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VIA EXPRESS MAIL

Dr. Charles Auer
Director
Chemical Control Division
Office Of Pollution Prevention And Toxics
United States Environmental Protection Agency
401 M Street, Southwest
Room 403 East Tower (Mail Code 7405)
Washington, D. C. 20460

FYI-00-001378

2000 SEP 12 AM 10:42

Re: **Information On PerfluorooctaneSulfonates Mixtures**

Dear Charlie:

3M has provided studies previously to the Agency on perfluorooctane sulfonates -- including CAS numbers 1763-23-1 (acid); 29081-56-9 (ammonium salt); 70225-14-8 (DEA salt); 2795-39-3 (potassium-salt); 29457-72-5 (lithium salt) -- as well on aqueous and/or solvent solutions of these materials. Pursuant to our recent communications, 3M is now enclosing information on products in which perfluorooctane sulfonates are deliberately added as an ingredient, *i.e.*, perfluorooctane sulfonates mixtures. We are providing this information on a voluntary basis as part of our continuing discussions with EPA regarding fluorochemistry.

As indicated in my letter to you dated May 11, 2000, potassium perfluorooctane sulfonate is deliberately added to 3M's aqueous fire fighting foam ("AFFF") products. The amount of PFOS in both current and historical formulations of these products has been quite low -- generally around 1 percent. Moreover, 3M customers dilute AFFF products significantly during end use and thus, the level of potassium perfluorooctane sulfonate in the final applied product would be even lower.

As these circumstances indicate, studies and other information on AFFF products have limited relevance, if any, to the potential hazard profile of perfluorooctane sulfonates. 3M is providing the Agency, therefore, with basic health and environmental laboratory studies on these AFFF products. With respect to toxicology studies, 3M is providing copies of all laboratory studies, except that we are listing acute studies in a bibliography. For environmental studies, we are providing copies of all laboratory studies and a bibliography of published literature. 3M is continuing its file review and will supplement the enclosed studies as appropriate.

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As you review studies, we ask that you bear in mind a point that we ha made previously with regard to test substance identity and composition. Many of the studies refer to the test substance only by a 3M product identification number with a "L", "FM", "FC" or other prefix. Although analysis of the test sample has been includ where available, it is often not possible to determine from the study report itself the identity of the test substance or composition of the test sample. To assist in interpre the studies, we have used 3M's product number records to provide test substance identity and composition information (*e.g.*, composition percentages; solvent content purity grade, etc.) next to each study name on the index and/or on the study summa some cases, the formulation information comes from historical records around the sa period as the study was conducted; in other cases, only current product formulation information is available. Thus, the formulation information provided may not reflect t precise formulation of the specific test sample. Moreover, it should be recognized th product formulations have evolved over the years, and thus, some of the test substa do not constitute current products.

3M looks forward to discussing the enclosed information with you and EPA staff. In the meantime, please do not hesitate to contact me with any questions

Very truly yours

William A. Weppner

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Enclosures

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PFOS Mixtures	

Acute Toxicity

Post 1976 Studies (Bibliography only)

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143) Report, Skin Irritation Study, 3M Reference No. T-1049, WARF Institute Inc., Project No. 4071932, Aug. 1, 1974.

144) Report, Acute Oral LD_{50}, 3M Reference No. T-1118, WARF Institute Inc., Project No. 4102872, Nov. 20, 1974.

145) Report, Eye Irritation Study, 3M Reference No. T-1118, WARF Institute Inc., Project No. 4102872, Nov. 20, 1974.

146) Report, Skin Irritation Study, 3M Reference No. T-1118, WARF Institute Inc., Project No. 4102872, Nov. 20, 1974.

Attachments to Letter to C. Auer dated June 28, 2000
Toxicological Studies and Other Relevant
Information on PFOS Mixtures

147) Report, Acute Oral LD_{50} (male & female), 3M Reference No. T-1207, WARF Institute Inc., Project No. 5030800, Apr. 11, 1975.

148) Report, Eye Irritation Study, 3M Reference No. T-1207, WARF Institute Inc., Project No. 5030800, Apr. 11, 1975.

149) Report, Skin Irritation Study, 3M Reference No. T-1207, WARF Institute Inc., Project No. 5030800, Apr. 11, 1975.

150) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-1328, Biosearch, Inc., Oct. 6, 1975.

151) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-1328, Biosearch, Inc., Study No. Oct. 6, 1975.

152) Final Report, Acute Oral Toxicity – Rats, Reference No. T-1328, Biosearch, Inc., Study No. Oct. 6, 1975

153) Final Report, Primary Skin Irritation Study, 3M Reference No. T-269, Biosearch, Inc., Oct. 1, 1970.

154) Final Report, Primary Eye Irritation Study, 3M Reference No. T-269, Biosearch, Inc., Oct. 1, 1970.

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Attachments to Letter to C. Auer dated June 28, 2000
Toxicological Studies and Other Relevant
Information on PFOS Mixtures

Genotoxicity

1) Final Report, *In Vitro* Microbiological Mutagenicity Assays of Three 3M Company Compounds, 3M Reference Nos. T-2136 [FC-206], T-2138, T-2140, SRI International, Project No. LSC 4442-16, Apr. 1978.

2) Final Report, In Vitro Microbiological Mutagenicity Assays of 3M Company's Compound T-3651, SRI International, Project No. LSC-3145, Feb. 1985.

