

Bioassays of

Southdown, Inc.

Riveria Beach, Palm Beach County, Florida

NPDES #FL0170801

Sampled 6/25/01

November 2001

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

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Bureau of Laboratories
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Introduction

Southdown, Inc., 502 Broadway, Riveria Beach, Palm Beach County, Florida, NPDES #FL0170801, tests performed on 26 to 28 June 2001.

This cargo terminal has a design flow of 67.5 GPM. The wastewater is once-through, non-contact cooling water. The wastewater receives no treatment before being discharged through Outfall D001 into the Class III marine waters of the Intracoastal Waterway at the Port of Palm Beach (facility summary provided by Bob Hennes, FDEP, West Palm Beach).

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 collected from this facility. The test species used for these bioassays were the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did show acute toxicity to the test species *C. dubia*, causing 25% mortality in the 100% sample. The *C. leedsi* results did not indicate toxicity within 48 hours (Table 1).

Total residual chlorine was 0.04 mg/L in the sample. Total and unionized ammonia were not detected in the sample. Further chemical analyses were performed on the sample, and several metals and a pesticide were identified (Table 2). The concentration of copper in the sample (16.7 µg/L) exceeds the State of Florida water quality criteria for Class III marine waters ($\leq$ 2.9 µg/L).

Conclusion

The sample of effluent collected from this facility on June 25, 2001, indicated acute toxicity to the test species *C. dubia*, but did not show acute toxicity to the test species *C. leedsi* within 48 hours. The mortality in the *C. dubia* test may have been due to the elevated copper concentration in the sample. The concentration of copper in the sample exceeded the State of Florida water quality criteria for copper in marine waters.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Southdown, Inc., 502 Broadway, Riveria Beach, Palm Beach County, Florida, NPDES# FL0170801 performed on 26 to 28 June 2001.

Facility:	**Southdown, Inc.**		**NPDES #**	**FL0170801**	Facility Type:	**Cargo**	**Analysts:** Shannon Gerardi
Location:	502 Broadway		Contact/District:	T. Davis/Southeast		**Terminal**	Joshua Ayres
County:	Palm Beach		Test type:	static acute screen			Della Parker-Hanson
Sample Collection Date:	6/25/01	Time: 1120	# tests:	2	Receiving Water:	Intracoastal Waterway	
Test Beginning Date:	6/26/01	Time: 1400	Chlorination Type:	Non-chlorinated			**Reviewer:** David Whiting
Test Ending Date:	6/28/01	Time: 1415				**Page 1 of 1**	

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

	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	5	8.1	-	8.4	25.2	-	24.2	7.9	-	8.3	180	200
Control B	0/20	5	5	5	-	-	8.4	-	-	24.1	-	-	8.3	-	190
Control C	0/20	5	5	5	-	-	8.4	-	-	24.1	-	-	8.3	-	200
Control D	0/20	5	5	5	-	-	8.4	-	-	24.1	-	-	8.2		200
100% A	20/0	5	5	4	8.0	-	8.4	25.0	-	24.2	7.4	-	8.2	300	350
100% B	20/0	5	5	3	-	-	8.4	-	-	24.3	-	-	8.2	-	335
100% C	20/0	5	5	4	-	-	8.4	-	-	24.3	-	-	8.3	-	355
100% D	20/0	5	5	4	-	-	8.4	-	-	24.3	-	-	8.2	-	360

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-25.5°C.
Incubator #2 temperature range for the test period was 24.0-25.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 10 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	7.9	8.3	8.5	24.7	25.0	24.4	8.1	7.8	8.0	270	345
Control B	0/500	5	5	5	8.0	8.3	8.5	24.7	24.9	24.4	7.9	7.7	8.0	265	285
Control C	0/500	5	5	5	8.0	8.3	8.5	24.6	24.8	24.2	7.8	7.7	8.0	270	280
Control D	0/500	5	5	5	8.0	8.3	8.5	24.5	24.8	24.2	7.9	7.7	8.0	265	290
100% A	500/0	5	5	5	8.0	8.2	8.3	24.5	24.8	24.3	7.3	7.8	8.0	320	375
100% B	500/0	5	5	5	8.0	8.2	8.3	24.5	24.9	24.2	7.3	7.7	8.0	320	355
100% C	500/0	5	5	5	8.0	8.2	8.3	24.5	24.9	24.1	7.3	7.7	8.0	320	335
100% D	500/0	5	5	5	8.0	8.2	8.3	24.4	24.6	24.2	7.3	7.6	8.1	320	385

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-25.5°C.
Incubator #3 temperature range for the test period was 24.0-25.0°C.

Data Transcription Verification	
date:	10/5/01
by:	Joshua Ayres
	Della Parker-Hanson

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	0.04	Hach

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):	150	140
20% Dilute Mineral Water (cladocerans):	77	83
100% Sample:	99	115

Table 2. Results of chemical analyses on the effluent from Southdown, Inc. sampled on June 25, 2001.

Metals

Aluminum	540	µg/L	
Calcium	42.6	mg/L	
Copper	16.7	µg/L	
Iron	63	µg/L	[I]
Magnesium	3	mg/L	
Zinc	8.7	µg/L	[I]

Pesticides and Herbicides

Hexazinone	0.16	µg/L	[I]

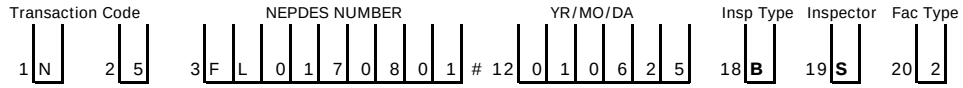
Base, Neutral, & Acid Extractable Organics

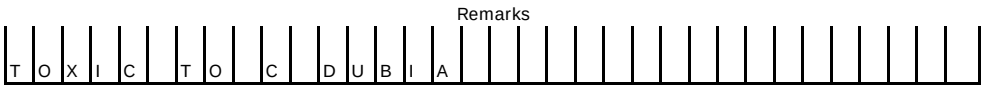
None detected

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

The Bioassay of Southdown, Inc. effluent sampled on June 25, 2001, NPDES #FL0170801.

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

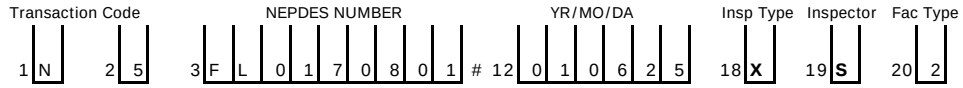




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The Priority Pollutants Analysis for Bioassay of Southdown, Inc. effluent sampled on June 25, 2001, NPDES #FL0170801.

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