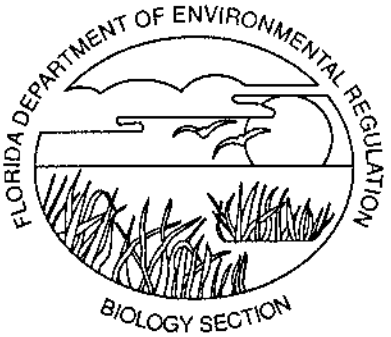


Bioassays of

Air Products and Chemicals, Inc.

Pace, Santa Rosa County, Florida

NPDES #FL0002313

Sampled 2/20/89

FILE COPY

DO NOT REMOVE

September 14, 1989

Biology Section
Division of Administrative and Technical Services

Bioassays of

Air Products and Chemicals, Inc.

Pace, Santa Rosa County, Florida

NPDES #FL0002313

Biology Section
Bureau of Laboratories
September 14, 1989

Introduction

Air Products and Chemicals, Inc., NPDES #FL00002313, Pace, Santa Rosa County, Florida, on 21 to 23 February, 1989.

Air Products and Chemicals, Inc., is located on upper Escambia Bay near Pace, Santa Rosa County, Florida. The facility produces a wide variety of industrial and agricultural chemicals, including pvc plastics, methanol amines, nitric acid, ammonia, ammonium nitrate, urea, and other chemical intermediates. Wastewater treatments include a percolation pond for the amines waste, and various equalization and neutralization processes for the remaining wastes. The latter wastes are retained in a series of ponds for 50 to 90 days prior to being discharged through a ditch to Escambia Bay. This discharger has been assigned a mixing zone.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition and by the FDER Biology Section, 1989, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

The sample of discharge from outfall #001 of the Air Products facility was not toxic to the bioassay test organisms, *Ceriodaphnia dubia*, *Daphnia pulex*, and *Notropis leedsi*. However, the sample did adversely affect the Microtox® assay test organism, *Photobacterium phosphoreum*, producing an EC_{50} of 90%.

Chemical analyses were performed on the sample. The metals, chromium (50 µg/l) and zinc (13 µg/l) were detected. In the acid extractables fraction of the organics analyses, several unidentified peaks were detected. Several unidentified components sensitive to electron capture detection were noted in the pesticide fraction of the organics analyses. The total ammonia concentration of the sample was 9.21 mg/l and the unionized ammonia concentration was 0.18 mg/l. The sample was not chlorinated. The cause of the adverse affect of the sample to the Microtox® assay organism, *P. phosphoreum,* was not determined.

Conclusion

The sample of discharge from outfall #001 of the Air Products facility was not toxic to the bioassay organisms, *C. dubia*, *D. pulex*, and *N. leedsi*, on 20 February, 1989.

Table 1. Concentration Series and Volumes Used for These Static Bioassays.

Ceriodaphnia dubia (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0 ml	15 ml
10.0%	13.5 ml	1.5 ml	15 ml
30.0%	10.5 ml	4.5 ml	15 ml
50.0%	7.5 ml	7.5 ml	15 ml
70.0%	4.5 ml	10.5 ml	15 ml
85.0%	2.25 ml	12.75 ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Daphnia pulex (water flea)

Concentration	Dilution Water	Sample	Total Volume
Control	15.0 ml	0.0ml	15 ml
100.0%	0.0 ml	15.0 ml	15 ml

Notropis leedsi (bannerfin shiner)

Concentration	Dilution Water	Sample	Total Volume
Control	500 ml	0 ml	500 ml
10.0%	450 ml	50 ml	500 ml
30.0%	350 ml	150 ml	500 ml
50.0%	250 ml	250 ml	500 ml
70.0%	150 ml	350 ml	500 ml
85.0%	75 ml	425 ml	500 ml
100.0%	0 ml	500 ml	500 ml

Table 2. Data recorded during the 48 hour static definitive bioassay of a sample of discharge from outfall #001 of Air Products, Pace, Santa Rosa County, Florida, NPDES #FL0002313, on 21 to 23 February, 1989.