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PFOS Mixtures

FC-185F

Acronyms: cc817-19, Lab Request Number: 7544

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-185F (BOD/COD)	3M Env. Lab	2/24/82	Robust summary, laboratory data summary

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Aquatic Toxicity Testing: FC-185F (cc817-19) L 1-2303 LR 7544 (Fathead Minnow)	3M Env. Lab	2/1/82	Robust summary, technical report summary
Acute toxicity of FC-185F to activated sludge mixed liquor	3M Env. Lab	1/28/82	Robust summary, copies of data sheets

FC-200

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Summary foe work performed for the German Government Agency for Military Technology and Procurement on fire extinguishing foam compounds from multiple companies	Dr. H. Hellmann, D. Muller	10/12/77, 3/7/80	Robust summary, Technical Awareness Report, final report

FC-201

Acronyms: Lab Request Number: 2563

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-201 (BOD/COD)	3M Env. Lab	1/28/75	Robust summary, copies of data summary sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type

Acute static toxicity of FC-201 to fathead minnow	3M Env.Lab	1/11/75	Robust summary, copies of data sheets

FC-201AF

Acronyms: Lab Request Numbers: N2964, N3281, N3747, L-13652

Physical Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-201AF (BOD/COD)	MDS Environmental Services Limited, London, Ontario, Canada	5/24/96	Robust summary, summary report
Ready biodegradability of FC-201AF (BOD/COD)	Pace Analytical Services, Golden Valley, MN	2/6/96	Robust summary, laboratory summary report, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static renewal toxicity of FC-201AF to fathead minnow	3M Env. Lab	10/20/95	Robust summary, copies of data sheets
Acute toxicity of FC-201AF to green algae, *Selenastrum capricornutum*	3M Env. Lab	1/7/96	Robust summary, copies of data sheets
Growth Inhibition Test with the Marine Alga *Skeletonema costatum* - FC-201 AF Light Water Brand AFFF	RF Rogaland Research, Stavanger, Norway	1/5/00	Robust summary, final report
Acute Toxicity Test with the Marine Copepod *Acartia tonsa* - FC-201 AF Light Water Brand AFFF	RF Rogaland Research, Stavanger, Norway	1/5/00	Robust summary, final report
Acute Toxicity Sediment Test with the Marine Amphipod *Corophium volutator* - FC-201 AF Light Water Brand AFFF	RF Rogaland Research, Stavanger, Norway	1/5/00	Robust summary, final report
Acute static toxicity of FC-201AF to *Daphnia magna*	3M Env. Lab	8/31/95	Robust summary, copy of data sheet
Acute toxicity of FC-201AF to Microtox	3M Env. Lab	12/2/95	Robust summary, laboratory report, copies of data sheets
Acute toxicity of FC-201AF to activated sludge mixed liquor	3M Env. Lab	9/14/95	Robust summary, copies of data sheets

FC-201F

Acronyms: Lab Request Number: K1792

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

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Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-201F (BOD/COD)	Hygiene Institute for the Ruhr District, Gelsenkirchen, Germany	9/13/93	Robust summary, English language summary, German language report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute Toxicity of FC-201F to Fathead Minnow (*Pimephales promelas*)	Ascl Corporation, Duluth, MN	8/24/92	Robust summary, final report
Further Investigation on the Acute Toxicity of FC-201F to Fathead Minnow (*Pimephales promelas*)	Ascl Corporation, Duluth, MN	10/5/92	Robust summary, final report
Acute Toxicity of FC-201F to *Daphnia magna*	Ascl Corporation, Duluth, MN	8/21/92	Robust summary, final report
Microbial inhibition (dehydrogenase activity) of FC-201F	Hygiene Institute for the Ruhr District, Gelsenkirchen, Germany	9/13/93	Robust summary, English language summary, German language report
Acute toxicity to fish (*Leuciscus idus*)	Hygiene Institute for the Ruhr District, Gelsenkirchen, Germany	9/13/93	Robust summary, English language summary, German language report

FC-201F-X

~~Acronyms: Lab Request Number: K1128~~

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-201F-X (BOD/COD)	Pace Incorporated, Minneapolis, MN	2/17/92	Robust summary, laboratory summary report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-201F-X to Microtox	3M Env. Lab	4/17/92	Robust summary, copies of data sheets
Acute toxicity of FC-201F-X to activated sludge mixed liquor	3M Env. Lab	3/23/92	Robust summary, copies of data sheets

FC-203
Acronyms: VW160390, Sample #5729, Sample 7902, 3M Sample B, Lab Request Numbers 1940, 2002, 2009, 2034, 2036, 2093, 2103, 4971, 4971S, 5360A, 5541S, 8483, 9611, H2864-9, J1608-8, J2176-5

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Summary of biodegradability tests of FC-203 (BOD/COD)	3M Env. Lab	1973 - 1980	Robust summary, copies of data sheets
OECD Biodegradation Testing on FC-600 and FC-203	3M Env. Lab	4/18/83	Robust summary, Technical Report Summary
Repeat OECD Biodegradation Test on FC-600 and FC-203	3M Env. Lab	6/16/83	Robust summary, Technical Report Summary.
Modified OECD Screening Test on FC-203, FC-203A, and FC-600	3M Env. Lab	7/9/84	Robust summary, Technical Report Summary, selected copies of data sheets
Ready biodegradability of FC-203 (BOD/COD)	Pace Incorporated, Minneapolis, MN	8/13/91	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-203 to rainbow trout	3M Env. Lab	Unknown	Robust summary, copy of data sheet
Acute toxicity of Light Water® to bluegill (Lepomis macrochirus)	Bionomics, Inc. Wareham, MA	September, 1972	Robust summary, final report
Summary of acute static toxicity tests of FC-203 to bluegill	3M Env. Lab	1973 - 1974	Robust summary, copies of data sheets
Acute Toxicity of 3M Samples (A and B) to the Water Flea (Daphnia magna) and Scud (Gammarus fasciatus) - robust summary for *Daphnia magna*	Bionomics Inc. Wareha IA	December, 1973	Robust summary, final report
Acute Toxicity of 3M Samples (A and B) to the Water Flea (Daphnia magna) and Scud (Gammarus fasciatus) - robust summary for *Gammarus fasciatus*	Bionomics, Inc. Wareham, MA	December, 1973	Robust summary, final report
summary of microbial inhibition (dehydrogenase activity) tests on FC-203	3M Env. Lab	1973-1974	Robust summary, copies of data sheets
Algicidal Activity of Two Samples Labeled "A" and "B"	Industrial Bio-Test Laboratories, Northbrook, IL	1/23/74	Robust summary, final report
Acute static toxicity of FC-203 to rainbow trout	3M Env. Lab	2/23/74	Robust summary, copies of data sheets

