

QwikLite™ 200 Final Bioassay Test Report

Summary Data

Test Location:	Hertford Sanitary District Wastewater Treatment Facility, St. Mary's County (CA)		
Test Facility:	Hertford Sanitary District Wastewater Treatment Facility (HSDWTF)	Substation:	Building 88
Operator:	Jane Smith	Date/Time:	11 May 06 / 11:00 AM
Address 1:	1 Melrose Place	Telephone:	(806)- 968-2617
Address 2:		City/State/Zip:	Hertford, CA, 93456
Comments:	Technician Jane Smith collected one wastewater sample on May 8, 2006 from HSDWTF Building 88 (treated wastewater effluent tank). Sample was collected & labeled as HSDWTF 001-88-QL in one presoaked and acid-rinsed (HCL) plastic polycarbonate bottle. No run off or wet weather/rain present in the past two days.		
Chain of Custody:	#1: Technician Jane Smith collected one wastewater sample from HSDWTF Building 88 on May 8, 2006 at 11:00 AM. Sample collected in one presoaked and acid-rinsed (HCL) plastic polycarbonate bottle (labeled as HSDWTF 001-88-QL).		
	#2: Jane Smith proceeded to perform test in laboratory (on-site) on May 10, 2006 with sample bottle.		
	#3: Supervisor Lane Jones reviewed and signed off on laboratory procedures.		
	#4: Samples were discarded on May 11, 2006		

Regulations and Requirements

It is national policy that the discharge of toxic substances in toxic amounts be prohibited.

*{Federal Water Pollution Control Act Amendments - 1972 (PL 92-500),
Clean Water Act (CWA) - 1977 (PL 95-917), and Water Quality Act of 1987 (PL 100-4).}*

One of the criteria used to gauge the harmful potential of discharged waste is toxicity to aquatic life. The type of test and species used for testing is dictated under the framework of the National Pollutant Discharge Elimination System and falls under the jurisdiction of the local Regional Water Quality Control Board.

This report describes the procedures used and the results obtained for the static percent survival aquatic toxicity-screening test performed by the QwikLite™, a self-contained portable instrument for environmental toxicity measurements.

Developed in accordance with the ASTM Standards:

- Guide for Conducting Toxicity Tests with Bioluminescent Dinoflagellates (E1924-97)
- Guide for Conducting Static Toxicity Tests with Microalgae (E1218-04)
- Standard Practice for Statistical Analysis for Toxicity Tests Conducted Under ASTM Guidelines (E1847-96)

Your permit requirements are: NPDES Permit No. CA 0084106.

Data Summary

Sample Water Chemistry (Values represent the water quality of the sample at test)

Water Chemistry	Sample ID: HSDWTF 001-88-QL
pH	7.4
Salinity (ppt)	30 (adjusted)
Temperature (°C)	20

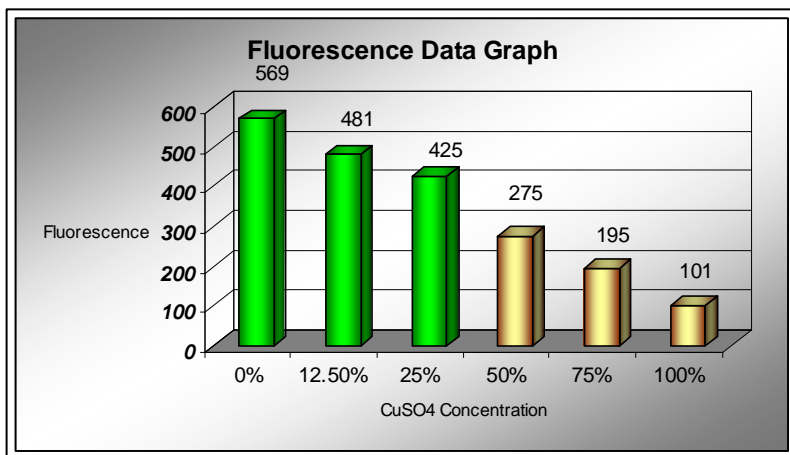
Test Materials, Methods and Procedures

Test Duration:	24 hours (1 day)				
Start time:	10 May 06 / 11:00 AM	End time:	11 May 06 / 11:00 AM		
Test Specie:	<i>Pyrocystis lunula</i>	Number of replicate(s):	1	Cells per cuvette:	30-800/mL
Operator:	Jane Smith				

