TOXICITY TO FISH (Saltwater Rainbow Trout)

TEST SUBSTANCE

Identity: Perfluorooctanesulfonate; may also be referred to as PFOS or FC-95. (1-Octanesulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-, potassium salt, CAS # 2795-39-3)

Remarks: The test substance is a white powder of uncharacterized purity.

METHOD

Method: Standard procedures for Testing Acute Lethality of Liquid Effleunts (Environment Canada, 1980)
Type: Acute static, renewal after 48-hours
GLP: No
Year completed: 1985
Species: Rainbow Trout, *Salmo gairdneri*
Fish source: Rainbow Springs, Thamesford
Fish age at test initiation: not noted
Fish acclimation to salt water: fish gradually acclimated to increasing salinity; held at 30 parts per thousand salinity 8 days prior to test initiation.
Exposure period: 96-hours
Analytical monitoring: Dissolved oxygen, pH, conductivity
Statistical methods: Not noted. Element values were calculated for each replicate series, but not combined for the whole study. A cumulative mortality-concentration plot was used to estimate the LC_{50}.
Test conditions:

Dilution water: Mississauga dechlorinated tap water amended with calcium, magnesium, sodium, and chloride to obtain 30 parts per thousand salinity

Dilution water chemistry (initial):

pH:	7.4 - 8.0
D.O.:	8.6 – 9.0 mg/L
Conductivity:	> 20,000 µmhos/cm

Stock solution preparation: 1000 mg/L
Exposure vessels: Not noted; solution volume 35 L
Number of replicates: 2 tests – run 4 days apart, not replicated
Number of organisms/vessel: 6
Loading: 0.75 g/L
Number of concentrations: 4 plus a blank control
Water chemistry during the studies:

Dissolved oxygen ranges

8.1 – 10.3 (control)
8.8 – 10.1 (30 mg/L)

pH ranges

7.6 – 8.2 (control)
7.3 – 8.0 (30 mg/L)

Test temperature (0 – 48 hours): 15°C

Photoperiod: 12-hours light, 12-hours dark

Element basis: mortality

RESULTS

Nominal concentrations: 5, 10, 20, 30 mg/L
Element values (95% confidence interval) calculated per replicate:
96-hour EC_{50} = 13.7 (10.7 –17.7) mg/L
96-hour EC_{50} = 13.7 (10.7 – 17.8) mg/L

Mortality of controls: 17% (1/6 in both studies)

DATA QUALITY

Reliability: Klimisch ranking = 2. This study satisfied all criteria for quality testing at the time performed, but actual concentrations were not measured. Results were based on nominal concentrations. Additionally, sample purity was not adequately characterized.

REFERENCES

This study was conducted by Beak Consultants Limited, Mississauga, Ontario, Canada for Panarctic Oils Ltd, Calgary, Alberta, Canada.

OTHER

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

Last changed: 6/12/01