Acute toxicity of 3M Company's sample 7902 to grass shrimp (Palaemonetes pugio)	EG&G Bionomics Marine Research Laboratory, Pensacola, FL	August, 1979	Robust summary, final report
Acute Toxicity of 7902 to the Common Mummichog (Fundulus heteroclitus)	EG&G Bionomics Marine Research Laboratory, Pensacola, FL	August, 1979	Robust summary, final report
Acute Toxicity of 3M Company's Sample 7902 to embryos-larvae of eastern oysters (Crassostrea virginica)	EG&G Bionomics Marine Research Laboratory, Pensacola, FL	August, 1979	Robust summary, final report
Acute toxicity of Sample #5729 to embryo-larvae of eastern oysters (Crassostrea virginica)	EG&G Bionomics Marine Research Laboratory, Pensacola, FL	July, 1980	Robust summary, final report
Static Acute Toxicity of FC 203 to the Alga, *Selenastrum capricornutum*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	June, 1991	Robust summary, final report
Acute toxicity of FC-203 without Tolytriazole (VW160390) to Microtox	3M Env. Lab	7/19/91	Robust summary, summary sheet, copies of data sheets
Static Acute Toxicity of FC 203 to the Daphnid, Daphnia magna	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	8/9/91	Robust summary, final report
Acute Toxicity Sediment Test with the Marine Amphipod *Corophium volutator*	RF Rogaland Research, Stavanger, Norway	1/6/00	Robust summary, final report
Acute Toxicity Test with the Marine Copepod *Acartia tonsa*	RF Rogaland Research, Stavanger, Norway	1/6/00	Robust summary, final report
Growth Inhibition Test with the Marine Alga *Skeletonema costatum*	RF Rogaland Research, Stavanger, Norway	1/6/00	Robust summary, final report

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Investigations of toxic effects and biological degradability of foam extinguishing agents in the waste water	Ekkehard Ising	3/29/90	Abbreviated robust summary, summary report from German Army
Environmental Effects of LIGHT WATER Brand AFFF and Components - Robust summary for FC-203	3M Env. Lab	4/1/91	Robust summary, Technical Report Summary
Environmental Effects of LIGHT WATER Brand AFFF and Components - Robust summary for VW160390 (FC-203 without tolytriazole)	3M Env. Lab	4/1/91	Robust summary, Technical Report Summary

FC-203A

Acronyms: FC-203 NF, Lab Request Numbers: 2543, 2563, 9611,

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-203A (BOD/COD)	3M Env. Lab	1/28/75	Robust summary, data summary pages
Biodegradation of "Light Water" Products in OECD Test - 6/80	3M Env. Lab	6/30/80	Robust summary, Technical Report Summary
Effect of Biodegradation on Foaming of "Light Water" Products.	3M Env. Lab	8/6/80	Robust summary, letter report, copies of data sheets
Modified OECD Screening Test of FC-203, FC-203A and FC-600	3M Env. Lab	7/9/84	Robust summary, Technical Report Summary

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-203A to fathead minnow	3M Env. Lab	1/11/75	Robust summary, copy of raw data

FC-203C

Acronyms: L-5440, 81-1/8 Lab Request Numbers; 6811S, 7038, 7736, 7737, 7738, 7903, 7625

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-203C	Numerous	1981-1982	Robust summary of several studies, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute Toxicity of 81-1/8 to Fathead Minnow (Pimephales Promelas)	EG&G Bionomics, Wareham, MA	October, 1981	Robust summary, final report
Acute Toxicity of a Surfactant Solution (81-1/8) to the Mummichog *Fundulus heteroclitus* in a Flow-through System.	EG&G Bionomics Marine research Laboratory, Pensacola, FL	October, 1981	Robust summary, final report
Algal Assay: Bottle Test (AA:BT), Toxicity Testing FC-203C	3M Env. Lab	6/12/81	Robust summary, Technical Report Summary
Acute toxicity of FC-203C to *Daphnia magna*	3M Env. Lab	7/6/81	Robust summary, data summary

Acute toxicity of FC-203C to activated sludge mixed liquor	3M Env. Lab	7/1/81	Robust summary, copies of data sheets

FC-203CE

Acronyms: Lab Request Numbers: G1358-1, H1480-1, H1480-3, J1884-1

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) & TOC of FC-203CE	Pace Laboratories, Inc,. Minneapolis, MN	5/12/89	Robust summary, final report
Ready biodegradability (OECD 301E) of FC-203CE	3M Env. Lab	6/23/89	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-203CE to *Daphnia magna*	3M Env. Lab	5/13/89	Robust summary, copy of data sheets
Acute static-renewal toxicity of FC-203CE to fathead minnow	3M Env. Lab	5/15/89	Robust summary, copy of data sheets
Acute toxicity of FC-203CE to green algae, *Selenastrum capricornutum*	3M Env. Lab	5/28/89	Robust summary, copy of data sheets
Toxicity of FC-203CE to activated sludge mixed liquor	3M Env. Lab		
Toxicity of FC-203CE to Microtox	3M Env. Lab	6/16/89	Robust summary, copy of data sheets
Toxicity of FC-203CE to activated sludge mixed liquor	3M Env. Lab	3/19/90	Robust summary, copy of data sheets
Toxicity of FC-203CE + antifoamer to activated sludge mixed liquor	3M Env. Lab	3/19/90	Robust summary, copy of data sheets
Static Acute Toxicity of FC-203CE to the Daphnid, *Daphnia magna*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	June, 1991	Robust summary, final report
Static Acute Toxicity of FC-203CE to the Alga, *Selenastrum capricornutum*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	July, 1991	Robust summary, final report

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Environmental Effects of LIGHT WATER Brand AFFF and components - Robust summary for FC-203CE	3M Env. Lab	4/1/91	Robust summary, Technical Report Summary

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FC-203CF

Acronyms: FC-203CF-X, Lab Request Numbers: J1884-3, J1885-1, K1905-1, N2977, W1127,

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-203CF (BOD/COD)	Pace Incorporated, Minneapolis, MN	7/2/91	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Static Acute Toxicity of FC-203CF to the Fathead Minnow, *Pimephales promelas*	EnviroSystems Division Resource Analysts, Inc. Hampton, NH	June, 1991	Robust summary, final report
Static Acute Toxicity of FC-203CF to the Daphnid, *Daphnia magna*	EnviroSystems Division Resource Analysts, Inc. Hampton, NH	July, 1991	Robust summary, final report
Acute toxicity of FC-203CF to Microtox	3M Env. Lab	7/19/91	Robust summary, copies of data sheets
Static Acute Toxicity of FC-203CF to the Alga, *Selenastrum capricornutum*	EnviroSystems Division Resource Analysts, Inc. Hampton, NH	August, 1991	Robust summary, final report
Acute toxicity of FC-203CF-X to activated sludge mixed liquor	3M Env. Lab	6/26/92	Robust summary, copies of data sheets
Acute toxicity of FC-203CF-X to nitrifying bacteria (ISO/DIS Method 9509)	3M Env. Lab	8/24/95	Robust summary, copies of data sheets
Acute toxicity of FC-203CF-X to nitrifying bacteria (Nitroseed™ Method)	3M Env. Lab	8/24/95	Robust summary, copies of data sheets
Acute Toxicity of FC-203CF to Fathead Minnow (*Pimephales promelas*)	ASci Corporation, Duluth, MN	2/22/99	Robust summary, final report