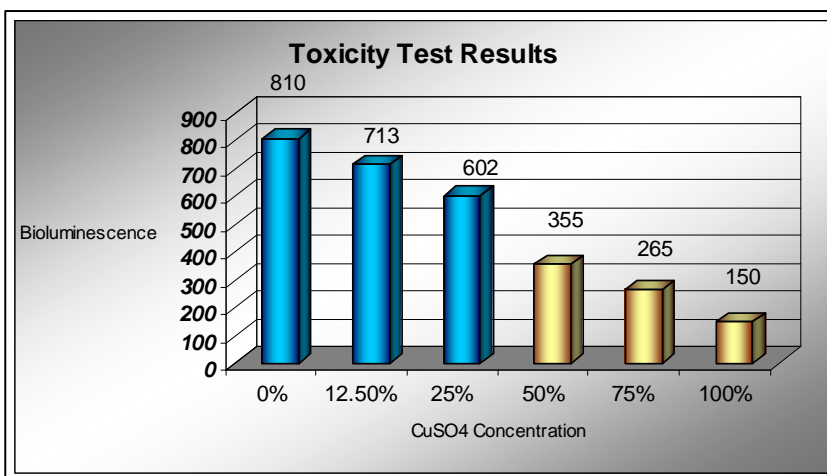
Experimental Design

Sample ID	Concentration [%]	Sample Volume [mL]	Sea Water Volume [mL]	Cells Volume [mL]
GSDWTF 001-88-QL	Control (A)	0	3.0	1.5
	12.5% (B)	0.38	2.62	1.5
	25% (C)	0.75	2.25	1.5
	50% (D)	1.50	1.50	1.5
	75% (E)	2.25	0.75	1.5
	100% (F)	3.0	0	1.5

Fluorescence Data				
Sample ID	Concentration	Rep	Fluorescence	% of Control
GSDWTF 001-88-QL	Control	1	569	100.0
	12.50%	1	481	84.5
	25%	1	425	74.7
	50%	1	275	48.3
	75%	1	195	34.3
	100%	1	101	17.8



Toxicity Test Results/Statistical Analysis				
Sample ID	Concentration	Rep	Bioluminescence	% of Control
GSDWTF 001-88-QL	Control	1	810	100.0
	12.5%	1	713	88.0
	25%	1	602	74.3
	50%	1	355	43.8
	75%	1	265	32.7
	100%	1	150	18.5



Statistical Analysis	
Point of Environmental Toxicity Concern	IC 50%
Sample 1: HSDWTF 001-88-QL	51.8%

IC50% Explained: This measurement is a calculation and expression of the sample's likelihood of producing adverse environmental consequences. The IC50% number in the box above represents the amount (in concentration) of the sample that would likely kill organisms if this solution were discharged into public waterways without treatment.

The term IC50% is defined as "the point at which 50% of the natural light production from marine plankton has been inhibited or reduced." This means that the plankton used in the testing process are dead or dying from the solution they were exposed to. This measurement is much the same as an LD50% or Lethal Dose 50% assessment used with other aquatic research organisms. The LD50% means "the point at which 50% of the sample population ceases to exist or function normally." Therefore, the IC50% measurement from QwikLite provides this same indication.

Observations & Notes

One wastewater sample was collected from HSDWTF Building 88 (treated wastewater effluent tank) on May 8, 2006 at 11:00 AM in one presoaked and acid-rinsed (HCL) plastic polycarbonate bottle & labeled as HSDWTF 001-88-QL. Sample was salinity adjusted to 30 ppt. Testing occurred within 1 day of sample collection.

Upon completion of the test, data and results were reviewed. The fluorescent and bioluminescence data both shared similar trends, showing toxicity at 50% concentration. The graph (concentration versus bioluminescence) also illustrates the toxicity at 50% concentration. I will repeat this test with the same wastewater sample. However, I will change my test concentrations (50%, 40%, 35%, 25%, 12.5%, control) to obtain a better understanding of the toxicity in the sample. This will help in determining the amount needed to dilute the wastewater treatment tank in order to be in compliance.

Use of the Information in this Report
IMPORTANT: The measurements, data, analysis and information in this report should be used in conjunction with ALL sources of relevant information about the sample used in this testing process. Qualified technical personnel should consult local regulatory or governing agencies and/or requirements for water quality management and utilize best management practices in decision making.