

Bioassays of

Nitram, Inc.

Tampa, Hillsborough County, Florida

NPDES #FL0001643

Sampled 10/15/01

February 2002

Biology Section

Division of Resource Assessment & Management

Comprehensive Quality Assurance Plan #870346G

Bioassays of

Nitram, Inc.

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NPDES #FL0001643

Biology Section
Bureau of Laboratories
February 2002

Introduction

Nitram, Inc., 5321 Hartford Street, Tampa, Hillsborough County, Florida, NPDES #FL0001643, tests performed on 16 to 18 October 2001.

This fertilizer plant's wastewater treatment system has a design flow of 0.41 MGD and an average flow of 0.20 MGD. The effluent includes non-contact-cooling water, cooling tower blowdown, demineralizer regenerate wastes, condensate leakage, boiler blowdown, washdown water, and stormwater runoff. The cooling tower blowdown is treated in a hyacinth pond to remove nutrients prior to being mixed with the other wastewaters. No additional treatment is preformed on the effluent before it is discharged through Outfall 001 into the Class III marine waters of Delaney Creek (facility summary provided by Andrea Grainger, 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 four 48-hour static acute screening toxicity bioassays on a sample of effluent collected from this facility using both freshwater and saltwater test species. The freshwater test species used for these bioassays were the waterflea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The saltwater test species used were the mysid shrimp, *Americamsis bahia*, and the inland silverside, *Menidia beryllina*. The apparent salinity of the sample was approximately 2.2 parts per thousand (ppt), based on conductivity and temperature. For the saltwater tests, aliquots of the sample were adjusted using Forty Fathoms® artificial sea salts to salinities of three ppt and eight ppt for the menidia and mysid tests, respectively, to ensure that the minimum required salinity was due to salt water ions (1 ppt for *M. beryllina*, 6 ppt for *A. bahia*). The control water was natural sea water (NSW) diluted to the test salinity. The salt-control water was NSW diluted to approximately 2.2 ppt to match the apparent salinity of the original sample and then salted up to the salinity of the appropriate test using the same method as outlined for the sample salinity adjustments. The test results did not indicate toxicity to any of the test species within 48 hours (Tables 1 and 2).

Total residual chlorine in the sample was not detected in the laboratory. Total ammonia and unionized ammonia concentrations in the sample were 0.204 mg/L and 0.003 mg/L, respectively. Further chemical analyses were performed on the sample, and several metals were identified (Table 3).

Conclusion

The sample of effluent collected from this facility on October 15, 2001, did not show acute toxicity to any of the test species within 48 hours.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Nitram, Incorporated, 5321 Hartford Street, Tampa, Hillsborough County, Florida, NPDES# FL0001643 performed from 16 to 18 October 2001.

Freshwater Species Tests

Facility:	**Nitram, Incorporated**		**NPDES #**	**FL0001643**	Facility Type:	**Fertilizer**	**Analysts:** Della Parker-Hanson
Location:	5321 Hartford Street		Contact/District:	Grainger/Southwest		**Producer**	Joshua Ayres
County:	Hillsborough		Test type:	static acute screen			Marshall Faircloth
Sample Collection Date:	10/15/01	Time: 1045	# tests:	4	Receiving Water:	Delaney Creek	Eva Pastora
Test Beginning Date:	10/16/01	Time: 1400	Chlorination Type:	non-chlorinated			Daisys Tamayo
Test Ending Date:	10/18/01	Time: 1335				**Page 1 of 1**	**Reviewer:** David Whiting

