

## ACUTE TOXICITY TO FISH (FATHEAD MINNOW)

### TEST SUBSTANCE

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**Identity:** A mixture containing perfluorooctanesulfonate, which may also be referred to as PFOS, FC-95, or as a component of FC-600. (1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptafluoro-, potassium salt, CAS # 2795-39-3)

**Remarks:** The 3M production lot number was 2367. The test sample is FC-600 (Belgium). Current information indicates it is a mixture of 1.0% PFOS, 81.20% water, 12.00% diethylene glycol butyl ether, 1.00% sodium octyl sulfate, 2.00% propane Sultone foamer, 1.00% sodium decyl sulfate, 0.85% xanthan gum, 0.1% N-(3-chloroallyl) hexaminium chloride, 0.80% starch, and 0.05 % tolyltriazole.

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

### METHOD:

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**Method:** Not noted.

**Test type:** Acute static (Range-finding)

**GLP:** No

**Year Completed:** 1983

**Species:** *Pimephales promelas*

**Supplier:** Commercial supplier in Brady, Nebraska

**Analytical monitoring:** Temperature, pH, DO

**Exposure period:** 96-hours

**Statistical methods:** Not applicable. No mortality at highest concentration tested.

**Test fish age:** Juvenile

**Average Length and weight:** Length = 3.6 cm  
Weight = 0.39 grams

**Loading:** 0.65 g/L

**Pretreatment:** Not noted.

**Test conditions:**

**Dilution water:** Carbon-filtered well water, St. Paul, MN.

**Dilution water chemistry:**

**pH:** 8.2

**Dissolved Oxygen:** 9.6 mg/L

**Temperature range:** 18°C

**Lighting:** Not noted

**Stock and test solution preparation:** Test solutions were created by direct weights additions.  
**Concentrations dosing rate:** Once  
**Stability of the test chemical solution:** Not noted  
**Exposure vessels:** Wide-mouth one gallon glass jars containing 3 liters of test solution.  
**Number of replicates:** One  
**Number of fish per replicate:** 5  
**Number of concentrations:** Four plus two blank controls  
**Water chemistry during the study:**  
    **pH range (0 – 96 hours):**  
        8.0 – 8.2 (control exposures)  
        7.7 – 8.2 (1,000 mg/L exposure)  
    **Dissolved Oxygen range (0 – 96 hours):**  
        5.8 – 9.6 mg/L (control exposures)  
        1.7 – 9.6 mg/L (1,000 mg/L exposure)  
    **Temperature range (0 – 96 hours):**  
        18 – 21°C

## **RESULTS**

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**Nominal concentrations:** 2 blank controls, 1, 10, 100, and 1,000 mg/L  
**Element value:** 96-hour LC<sub>50</sub> = >1,000 mg/L

Element value based on nominal concentrations.

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

## **CONCLUSIONS**

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The FC-600 96-hour LC<sub>50</sub> for *Pimephales promelas* was determined to be >1,000 mg/L.

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

## **DATA QUALITY**

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**Reliability:** Klimisch ranking 2. The study meets all the criteria for quality testing. However, the sample purity was not properly characterized and the study lacks analytical confirmation of the amount of fluorochemical proportion in the solutions.

## REFERENCES

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This study was conducted by 3M Company, Environmental Laboratory, St. Paul, MN, Lab Request number 8875, 1983.

## OTHER

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**Last changed:** 6/28/00

ENVIRONMENTAL LABORATORY  
AQUATIC TOXICITY DATA SHEET  
EXPLORATORY (RANGE-FINDING TEST)

LR 8875

Type Test 96 HR. ACUTE STATIC Material Tested EC-100 (BELGIUM) Lot 2367  
Test Organism FATHEN MINNOW Source BRADY, N.E.S. Date Rec'd 10/13/82 Batch No. L83  
Avg. Wt. 0.39 grams Avg. Size 3.6 CM No. Organisms per dose 5

Test Solution Volume 3 Liters/All-Glass Tank Tank Dimensions: WIDE-MOUTH 1 GALLON GLASS JAR

Time Started 4:30 PM Date Started 2/6/83 Date Completed 2/10/83

Dilution Water Carbon-filtered well water (Temp. 18 °C., D.O. 9.16 ppm, pH 8.2)

Investigator WVE, R3 LC<sub>50</sub> (95% Confidence Limits) >1000 mg/l  
(Full Signature) WVE, R3 <sup>K=2</sup>

| Tank No. | Init. Conc. mg/l | Total Amount Added | 24 Hours       |     |          | 48 Hours       |     |          | 72 Hours       |     |          | 96 Hours       |     |          |
|----------|------------------|--------------------|----------------|-----|----------|----------------|-----|----------|----------------|-----|----------|----------------|-----|----------|
|          |                  |                    | Total No. Dead | pH  | D.O. ppm | Total No. Dead | pH  | D.O. ppm | Total No. Dead | pH  | D.O. ppm | Total No. Dead | pH  | D.O. ppm |
| I        | Control          | <u>49*</u>         | 0              | 8.1 | 6.9      | 0              | 8.1 | 6.5      | 0              | 8.0 | 6.3      | 0              | 8.0 | 6.0      |
| I        | Control          | —                  | 0              | 8.1 | 6.9      | 0              | 8.1 | 6.4      | 0              | 8.0 | 6.1      | 0              | 7.9 | 5.8      |
| -1       | 1                | 3                  | 0              | 8.2 | 6.4      | 0              | 8.1 | 6.3      | 0              | 7.9 | 6.0      | 0              | 8.0 | 5.4      |
| -2       | 10               | 30                 | 0              | 8.2 | 6.3      | 0              | 8.1 | 6.0      | 0              | 8.0 | 6.0      | 0              | 8.0 | 5.6      |
| -3       | 100              | 300                | 0              | 8.2 | 6.3      | 0              | 8.1 | 6.0      | 0              | 7.9 | 5.3      | 0              | 8.0 | 5.3      |
| -4       | 1000             | 3000               | 0              | 8.2 | 6.4      | 0              | 7.8 | 1.4      | 0              | 7.7 | 2.8      | 0              | 7.8 | 3.6      |

Test Temp. °C. 19°C 20°C 20°C 21°C

Initials & Date R3 2/7/83 R3 2/8/83 R3 2/9/83 R3 2/10/83

Comments: \*INDIVIDUAL WEIGHTS. CLEAR, MURKY COLORED LIQUID.

Effects other than Mortality

EC<sub>50</sub>

| Tank No. | Symptoms or Reactions | Total No. Affected |        |        |        |
|----------|-----------------------|--------------------|--------|--------|--------|
|          |                       | 24-Hr.             | 48 Hr. | 72-Hr. | 96-Hr. |
| Control  | I                     | NONE               | NONE   | NONE   | NONE   |
| Control  | II                    | NONE               | NONE   | NONE   | NONE   |
| 4-1      |                       | NONE               | NONE   | NONE   | NONE   |
| 4-2      |                       | NONE               | NONE   | NONE   | NONE   |
| 4-3      |                       | NONE               | NONE   | NONE   | NONE   |
| 4-4      | <u>SURFACING</u>      | NONE               | 5      | 5      | NONE   |

Comments: