

Bioassays of

Amerada Hess Corporation

Jacksonville, Duval County, Florida

NPDES #FL0001295

Sampled 3/24/97

June 1997

Biology Section

Division of Administrative & Technical Services

Comprehensive Quality Assurance Plan #870346G

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Biology Section
Bureau of Laboratories
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Introduction

Amerada Hess Corporation Petroleum Tank Farm, 2617 Hecksher Drive, Jacksonville, Duval County, Florida, NPDES #FL0001295, tests performed on 25 to 27 March, 1997.

This petroleum tank farm's wastewater treatment system has a design flow of 50 GPM. Collection sumps receive wastewater from loading racks, stormwater drainage, and boiler blowdown. Wastewater from the sumps is pumped into a 10,000 gallon oil/water separator, then into a 10,000 gallon underground storage tank. From the storage tank, the wastewater is run through a 50 GPM sand filter, one of two sets of 55-gallon drum activated-carbon units, and a 55-gallon drum aeration-tank, before being discharged via an effluent pipeline into the St. Johns River (facility summary provided by Alex Athans, 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 freshwater species; the water flea, *Ceriodaphnia dubia*, and the bannerfin shiner, *Cyprinella leedsi*. The test results did not show toxicity (Table 1).

Total residual chlorine and total ammonia were not detected in the sample. Further chemical analyses were performed on the sample and several metals and the volatile organic compound, methyl tert-butyl ether, was identified (Table 2).

Conclusion

The sample of effluent collected from this facility on March 24, 1997, did not show toxicity.

Table 1. Data recorded during the 48-hour acute screening bioassays of a sample of effluent from the Amerada Hess Corporation Petroleum Tank Farm, Jacksonville, Duval County, Florida, NPDES# FL0001295, performed on 25 to 27 March, 1997.

Facility:	Amerada Hess Corporation Petroleum Tank Farm	NPDES #	FL0001295	Facility Type:	Petroleum Tank Farm
Location:	2617 Hecksher Drive, Jacksonville	Contact/District:	Tim McKelvey/Northeast		
County:	Duval	Test type:	static acute screen		
Sample Collection Date:	3/24/97 Time: 1100	# tests:	2	Receiving Water:	St. Johns River
Test Beginning Date:	3/25/97 Time: 1447	Chlorination Type:	non-chlorinated		
Test Ending Date:	3/27/97 Time: 1500				Page 1 of 1

Total Residual CL2	mg/L	Method
Field:	0	-
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

Alk & Hardness	Alkalinity (mg/L)	Hardness (mg/L)
Control Water (fish):	120	134
Control Water (20% DMW) (cladocerans)	75	85
100% Sample:	147	230

Salinity	(ppt)
Control Water (fish):	0
Control Water (20% DMW) (cladocerans):	0
100% Sample:	0

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

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[A]			Dissolved Oxygen			Conductivity 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	8.0	-	8.0	23.3	-	24.7	7.9	-	7.4	165	170
Control B	0/20	5	5	5	-	-	8.0	-	-	24.8	-	-	7.5	-	180
Control C	0/20	5	5	5	-	-	8.0	-	-	24.8	-	-	7.5	-	180
Control D	0/20	5	5	5	-	-	8.1	-	-	24.7	-	-	7.5	-	180
100% A	20/0	5	5	4	7.9	-	8.5	22.9	-	24.7	7.8	-	7.5	455	490
100% B	20/0	5	5	5	-	-	8.5	-	-	24.8	-	-	7.5	-	490
100% C	20/0	5	5	5	-	-	8.5	-	-	24.8	-	-	7.5	-	495
100% D	20/0	5	5	5	-	-	8.5	-	-	24.7	-	-	7.5	-	490

[A] Temperature of test incubator was continously recorded on a strip chart recorder. Incubator temperature range for the test period was 24-26°C.

Organism: *Cyprinella leedsi* Age: 10 days

	Sample/Diluent	SURVIVAL # Alive			pH			Temperature[B]			Dissolved Oxygen			Conductivity 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	7.5	7.9	8.2	24.4	25.5	23.8	7.6	7.6	7.5	250	260
Control B	0/500	5	5	5	7.5	8.1	8.3	24.4	25.8	23.7	7.6	7.7	7.5	250	265
Control C	0/500	5	5	5	7.5	8.1	8.3	24.4	24.5	23.9	7.6	7.8	7.8	250	260
Control D	0/500	5	5	5	7.6	8.1	8.3	24.4	24.4	24.4	7.6	7.8	7.9	250	265
100% A	500/0	5	5	5	7.9	8.2	8.3	22.5	25.1	24.7	7.4	7.2	7.5	475	530
100% B	500/0	5	5	5	7.9	8.3	8.4	22.1	25.7	23.9	7.5	7.5	7.5	475	520
100% C	500/0	5	5	5	7.9	8.3	8.4	22.0	24.2	24.1	7.4	7.7	7.6	470	530
100% D	500/0	5	5	5	7.9	8.3	8.4	22.0	24.1	24.1	7.6	7.7	7.6	470	520

[B] Temperature of test room was continously recorded on a strip chart recorder. Room temperature range for the test period was 24-26°C.

