MICROBICS MICROTOX® TOXICITY TEST

TEST SUBSTANCE

Identity: Perfluorooctanesulfonylamido(ethyl)acetate; may also be referred to as PFOSAA, FC-128 or as the major component of FC-127, FC-129, FC-109, FC-109-X or R1904. (Glycine, N-ethyl-N-[(heptadecafluorooctyl)sulfonyl]-, potassium salt, CAS # 2991-51-7)

Remarks: The test sample is FC-129 referred to by the test laboratory as R1904. Current information indicates it is a mixture of 42% test substance, 32% water, 14% 2-butoxyethanol, 4% ethanol, and 8% C_4-C_7 fluoroalkyl carboxylate compounds. Test material was from 3M production lot 930014, mfg date 3/97.

The following summary is abbreviated because the test sample is a mixture of the test substance in a water/organic solvent solution. Data may not accurately relate toxicity of the test sample with that of the test substance.

METHOD:

Method: Microbics Microtox® "BASIC" Procedure
Test type: Static acute
GLP: No
Year Completed: 1997
Species: *Vibrio fischeri* formerly *Photobacterium phosphoreum*
Analytical monitoring: pH and osmotic condition
Replicates: Two
Statistical methods: EC10 and EC50 values calculated by statistical linear regression program provided for Microtox®
Test organism source: Microbics Microtox® Reagent.

RESULTS

Nominal concentrations: Blank control, 125, 250, 500, 1000 mg/L
Element value: 5-minute EC_{50} = 354 (316-396) mg/L
15-minute EC_{50} = 290 (261-323) mg/L
30-minute EC_{50} = 274 (248-302) mg/L

All element values based on nominal concentrations.

Remarks: Testing was conducted on the mixture of the test substance as described in the test substance remarks field. The value reported applies to that mixture and not the test substance. No attempt was made to

determine the impact of the presence of the organic solvents or what portion of the toxicity can be contributed to the Perfluorooctanesulfonylamido(ethyl)acetate.

CONCLUSIONS

The FC-129 30-minute EC_{50} for *Vibrio fischeri* was determined to be 274 mg/L with a 95% Confidence Interval of 248-302 mg/L.

Submitter: 3M Company, Environmental Laboratory, P.O. Box 33331, St. Paul, Minnesota, 55133

DATA QUALITY

Reliability: Klimisch ranking 2. Testing meets all criteria for quality testing, but lacks analytical confirmation of test substance concentrations. There is a lack of characterization of the test sample.

REFERENCES

This study was conducted at AScI Corporation of Duluth, Minnesota at the request of the 3M Company.

OTHER

Last changed: 5/17/00

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AScI Corporation

TEST 3M R1904 Microtox©

DATE 7/9/97

TECHNICIAN NHK, TG

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INFORMATION ABOUT THE STUDY

Sponsor:	3M
Sponsor Study ID#:	R1904
ASci Study ID#:	5010-068
Study Director:	HHC, TG
Test Substance:	R1904
Reference Substance:	
Test Organism:	Vibrio fischeri
Type of Test:	Micro tox toxicity test
Test Guideline:	
In-Life Phase Dates:	

Provide comments below if any additional observations are made or data provided:

Stock of 2000 mg/L ~~made~~ RCHHR 4/3/97

200 ml volume

(2000 mg/L)(0.2L) = 400 mg

Amount wanted	Amount Weighed
400 mg	402

Provide an explanation below if the test is unsuccessful:

Chemical is a dark yellow color and the consistency of cough syrup

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MICROTOX DATA REPORT
Basic Test

FILE: 97070901.K5
R1904 dark yellow in color;consistency of cough syrup. 2000mg/l stock
Test Time: 5 minutes Osmotic Adjustment:NaCl