FC-203FC

Acronyms: Lab Request Number: R1335

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type

R1335 BOD Report for 3M Company	ASci Corporation, Duluth, Mn	September, 1997	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Toxicity of FC-203FC to Microtox	3M Env. Lab	3/17/97	Robust summary, copies of data sheets
Toxicity of FC-203FC to activated sludge mixed liquor	3M Env. Lab	3/24/97	Robust summary, copies of data sheets
Acute Toxicity of R1335 to *Daphnia magna*	ASci Corporation, Duluth, MN	4/1/97	Robust summary, final report
Growth Inhibition of R1335 for Green Alga (*Selenastrum caprioomutum*)	ASci Corporation, Duluth, MN	4/7/97	Robust summary, final report
Acute static toxicity of FC-203FC to fathead minnow	3M Env. Lab	4/18/97	Robust summary, copies of data sheets
Acute Toxicity of R1335 to Fathead Minnow (*Pimephales promelas*)	ASci Corporation, Duluth, MN	6/26/97	Robust summary, final report

FC-203S

Acronyms:

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
None available			

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-203S to Rainbow Trout	ABC Laboratories, Columbia, MO	12/2/88	Robust summary, summary letter, final report missing first 5 pages.

FC-206

Acronyms: L3243, Sample C Lab Request Number: 2577

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type

Ready biodegradability of FC-206 (BOD/COD)	3M Env. Lab	1/16/75	Robust summary, results summary
Ready biodegradability of FC-206 (BOD/COD)	3M Env. Lab	6/30/76	Robust summary, results summary
Biodegradation of "LIGHT WATER" Products in OECD Test - 6/80	3M Env. Lab	6/30/80	Robust summary, Technical Report Summary
Effect of degradation on foaming of FC-206	3M Env. Lab	8/6/80	Robust summary, letter report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Summary of microbial inhibition (dehydrogenase activity) tests on FC-206	3M Env. Lab	1973-1974	Robust summary, copy of data sheet
Acute static toxicity of FC-206 to fathead minnow	3M Env. Lab	2/15/74	Robust summary, copies of data sheets
Acute static toxicity of FC-206 to rainbow trout	3M Env. Lab	4/5/74	Robust summary, copy of data sheet
Acute Toxicity of Sample C to Mummichog (Fundulus heteroclitus), Grass Shrimp (Palaemonetes vulgaris) and Fiddler Crab (Uca pugilator) - Robust summary for mummichog	Bionomics EG&G, Wareham, MA	May, 1974	Robust summary, final report
Acute Toxicity of Sample C to Mummichog (Fundulus heteroclitus), Grass Shrimp (Palaemonetes vulgaris) and Fiddler Crab (Uca pugilator) - Robust summary for grass shrimp	Bionomics EG&G, Wareham, MA	May, 1974	Robust summary, final report
Acute Toxicity of Sample C to Mummichog (Fundulus heteroclitus), Grass Shrimp (Palaemonetes vulgaris) and Fiddler Crab (Uca pugilator) - Robust summary for fiddler crab	Bionomics EG&G, Wareham, MA	May, 1974	Robust summary, final report
Acute Toxicity of Sample C to Atlantic Oyster (Crassostrea virginica)	Bionomics EG&G, Wareham, MA	July, 1974	Robust summary, final report
Acute Toxicity of Sample C to Water Flea (Daphnia magna) and Scud (Gammarus fasciatus). - Robust summary for *Daphnia magna*	Bionomics EG&G Wareham, MA	August, 1974	Robust summary, final report
Acute Toxicity of Sample C to Water Flea (Daphnia magna) and Scud (Gammarus fasciatus). - Robust summary for Scud	Bionomics EG&G Wareham, MA	August, 1974	Robust summary, final report
Acute static toxicity of FC-206 to fathead minnow	3M Env. Lab	6/18/76	Robust summary, copy of data sheet
Acute static toxicity of FC-206 amended to soil to fathead minnow	3M Env. Lab	11/6/76	Robust summary, copies of data sheets
Acute flow-through toxicity of FC-206 to bluegill sunfish	3M Env. Lab	11/11/78	Robust summary, copy of data sheet

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Investigations of toxic effects and biological degradability of foam extinguishing agents in the waste water	Ekkehard Ising	3/29/90	Abbreviated robust summary, summary report from German Army
Summary for work performed for the German Government Agency for Military Technology and Procurement on fire extinguishing foam compounds from multiple companies	Dr. H. Hellmann, D. Muller	10/12/77, 3/7/80	Robust summary, Technical Awareness Report, final report

FC-206A

Acronyms:

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-206A	3M Env. Lab	11/10/78	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
FC-206A cc 786-22: Results of Aquatic 96-hr. LC50 Tests (bluegill sunfish)'	3M Env. Lab	11/2/78	Robust summary, Technical Report Summary
Acute static toxicity of FC-206A to fathead minnow	3M Env. Lab	7/14/79	Robust summary, copies of data sheets
Acute flow-through toxicity of FC-206A to fathead minnow	3M Env. Lab	7/21/79	Robust summary, copies of data sheets
Acute toxicity of FC-206A to *Daphnia magna*	3M Env. Lab	7/14/79	Robust summary, copies of data sheets
Microbial inhibition (dehydrogenase activity) of FC-206A	3M Env. Lab	11/29/79	Robust summary, copies of data sheets
Acute toxicity of FC-206A to activated sludge mixed liquor	3M Env. Lab	8/8/79	Robust summary, copies of data sheets

FC-206C

Acronyms:L-5439, 81-2/6, Lab Request Numbers; 6812S, 7625, 7736, 7737, 7738, 7903,

