017
100% Sample:	<0.017	<0.017

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	125	130
20% Dilute Mineral Water (cladocerans):	75	85
100% Sample:	60	135

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

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	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	4	8.1	-	8.4	23.7	-	24.4	7.8	-	7.8	165	200
Control B	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.9	-	195
Control C	0/20	5	5	5	-	-	8.3	-	-	24.3	-	-	7.9	-	190
Control D	0/20	5	5	5	-	-	8.3	-	-	24.2	-	-	7.9	-	200
100% A	20/0	5	5	5	8.3	-	8.9	24.1	-	24.3	8.0	-	7.9	1530	1690
100% B	20/0	5	5	5	-	-	9.0	-	-	24.4	-	-	7.8	-	1715
100% C	20/0	5	5	5	-	-	9.0	-	-	24.4	-	-	7.8	-	1700
100% D	20/0	5	5	5	-	-	9.0	-	-	24.1	-	-	7.9	-	1700
[B]Decl100% A	20/0	5	5	5	8.3	-	9.0	24.5	-	24.4	8.0	-	7.9	1605	1655
Decl100% B	20/0	5	5	5	-	-	9.0	-	-	24.5	-	-	7.8	-	1650
Decl100% C	20/0	5	5	5	-	-	9.0	-	-	24.4	-	-	7.8	-	1655
Decl100% D	20/0	5	5	5	-	-	9.0	-	-	24.1	-	-	7.8	-	1650

[B]Decl = Dechlorinated sample. See report text for explaination.

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 24.4-25.6°C.

Organism: ***Cyprinella leedsi*** Age: 10 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[D]			Dissolved Oxygen			Conductivity Uncorrected µmhos/cm	
Concentrations	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	8.1	8.2	8.4	24.6	23.4	25.0	8.0	7.8	7.9	245	265
Control B	0/500	5	5	5	8.1	8.2	8.4	24.3	23.4	25.2	8.0	7.7	7.9	245	260
Control C	0/500	5	5	5	8.1	8.3	8.4	25.0	23.4	25.1	8.0	7.6	7.8	245	260
Control D	0/500	5	5	5	8.1	8.3	8.4	24.2	23.5	25.3	8.0	7.7	7.9	245	265
100% A	500/0	5	5	4	8.3	8.6	8.8	25.0	25.3	25.2	8.4	7.5	7.8	1660	1650
100% B	500/0	5	5	5	8.3	8.6	8.8	24.5	25.5	25.1	8.3	7.5	7.7	1670	1715
100% C	500/0	5	5	5	8.3	8.6	8.8	24.3	25.5	25.3	8.4	7.6	7.9	1670	1730
100% D	500/0	5	5	5	8.3	8.6	8.8	25.1	25.5	24.1	8.4	7.6	7.7	1675	1730
[C]Decl100% A	500/0	5	5	5	8.3	8.6	8.8	25.1	23.4	25.3	8.3	7.5	7.9	1670	1755
Decl100% B	500/0	5	5	5	8.3	8.6	8.8	24.8	25.4	24.3	8.3	7.6	7.7	1670	1750
Decl100% C	500/0	5	5	5	8.3	8.6	8.8	24.8	25.4	25.0	8.2	7.6	7.8	1670	1735
Decl100% D	500/0	5	5	5	8.3	8.6	8.8	24.8	25.3	24.9	8.3	7.6	7.6	1670	1710

[C]Decl = Dechlorinated sample. See report text for explaination.

[D] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 24.0-25.0°C.

Table 2. Results of chemical analyses on the effluent from the Tenneco Packaging facility sampled on November 12, 1996.

Metals

Aluminum	319	µg/L[A]
Calcium	23.0	mg/L[A]
Copper	2	µg/L[I]
Iron	160	µg/L[A]
Magnesium	15.3	mg/L[A]
Zinc	6	µg/L[I]

Base, Neutral, & Acid Extractable Organics

none detected

A Value reported is the mean of two or more determinations.
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: Tennessee Packaging, Inc.
County: mf 11/25/97 correction ~~Duval~~ Lowndes Co. Georgia
Contact / District: Tim McKelvey / NorthEAST
NPDES Permit #: FL0000281
LIMS Sample #: 159501 **LIMS Job #:** 96-NOV-13-28
sample log 11-8-96
Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Test Number: 1 of 2

Sample Collection: Date 11-12-96 Time 1130
Test Beginning: Date 11-13-96 Time 1450
Test Ending: Date 11-15-96 Time 1355
Organism Batch #: 55 **Diluent Batch #:** 47
Organism Age: <24hours
Test Organism: Ceriodaphnia dubia

Remarks: Total residual chlorine was measured at 0.03mg/L. 0.03 mL of 0.25N Sodium thiosulfate was added per liter of sample for the dechlorinated test. TRC of dechlorinated sample was <0.03mg/L.

