

FYI-0700-1378

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July 12, 2000

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3M

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

Contains CBI

Re: 3M Fluorochemicals Document Submission -- CD Version

Dear Charlie:

Enclosed is the CD version of the documents submitted on perfluorooctane sulfonates and related compounds to EPA over the past few months. This CD contains the information provided to the agency beginning with the April 20, 2000 and ending with the May 18, 2000 document productions to the agency. Included with the CD's is an information sheet on how to access the documents and how best to use the search capabilities incorporated onto the CD. Several items should be noted before you access the documents:

1. This CD has an extensive index such that the reader can scroll down the index, find the document(s) he/she wants, and click and open that document. Note that even though the index includes documents submitted after May 18, 2000, those documents cannot be opened, as they are not on the CD.
2. No confidential documents have been put on this CD. The sanitized version of any confidential information is on the CD. Due to concerns over confidentiality, we would ask that you refer to the paper copies already submitted to EPA when you seek to review confidential information.
3. The CD contains the documents by submission date, just as EPA received them. Each separate submission begins with the cover letter used to convey the information to the agency and the indices that accompanied the cover letter.
4. The information provided to the agency contains information that 3M voluntarily has submitted as part of our continuing discussions with EPA regarding fluorochemistry. These documents are submitted for read-only purposes and are not to be modified. For security reasons and to discourage any form of tampering with the documents, 3M will be maintaining a master CD and original paper copies of the same documents that appear on the CD. In terms of any discrepancies between the paper copies and the documents on the CD, the information contained in the 3M paper copies is considered to be controlling.

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Dr. Charles Auer
July 12, 2000
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We hope that this form of the information assists the agency in the review of the documents.

Please do not hesitate to contact me at 651-733-6374 should you have any questions.

Very truly yours,



William A. Weppner, Ph.D.
Director of Environmental, Health, Safety
and Regulatory Affairs
Specialty Materials Markets
3M
Bldg 236-1B-10
3M Center
St. Paul, Minnesota 55144
E:mail: waweppner@mmm.com
Enclosures

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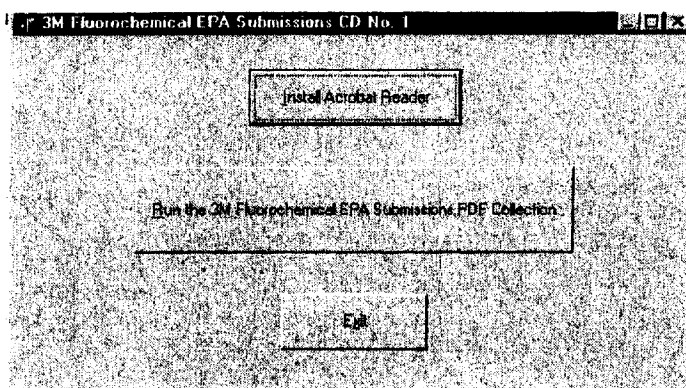
3M Fluorochemical EPA Submission CD

Adobe Acrobat Reader

Quick Reference Guide

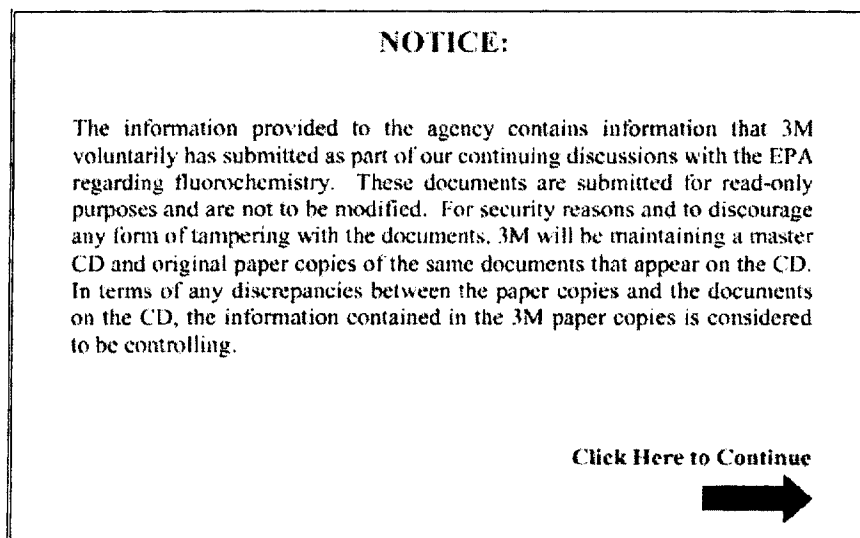
Opening CD:

Place CD in CD-ROM drive. The CD will activate by itself and will open the following dialog window:



If your computer does not contain Adobe Acrobat Reader then click on the *Install Acrobat Reader* tab and follow the instructions.

After installation is complete then click on the *Run* tab. The following Notice will appear:



After reading the notice click on the arrow in the lower right hand corner. This will take you to the 3M Fluorochemical EPA Submissions index. At this point you are ready to search and navigate through the documents.

Opening a Document:

The documents on the CD are *pdf* (portable document format) image files. The titles of the documents in the index are hotlinks to the *pdf* file that contains that document. These hotlinks work the same way as hotlinks on the internet. When your cursor becomes a hand pointing the index finger then you are on a link. Simply click your left mouse button and the link will take you to the first page of the document.

