

Bioassays of

Lykes Pasco

Dade City, Pasco County, Florida

NPDES #FL0000485

Sampled 3/20/00

July 2000

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

Bioassays of

Lykes Pasco

Dade City, Pasco County, Florida

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Bureau of Laboratories
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Introduction

Lykes Pasco, 15000 US Highway 301 North, Dade City, Pasco County, Florida, NPDES #FL0000485, tests performed on 21 to 23 March 2000.

This industrial facility produces single strength and concentrated citrus juices, molasses, cattle feed, and terpenes. The wastewater consists of the process wastewater, cooling tower blowdown, boiler blowdown, and treated effluent from the sanitary wastewater treatment plant. The effluent is treated within an aeration lagoon followed by a clarifier, three settling ponds, and an aerated mixing pond. The undigested biological sludge, produced from the aeration lagoon and the clarifier treatment, is disposed of by land application. The effluent is discharged into Larkin Canal, which flows into Dade City Canal and then into the class III waters of the Withlacoochee River (facility summary provided by Eddie Hughes and Kelli Ford, FDEP, Tampa).

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 the Lykes Pasco. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results indicated that the sample was not toxic to the *C. dubia* or the *C. leedsi* test organisms. Both tests had 100% survival in the 100% sample concentration at forty-eight hours (Table 1). However, the *C. dubia* test was invalidated due to excessive control mortality (20% mortality; protocol allows 10% mortality).

Total residual chlorine and total ammonia were 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 March 20, 2000 did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Lykes Pasco, 15000 US Highway 301 North, Dade City, Pasco County, Florida, NPDES# FL0000485, performed on 21 to 23 March 2000.

Facility:	**Lykes Pasco**	**NPDES #**	**FL0000485**	Facility Type:	**Industrial**
Location:	15000 US Highway 301 North	Contact/District:	Charles Kovack/SW-DIST		**Treatment Plant**
County:	Pasco	Test type:	static acute screen		
Sample Collection Date:	3/20/00 Time: 1115	# tests:	2	Receiving Water:	Withlacoochee River
Test Beginning Date:	3/21/00 Time: 1345	Chlorination Type:	Not Chlorinated		
Test Ending Date:	3/23/00 Time: 1400				**Page 1 of 1**

Total Residual CL2	mg/L	Method
Field:	0.03	N/A
Lab:	<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):	145	133
20% Dilute Mineral Water (cladocerans):	79	76
100% Sample:	200	174

Salinity[C]	(ppt)
Control Water:	0
100% Sample:	0

[C] Salinity based on conductivity and temperature measurements.

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	2	2	8.4	-	7.8	24.7	-	24.1	9.0	-	7.9	185	245
Control B	0/20	5	5	5	-	-	8.1	-	-	24.2	-	-	7.8	-	190
Control C	0/20	5	5	4	-	-	8.1	-	-	24.2	-	-	7.7	-	190
Control D	0/20	5	5	5	-	-	8.0	-	-	24.2	-	-	7.7	-	200
100% A	20/0	5	5	5	8.4	-	8.7	25.0	-	24.2	8.7	-	7.7	540	555
100% B	20/0	5	5	5	-	-	8.7	-	-	24.2	-	-	7.9	-	605
100% C	20/0	5	5	5	-	-	8.7	-	-	24.2	-	-	8.1	-	605
100% D	20/0	5	5	5	-	-	8.7	-	-	24.1	-	-	8.2	-	630

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0°C.
Incubator #2 temperature range for the test period was 25.5-26.0°C.

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			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	7.8	8.3	8.5	24.2	24.7	23.9	8.3	7.6	8.5	300	300
Control B	0/500	5	5	5	8.0	8.3	8.5	24.3	24.3	23.9	8.3	7.6	8.6	265	270
Control C	0/500	5	5	5	8.0	8.3	8.5	24.3	24.4	24.0	8.4	7.8	8.6	255	265
Control D	0/500	5	5	5	7.9	8.3	8.5	24.2	24.4	24.3	8.4	7.9	8.5	255	270
100% A	500/0	5	5	5	8.3	8.5	8.5	24.2	24.3	24.2	8.0	8.0	8.5	530	545
100% B	500/0	5	5	5	8.3	8.5	8.5	24.4	24.3	24.1	8.0	8.0	8.5	535	555
100% C	500/0	5	5	5	8.3	8.5	8.6	24.4	24.2	24.1	8.0	7.8	8.5	525	560
100% D	500/0	5	5	5	8.3	8.5	8.6	24.4	24.2	24.2	8.0	7.9	8.5	535	560

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 24.5-26.0°C.
Incubator #3 temperature range for the test period was 24.5-26.5°C.