Table 2. Results of chemical analyses on the effluent from the Amerada Hess Corporation sampled on March 24, 1997.

Metals

Calcium	56.4	mg/L[A]
Iron	60	µg/L[J]
Magnesium	22.6	mg/L[A]
Zinc	13	µg/L[I]

Base, Neutral, & Acid Extractable Organics

none detected

Volatile Organic Compounds

Methyl tert-butyl ether	300	µg/L[J]

[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.
[J] Estimated value.

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Amerada Hess
County: Duval
Contact / District: Tim McKelvey
NPDES Permit #: FL0001295
LIMS Sample #: 173631 LIMS Job #: 97-MAR-25-10
sample log: 3-25-97 JS
Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24°C-26°C
incubator 24°C-26°C
Test Number: 1 of 2
Remarks: D = dead, M = missing
@48h, 1-2 indiv in each vial of 100% were at surface (alive, but wouldn't swim down) KR

Sample Collection: Date 3/24/97 Time 1100
Test Beginning: Date 3-25-97 Time 1542
Test Ending: Date 3-27-97 Time 1500
Organism Batch #: 10 Diluent Batch #: 10
Organism Age: 24/<24 hr
Test Organism: Ceriodaphnia dubia

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	24.5 @ 24.6	8.4 @ 23.7 °C	101.6 @ 103.1 1001 @ 985 @ 25.1 °C
24 hr	7.0 @ 7.0 9.0 @ 9.0	24.6 @ 24.5	8.2 @ 25.2 °C	101.8 (1001) @ 104.5 1001 @ 1002 @ 25.1 °C
48 hr	7.0 @ 7.0 9.0 @ 9.0	24.3 @ 24.3	8.4 @ 23.8 °C	103.5 @ 101.8 1002 @ 1001 @ 25.1 °C

A either... of the... Sec... M93...

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
CTL A		5	5	5	8.0		8.0	23.3		24.7	7.9		7.4	165		170
CTL B		5	5	5			8.0			24.8			7.5			180
CTL C		5	5	5			8.0			24.8			7.5			180
CTL D		5	5	5			8.1			24.7			7.5			180
100% A		5	5	4[M]	7.9		8.5	23.9		24.7	7.8		7.5	455		490
100% B		5	5	5			8.5			24.8			7.5			490
100% C		5	5	5			8.5			24.8			7.5			495
100% D		5	5	5			8.5			24.7			7.5			490
Measured/Loaded by:		MF	ND	KR	MF		JS	MF		JS	MF		JS	MF		JS
Recorded by:		KR	ND	KR	ND		KR	ND		KR	ND		KR	ND		KR

Investigators' Signatures

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):			0	—	Alex Athans
Lab Total Residual Cl2 (mg/L):		<0.03	<0.03	DR/100	KJ
Alkalinity (mg/L as $CaCO_3$):		75	147	Hach	KR
Hardness (mg/L as $CaCO_3$):		85	230	Hach	KR
Total ammonia (mg/L as N):		<0.017	<0.017	Hach	MF

Ammonia Meter #98136 Ammonia Meter Slope: -55.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

FDEP Biology Section — Acute Bioassay Bench Sheet

Sample Source: Amerada Hess
County: Duval
Contact / District: Tim McKelvey
NPDES Permit #: FL0001295
LIMS Sample #: 173631 LIMS Job #: 97-MAR-25-10
sample log: 3-25-97 JS

Sample Collection: Date 3/24/97 Time 1100
Test Beginning: Date 3/25/97 Time 1445
Test Ending: Date 3/27/97 Time 1500
Organism Batch #: 20 Diluent Batch #:
Organism Age: 10 days (hatch 3-15-97)
Test Organism: Cyprinella leedsi

Test Type: (Screening) / Definitive
(Static) / Static Renewal / Flow-through
Temperature range: room 24°C-26°C
incubator ~~27°C-29°C~~ A 24°C-26°C
Test Number: 2 of 2
Remarks: D = dead, M = missing