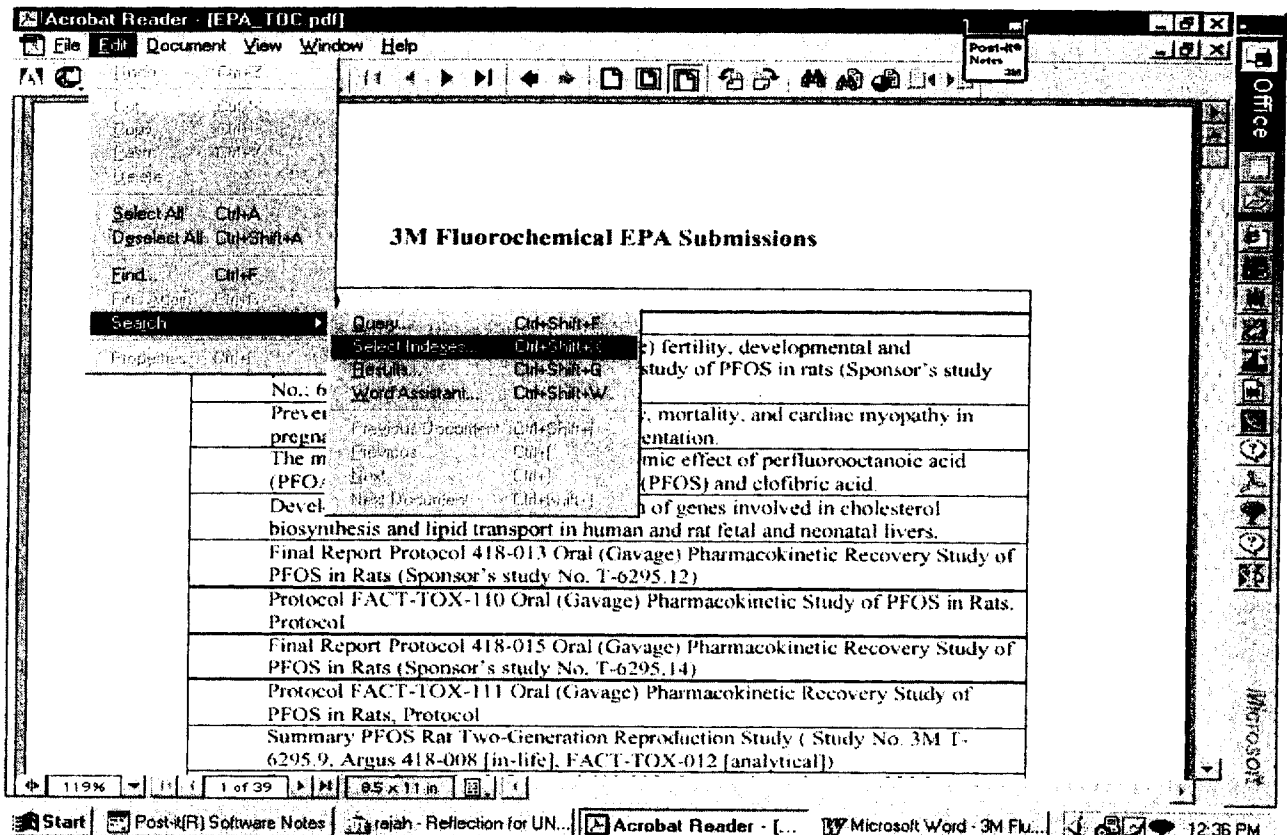
Navigating Through the Documents:

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Previous Page	Ctrl + Page Up
Last Page of Document	Ctrl + Shift + Page Down
First Page of Document	Ctrl + Shift + Page Up
Go to Page...	Ctrl + N
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Go Back a Document	Ctrl + Shift + Left Arrow

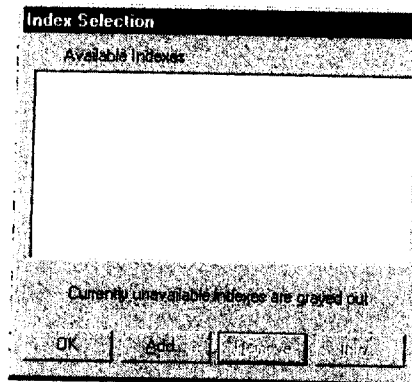
Searching the Documents:

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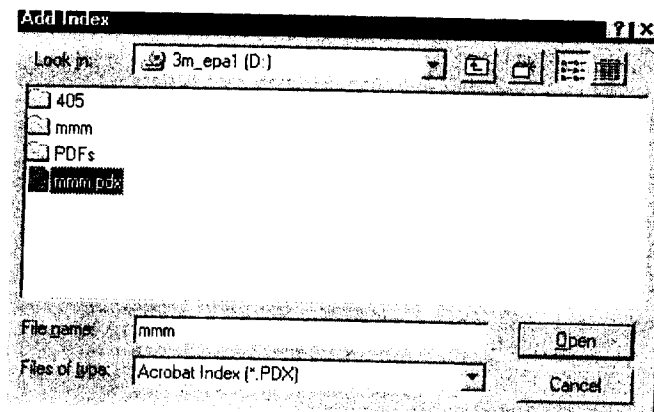
To do this, press **Ctrl + Shift + X** all at the same time on your keyboard. Or you can pull down the Edit menu, select *Search* and then select *Search Indexes*:



This will open the *Index Selection* dialog window. Click on Add.