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-206C	Numerous	1981-1982	Robust summary of several studies, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-206C to activated sludge mixed liquor	3M Env. Lab	7/1/81	Robust summary, copies of data sheets

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Acute Toxicity of 81-2/8 to Fathead Minnow (Pimephales promelas)	EG&G Bionomics, Wareham, MA	October, 1981	Robust summary, final report
Acute Toxicity of a Surfactant Solution to the Mummichog (Fundulus heteroclitus) in a Flow-through System. (FC-206C)	EG&G Bionomics, Pensacola, FL	September, 1981	Robust summary, final report
Algal Assay: Bottle Test (AA:BT), Toxicity Testing FC-206C	3M Env. Lab	6/23/81	Robust summary, Technical Report summary

FC-206CE

Acronyms: Lab Request Numberts: G1358-2, J1884-2, H1480-2, H1480-4

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-206CE	Pace Laboratories, Inc, Minneapolis, MN	5/12/89	Robust summary, final report
Ready biodegradability (OECD 301E) of FC-206CE	3M Env. Lab	6/23/89	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-206CE to *Daphnia magna*	3M Env. Lab	4/6/89	Robust summary, copy of data sheet
Acute static toxicity of FC-206CE to *Daphnia magna*	3M Env. Lab	5/13/89	Robust summary, copies of data sheets
Acute static-renewal toxicity of FC-206CE to fathead minnow	3M Env. Lab	5/15/89	Robust summary, copies of data sheets
Acute toxicity of FC-206CE to green algae, *Selenastrum capricornutum*	3M Env. Lab	5/28/89	Robust summary, copies of data sheets
Acute toxicity of FC-206CE to Microtox	3M Env. Lab	6/16/89	Robust summary, copies of data sheets
Acute toxicity of FC-206CE to activated sludge mixed liquor	3M Env. Lab	6/23/89	Robust summary, copies of data sheets
Acute toxicity of FC-206CE to activated sludge mixed liquor	3M Env. Lab	3/23/90	Robust summary, copies of data sheets
Acute toxicity of FC-206CE + antifoamer to activated sludge mixed liquor	3M Env. Lab	3/23/90	Robust summary, copies of data sheets
Static Acute Toxicity of FC-206CE to the Daphnid, *Daphnia magna*	EnviroSystems Division of Resource Analysts Inc., Hampton, NH	June, 1991	Robust summary, final report
Static Acute Toxicity of FC-206CE to the Alga, *Selenastrum capricornutum*	EnviroSystems Division of Resource Analysts Inc., Hampton, NH	July, 1991	Robust summary, final report

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Environmental Effects of LIGHT WATER Brand AFFF and components - Robust summary for FC-206CE	3M Env. Lab	4/1/91	Robust summary, Technical Report Summary

FC-206CF

Acronyms: FC-206CF-X Lab Request Numbers: J1884-4, J1885-2, K1905

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-206CF (BOD/COD)	Pace Incorporated, Minneapolis, MN	7/2/91	Robust summary, final report

Ecotoxicity Elements

Static Acute Toxicity of FC 206CF to the Fathead Minnow, *Pimephales promelas*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	June, 1991	Robust summary, final report
Static Acute Toxicity of FC-206CF to the Daphnid, *Daphnia magna*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	June, 1991	Robust summary, final report
Acute toxicity of FC-206CF to Microtox	3M Env. Lab	7/19/91	Robust summary, copies of data sheets
Static Acute Toxicity of FC 206CF to the Alga, *Selenastrum capricornutum*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	August, 1991	Robust summary, final report
Acute toxicity of FC-206CF-X to activated sludge mixed liquor	3M Env. Lab	6/26/92	Robust summary, copies of data sheets

FC-600

Acronyms: 3M-I Lab Request Numbers: 2874, 8483, 8873, 8875, 9063, 9595,

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Summary of ready biodegradability studies on FC-600	3M Env. Lab	8/15/75, 10/27/82, 4/19/83, 7/9/84, 10/4/88,	Abbreviated robust summary, copies of data sheets, Technical Report Summaries

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-600 to fathead minnow	3M Env. Lab	8/29/75	Robust summary, copies of data sheets
Acute static toxicity of FC-600 to bluegill sunfish	3M Env. Lab	8/29/75	Robust summary, copies of data sheets
Acute static toxicity of FC-600 to *Daphnia magna* - first of 3 studies of effluent from an FC-600-exposed SCAS reactor	3M Env. Lab	8/10/77	Robust summary, copies of data sheets
Acute static toxicity of FC-600 to *Daphnia magna* - second of 3 studies of effluent from an FC-600-exposed SCAS reactor (treated reactor after 4-hours of treatment)	3M Env. Lab	8/10/77	Robust summary, copies of data sheets
Acute static toxicity of FC-6[illegible] to *Daphnia magna* - third of 3 studies of effluent from an FC-600-exposed SCAS reactor (blank control re[illegible]tor after 4-hours of treatment)	3M Env. Lab	8/10/77	Robust summary, copies of data sheets
Acute toxicity of FC-600 to activated sludge mixed liquor	3M Env. Lab	2/1/83	Robust summary, copies of data sheets
Acute toxicity of FC-600 (from Antwerp, Belgium) to activated sludge mixed liquor	3M Env. Lab	2/1/83	Robust summary, copies of data sheets
Range-finding study of acute toxicity of FC-600 (US) to fathead minnow	3M Env. Lab	2/10/83	Robust summary, copies of data sheets
Range-finding study of acute toxicity of FC-600 (Belgium) to fathead minnow	3M Env. Lab	2/10/83	Robust summary, copies of data sheets
Range-finding study of acute toxicity of FC-600 (US) to fathead minnow	3M Env. Lab	2/10/83	Robust summary, copies of data sheets
Range-finding study of acute toxicity of FC-600 (Belgium) to fathead minnow	3M Env. Lab	2/10/83	Robust summary, copies of data sheets
Dynamic Acute Toxicity of 3M-I to Fathead Minnows (Pimephales promelas)	Analytical Bio-Chemistry Laboratories, Inc. Columbia, MO	3/29/83	Robust summary, final report
Aquatic Toxicity Testing: FC-600 (Belgium-AFFF) LR 9595	3M Env. Lab	7/21/83	Robust summary, Technical Report Summary

FX-601

Acronyms: Lab Request Number: B1684

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
None avialble			

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FX-601 to fathead minnow	3M Env. Lab	6/15/84	Robust summary, copies of data sheets.
Acute toxicity of FX-601 to activated sludge mixed liquor	3M Env. Lab	6/20/84	Robust summary, copies of data sheets.