Table 2. Results of chemical analyses on the effluent from Lykes Pasco sampled on March 20, 2000.

Metals

Calcium	59.5	mg/L	
Chromium	3.9	µg/L	J
Copper	4.4	µg/L	
Iron	132	µg/L	
Lead	4.82	µg/L	
Magnesium	6.7	mg/L	
Nickel	3.7	µg/L	I

Pesticides and Herbicides

None detected

Base, Neutral, & Acid Extractable Organics

None detected

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

J Estimated value

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Lykes Pasco
County: Pasco
Contact / District: Charles Kovach / SW-DIST
NPDES Permit #: FL0000485
LIMS Sample #: 442356 LIMS Job #: TLH2000-03-21-49-01
sample log 4/7/00
Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through
Test Number: 2 of 2

Remarks:

Sample Collection: Date 3/20/00 Time 1115
Test Beginning: Date 3/21/00 Time 1300
Test Ending: Date 3/23/00 Time 1400
Organism Batch #: 20 Diluent Batch #: Well
Organism Age: 11 days SRT toxicant batch #: —
Test organism: C. dubia

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. (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
CONT.	A 17	5	5	5	7.9	8.3	8.5	24.2	24.7	23.9	8.3	8.5	8.5	300	358	306
B	A 18	5	5	5	8.0	8.3	8.5	24.3	24.3	23.9	8.3	7.6	8.6	265	355	270
C	A 19	5	5	5	8.0	8.3	8.5	24.3	24.4	24.0	8.4	7.8	8.6	255	360	265
D	A 20	5	5	5	7.9	8.3	8.5	24.2	24.4	24.3	8.4	7.9	8.5	255	356	270
100%	A 21	5	5	5	7.3	8.5	8.5	24.2	24.3	24.2	8.8	8.0	8.5	530	560	545
B	A 22	5	5	5	8.3	8.5	8.5	24.4	24.3	24.1	8.0	8.0	8.5	535	535	555
C	A 23	5	5	5	8.3	8.6	8.6	24.4	24.2	24.1	8.0	7.9	8.5	525	535	560
D	A 24	5	5	5	8.3	8.5	8.6	24.4	24.2	24.2	8.0	7.9	8.5	535	530	560
measured by:		DPH	KBL	SG	DPH	DPH	DPH	DPH	DPH	DPH	DPH	DPH	DPH	DPH	DPH	DPH
recorded by:		SG	KBL	DPH	DPH	DPH	SG	DPH	DPH	SG	DPH	DPH	SG	DPH	DPH	SG

A should be PMTB mf 7/21/00

(A) 7.6 DPH 3/21

Investigators' Signatures

Shannon Gerard
Della Hyden Hass
[illegible]

[illegible]
reviewer

form updated 3/3/99

Temperature Range °C
Incubator # 3 24.5°-26.5°C
Room B246 24.5°-26.0°C

Water Quality Parameters	Salt Water: Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			0.03	N/A	Hygiene/Grainger	SG
Lab Total Residual Cl2 (mg/L):	<0.03		<0.03	DR100	DPH	SG
Alkalinity (mg/L as $CaCO_3$):	145		200	Hach	SG	SG
Hardness (mg/L as $CaCO_3$):	133		174	Hach	SG	SG
Total ammonia (mg/L as N):	<0.017		<0.017	Denver	DPH	SG
Salinity:	0		0	YSI	DPH	SG

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Lykes Pasco
County: Pasco
Contact / District: Charles Kovach / SW-DIST
NPDES Permit #: FL0000004485
LIMS Sample #: 442356 LIMS Job #: TH2000-03-21-49-01
sample log 4/7/00
Test Type: Screening / Definitive
Static / Static Renewal / Flow-through
Test Number: 1 of 2

Sample Collection: Date 3/20/00 Time 1115
Test Beginning: Date 3/21/00 Time 1335
Test Ending: Date 3/23/00 Time 1400
Organism Batch #: 13 Diluent Batch #: 8
Organism Age: 24hrs. SRT toxicant batch #: —
Test organism: C. dubia