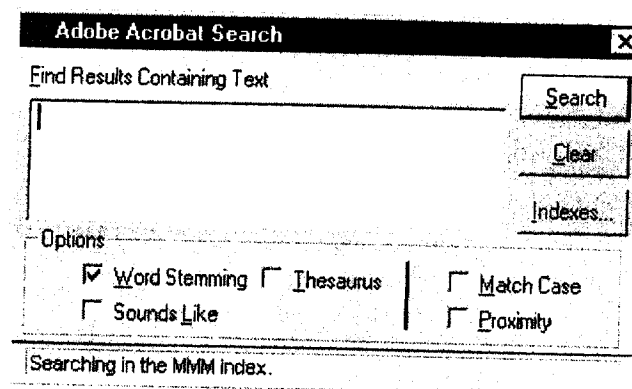


This will open the *Add Index* dialog window. Click on the mmm.pdx file. Then click on Open.



This will take you back to the *Index Selection* window. MMM should now appear in the box. Click on OK and you can begin searching.

To start a search query press **Ctrl + Shift + F** on keyboard. This will open the Search dialog box:



Type the text you want to search for in the Find Results Containing Text box:

The text you type in can be a single word, a number, a term, or a phrase.

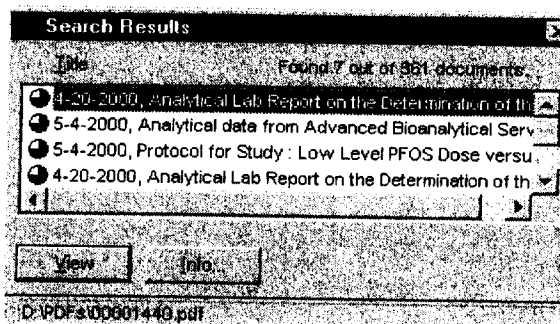
You can use wild-card characters (*,?), and Boolean operators (AND, OR, NOT) in the text box. Because of this, you must enclose any search term that includes *and*, *or*, or *not* in quotes.

Select Search.

The documents that match your search query will be listed in the Search Results window. Documents more likely to contain relevant information are listed first on the list.

Double-click a document that seems likely to contain the relevant information.

The document will open on the first match for the text you typed. When you open a document in the list, you view only pages containing matches. All the matches on a page are highlighted.



Short Cut Keys for Searches:

Next hit within document	Ctrl +]
Previous hit	Ctrl + [
First hit in next document	Ctrl + Shift +]
Previous hit in last document	Ctrl + Shift + [

Ctrl + +	Zoom in on image.
Ctrl + -	Reduce image.

April 20, 2000
Cover Letter to EPA
Protocol 418-008 Combined oral (gavage) fertility, developmental and perinatal/postnatal reproduction toxicity study of PFOS in rats (Sponsor's study No.: 6295.9), Table E20, 1-3
Prevention of fluvastatin induced toxicity, mortality, and cardiac myopathy in pregnant rats by mevalonic acid supplementation.
The mechanism underlying the hyperlipemic effect of perfluorooctanoic acid (PFOA), perfluorooctane sulphonic acid (PFOS) and clofibrilic acid.
Developmental changes in the expression of genes involved in cholesterol biosynthesis and lipid transport in human and rat fetal and neonatal livers.
Final Report Protocol 418-013 Oral (Gavage) Pharmacokinetic Recovery Study of PFOS in Rats (Sponsor's study No. T-6295.12)
Protocol FACT-TOX-110 Oral (Gavage) Pharmacokinetic Study of PFOS in Rats. Protocol
Final Report Protocol 418-015 Oral (Gavage) Pharmacokinetic Recovery Study of PFOS in Rats (Sponsor's study No. T-6295.14)
Protocol FACT-TOX-111 Oral (Gavage) Pharmacokinetic Recovery Study of PFOS in Rats, Protocol
Summary PFOS Rat Two-Generation Reproduction Study (Study No. 3M T-6295.9, Argus 418-008 [in-life], FACT-TOX-012 [analytical])
Report Amendment I, 13, Protocol 418-008 (Sponsor's study No.: 6295.9) Combined Oral (Gavage) Fertility, Developmental and Perinatal / Postnatal Reproduction Toxicity Study of PFOS in Rats, Final Report
Analytical Lab Report on the Determination of the Presence and Concentration of Potassium Perfluorooctanesulfonate (CAS No.: 2759-39-3) in the Serum and Liver of Sprague-Dawley Rats Exposed to PFOS via Gavage, Lab Report No. <U2006>, Requestor Project No. <3M TOX 6295.9>
Interoffice Memo from Tom Kestner to Leo Gehlhoff, "Fluorochemical Isomer Distribution by ¹⁹ F-NMR Spectroscopy
Final Report Protocol 418-008 Combined Oral (Gavage) Fertility, Developmental and Perinatal / Postnatal Reproduction Toxicity Study of PFOS in Rats (Sponsor's study No. 6295.9)
Summary PFOS Rat Cross-Fostering (Study No.: 3M T-6295.13, Argus 418-014)
Final Report Protocol 418-014, Oral (Gavage) Cross-Fostering Study of PFOS in Rats (Sponsor's study No.: T-6295.13)
Analytical Lab Report on the Determination of the Presence and Concentration of Perfluorooctanesulfonate (PFOS) (CAS No.: 2759-39-3) in the Serum of Sprague-Dawley Rats Exposed to Potassium Perfluorooctanesulfonate via Gavage, Lab Report No. U2779, Requestor Project No. 3M Tox 6295.13