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity Uncorrected ìmhos/cm	
Concentrations	Volume(mL) [A]	0 hr	24 hr	48 hr		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	23.8	-	24.0	8.0	-	8.0	155	165
Control B	0/20	5	5	5	-	-	8.3	-	-	23.8	-	-	7.9	-	180
Control C	0/20	5	5	5	-	-	8.2	-	-	23.5	-	-	8.2	-	185
Control D	0/20	5	5	5	-	-	8.3	-	-	23.3	-	-	8.1	-	200
100% A	20/0	5	5	5	7.4	-	8.4	24.5	-	24.0	7.8	-	8.0	3920	4050
100% B	20/0	5	5	5	-	-	8.4	-	-	24.3	-	-	7.9	-	4210
100% C	20/0	5	5	5	-	-	8.4	-	-	24.0	-	-	7.9	-	4370
100% D	20/0	5	5	5	-	-	8.4	-	-	23.7	-	-	7.9	-	4480

[A] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-26.0 °C.
Incubator #2 temperature range for the test period was 24.5-25.5°C.

Organism: ***Cyprinella leedsi*** Life stage: 12 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity Uncorrected ìmhos/cm	
Concentrations	Volume(mL) [B]	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	8.6	8.5	24.1	23.2	24.5	8.1	8.1	8.0	245	330
Control B	0/500	5	5	5	7.9	8.6	8.6	24.0	23.1	24.4	7.9	8.0	7.7	255	330
Control C	0/500	5	5	5	7.9	8.6	8.5	24.0	23.2	24.4	7.9	8.0	7.6	260	285
Cotnrol D	0/500	5	5	5	8.0	8.3	8.4	23.9	23.6	24.5	7.9	8.0	7.6	265	280
100% A	500/0	5	5	5	7.4	8.0	8.2	24.3	23.6	24.3	7.8	7.8	7.6	3870	4020
100% B	500/0	5	5	5	7.4	8.0	8.2	24.5	23.3	24.1	7.8	7.7	7.6	4020	4450
100 % C	500/0	5	5	5	7.4	8.1	8.3	24.5	23.1	24.1	7.8	7.8	7.6	4110	5040
100% D	500/0	5	4	4	7.4	8.1	8.2	24.5	23.1	24.3	7.8	7.9	7.7	3880	4520

[B] Temperatures of room and test incubator were continuously recorded on a strip chart recorder.
Room Temperature range for the test period was 23.5-26.0°C.
Incubator #3 temperature range for the test period was 26.0-27.0°C.

Data Transcription Verification	
date:	1/8/02
by:	Cathy Oaks Della Parker-Hanson

Total Residual CL2	mg/L	Method
Field:	-	-
Lab:	<0.03	Hach

Ammonia	Total (mg/L)	Unionized (mg/L)
Control water (fish):	<0.017	<0.017
Control water (water flea):	<0.017	<0.017
100% Sample:	0.204	0.003

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control water (fish):	152	135
Control water (waterflea):	78	76
100% Sample:	130	---

Table 3. Results of chemical analyses on the effluent from Nitram, Incorporated sampled on October 15, 2001.

Metals

Calcium	161	mg/L	
Copper	0.75	µg/L	[I]
Iron	47	µg/L	[I]
Magnesium	45.9	mg/L	

Pesticides and Herbicides

None detected

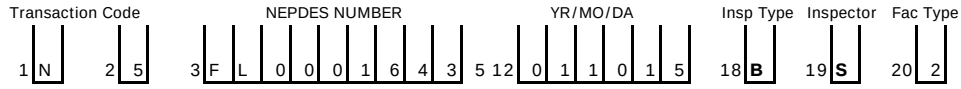
Base, Neutral, & Acid Extractable Organics

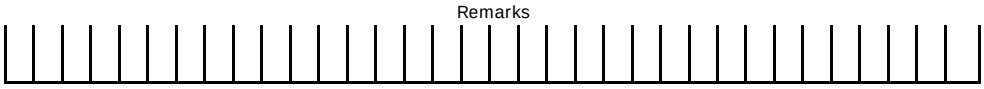
None detected

[I] The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

The Bioassay of Nitram, Incorporated effluent sampled on October 15, 2001, NPDES #FL0001643.

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





The Priority Pollutants Analysis for Bioassay of Nitram, Incorporated effluent sampled on October 15, 2001, NPDES #FL0001643.

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