Facility:	**Air Products**		**NPDES #**	**FL0002313**	Facility Type: **Chemical Processing**
Location:	US Highway 90, Pace		Contact/District:	J. Williams / N.W.	
County:	Santa Rosa		Test type:	static definitive	
Sample Collection Date:	**2/20/89**	Time: 1342	# tests:	3	Receiving Water: Escambia Bay
Test Beginning Date:	2/21/89	Time: 1030	Chlorination Type:	**unchlorinated**	
Test Ending Date:	2/23/89	Time: 1030			**Page 1 of 2**

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen *			pH *			Temperature *			Conductivity **	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	8.9	-	-	8.4	-	-	20.0	-	-	-	-
Control	5	5	5	8.9	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	8.9	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	9.0	-	-	8.4	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	19.8	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	19.7	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
50%	5	5	5	9.0	-	-	7.9	-	-	19.9	-	-	-	-
50%	5	5	5	9.0	-	-	7.9	-	-	-	-	-	-	-
50%	5	5	5	9.1	-	-	7.9	-	-	-	-	-	-	-
50%	5	5	5	9.1	-	-	7.9	-	-	-	-	-	-	-
70%	5	5	5	9.0	-	-	7.7	-	-	20.0	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	20.2	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
100%	5	5	4	9.2	-	-	7.6	-	-	20.5	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-

* tests accidently discarded after 48 hour counts **conductivity measurements performed on fish tests only

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	-	-
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.94	0.10
100% Sample:	9.21	0.18

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	125
Cond. Control Water (daphnids):	135	130
100% Sample:	235	45

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

Table 2. Data recorded during the 48 hour static definitive bioassay of a sample of discharge from outfall #001 of Air Products, Pace, Santa Rosa County, Florida, NPDES #FL0002313, on 21 to 23 February, 1989.

Facility:	**Air Products**		**NPDES #**	**FL0002313**	Facility Type: **Chemical Processing**
Location:	US Highway 90, Pace		Contact/District:	J. Williams / N.W.	
County:	Santa Rosa		Test type:	static definitive	
Sample Collection Date:	**2/20/89**	Time: 1342	# tests:	3	Receiving Water: Escambia Bay
Test Beginning Date:	2/21/89	Time: 1030	Chlorination Type:	**unchlorinated**	
Test Ending Date:	2/23/89	Time: 1030			**Page 1 of 2**

Organism: ***Ceriodaphnia dubia*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen *			pH *			Temperature *			Conductivity **	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	8.9	-	-	8.4	-	-	20.0	-	-	-	-
Control	5	5	5	8.9	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	8.9	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	9.0	-	-	8.4	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	19.8	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
10%	5	5	5	9.0	-	-	8.2	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	19.7	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
30%	5	5	5	9.0	-	-	8.0	-	-	-	-	-	-	-
50%	5	5	5	9.0	-	-	7.9	-	-	19.9	-	-	-	-
50%	5	5	5	9.0	-	-	7.9	-	-	-	-	-	-	-
50%	5	5	5	9.1	-	-	7.9	-	-	-	-	-	-	-
50%	5	5	5	9.1	-	-	7.9	-	-	-	-	-	-	-
70%	5	5	5	9.0	-	-	7.7	-	-	20.0	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
70%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	20.2	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
85%	5	5	5	9.2	-	-	7.7	-	-	-	-	-	-	-
100%	5	5	4	9.2	-	-	7.6	-	-	20.5	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-
100%	5	5	5	9.2	-	-	7.6	-	-	-	-	-	-	-

* tests accidently discarded after 48 hour counts **conductivity measurements performed on fish tests only

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	-	-
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.94	0.10
100% Sample:	9.21	0.18

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	125
Cond. Control Water (daphnids):	135	130
100% Sample:	235	45

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

Table 2. Continued.