3M Fluorochemical EPA Submissions

April 21, 2000
Cover Letter to EPA
<i>Radiolabel Oral Absorption and Intravenous Pharmacokinetic Studies in Rats</i>
Synthesis and Characterization of FC 95 ¹⁴ C
Extent and Route of Excretion and Tissue Distribution of Total Carbon-14 in Rats after a Single Intravenous Dose of FC 95 ¹⁴ C
Absorption of FC 95 ¹⁴ C in Rats after a Single Oral Dose
Cholestyramine-Enhanced Fecal Elimination of Carbon -14 in Rats after Administration of Ammonium [¹⁴ C] Perfluorooctanoate or Potassium [¹⁴ C] Perfluorooctanesulfonate
<i>Dermal Absorption and Intravenous Pharmacokinetics in Rabbits</i>
Single-Dose Intravenous Pharmacokinetic Study of T-6246 in Rabbits. 3M Environmental Lab Study No. AMDT-042095.1
Single-Dose Dermal Absorption / Toxicity Study of T-6049 in Rabbits. 3M Environmental Lab Study No. AMDT020895.1
Single-Dose Intravenous Pharmacokinetic Study of T-6049 in Rabbits. 3M Environmental Lab Study No. AMDT-112294.1
<i>Teratology Studies in Rats and Rabbits</i>
Oral Developmental Toxicity (Teratology) in Rats and Rabbits
Rat Teratology Study T-3351 Final Report Hazelton Labs America Project No. 154-160
Letter to Mr. William C. McCormick, III from E. Marshall Johnson, reviewing draft Rat Teratology Study T-3351
Oral Teratology Study of FC-95 in Rats, Riker Lab, Experiment No. 068TR0008
Letter to Franklin D. Griffith, Ph.D. from Marshall Johnson, Ph.D. reviewing the Oral Teratology Study of FC-95 in Rats
Oral (Stomach Tube) Developmental Toxicity Study of PFOS in Rabbits, Study No. 418-012 Argus Labs
<i>Medical Surveillance and Epidemiology</i>
<i>Final Reports</i>
An Epidemiologic Investigation of Clinical Chemistries, Hematology and Hormones in Relation to Serum Levels of Perfluorooctanesulfonate in Male Fluorochemical Production Employees
Serum Perfluorooctane Sulfonate and Hepatic and Lipid Clinical Chemistry Tests in Fluorochemical Production Employees
Fluorochemical Exposure (Serum) Assessment of (3M) Decatur Chemical and Film Plant Employees
Mortality Study of Employees at 3M Plant in Decatur, Alabama
Determination of Serum Fluorochemical Levels in Sumitomo 3M Employees
Analysis of Selected Decatur Employee Serum for Sulfonic and Carboxylic Fluorochemicals

3M Fluorochemical EPA Submissions

Fluorochemical Control Study
Working Memorandum on Data Quality Assessment
<i>Study Protocols/Proposals of Ongoing Research</i>
Identification of Fluorochemicals in Sera of Children in the United States
Serum fluorochemical trends of out-of-country residents in CLUE I (1974) and Clue II (1989) epidemiologic investigations.
Identification of Fluorochemicals in Human Tissue
An Epidemiologic Analysis of the Inpatient and Outpatient Claims Event and Episode Experience of 3M Decatur Employees, 1993-1998
Determination of Serum Elimination half-lives of Ammonium Perfluorooctanoate, Perfluorooctane Sulfonic Acid, Perfluorohexane Sulfonic Acid and Total Organic Fluorine in Decatur Chemical Plant Retirees

April 25, 2000
Cover Letter to EPA
Protocol 418-008 Combined oral (gavage) fertility, developmental and perinatal / postnatal reproduction toxicity study of PFOS in rats (Sponsor's No.: 6295.9), Table E20, 1-3
Prevention of fluvastatin induced toxicity, mortality, and cardiac myopathy in pregnant rats by mevalonic acid supplementation.
The mechanism underlying the hyperlipemic effect of perfluorooctanoic acid (PFOA), perfluorooctate sulphonic acid (PFOS) and ceftriaxone.
Developmental changes in the expression of genes involved in cholesterol biosynthesis and lipid transport in human and rat fetal and neonatal livers.
Interoffice memo from Tom Kestner to Leo Gehlhoff, "Fluorochemical Isomer Distribution by ^{19}F -NMR Spectroscopy"

April 28, 2000
Cover Letter to EPA
Voluntary Use and Exposure Information Profile – Perfluorooctane Sulfonic Acid and Its Salt Forms

May 4, 2000
Cover Letter to EPA
3M TSCA 8(e) Fluorochemical Index of Submissions
<i>Physical / Chemical Properties</i>
Determination of the Melting Point / Melting Range of PFOS
Boiling Point (Not Conducted)
Determination of the Vapor Pressure of PFOS Using the Spinning Rotor Gauge Method
PFOS: Determination of the n-Octanol / Water Partition Coefficient by the Shake Flask Method – A Non-GLP Feasibility Study in Support of Wildlife Intl Ltd Project No.: 454C-108
Testing Results: Air-Water Partition Coefficient (K_{AW}) for PFOS