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT	AV % q DIFF.
Control	96.99/ 78.33	0.0	0.8076 #		
Control	110.50/ 89.45	0.0	0.8095 #		
1	116.03/ 67.32	125.0000	0.394 #	28.2	
2	110.55/ 60.09	125.0000	0.488 #	32.8	30.5 q 2.3
3	122.19/ 53.45	250.0000	0.848 #	45.9	
4	108.70/ 53.42	250.0000	0.645 #	39.2	42.6 q 3.3
5	103.95/ 35.95	500.0000	1.338 #	57.2	
6	110.81/ 37.84	500.0000	1.368 #	57.8	57.5 q 0.3
7	111.12/ 26.72	1000.0000	2.363 #	70.3	
8	109.79/ 27.90	1000.0000	2.182 #	68.6	69.4 q 0.8

CR = CoCORRECTION FACTOR = 0.8086
# Used for calculations

EC50 354.0 mg/L (95% CONFIDENCE RANGE:316.3 TO 396.3)

Signature Hollie Hillerman TEST DATE: 7/9/97
TIME: 1530

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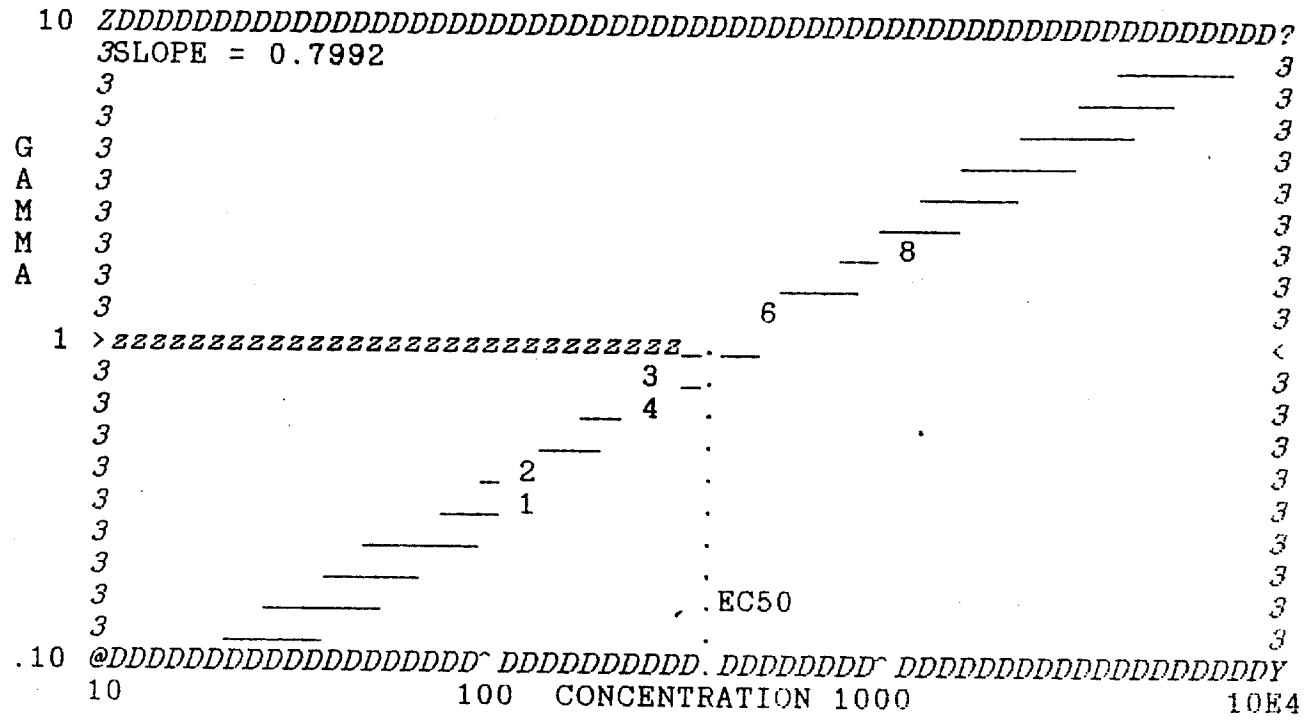
FILE:97070901.K5 PAGE 2