A Incorrect Temperature entered initially (27°C-29°C) 3-27-97 MF for JS

Instrument Calibrations:

	pH	Temperature °C	D.O. mg/L	Conductivity µmhos/cm
meter #	7851	90H018262	90H018262	G9005749
0 hr	7.0 @ 7.0	24.5 @ 24.6	8.4 @ 23.7 °C	101.8 @ 103.1
	9.0 @ 9.0			1001 @ 985 @ 25.1 °C
24 hr	7.0 @ 7.0	24.6 @ 24.5	8.2 @ 25.2 °C	101.8 @ 1045
	9.0 @ 9.0			1001 @ 1002 @ 25.1 °C
48 hr	7.0 @ 7.0	24.2 @ 24.3	8.4 @ 23.8 °C	103.5 @ 101.5
	9.0 @ 9.0			1002 @ 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
CTL A	A1	5	5	5	7.5	7.9	8.2	24.4	25.5	23.8	7.6	7.6	7.5	250	260	260
B	A2	5	5	5	7.5	8.1	8.3	24.4	25.8	23.7	7.6	7.7	7.5	250	260	265
C	A3	5	5	5	7.5	8.1	8.3	24.4	24.5	23.9	7.6	7.8	7.8	250	260	260
D	A4	5	5	5	7.6	8.1	8.3	24.4	24.4	24.4	7.6	7.8	7.9	250	260	265
100% A	A5	5	5	5	7.9	8.2	8.3	22.5	25.1	24.7	7.4	7.2	7.5	475	515	530
100% B	A6	5	5	5	7.9	8.3	8.4	22.1	25.7	23.9	7.5	7.5	7.5	475	515	520
100% C	A7	5	5	5	7.9	8.3	8.4	22.0	24.2	24.1	7.4	7.7	7.6	470	515	530
100% D	A8	5	5	5	7.9	8.3	8.4	22.0	24.1	24.1	7.6	7.7	7.6	470	510	520
Measured/Loaded by:		JS	ND	KR	JS	ND	JS	JS	ND	JS	JS	ND	JS	JS	ND	JS
Recorded by		KR	ND	KR	ND	KR	KR	ND	KR	KR	ND	KR	KR	ND	KR	KR

Investigators' Signatures

Marshall Faircloth
Kellie Kalstrom
Keri Johnson
Julie Sharpe
Jeff Wolfe

Salt Water: (Well Water) / 20% Min Water

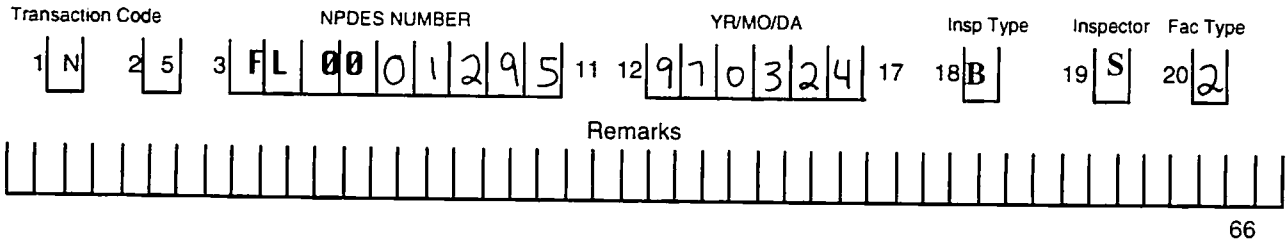
Water Quality Parameters

		Sample	Method	Measured by
Field Total Residual Cl2 (mg/L):		0	—	Alex Athens
Lab Total Residual Cl2 (mg/L):	<0.03	<0.03	DR/LO	KJ
Alkalinity (mg/L as $CaCO_3$)	120	147	Hach	KR
Hardness (mg/L as $CaCO_3$)	134	230	Hach	KR
Total ammonia (mg/L as N)	<0.017	<0.017	Orion	MF

Ammonia Meter #98136 Ammonia Meter Slope -55.6 Ammonia Blank: <0.017 Control Salinity: 0 ppt Sample Salinity: 0 ppt

The Bioassay of the Amerada Hess Corporation Petroleum Tank Farm effluent sampled on March 24, 1997, NPDES #FL0001295.

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 Amerada Hess Corporation Petroleum Tank Farm effluent sampled on March 24, 1997, NPDES #FL0001295.

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