3M Fluorochemical EPA Submissions

Determination of the Water Solubility of PFOS by the Shake Flask Method
Technical Report. Solubility Measurements of FC-95
Solubility Estimate of FC-95 by use of Xertex TOC Analyzer
<i>Environmental Fate and Transport</i>
Adsorption of FC-95 and FC-143 on Soil / Summary of the Soil Adsorption study of the Potassium Salt of Perfluorooctanesulfonic acid
Photodegradation (Testing in Progress)
FC-95 / Photolysis Study Using Simulated Sunlight / Summary of Photolysis Study Using Simulated Sunlight on the Potassium Salt of Perfluorooctanesulfonic acid
Biodegradation Studies of Fluorocarbons (8/12/76) report and Biodegradation Studies of Fluorocarbons – III (7/19/78) report.
BOD / COD results for FC-94-X (Li salt of PFOS)
BOD / COD results for FC-99 (DEA salt of PFOS)
Transport between environmental compartments (fugacity modeling) / letter from Don Mackay on the air / water partitioning coefficient calculations
Analysis for fluorochemicals in Bluegill fish.
<i>Ecotoxicity Elements</i>
PFOS : A 96 –Hour Static Acute Toxicity Test with the Fathead Minnow (<i>Pimephales promelas</i>)
PFOS : A 96-Hour Toxicity Test with the Freshwater Alga (<i>Selenastrum capricornutum</i>)
PFOS : A 48-Hour Static Acute Toxicity Test with the Cladoceran (<i>Daphnia magna</i>)
PFOS : A 96-Hour Shell Deposition Test with the Eastern Oyster (<i>Crassostrea virginica</i>)
PFOS : A 96-Hour Static Acute Toxicity Test with the Freshwater Mussel (<i>Unio complamatus</i>)
PFOS : An Activated Sludge, Respiration Inhibition Test
PFOS : A 96-Hour Static Acute Toxicity Test with the Saltwater Mysid (<i>Mysidopsis bahia</i>)
PFOS : An Early Life-Stage Toxicity Test with the Fathead Minnow (<i>Pimephales promelas</i>)
PFOS : A Semi-Static Life-Cycle Toxicity Test with the Cladoceran (<i>Daphnia magna</i>)
PFOS : A Flow-through Life-Cycle Toxicity Test with the Saltwater Mysid (<i>Mysidopsis bahia</i>)
PFOS : A Dietary LC50 Study with the Mallard
PFOS : A Dietary LC50 Study with the Northern Bobwhite
Multi-Phase Exposure / Recovery Algal Assay Test Method

3M Fluorochemical EPA Submissions

The Effects of Continuous Aqueous Exposure to 14C-78.02 on Hatchability of Eggs and Growth and Survival of Fry of Fathead Minnow (Pimephales promelas / Summary of histopathological Examinations of Fathead Minnow (Pimephales promelas) Exposed to 78.02 for 30 Days
Effect of Potassium Perfluorooctanesulfonate on Survival, etc. (Daphnid reproduction)
Pimephales promelas 96-hour Toxicity Test Data Summary. Sample FC-94-X (Li salt of PFOS)
48-HR Acute Toxicity to Daphnia, Daphnia magna. FC-94-X (Li salt of PFOS)
Microbics Microtox Toxicity Test. Sample : FC-94-X (Li salt of PFOS)
Evaluation of FC-94-X by OECD Activated Sludge Respiration Inhibition Test #209, Review of OECD 209 and BOD/COD Test Results for FC-94- X, test data sheets (Li salt of PFOS)
96-Hour Acute Toxicity Test on Bluegill Sunfish (FC-99, DEA salt of PFOS)
Acute Toxicity to Activated Sludge (FC-99, DEA salt of PFOS)
Microtox data for FM-3820 (28% PFOS)
Acute Toxicity to Daphnia magna for FM-3820 (28% PFOS)
Toxicity to Algae (Selenastrum capricornutum) for FC-3820 (28% PFOS)
Summary Reports
Final Comprehensive Report : FC-95
Environmental Monitoring – Part 1 : Multi-City Study
Design and Structure of Multi-City Study
Low Level Drinking Water Analytical Method
Fluorochemical Characterization of Drinking Water Samples. Columbus, GA (W2336)
Fluorochemical Characterization of Drinking Water Samples. Pensacola, FL (W2176)
Fluorochemical Characterization of Drinking Water Samples. Port St. Lucie, FL (W2363)
Fluorochemical Characterization of Drinking Water Samples. Decatur, Alabama (W1979)
Fluorochemical Characterization of Drinking Water Samples. Mobile, Alabama (W2151)
Fluorochemical Characterization of Drinking Water Samples. Cleveland, Tennessee (W1973)
Draft Drinking Water Health Advisory (DWHA) – PFOS
Battelle Field Sampling Procedures Review. Columbus Georgia City Survey regarding Empirical Human Exposure Assessment. Multi-City Study
Multi-City Study. Field Report for Cleveland Tennessee and Decatur Alabama – Battelle Duxbury Activities
Multi-City Study. Field Report for Columbus Georgia and Port St. Lucie Florida – Battelle Duxbury Activities