Facility:	**Air Products**		**NPDES #**	**FL0002313**	Facility Type: **Chemical Processing**
Location:	US Highway 90, Pace		Contact/District:	J. Williams / N.W.	
County:	Santa Rosa		Test type:	static definitive	
Sample Collection Date:	**2/20/89**	Time: 1342	# tests:	3	Receiving Water: Escambia Bay
Test Beginning Date:	2/21/89	Time: 1030	Chlorination Type:	**unchlorinated**	
Test Ending Date:	2/23/89	Time: 1030			**Page 2 of 2**

Total Residual Cl2	mg/l	Method
Field:	-	-
Lab:	-	-
Lab:	-	-

Ammonia	Total (mg/l)	Unionized (mg/l)
Control Water (fish):	0.00	0.00
Cond. Control Water (daphnids):	0.94	0.10
100% Sample:	9.21	0.18

Alk & Hardness	Alkalinity (mg/l)	Hardness (mg/l)
Control Water (fish):	115	125
Cond. Control Water (daphnids):	135	130
100% Sample:	235	45

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

Organism: ***Daphnia pulex*** Life stage: neonate
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen *			pH *			Temperature *			Conductivity **	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	9.0	-	-	8.4	-	-	20.2	-	-	-	-
Control	5	5	5	9.0	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	9.0	-	-	8.4	-	-	-	-	-	-	-
Control	5	5	5	9.0	-	-	8.4	-	-	-	-	-	-	-
100.0%	5	4	4	9.1	-	-	7.7	-	-	20.2	-	-	-	-
100.0%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
100.0%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-
100.0%	5	5	5	9.1	-	-	7.7	-	-	-	-	-	-	-

* tests accidently discarded after 48 hour counts** conductivity measurements performed on fish tests only

Organism: ***Notropis leedsi*** Age: 23-28 days
LC50: - Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 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	5	5	5	8.8	8.5	8.7	7.8	7.9	7.9	20.4	20.0	19.7	-	-
Control	5	5	5	8.9	8.6	8.8	7.8	7.9	7.9	-	-	-	225	225
10%	5	5	5	9.0	8.4	8.5	7.6	7.9	7.9	20.5	19.9	19.4	-	-
10%	5	5	5	9.1	8.4	8.5	7.6	7.9	7.9	-	-	-	305	295
30%	5	5	5	9.0	8.3	8.3	7.5	7.9	8.0	21.2	19.8	19.2	-	-
30%	5	5	5	9.1	8.4	8.4	7.5	7.9	8.0	-	-	-	385	365
50%	5	5	5	9.1	8.2	8.2	7.3	7.8	8.0	21.0	19.8	19.2	-	-
50%	5	5	5	9.1	8.2	8.2	7.3	7.8	8.0	-	-	-	490	470
70%	5	4	4	9.2	8.3	8.3	7.2	7.8	8.1	20.7	19.7	19.2	-	-
70%	5	5	5	9.2	8.2	8.2	7.2	7.8	8.0	-	-	-	590	570
85%	5	5	5	9.2	8.2	8.1	7.2	7.8	8.1	20.4	19.8	19.2	-	-
85%	5	5	5	9.3	8.2	8.1	7.2	7.8	8.1	-	-	-	665	650
100%	5	5	5	9.3	8.2	8.1	7.1	7.8	8.1	20.3	20.0	19.5	-	-
100%	5	5	5	9.3	8.0	7.8	7.1	7.8	8.1	-	-	-	740	720

Table 3. Microtox test results, Air Products, Santa Rosa County, NPDES #FL0002313, on 21 February, 1989.

Microtox Test — Culture Lot # M-606

% Sample	Final Reclaimed Water nonchlorinated	
	5-min	15-min
0	71	43
0	59	36
0	61	37
12.38	54	30
12.38	63	36
12.38	58	32
24.75	47	35
24.75	45	24
24.75	50	28
49.5	56	32
49.5	40	21
49.5	39	21
99	35	19
99	32	17
99	44	25

EC_{50} Nonchlorinated (15 minute, 15 °C) = 90.02% sample

EC_{50} (15 minute, 15 °C) is calculated using the Data Reduction Computer Program developed by Microbics Corporation for the Sharp Model EL-5100 calculator.*(Microbics) Systems Operating Manual,* 1982.

Table 4. Results of chemical analyses on the sample of discharge from Air Products, Santa Rosa County, Florida.