FC-602

Acronyms: FC-602-X, FC-602-ATC, Lab

Request Number: F1151

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-602	Pace Laboratories, Inc. Minneapolis, MN	3/4/88	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Toxicity of FC-602 to Microtox	3M Env. Lab	1/28/88	Robust summary, copies of data sheets
Acute static toxicity of FC-602-X to *Daphnia magna*	3M Env. Lab	3/17/88	Robust summary, copies of data sheets
Acute static toxicity of FC-602-X to fathead minnow	3M Env. Lab	3/25/88	Robust summary, copies of data sheets
Acute Toxicity Test with the Marine Copepod *Acartia tonsa* (FC-602)	RF Rogaland Research, Stavanger, Norway	1/7/00	Robust summary, final report
Growth Inhibition Test with the Marine Alga *Skeletonema costatum* FC-602)	RF Rogaland Research, Stavanger, Norway	1/7/00	Robust summary, final report
Acute Toxicity Sediment Test with the Marine Amphipod *Corophium volutator* (FC-602)	RF Rogaland Research, Stavanger, Norway	1/7/00	Robust summary, final report

FC-603EF

Acronyms: Lab Request Number: P2581

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-603EF	3M Env. Lab	Dec., 1996	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-603EF to the Golden Orfe (*Leuciscus idus*)	Hygiene-Institut des Ruhrgebiets, Gelsenkirchen, Germany	9/26/96	Robust summary, Final report in the German language
Acute toxicity of FC-603EF to the alga, *Scenedesmus subspicatus*	Hygiene-Institut des Ruhrgebiets, Gelsenkirchen, Germany	9/26/96	Robust summary, Final report in the German language
Acute toxicity of FC-603EF to *Daphnia magna*	Hygiene-Institut des Ruhrgebiets, Gelsenkirchen, Germany	9/26/96	Robust summary, Final report in the German language
Bacterial dehydrogenase activity of FC-603EF by the TTC method	Hygiene-Institut des Ruhrgebiets, Gelsenkirchen, Germany	9/26/96	Robust summary, Final report in the German language
Toxicity of FC-603EF to activated sludge	Hygiene-Institut des Ruhrgebiets, Gelsenkirchen, Germany	9/26/96	Robust summary, Final report in the German language
Toxicity of FC-603EF to Microtox	3M Env. Lab	10/22/96	Robust summary, laboratory summary report, copies of data sheets
Toxicity of FC-603EF to activated sludge mixed liquor	3M Env. Lab	10/23/96	Robust summary, copies of data sheets
Acute Toxicity of FC-603EF, Light Water (TM) ATC 3% AR-AFFF to *Daphnia magna*	ASci Corporation, Duluth, MN	11/7/96	Robust summary, final report
Growth Inhibition of FC-603EF, Light Water (TM) ATC 3%, AR-AFFF to Green Alga (*Selenastrum capricornutum*)	ASci Corporation, Duluth, MN	11/22/96	Robust summary, final report.
Acute Toxicity of FC-603EF, Light Water (TM) ATC 3% AR-AFFF to Fathead Minnow (*Pimephales promelas*)	ASci Corporation, Duluth, MN	1/28/97	Robust summary, final report.
Growth Inhibition Test with the Marine Alga *Skeletonema costatum* - FC-603EF	RF Rogaland Research, Stavanger, Norway	1/14/00	Robust summary, final report
Acute Toxicity Test with the Marine Copepod *Acartia tonsa* - FC-603EF	RF Rogaland Research, Stavanger, Norway	1/14/00	Robust summary, final report
Acute Toxicity Sediment Test with the Marine Amphipod *Corophium volutator* - FC-603EF	RF Rogaland Research, Stavanger, Norway	1/14/00	Robust summary, final report

FC-603F

Acronyms: Lab Request Number: M1655

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-603F	Pace Inc., Minneapolis, MN	5/10/94	Robust summaries, summary reports

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-603F to fathead minnow	3M Env. Lab	5/27/94	Robust summary, copy of data sheets
Acute static toxicity of FC-603F to *Selenastrum capricornutum*	3M Env. Lab	10/13/95	Robust summary, copy of data sheets
Acute static toxicity of FC-603F to *Daphnia magna*	3M Env. Lab	5/27/94	Robust summary, copy of data sheets
Toxicity of FC-603F to Microtox	3M Env. Lab	5/20/94	Robust summary, copy of data sheets
Acute toxicity of FC-603F to activated sludge mixed liquor	3M Env. Lab	5/10/94	Robust summary, copy of data sheets

FC-780

Acronyms:

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-780	Numerous	4/23/82	Robust summaries, summary reports

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity to Mummichog (Fundulus heteroclitus)	Naval Research Laboratory, Fire Supression Section, Washington, D.C.	6/11/82	Robust summary, summary report

FC-780B
Acronyms: 7901, Sample 1-3, AFFF C, Lab Request Numbers: 4461, 4653, 4673, 5598, 6211S 7685

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-780B (BOD/COD)	Numerous	Numerous	Abbreviated robust summary, copies of data sheets
Ready biodegradability of FC-780B (AFFF C) (OECD Closed Bottle Test)	3M Env. Lab	11/28/80	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
780B (lot 788-20): Results of Aquatic 96 Hr. LC_{50} Tests	3M Env. Lab	11/15/78	Robust summary, Technical Report Summary
Acute Toxicity of 7901 to the Common Mummichog (Fundulus heteroclitus)	EG&G Bionomics, Wareham, MA	April, 1979	Robust summary, final report
Dynamic 96-Hour Acute Toxicity of 3M Sample 1-3 to Fathead Minnows (Pimephales promelas)	Analytical Bio Chemistry Laboratories, Inc. Columbia, MO	9/29/80	Robust summary, final report