Instrument Calibrations:	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0 9.0 @ 9.0	22.1 @ 22.1	8.2 @ 25.0 °C	102.2 @ 92.8 994 @ 1001 @ 24.3 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	22.0 @ 22.0	8.7 @ 22.3 °C	103.0 @ 92.8 1004 @ 1001 @ 25.2 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	22.8 @ 22.8	8.2 @ 25.3 °C	102.1 @ 92.8 1003 @ 1001 @ 25.1 °C

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) Cond. (µmhos/cm) 0 hr	24 h	48 h
Control A	A	5	5	4/0	8.1		8.4	23.7		24.4	7.8		7.8	165		200
Control B	B	5	5	5			8.3	~~24.1~~		24.3	~~8.0~~		7.9			195
Control C	C	5	5	5			8.3	wrong cell DN		24.3	Dentry mmDN		7.9			190
Control D	D	5	5	5			8.3			24.2			7.9			200
100% A	A	5	5	5	8.3		8.9	24.1		24.3	8.0		7.9	1530		1650
100% B	B	5	5	5			9.0			24.4			7.8			1715
100% C	C	5	5	5			9.0			24.4			7.8			1700
100% D	D	5	5	5			9.0			24.1			7.9			1700
100% A dil	A	5	5	5	8.3		9.0	24.5		24.4	8.0		7.9	1605		1655
100% B dil	B	5	5	5			9.0			24.5			7.8			1650
100% C dil	C	5	5	5			9.0			24.4			7.8			1655
100% D dil	D	5	5	5			9.0			24.1			7.8			1650
Measured/Loaded by:		MF	DN	MF	MF	~~ND~~	JS	MF	~~ND~~	JS	MF	~~ND~~	JS	MF	~~ND~~	JS
Recorded by:		MF	DN	MF	DN	~~DN~~	CW	DN	~~DN~~	CW	DN	~~DN~~	CW	DN	~~DN~~	CW

Investigators' Signatures

Marshall Faircloth
Dawn Nicholson
Julie Shapo
A H Wolfe

reviewer form updated 4/01/96

Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			NOT MEASURED		
Lab Total Residual Cl2 (mg/L):	—	<0.03	0.03	DR-100	MF
Alkalinity (mg/L as $CaCO_3$):	—	20	180	HACH	DB
Hardness (mg/L as $CaCO_3$):	—	40	140	HACH	DB
Total ammonia (mg/L as N):	—	<0.017	<0.017	ORION	MF

Ammonia Meter #98136 Ammonia Meter Slope: -59.5 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Tenneco Packaging, Inc.
County: ~~Decatur~~ Lowndes Co. Georgia (MF 11-15-96 correction)
Contact / District: Tim McKelvey / Northeast
NPDES Permit #: FL0000281
LIMS Sample #: 159501 **LIMS Job #:** 96-NOV-13-28
sample log 11-18-96

Sample Collection: Date 11-12-96 Time 1130
Test Beginning: Date 11-13-96 Time 1450
Test Ending: Date 11-15-96 Time 1355
Organism Batch #: 86 **Diluent Batch #:** well
Organism Age: 10 days
Test Organism: Cyprinella leedsi

Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Test Number: 2 of 2

Remarks: 0.03mL of 0.25 N Sodium Thiosulfate added per liter of sample in the dechlorinated Test. TRC of dechlorinated sample was <0.03mg/L.