Organics

Acid Extractables	Several small unidentified peaks
Base Neutral Extractables	None detected
Pesticide Extractables	Several very small unidentified components sensitive to ECD

Metals

Chromium	50.0 µg/l
Zinc	13.0 µg/l

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Air Products
Address/City: P.O. Box 467, Pensacola 32592
County: Santa Rosa
Contact/District: Jon Wilson / NW
NPDES Permit #: FL 000213 Outfall #: 001

Sample Collection: Date 2/6/87 Time 1342
Test Beginning: Date 2/7/87 Time 1030
Test Ending: Date 2/13/87 Time 1130
Test Organism: C. dubia
Life Stage/Age: neonate

Test Number: 1 of 3 Test Type: Screening (Definitive)
(Static) | Static Renewal | Flow-through

Remarks: Organics - slight algal growth
* samples discarded after 48hr count by resp SHW

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7.2, 7.9	8.1@22.5	1304@20°C	21.2@21.4
24 hr	7.7, 7.9	8.3@22.0		20.1@20.2
48 hr	7.7, 7.9	9.1@20.4	1305@20.8@19.8	19.8@19.7

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
Control	1	5	5	5	8.9		*	8.4		*	20.0		*			
"	2	5	5	5	8.9			8.4			1					
"	3	5	5	5	8.9			8.4								
"	4	5	5	5	8.0			8.4								
10%	5	5	5	5	7.0			8.2			19.8					
"	6	5	5	5	8.0			8.2								
"	7	5	5	5	8.0			8.2								
"	8	5	5	5	8.0			8.2								
30%	9	5	5	5	9.0			8.0			19.7					
"	10	5	5	5	9.0			8.0								
"	11	5	5	5	9.0			8.0								
"	12	5	5	5	9.0			8.0								
56%	13	5	5	5	9.0			7.9			19.9					
"	14	5	5	5	9.0			7.9								
"	15	5	5	5	9.1			7.9								
"	16	5	5	5	9.1			7.9								
70%	17	5	5	5	9.0			7.7			20.0					
"	18	5	5	5	9.1			7.7								
"	19	5	5	5	9.1			7.7								
"	20	5	5	5	9.1			7.7								
85%	21	5	5	5	9.1			7.7			20.2					
"	22	5	5	5	9.2			7.7								
"	23	5	5	5	9.2			7.7								
"	24	5	5	5	9.2			7.7								
100%	25	5	5	4	9.2			7.6			20.5					
"	26	5	5	5	9.2			7.6								
"	27	5	5	5	9.2			7.6								
"	28	5	5	5	9.2			7.6								
Measured by:		SHW	MF	SHW	SHW			SHW			SHW					
Recorded by:		SHW	MF	SHW	MF			MF			MF			TEF		

Investigators' Signatures

Steve H Wells

Marivelle Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:	115	135	135	titr	MF
Hardness:	125	130	45	titr	MF
Total Ammonia:	0	0.94	9.91	Orion	SHW

Slope = -96.4

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Air Products
Address/City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 2/24/89 Time 1342
Test Beginning: Date 2/24/89 Time 1030
Test Ending: Date 2/28/89 Time 1035
Test Organism: D. pulex
Life Stage/Age: neonate

Test Number: 2 of 3 Test Type: (Screening) | Definitive
(Static) | Static Renewal | Flow-through

Remarks:
Unchlor
* Samples discarded after 48hr count by error SHW

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live			DO (mg/l)			pH			Temp. (°C)			Cond. (umhos/cm)		
		0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control	29	5	5	5	9.0		*	8.4		*	20.2		*			
"	30	5	5	5	9.0			8.4								
"	31	5	5	5	9.0			8.4								
"	32	5	5	5	9.0			8.4								
100%	33	5	4	4	9.1			7.7			20.2					
"	34	5	5	5	9.1			7.7								
"	35	5	5	5	9.1			7.7								
"	36	5	5	5	9.2			7.7								
Measured by:		YW	MK	SHW	SHW			SHW			SHW			Sandy		
Recorded by:		SHW	MK	SHW	MK			MK			MK			MK		

Investigators' Signatures

Steven H Wolfe

Marshall Faircloth

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

DER Biology Section — Acute-bioassay Bench Sheet

Sample Source: Air Products
Address City:
County:
Contact/District:
NPDES Permit #: Outfall #:

Sample Collection: Date 11/20/96 Time 1342
Test Beginning: Date [illegible] Time [illegible]
Test Ending: Date 11/27/96 Time 2:30
Test Organism: M. bahia
Life Stage/Age: 23-28 days

Test Number: 3 of 3 Test Type: Screening | Definitive
Static | Static Renewal | Flow-through

Remarks: Unchlor
* conductivity drop attributed to settling of some algae population

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr				
24 hr				
48 hr				

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp. (°C) 0	24	48	Cond. (umhos/cm) 0	24	48
Control	271	5	5	5	9.8	8.5	8.7	7.8	7.9	7.9	20.4	20.0	19.7			215
"	4	5	5	5	8.9	8.6	8.9	7.8	7.9	7.9				225		225
10%	228	5	5	5	9.0	8.4	8.5	7.6	7.9	7.9	20.5	18.9	19.1			
"	25	5	5	5	9.1	8.4	8.5	7.6	7.9	7.9				305		215
30%	38	5	5	5	9.0	8.3	8.3	7.5	7.9	8.0	21.2	18.9	19.2			
"	3	5	5	5	9.1	8.4	8.4	7.5	7.9	8.0				355		360
50%	285	5	5	5	9.1	8.2	8.2	7.3	7.8	8.0	21.0	19.3	19.2			
"	67	5	4	4	9.1	8.2	8.2	7.3	7.8	8.0				490		470
70%	54	5	5	5	9.2	8.2	8.3	7.2	7.8	8.1	20.7	19.1	19.2			
"	64	5	5	5	9.2	8.2	8.2	7.2	7.8	8.0				540		570
85%	33	5	5	4	9.2	8.2	8.1	7.2	7.8	8.1	20.4	19.8	19.2			
"	130	5	5	5	9.3	8.2	8.1	7.2	7.8	8.1				665		625
100%	21	5	5	5	9.3	8.2	8.1	7.1	7.8	8.1	20.3	20.0	19.5			
"	113	5	5	5	9.3	8.0	7.8	7.1	7.8	8.1				770		715
Measured by:		MF	MF	SHW	SHW	MF	SHW	SHW	MF	SHW	SHW	MF	SHW	SHW		SHW
Recorded by:		MF	MF	SHW	MF	SHW	SHW	MF	SHW	SHW	MF	MF	SHW	MF		SHW

Investigators' Signatures

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl2:					
Lab Tot. Resid. Cl2:					
Alkalinity:					
Hardness:					
Total Ammonia:					

MICROTOX™ Data Reduction Sheet

SOURCE: Our Products 2/21/89

GRAPH CARD: EC 50 = (15 MIN, 15 °C) = 7202 (%SAMPLE) m/L

SAMPLE DATA:

SAMPLE TYPE (EFFLUENT, LEACHATE, ETC.):

DATE ASSAYED: 2/21/89 TIME: 10.55

VISUAL COLOR: greenish CORRECTION REQUIRED: YES (NO)

VISUAL TURBIDITY: SEPARATION REQUIRED: YES (NO)

INITIAL pH: pH ADJUSTED TO: WITH:

OSMOTICALLY ADJUSTED WITH: MOAS (DRY NaCl) OTHER

PRIMARY DILUTION OF SAMPLE:

OPERATOR: M. Faindell REAGENT VIAL LOT NO. M- 606

REMARKS:

MICROTOX™ 99% TEST

SAMPLE CUVETTE	% SAMPLE	READINGS 5 MIN	READINGS 15 MIN	I5	I15	NOTES
A1	0	71	43	X	X	
B1		59	36			
C1		61	37			
A2	12.38	54	30	0.09	0.18	
B2		63	36			
C2		58	32			
A3	24.75	47	25	0.35	0.31	
B3		45	24			
C3		50	23			
A4	49.5	4050	32	0.41	0.57	
B4		39	21			
C4		34	21			
A5	99	35	14	0.72	0.90	
B5		32	12			
C5		44	25			
EC50 (MIN, °C)				10.70	9.02	

REVIEWED BY:

DATE: 03/14/89