3M Fluorochemical EPA Submissions

Final Multi-City Study. Field Report for Mobile Alabama and Pensacola Florida – Battelle Duxbury Activities
Quality assurance Project Plan for Empirical Human Exposure Assessment. Multi-City Study Sampling Task
Amendment 1 to the Quality Assurance Project Plan and Associated SOP's
<i>Environmental Monitoring – Part 2 : Biosphere Studies</i>
LCMSMS Analysis of Extracts in: "Preliminary Report Analysis of Perfluorinated Compounds in Environmental Samples"
Analysis of Fluorochemicals in Wild Bird Livers
Screening of PFOS levels in Eagles and Albatross
<i>Perfluorooctane Sulfonate Studies</i>
<i>Acute Toxicity</i>
An Acute Inhalation Toxicity Study of T-2306 CoC in the Rat, Bio/dynamics, Project No. 78-7185 (FC-95, Perfluorooctane Sulfonate potassium salt)
Acute Oral Toxicity (LD50) Study in Rats with Fluorad Fluorochemical Surfactant FC-95, Intl R&D Corp, Project No. 137-083
Combined Eye and Skin Irritation Studies Report on Sample T-1166 (FC-98), Warf Inst, Project No. 5011023.
Eye Irritation Study (with washout procedure) Report on Sample T-1166 (FC-98), Warf Inst, Project No. 5011023.
<i>Genotoxicity</i>
Mutagenicity Evaluation of T-2014 CoC in the Ames Salmonella / Microsome Plate Test Final Report, Litton Bionetics Project No. 20838, Protocol No. DMT-100
Memo Report from S.R. Rohfing to A.N. Welter, on Results of the Ames Spot Test for Mutagenicity screening of various FCs, including Sample 23-583 which is FC-95, Notebook Reference 45867-24, 25.
Mutagenicity Test on T-6295 in an in vivo Mouse Micronucleus Assay, Final Report, Corning Hazleton, CHI Study No. 17403-0-455, protocol and amended protocol.
Final Report, Chromosomal Aberrations in Human Whole Blood Lymphocytes with PFOS, Covance Lab, Covance Study No. 20784-0-449, 3M Reference No. T-6295.18 / October 25, 1999.
Final Report, Unscheduled DNA Synthesis in Rat Liver Primary Cell Cultures with PFOS, Covance Lab, Covance Study No. 20784-0-447, 3M Reference No. T-6295.19, and protocol.
Final Report, Salmonella Escherichia coli / Mammalian-Microsome Reverse Mutation Assay with PFOS, Covance Lab, Covance Study No. 20784-0-409, Reference No. T-6295.17, and protocol.

3M Fluorochemical EPA Submissions

Final Report, In Vitro Microbiological Mutagenicity Assays of 3M Company Compounds T-2247 CoC and T-2248 CoC, SRI Intl, SRI Project No. LSC-4442-016, 3M Reference No. T-2247.1 (FC-99 Old Formula, L-4299 which is 50% of the diethanolamine salt of perfluorooctanesulfonate in water)
Evaluation of Mutagenicity Studies Developed on (PFOS) Perfluorooctane Sulfonate
Final Report – Bacterial Reverse Mutation Assay of τ -1, Hita Research Lab / Study Code K01-1802, 3M Reference No. T-6667.1 (FC-98, Potassium Perfluoroethylcyclohexyl Sulfonate)
<i>Repeated-Dose Toxicity</i>
Ninety-Day Subacute Rhesus Monkey Toxicity Study, with Fluorad Fluorochemical Surfactant FC-95, Intl Research and Development Corp, Project No. 137-092
Aborted Study : Ninety-Day Subacute Rhesus Monkey Toxicity Study, with Fluorad Fluorochemical Surfactant FC-95, Intl R&D Corp, Project No. 137-087
Ninety-Day Subacute Rat Toxicity Study, with Fluorad Fluorochemical Surfactant FC-95, Intl R&D Corp, Project No. 137-085
<i>104-week Dietary Chronic Study and Carcinogenicity Study with Perfluorooctane Sulfonic Acid Potassium Salt (PFOS: T-6295) in Rats, Covance Lab, Study No. 6329-183.</i>
Summary Report – Week 53 undated
“Liver Slide Review”, Marvin Case to John Butenhoff and Andrew Seacat relaying the results of an independent histopathologic review of liver slides from the study.
Second Draft Cell Proliferation Report, Pathology Associates Intl.
Study Report of Determination of Cyanide Insensitive Palmitoyl-CoA oxidation in samples from 3M Environmental Lab – Covance Studies 6329-183 and 6329-212, Study No. XR0108
<i>Range-finder: 4-Week Capsule Toxicity Study with Perfluorooctane Sulfonic Acid Potassium Salt (PFOS; T-6295) in Cynomolgus Monkeys, Covance Labs, Study No. 6329-222</i>
Unaudited Draft Final Report, 4-Week Capsule Toxicity Study with Perfluorooctane Sulfonic Acid Potassium Salt (PFOS; T-6295) in Cynomolgus Monkeys, Covance Labs, Study No. 6329-222 (draft not complete).
Cell Proliferation Report, 4-Week Capsule Toxicity Study with Perfluorooctane Sulfonic Acid Potassium Salt (PFOS; T-6295) in Cynomolgus Monkeys, Covance Labs, Study No. 6329-222 (draft to be incorporated in final report)

