

ACTIVATED SLUDGE RESPIRATION INHIBITION TEST

TEST SUBSTANCE

Identity: Perfluorooctanoic acid, tetrabutylammonium salt; may also be referred to as PFOA tetrabutylammonium salt, tetrabutylammonium perfluorooctanoate, N2803-2, or as a major component of L-13492. (Octanoic acid, pentadecafluoro-, tetrabutylammonium salt, CAS # 95658-53-0)

Remarks: The 3M production lot number was 2. The test sample is referred to by the testing laboratory as L-13492. The purity of the sample was not sufficiently characterized, although current information indicates it is a solution of 44.9% tetrabutylammonium perfluorooctanoate, 27.9% water, and 27.2% isopropanol.

The following summary applies to the test sample as a mixture of the test substance in an isopropanol/water solution with incompletely characterized concentrations of impurities. Data may not accurately relate toxicity of the test sample with that of the test substance.

METHOD

Method: OECD 209

GLP: No

Year Completed: 1995

Analytical monitoring: DO concentrations, pH, and temperature.

Test organism source: Activated sludge mixed liquor collected from the Metro Wastewater Treatment Plant, St. Paul, MN.

Test conditions

Dilution water: Millipore Milli-Q® water

Synthetic Sewage: Per OECD method

Reference and test solution preparation: A stock solution of the reference substance, 3,5-dichlorophenol, was prepared by dissolving 500 mg in 10 mL of 1N NaOH, diluted to 30 mL with Milli-Q® water, then brought to the point of incipient precipitation with 1N H₂SO₄, and diluted to 1 L with Milli-Q® water. The pH of the reference stock solution was measured to be 7.3.

The test substance was added directly to the test vessels. The initial pH of the test solution was measured to be 7.1.

Test vessels: 1200 mL Pyrex® Fleakers™ containing 500 mL test solution

Number of concentrations: 1 (in duplicate) plus reference control and blank controls in duplicate

Temperature: 18.6-21.0°C

Total Suspended Solids and pH for sludge on day of testing:
3.8 g/L (diluted TSS in test vessel: 1.5 g/L) and initial pH 6.0, final pH 7.7.

Element basis: Respiration inhibition as determined by oxygen consumption.

Exposure period: 30–minutes and 3-hours

Statistical methods: No EC₅₀ was determined.

RESULTS

Nominal concentrations: Blank control, reference substance control, 1,000 mg/L test material solution.

Element Values: 30-minute EC₅₀ = >1,000 mg/L

3-hour EC₅₀ = >1,000 mg/L

Control response: Satisfactory

Element values based on nominal concentrations.

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

CONCLUSIONS

The L-13492 3-hour EC₅₀ for activated sludge respiration inhibition was determined to be >1000 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 by the 3M Company, Environmental Laboratory, St. Paul, MN, Lab Request N2169, 1995.

OTHER

Last changed: 4/01/01