ACUTE TOXICITY TO FISH (FATHEAD MINNOW)

TEST SUBSTANCE

Identity: A mixture containing perfluorooctanesulfonate, which may also be referred to as PFOS, FC-95, or as a component of FC-206 or L-3243. (1-Octanesulfonic acid) (CAS # 2795-39-3).

Remarks: The 3M production lot number was 501. The test sample is FC-206. Current information indicates it is a mixture of 0.67% PFOS, 17.5% diethylene glycol butyl ether, 78.91% water, 1.33% Sultone foamer, 1% sodium octyl sulfate, 0.04% sodium lauryl sulfate, 0.5% polyoxyethylene monooctylphenyl ether, and 0.05% benzotriazole.

The following summary applies to a mixture with incompletely characterized concentrations of impurities. Data may not accurately reflect toxicity of the fluorochemical component of the test sample.

METHOD:

Method: Not given.
Type: Acute static
GLP: No
Year completed: 1976
Species: *Pimephales promelas*
Supplier: Not given.
Analytical monitoring: Dissolved oxygen, pH, and temperature.
Exposure period: 96-hours
Statistical methods: LC_{50} value calculated using graphic interpolation.
Test fish age: Juveniles.
Length and weight: Average length = 50 mm
Average weight = 1.5 g (wet)
Loading: Not given.
Pretreatment: None
Test conditions:
Dilution water: Carbon-filtered well water.
Dilution water chemistry: Not given.
Lighting: Not given.
Stock and test solution preparation: Not given.
Concentrations dosing rate: Once.
Stability of the test chemical solutions: Not given.
Exposure vessels: Not given.
Number of replicates: 1
Number of fish per replicate: Not given.
Number of concentrations: five plus a blank control
Water chemistry during the study:
Temperature range (0-96 hours): 21 - 22 °C

pH range (0-96 hours):
7.0 – 7.0 mg/L (control exposure)
6.7 – 6.9 mg/L (1250 mg/L exposure)*
Dissolved oxygen range (0-96 hours):
5.0 – 5.5 mg/L (control exposure)
4.0 – 5.2 mg/L (1250 mg/L exposure)*
* 1250 mg/L (intermediate concentration) exposure values used because the highest three concentrations resulted in total mortality by 72 hours.

RESULTS

Nominal concentrations: Blank control, 500, 1250, 2500, 3750, and 5000 mg/L.

Element values: 96-hour LC_{50} = 1500 mg/L

Element values based on nominal concentrations

Remarks: Testing was conducted on the mixture as described in the Test Substance Remarks field. The values reported apply to that mixture and not the fluorochemical proportion alone.

CONCLUSIONS

The FC-206 96-hour LC_{50} for fathead minnow was determined to be 1500 mg/L.

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

DATA QUALITY

Reliability: Klimisch ranking 3. Testing lacks record of methodology used and documentation. The sample purity was not properly characterized and the study lacks analytical confirmation of the amount of fluorochemical proportion in the solution.

REFERENCES

This study was conducted by the 3M Company, Environmental Laboratory, St. Paul, MN, 1976.

OTHER

Last changed: 6/28/00.

AQUATIC TOXICITY WORK SHEET

Type Test 96 Hours – Static

Material Tested FC-206 lot 501 Chemfire Effluent

Test Organism Fathead Minnow

Avg. Weight 1.5g Avg. Size 5cm

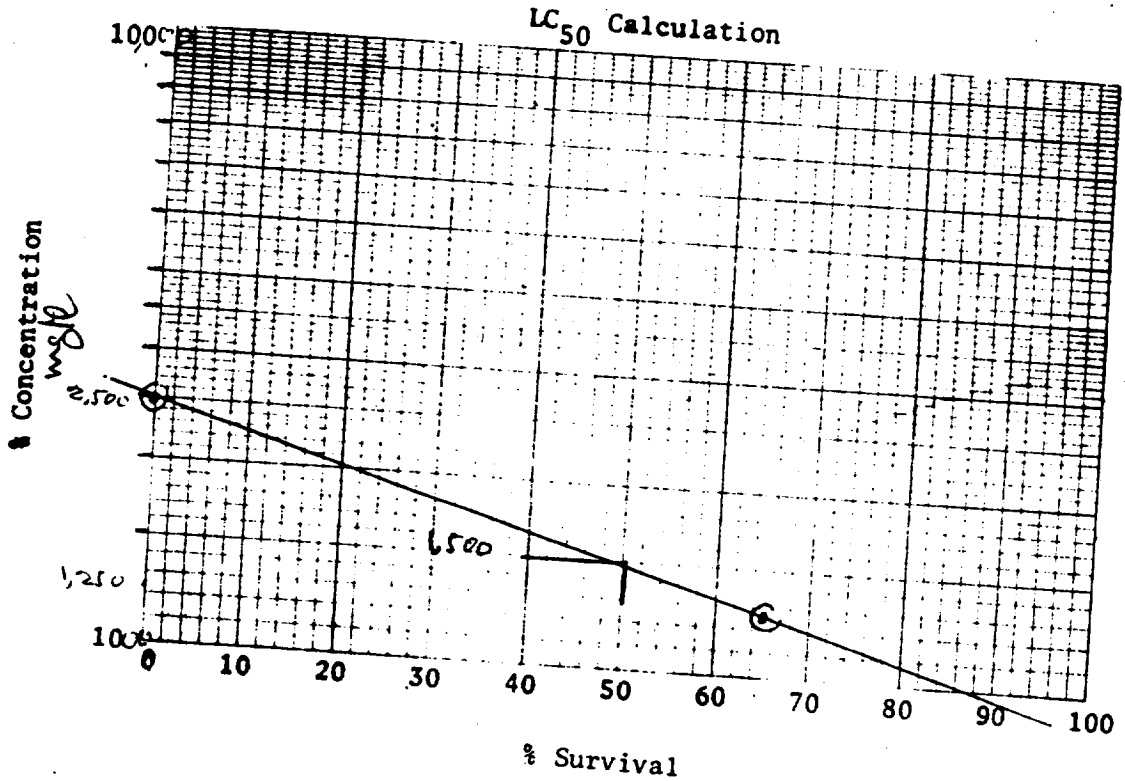
Date Started 6/15/76

Date Completed 6/19/76

Time Started 3:00 pm

Plotted LC_{50} 1,500 mg/l

Dilution Water Carbon Filtered - Well Water

Conc.	24 hrs % Survival	pH	D.O ppm	48 hrs % Survival	pH	D.O ppm	72 hrs % Survival	pH	D.O ppm	96 hrs % Survival	pH	D.O ppm
Control	100	7.0	5.5	100	7.0	5.2	100	7.0	5.0	100	7.0	5.0
500 mg/l	100	7.0	5.3	100	7.0	5.0	100	7.0	4.7	100	7.0	4.5
1,250	100	6.9	5.2	85	6.8	4.9	70	6.7	4.5	65	6.7	4.0
2,500	100	6.8	5.0	30	6.7	4.5	0	6.7	4.0	0	—	—
3,750	75	6.8	4.8	0	6.7	4.2	0	—	—	0	—	—
5,000	0	6.8	4.5	0	—	—	0	—	—	0	—	—
Average Temperature	22°			22			21			21		

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