FC-783
Acronyms: 3M sample no. 6, Lab Request Number: 4896

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-783	3M Env. Lab	6/8/79	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute Toxicity of 3M Sample No. 6 to Bluegill Sunfish (Lepomis macrochirus)	Analytical Bio Chemistry Laboratories, Inc., Columbia, MO	6/19/79	Robust summary, final report

Acute toxicity of FC-783 to activated sludge mixed liquor	3M Env. Lab	6/4/79	Robust summary, copies of data sheets

FC-787

Acronyms: FC-787-X. Lab Request Numbers: H1608, H1609

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability of FC-787 (BOD/COD)	Serco Laboratories, St Paul, MN	9/28/90, 10/13/90, 11/2/90	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-787 to Microtox	3M Env. Lab	8/16/90	Robust summary, copies of data sheets
Static Acute Toxicity of FC-787 to the Daphnid, *Daphnia magna*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	9/4/90	Robust summary, final report
Flow Through Acute Toxicity of Fc-787 to the Fathead Minnow, *Pimephales promelas*	EnviroSystems Division Resource Analysts, Inc., Hampton, NH	9/20/90	Robust summary, final report

FC-3003

Acronyms: Lab Request Number: R1331

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
R1331 BOD Report for 3M Company	ASci Corporation, Duluth, MN	August, 1997	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Toxicity of FC-3003 to Microtox	3M Env. Lab	3/13/97	Robust summary, copies of data sheets

Toxicity of FC-3003 to activated sludge mixed liquor	3M Env. Lab	3/21/97	Robust summary, copies of data sheets
Acute Toxicity of R1331 to *Daphnia magna*	ASci Corporation, Duluth, MN	3/27/97	Robust summary, final report
Growth Inhibition of R1331 for Green alga (*Selenastrum capricornutum*)	ASci Corporation, Duluth, MN	4/3/97	Robust summary, final report
Acute static toxicity of FC-3003 to fathead minnow	3M Env. Lab	4/18/97	Robust summary and copies of data sheets
Acute Toxicity of R1331 to Fathead Minnow (*Pimephales promelas*)	ASci Corporation, Duluth, MN	6/26/97	Robust summary, final report

FC-3017

Acronyms: Lab Request Numbers: N3188, N3688

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Biodegradation of "Light Water" Products in OECD Test - 6/80	3M Env. Lab	6/30/80	Robust summary, technical report summary
N3688 BOD Report for 3M Company	ASci Corporation, Duluth, MN	April, 1996	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute toxicity of FC-3017 to Microtox	3M Env. Lab	9/26/95	Robust summary, copies of data sheets
Acute static renewal toxicity of FC-3017 to fathead minnow	3M Env. Lab	9/29/95	Robust summary, copies of data sheets
Acute toxicity of FC-3017 to activated sludge mixed liquor	3M Env. Lab	9/29/95	Robust summary, copies of data sheets
Acute Toxicity of FC-3017 to *Daphnia magna*	ASci Corporation, Duluth, MN	12/23/95	Robust summary, final report
Acute toxicity of FC-3017 to *Selenastrum capricornutum*	3M Env. Lab	1/16/96	Robust summary, laboratory summary report, copies of data sheets

Summary Reports

Title	Laboratory or Author	Completion Date	Type
Summary for work performed for the German Government Agency for Military Technology and Procurement on fire extinguishing foam compounds from multiple companies	Dr. H. Hellmann, D. Muller	10/12/77	Robust summary, Technical Awareness Report, final report

FC-3031

Acronyms: Lab Request Number: N3188

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
None available			

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-3031 to fathead minnow	3M Env. Lab	8/14/76	Robust summary, copies of data sheets

FC-3041

Acronyms: Lab Request Number: 6508S

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FC-3041	3M Env. Lab	3/5/81	Robust summary, copies of data sheets
Investigation for the Eco-toxicological Evaluation of the Fluoro-surfactant Base FC-3041. Aerobic Degradation. Part f	Fraunhofer Institute for Environmental Chemistry and Eco-toxicology, Schmallenberg, Germany	December, 1993	Robust summary, final report
Investigation for the Eco-toxicological Evaluation of the Fluoro-surfactant Base FC-3041. Anaerobic Degradation. Part g	Fraunhofer Institute for Environmental Chemistry and Eco-toxicology, Schmallenberg, Germany	December, 1993	Robust summary, final report

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FC-3041 to fathead minnow	3M Env. Lab	2/13/81	Robust summary and copies of data sheets
Acute static toxicity of FC-3041 to *Daphnia magna*	3M Env. Lab	2/13/81	Robust summary and copies of data sheets
Acute toxicity of FC-3041 to activated sludge mixed liquor	3M Env. Lab	3/6/81	Robust summary and copies of data sheets

FC-3052

Acronyms: Lab Request Number: W2039-2

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
None available			

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute Toxicity of FC-3052 to Rainbow Trout (*Oncorhynchus mykiss*)	ASci Corporation, Duluth, MN	7/19/99	Robust summary, final report

FC-3072

Acronyms: Lab Request: M3597

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
None available			

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute Toxicity of FC-3072 to Fathead Minnow (*Pimephales Promelas*)	ASci Corporation, Duluth, MN	3/20/95	Robust summary, final report
Acute static toxicity of FC-3072 to *Daphnia magna*	3M Env. Lab	3/23/95	Robust summary, copy of data sheet
Acute toxicity of FC-3072 to Microtox	3M Env. Lab	3/15/95	Robust summary, copy of laboratory summary report, copies of raw data sheets
Acute toxicity of FC-3072 to activated sludge mixed liquor	3M Env. Lab	3/20/95	Robust summary, copies of data sheets

FX-3103

Acronyms: Lab Request Number: C1111-1

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FX-3103	3M Env. Lab	4/18/85	Robust summary, laboratory data summary

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FX-3103 to fathead minnow	3M Env. Lab	2/8/85	Robust summary, copy of data sheets
Acute static toxicity of FX-3103 to *Selenastrum capricornutum*	3M Env. Lab	2/23/85	Robust summary, copy of data sheets
Acute static toxicity of FX-3103 to *Daphnia magna*	3M Env. Lab	2/8/85	Robust summary, copy of data sheets
Toxicity of FX-3103 to Microtox	3M Env. Lab	2/5/85	Robust summary, copy of data sheets
Acute toxicity of FX-3103 to activated sludge mixed liquor	3M Env. Lab	2/20/85	Robust summary, copy of data sheets