3M Fluorochemical EPA Submissions

Protocol – Analytical Study, Quantitative Analysis of Perfluorooctane Sulfonic Acid Potassium Salt (PFOS; T-6295) in Cynomolgus Monkeys Following Administration of a 4-Week Capsule Toxicity Study, 3M Environmental Lab, AMDT-041598.1
Memo from Marvin Case, re: histopathology review of liver tissue in Covance Study 6329-222
<i>26-Week Capsule Toxicity Study with Perfluorooctane Sulfonic Acid Potassium Salt (PFOS: T-6295) in Cynomolgus Monkeys, Covance Labs, Study No. 6329-223. In Progress</i>
Undated report covering the 26-week dosing phase and one year recovery.
Dose-Setting Rationale for Six-Month Chronic Oral Study in Cynomolgus Monkeys
<i>Fecal Urobilinogen Analysis, Mayo Clinic, Test Code: 8308.</i>
Summary Report from Dr. Joseph P. McConnell
General Info from Mayo Clinic on Urobilinogen Analysis
Individual animal urobilinogen lab reports from Mayo Clinic
Pathology Report, Electron Microscopic Evaluation of Liver in Cynomolgus Monkeys, Pathology Associates Intl, Study No. EM99.76
Pathology Review, Marv Case to Andrew Seacat, relaying the results of a histopathology review of slides.
Lab Report, Interim Report of Preliminary Data for 26 Week Capsule Toxicology Study with PFOS in Cynomolgus Monkeys, 3M Environmental Lab, Report No. FACT-TOX-030
Two Week Oral Rangefinding Toxicity Study of T-2509CoC in Rats, Safety Evaluation Lab, Riker Labs, Experiment No. 179RR023, 3M Reference No. T-2509.3 (FC-99 New Formula, L-4509, 25% diethanolamine salt of perfluorooctanesulfonate in water)
<i>Pharmacokinetic Studies</i>
Skin Absorption Studies on Surfactants Report from W.C. McCormick to D.R. Ricker
Skin Absorption Studies on Surfactants 28 Day Percutaneous Absorption Study in Rabbits with FC- 95, Safety Evaluation Lab, Riker Labs, Experiment No. 0979AB0632 (FC-95)
Skin Absorption Studies on Surfactants 28 Day Percutaneous Absorption Study in Rabbits with FC-99, Safety Evaluation Lab, Riker Labs, Experiment No. 0979AB0633, 3M Reference No. T-3988.1

3M Fluorochemical EPA Submissions

Single-Dose Intravenous Pharmacokinetic Study of T-6053 in Rabbits, 3M Environmental Lab. Final Report – Analytical Study, Hazleton Wisconsin Project No. HWI 6329-136, 3M Reference No. T-6053.1
Single-Dose Dermal Absorption / Toxicity Study of T-6053 in Rabbits, 3M Environmental Lab, Study No. AMDT-022195.1. Final Report – Analytical Study, Hazleton Wisconsin, Project No. HWI 6329-137, 3M Reference No. T-6053.2
Fluorochemical (FC) Levels in Naïve Rats, 3M Medical Department, Toxicology Services, Study No. T-6316.9, DT21, Draft Report for Objective 3
<i>Analytical Data submitted to Dr. Jennifer Seed, USEPA, by letter dated May 3, 2000, including serum measurements from two in-life studies</i>
Analytical data from Advanced Bioanalytical Services Study No. FACT-TOX-111, re: Oral (Gavage) Pharmacokinetic Recovery Study of Perfluorooctane Sulfonate in Rats, Argus Labs Protocol No. 418-015, 3M Reference T-6295.14.
Analytical data from Advanced Bioanalytical Services Study No. FACT-TOX-110., re: Oral (Gavage) Pharmacokinetic Study of Perfluorooctane Sulfonate in Rats, Argus Labs Protocol No. 418-013, 3M Reference T-6295.12.
<i>In Vitro Comparative Metabolism Study in Rat and Human Hepatocytes with Various Fluorochemicals, 3M Reference T-6295.1, study of T-6292, T-6293, T-6294, and T-6295.</i>
Range-finding Cytotoxicity Assay, SRI Intl Toxicology Lab, Study No. B010-95
Metabolism of T-6292, T-6293, T-6294, T-6295 by Rat and Human Hepatocytes, SRI Intl Toxicology Lab, Study No. B011-95
Advanced Bioanalytical Services, Analytical Report, Additional Characterization of Metabolites of T-6292, T-6293 and T-6294 from Rat and Human Hepatocytes by TurboIonSpray LC/MS and LC/MS/MS. Semi-Quantitative Analysis of T-6295 in Rat and Human Hepatocytes Incubated with T-6292, T-6293 and T-6294 by LC/MS/MS, Report 98AGKP01.3M
Working Interpretation of Results, chart titled Perfluorosulfonamide Metabolism in Rat vs. Human Hepatocytes.

3M Fluorochemical EPA Submissions

<i>Mechanistic</i>	
	One Generation Reproduction Study of PFOS – Mevalonic Acid / Cholesterol Challenge and NOEL Investigation in Rats. Draft Study Outline
	One Generation Reproduction Study of PFOS in Rats – Pharmacokinetic Analysis. Study Outline
	One Generation Reproduction Study of PFOS in Rats – Pharmacokinetic Analysis. Study Outline
	Biochemical and Molecular Mechanistic Studies of N-Alkyl Perfluorosulfonamides, Research Proposal, Kendall B. Wallace
	The Effect of Perfluorinated Arylalkylsulfonamides on Bioenergetics of Rat Liver Mitochondria, Kendall B. Wallace and Anatoli Starkov
	Report on Covance Studies, assessment of mitochondrial bioenergetics
	Summary of the Effect of PFC's on Mitochondrial Bioenergetics In Vitro
	Effects of Selected Perfluoro-compounds on Mitochondrial Beta-Oxidation
	Effect of Acute FC Administration on Catalase and acylCoA Oxidase Expression
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<i>Ongoing Environmental Studies On Perfluorooctanesulfonates</i>	
<i>Environmental Fate and Transport</i>	
	Abiotic Degradation Studies. Includes Hydrolysis and Photolysis Study Plans
	Biodegradation Studies (Includes Studies on : aerobic acclimated closed bottle biodegradation, aerobic soil / sediment biodegradation, pure culture aerobic, and fluorochemical decomposition process)