Remarks:

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. (µmhos/cm) 0 hr	UNCORRECTED Cond. (µmhos/cm) 24 h	UNCORRECTED Cond. (µmhos/cm) 48 h
CONTROL	A	5	2 3D	2 3D	8.4	—	7.8	24.7	—	24.1	9.0	—	7.9	185	—	245
	B	5	5	5	—	—	8.1	—	—	24.2	—	—	7.8	—	—	190
	C	5	5	4 1M	—	—	8.1	—	—	24.2	—	—	7.7	—	—	190
	D	5	5	5	—	—	8.0	—	—	24.2	—	—	7.7	—	—	200
100%	A	5	5	5	7	—	8.7	25.0	—	24.2	8.7	—	7.7	540	—	555
	B	5	5	5	8.4	—	8.7	—	—	24.2	—	—	7.9	—	—	605
	C	5	5	5	—	—	8.7	—	—	24.2	—	—	8.1	—	—	605
	D	5	5	5	—	—	8.7	—	—	24.1	—	—	8.2	—	—	630
measured by:		JG	JG	JG	JG	—	DPH	JG	—	DPH	JG	—	DPH	JG	—	DPH
recorded by:		DPH	JG	JG	JG	—	JG	JG	—	JG	JG	—	JG	JG	—	JG

Investigators' Signatures
Sharon Gerard
Della Parker-Hanson

Temperature Range °C
Incubator # 2 25.5°-26.0°C
Room B246 24.5°-26.0°C

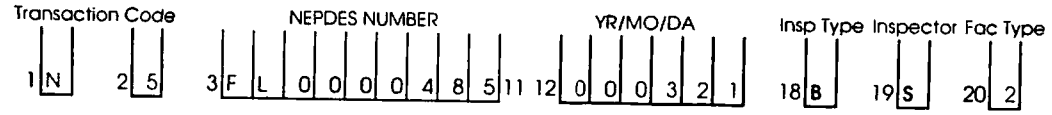
Water Quality Parameters	Salt Water / Well Water	20% Min Water	Sample	Method	Measured by	Verified by
Field Total Residual Cl2 (mg/L):			0.03	N/A	Hughes/Grainger	JG
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR100	DPH	JG
Alkalinity (mg/L as $CaCO_3$):		79	200	Hach	JG	JG
Hardness (mg/L as $CaCO_3$):		76	174	Hach	JG	JG
Total ammonia (mg/L as N):		<0.017	<0.017	Hach	DPH	JG
Salinity:	/	0	0	Ysi	DPH	JG

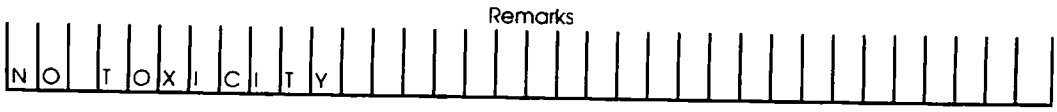
A.H. Wolfe
reviewer

form updated 3/3/99

The Bioassay of Lykes Pasco effluent sampled on March 21, 2000, NPDES #FL0000485

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

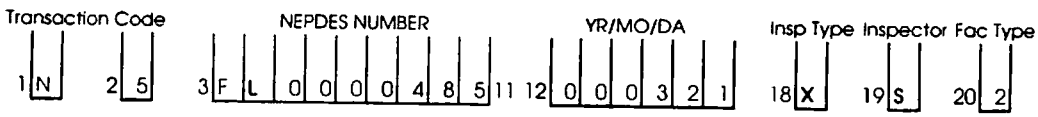


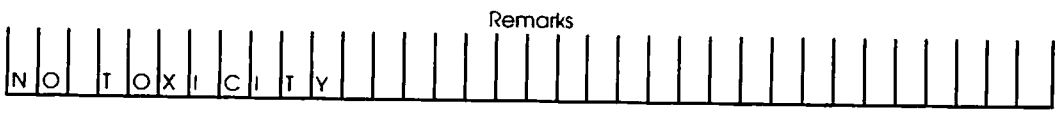


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The Priority Pollutants Analysis for Bioassay of Lykes Pasco effluent sampled on March 21, 2000, NPDES #FL0000485

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





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