FX-3104

Acronyms: Lab Request Number: C1111-2

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FX-3104	3M Env. Lab	4/18/85	Robust summary, laboratory data summary

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of FX-3104 to fathead minnow	3M Env. Lab	2/8/85	Robust summary, copies of data sheets
Acute static toxicity of FX-3104 to *Selenastrum capricornutum*	3M Env. Lab	2/23/85	Robust summary, copies of data sheets
Acute static toxicity of FX-3104 to *Daphnia magna*	3M Env. Lab	2/8/85	Robust summary, copies of data sheets
Toxicity of FX-3104 to Microtox	3M Env. Lab	2/6/85	Robust summary, copies of data sheets
Acute toxicity of FX-3104 to activated sludge mixed liquor	3M Env. Lab	2/20/85	Robust summary, copies of data sheets

FX-3106

Acronyms: Lab Request: C2282

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of FX-3106	3M Env. Lab	11/26/85	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static renewal toxicity of FX-3106 to fathead minnow	3M Env. Lab	11/2/85	Robust summary, copies of data sheets.
Toxicity of FX-3106 to Microtox	3M Env. Lab	10/28/85	Robust summary, copies of data sheets.

L-4647

Acronyms: Lab Request Number: 5623S

Physical/Chemical Properties

Title	Laboratory or Author	Completion Date	Type
None available			

Environmental Fate and Transport

Title	Laboratory or Author	Completion Date	Type
Ready biodegradability (BOD/COD) of L-4647	3M Env. Lab	5/21/80	Robust summary, copies of data sheets

Ecotoxicity Elements

Title	Laboratory or Author	Completion Date	Type
Acute static toxicity of L-4647 to fathead minnow	3M Env. Lab	6/28/80	Robust summary, copies of data sheets.

Miscellaneous Studies

Title	Laboratory or Author	Completion Date	Type
Summary for foaming studies done on vairous AFFF products	3M Env. Lab	8/15/79, 6/18/81, 3/15/82, 3/16/90, 8/19/92, 1/27/94, 3/20/95	Abbreviated robust summary, reports, copies of data sheets.

Attachments to Letter to C. Auer dated 6/28/00
Bibliography of Published Literature in 3M's Possession
Related to PFOS Mixtures

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2. Ansul Company. Final Report: Environmentally Improved AFFF. Department of Defense Technical Information Center N00173-76-C-0295, December 13, 1997.

3. Bass, C.M. Soil treatment of AFFF: Microtox toxicity monitor evaluation: Phase 1. Naval Civil Engineering Laboratory. TM No. 80-54-14. Sept. 1980.

4. Bass, C.M. The fate and effects of aqueous film forming foam (AFFF) as it passes through a sand, soil, or activated carbon biofilter with appendices on high performance liquid chromatography and the Bechman Microtox toxicity monitor applications to AFFF: Ph.D. Dissertation, University of Oklahoma (1982).

5. Chan, D.B. Toxic substance: Disposal of wastewater containing aqueous film forming foam (AFFF) - A summary of progress to date on development of all AFFF treatment processes. TM No. M-54-80-10, Civil Engineering Laboratory, Naval Construction Battalion Center, Aug. 1980.

6. Chen, Guoqing and Farhang Shadman. Removal of Trace Surfactant from Ultrapure Water Through UV Photolysis and Photocatalytic Oxidation. Chemical & Environmental Engineering Department, University of Arizona, Tucson, Arizona 85721.

7. Howell, R.D., and E.E. Tucker. Removal of surfactants from fire extinguishing foam. American Environmental Laboratory 12 (1996) 10.

8. Moody, C.A. and J.A. Field. Determination of Perfluorocarboxylates in Groundwater Impacted by Fire-Fighting Activity, Environmental Science & Technology, Vol. 33, No. 16, (1999), pp. 2800-2806.

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Attachments to Letter to C. Auer dated June 28, 2000
Toxicological Studies and Other Relevant Information on PFOS Mixtures

PFOS Mixtures	

Acute To. icity

Post 1976 Studies (Bibliography only)

1) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-1328, Biosearch, Inc., Oct. 18, 1976.

2) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-1516, Biosearch, Inc., June 25, 1976.

3) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-1516, Biosearch, Inc., June 25, 1976.

4) Final Report, Acute Oral Toxicity – Rats, 3M Reference No. T-1516, Biosearch, Inc., June 25, 1976.

5) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-1639, Biosearch, Inc., Nov. 22, 1976.

6) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-1639, Biosearch, Inc., Nov. 22, 1976.

7) Final Report, Acute Oral Toxicity – Rats, 3M Reference No. T-1639, Biosearch, Inc., Nov. 22, 1976.

8) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-1943, Biosearch, Inc., Sept. 27, 1977.

9) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-1943, Biosearch, Inc., Sept. 27, 1977.

10) Final Report, Acute Oral Toxicity in Rats, 3M Reference No. T-1943, Biosearch, Inc., Sept. 27, 1977.

11) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-2080, Biosearch, Inc., Mar. 2, 1978.

12) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-2080, Biosearch, Inc., Mar. 2, 1978.

Attachments to Letter to C. Auer dated June 28, 2000
Toxicological Studies and Other Relevant
Information on PFOS Mixtures

13) Final Report, Acute Oral Toxicity – Rats, 3M Reference No. T-2080, Biosearch, Inc., Mar. 2, 1978.

14) Final Report, Acute Oral Toxicity – Rats, 3M Reference No. T-2226, Biosearch, Inc., Aug. 7, 1978.

15) Final Report, Primary Skin Irritation Study – Rabbits, 3M Reference No. T-2226, Biosearch, Inc., Aug. 7, 1978.

16) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-2226, Biosearch, Inc., Aug. 7, 1978.

17) Final Report, Primary Eye Irritation Study (Wash-out) – Rabbits, 3M Reference No. T-2226, Biosearch, Inc., Aug. 7, 1978.

18) Final Report, Primary Eye Irritation Study – Rabbits, 3M Reference No. T-2226, Biosearch, Inc., Sept. 19, 1978.

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IN VITRO MICROBIOLOGICAL MUTAGENICITY ASSAYS OF THREE 3M COMPANY COMPOUNDS

Final Report

April 1978

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