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	22.1 @ 22.1	8.2 @ 25.0 °C	102.2 @ 92.8
	9.0 @ 9.0			994 @ 100.1 @ 24.3 °C
24 hr	7.0 @ 7.0	22.0 @ 22.0	8.7 @ 22.3 °C	103.0 @ 92.8
	9.0 @ 9.0			1004 @ 1001 @ 25.2 °C
48 hr	7.0 @ 7.0	22.8 @ 22.8	8.2 @ 25.3 °C	102.1 @ 92.8
	9.0 @ 9.0			1003 @ 1001 @ 25.1 °C

*wrote in wrong column :DN 11-14-96

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) 0 hr	UNCORRECTED Cond. (mmhos/cm) 24 h	UNCORRECTED Cond. (mmhos/cm) 48 h
Control A	D9	5	5	5	8.1	8.2	8.4	24.6	23.4	25.0	8.0	7.8	7.9	245	255	265
Control B	D10	5	5	5	8.1	8.2	8.4	24.3	23.4	25.2	8.0	7.7	7.9	245	255	260
Control C	D11	5	5	5	8.1	8.3	8.4	25.0	23.4	25.1	8.0	7.6	7.8	245	260	260
Control D	D12	5	5	5	8.1	8.3	8.4	24.2	23.5	25.3	8.0	7.7	7.9	245	255	265
100% A	D13	5	5	4 (10)	8.3	8.6	8.8	25.0	25.3	25.2	8.4	7.5	7.8	1660	1685	1650
100% B	D14	5	5	5	8.3	8.6	8.8	24.5	25.5	25.1	8.3	7.5	7.7	1670	1670	1715
100% C	D15	5	5	5	8.3	8.6	8.8	24.3	25.5	25.3	8.4	7.6	7.9	1670	1700	1730
100% D	D16	5	5	5	8.3	8.6	8.8	25.1	25.5	24.1	8.4	7.6	7.7	1675	1695	1730
100% del A	D17	5	5	5	8.3	8.6	8.8	25.1	25.4	25.3	8.3	7.5	7.9	1670	1705	1755
100% del B	D18	5	5	5	8.3	8.6	8.8	24.8	25.4	24.3	8.3	7.6	7.7	1670	1680	1750
100% del C	D19	5	5	5	8.3	8.6	8.8	24.8	25.4	25.0	8.2	7.6	7.8	1670	1690	1735
100% del D	D20	5	5	5	8.3	8.6	8.8	24.8	25.3	24.5	8.3	7.6	7.6	1670	1690	1710
Measured/Loaded by:		DN	ND	MF	MF	ND	JS	MF	ND	JS	MF	ND	JS	MF	ND	JS
Recorded by:		MF	ND	DW	DN	DN	DW	DN	DN	DW	DN	DN	DW	DN	DN	DW

*DN 11-14-96

Investigators' Signatures
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Dennis Nicholson
Julie Shepp
J A Wolfe
reviewer

form updated 4/01/96

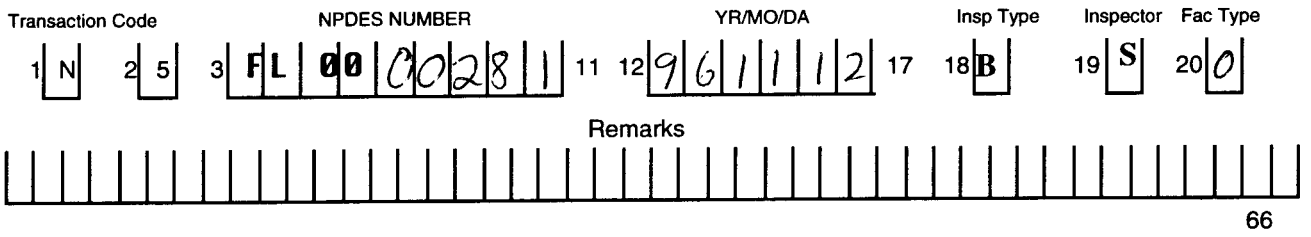
Water Quality Parameters

	Salt Water (Well Water)	20% Min Water	Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):			Not measured		
Lab Total Residual Cl2 (mg/L):	<0.03	—	0.03	DR-100	mf
Alkalinity (mg/L as $CaCO_3$):	130	—	140	HACH	DB
Hardness (mg/L as $CaCO_3$):	135	—	140	HACH	DB
Total ammonia (mg/L as N):	<0.017	—	<0.017	ORION	mf

Ammonia Meter #98136 Ammonia Meter Slope: -59.5 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Tenneco Packaging effluent sampled on November 12, 1996, NPDES #FL0000281.

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 Tenneco Packaging effluent sampled on November 12, 1996, NPDES #FL0000281.

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