ESTIMATING EQUATION: LOG C = 1.2247 x LOG *b* +2.5491
95% CONFIDENCE FACTOR: 1.11940 FOR EC50
COEFFICIENT OF DETERMINATION: R^2 = 0.97877

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MICROTOX DATA REPORT
Basic Test

FILE: 97070901.K15
R1904 dark yellow in color;consistency of cough syrup. 2000mg/l stock
Test Time: 15 minutes

Osmotic Adjustment:NaCl

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT	AV % q DIFF.
Control	96.99/ 72.50	0.0	0.7475 #		
Control	110.50/ 81.76	0.0	0.7399 #		
1	116.03/ 58.65	125.0000	0.471 #	32.0	
2	110.55/ 52.30	125.0000	0.572 #	36.4	34.2 q 2.2
3	122.19/ 45.05	250.0000	1.017 #	50.4	
4	108.70/ 44.87	250.0000	0.802 #	44.5	47.5 q 3.0
5	103.95/ 30.48	500.0000	1.536 #	60.6	
6	110.81/ 32.57	500.0000	1.530 #	60.5	60.5 q 0.0
7	111.12/ 22.36	1000.0000	2.696 #	72.9	
8	109.79/ 23.43	1000.0000	2.485 #	71.3	72.1 q 0.8

CR = CoCORRECTION FACTOR = 0.7437 ..
# Used for calculations

EC50 290.1 mg/l (95% CONFIDENCE RANGE:261.0 TO 322.5)

Signature Tina Holloway
Hollie Kitchens

TEST DATE: 7/9/97
TIME: 1530

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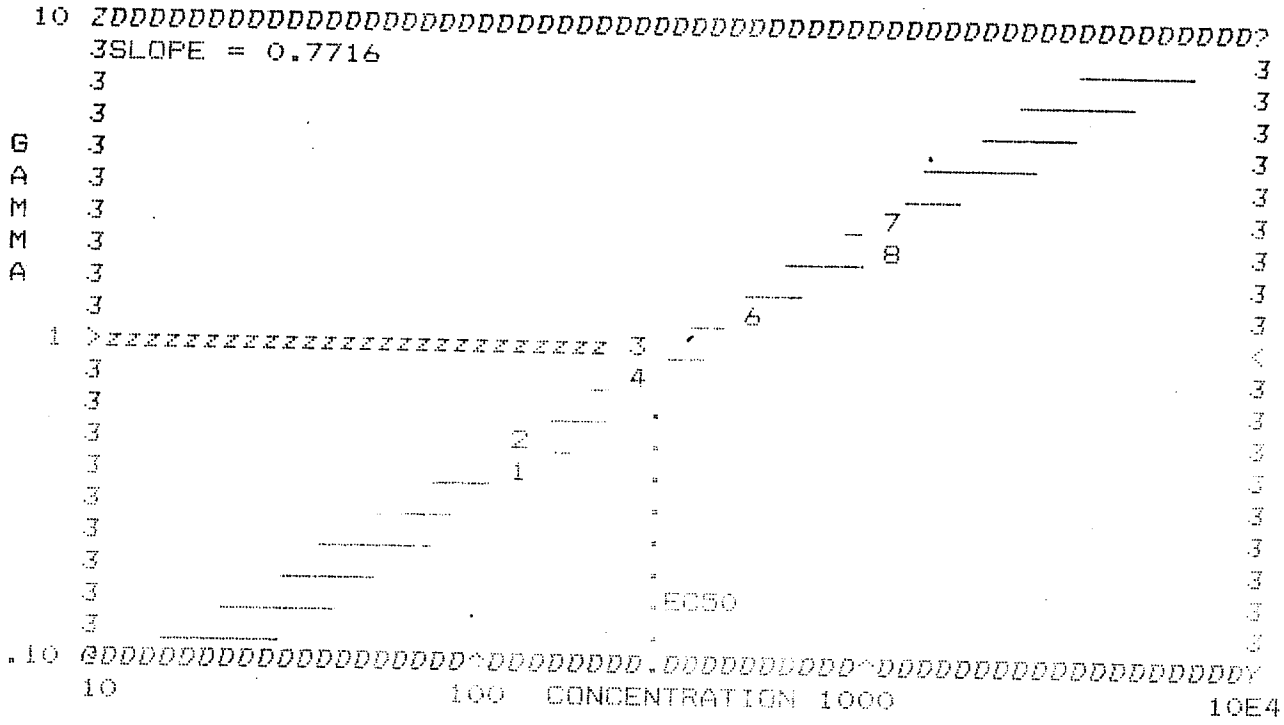
FILE:97070901.K15 PAGE 2



ESTIMATING EQUATION: LOG C = 1.2733 x LOG b +2.4626
95% CONFIDENCE FACTOR: 1.11152 FOR EC50
COEFFICIENT OF DETERMINATION: R^2 = 0.98251

#7130

MICROTOX DATA REPORT
Basic Test

FILE: 97070901.K30
R1904 dark yellow in color;consistency of cough syrup. 2000mg/l stock
Test Time: 30 minutes Osmotic Adjustment:NaCl

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT	AV % q DIFF.
Control	96.99/ 67.40	0.0	0.6949 #		
Control	110.50/ 76.81	0.0	0.6951 #		
1	116.03/ 54.30	125.0000	0.485 #	32.7	
2	110.55/ 48.04	125.0000	0.599 #	37.5	35.1 q 2.4
3	122.19/ 42.35	250.0000	1.005 #	50.1	
4	108.70/ 41.06	250.0000	0.840 #	45.7	47.9 q 2.2
5	103.95/ 27.41	500.0000	1.636 #	62.1	
6	110.81/ 29.19	500.0000	1.638 #	62.1	62.1 q 0.0
7	111.12/ 19.34	1000.0000	2.993 #	75.0	
8	109.79/ 20.62	1000.0000	2.701 #	73.0	74.0 q 1.0

CR = CoCORRECTION FACTOR = 0.6950
# Used for calculations

EC50 273.6 % (95% CONFIDENCE RANGE:248.2 TO 301.5)
BG 7/9/97
mg/l

Signature Lollie Litton TEST DATE: 7/9/97
TIME: 1530

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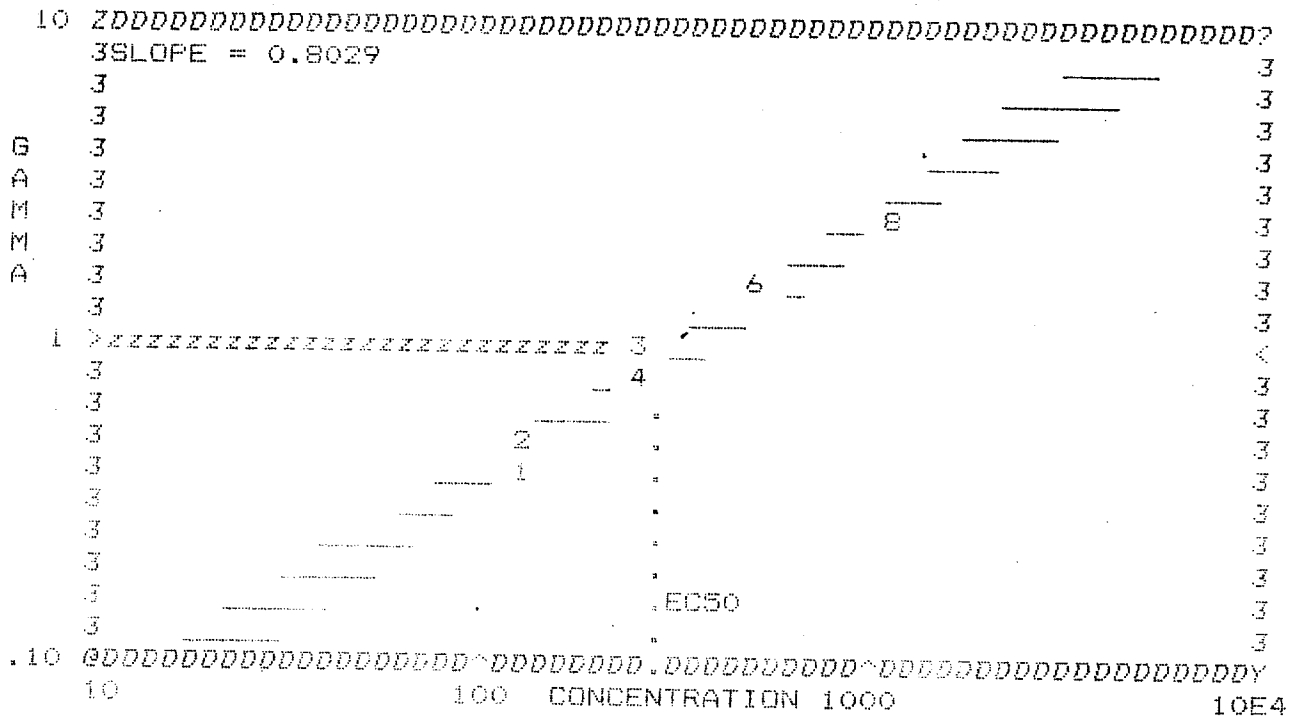
FILE:97070901.K30 PAGE 2



ESTIMATING EQUATION: LOG C = 1.2279 x LOG b +2.4370
95% CONFIDENCE FACTOR: 1.10200 FOR EC50
COEFFICIENT OF DETERMINATION: R^2 = 0.98583

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Attachment A
Environmental Laboratory

LR/Study Number: R1904
Date/Time: 7/9/97, 1530
Analyst: HAH, TG

Microtox® Test Solution Preparation

TEST SUBSTANCE: R1904

1. Preparation of Stock Solution or 100% Solution
(If testing a 100% solution, record final concentration as 100% and skip to section 2)

Mass/Volume or volume/volume of Test Substance: 402 mg/200 ml
Diluent Used: milipore water

Final Concentration of Stock Solution (mg/L or % v/v): 2000 mg/l

Balance Used: MEHLER AT250 Analytical

2. pH Adjustment of Stock Solution or 100% Solution

Initial pH: 8.46

pH Adjusted to: 7.64

pH Adjusted with: HCl

3. Osmotic Adjustment of Stock Solution or 100% Solution

Osmotic Adjuster: NaCl 400 *mg added to* 20 *mL solution*

Comments: Sodium Chloride crystals J.T. Baker Lot # KO2636

4. Appearance of pH and Osmotically Adjusted Stock Solution

(CLEAR) or OPAQUE *(Circle one)*

Color: Light yellow

Comments: R1904 dark yellow color, consistency of cough syrup

5. Comments

Reagent lot # ACVC05-3 Exp. 1/98

MICROTOX® PHENOL REFERENCE TOXICITY CONTROL CHART

Test Date	5-Min EC_{50} (mg/L)	Running Mean (mg/L)	Standard Deviation	Upper Limit	Lower Limit	CV (%)
July 1997	23.59	--	--	--	--	--
July 1997	18.26	20.93	3.769	28.47	12.99	18.0
July 1997	18.23	20.03	3.086	26.20	13.86	15.4

MICROTOX® ZINC REFERENCE TOXICITY CONTROL CHART

Test Date	15-Min EC_{50} (mg/L)	Running Mean (mg/L)	Standard Deviation	Upper Limit	Lower Limit	CV (%)
June 1997	3.898	--	--	--	--	--
June 1997	4.481	4.190	0.412	5.014	3.366	9.8
July 1997	4.125	4.168	0.294	4.756	3.580	7.1