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<i>Ecotoxicity Elements</i>	
	Protocol: PFOS: A 96-Hour Toxicity Test with the Freshwater Alga
	Protocol: PFOS: A 96-Hour Toxicity Test with the Freshwater Diatom
	Protocol: PFOS: A 96-Hour Toxicity Test with the Marine Diatom
	Protocol: PFOS: A 7-Day Toxicity Test with Duckweed
<i>Perfluorooctane Sulfonate Studies</i>	
<i>Ongoing Research / Study Protocols</i>	
	Protocol for Study : Low Level PFOS Dose versus Rat Serum and Liver PFOS, 3M Medical Department, Toxicology, Study No. T-6295.16 DT31
	Protocol for Study : Pharmacokinetic Study of POSF in Rats, 3M Medical Department, Toxicology, Protocol for Study No. T-7098.1
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	BOD / COD results for FC-93 (25% NH ₄ salt of PFOS in IPA and water), 3M Environmental Lab, July 18, 1974
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Tech Report – Bioconcentration of FM3422 in Bluegill Sunfish and in Channel Catfish. Tech Report – Aquatic Fate of a Fluorochemical : FM3422
Tech Notebook copies – Analytical from fish bioconcentration studies
Alkaline hydrolysis
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Tech Report - Adsorption of FM-3422 on Soil
Tech Report - Analysis for Fluorochemicals in Bluegill Fish
Tech Report – Bioaccumulation of Fluorochemicals in Tenn. River. Tech Report – Fluorochemicals in Tennessee River Fish.
Tech Report – Photolysis of FM-3422 on Soil
Tech Report – FM-3422 Photolysis Study using Simulated Sunlight
<i>Summary Reports</i>
Tech Report – Analytical Methodology on FM-3422
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<i>Ecotoxicity Elements</i>
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Acute Toxicity of U1464 to Larval Fathead Minnow
Inhibition of U1464 for Activated Sludge Respiration Inhibition
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<i>Acute Toxicology</i>
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<i>Studies in Progress</i>
Protocol, Feces Method Development Metabolism Study for Perfluorooctanesulfonate Derivatives, 3M Strategic Toxicology Lab, Study Nos. T-636.17; T-6295.21; T-7132.3; ST-41
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<i>Pharmacokinetic Studies</i>
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Letter from Steve R. Haworth, Covance Labs, reviewing the NOTOX study and concluding it was technically inadequate and should be repeated
<i>Repeated-Dose Toxicity</i>
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<i>Pharmacokinetic Studies</i>
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Memo from E.G. Lambrecht to Riker Study Files re Fetal Lens Artifact – Summary of Developments to Date
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	Genotoxicity Test on T-5711.1 in the In Vivo / In Vitro Unscheduled DNA Synthesis and Cell Proliferation Assays in Rat Liver Cells, Hazelton, HWA Study No. 15515-0-494
	Mutagenicity Test on T-5711 in an In Vivo Rat Micronucleus Assay, Hazelton, HWA Study No. 15515-0-454
	Evaluation of the Mutagenic Activity of T-5874 in the Ames Salmonella / Microsome Test, NoTox Project 115932, NoTox Substance 38187, 3M Reference T-5874.1
	Evaluation of the Ability of T-5874 to Induce Chromosome Aberrations in Cultured Peripheral Human Lymphocytes, NoTox Project 115919, NoTox Substance 38187, 3M Reference T-5874.2
	Evaluation of the Mutagenic Activity of T-5874 in an In Vitro Mammalian Cell Gene Mutation Test with L5178Y Mouse Lymphoma Cells, NoTox Project 115921, NoTox Substance 38187, 3M Reference T-5874.3
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	Letter from Andrew M. Seacat to Peter J. Thomford, Study Director at Covance, re errors in draft report. 13-Week Dietary Toxicity Study
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	Analysis of T-5794 in a Cell Proliferation Assay in Rat Liver Cells, Hazelton, Final Report, HWA Study No. 154-207, and protocol and analytical data
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	Acute Oral Toxicity Screen with T-3493 in Albino Rats, Safety Evaluation Lab, Riker Labs, Project No. 0884AR0010, 3M Reference No. T-3943
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	In Vitro Microbiological Mutagenicity Assays of 3M Company's Compound T-3610, SRI Intl, Project No. LSC-3145, 3M Reference No. T-3610 (NB No. 63601-32, FX-14)
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	Final Report, Acute Oral Toxicity Study of T-5898 in Rats, Hazelton, Study No. 40200468
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	Final Report, Primary Dermal Irritation / Corrosion Study of T-5898 in Rabbits, Hazelton, Study No. 40200470
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	Qualitative Investigation of the In Vitro Metabolism of T-6292, T-6293, T-6294 and T-6295 by Rat and Human Hepatocytes Using Ion Spray LC/MS and LC/MS/MS, Advanced Bioanalytical Services [Preliminary] Analytical Report, Report 96ADEM01.3M
<i>Teratology</i>	
	Memo from E.G. Lamprecht re Fetal Rat Lens Artifact – Summary of Developments
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	Ion Spray LC/MC Determination of Perfluoro Analytical Standards Provided by 3M Medical Department, Advanced Bioanalytical Services, No. 95MYHW01.3M
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May 23, 2000
Cover Letter to EPA
Net-FOSE
Summary Octanol / Water Partition Coefficient / Report – Determination of the Partition Coefficient (N-Octanol / Water) of T-5874 by High Performance Liquid Chromatography (HPLC)
Perfluorodecansulfonate, Ammonium Salt (PFDS)
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BOD/COD Testing Results FC-120
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Tech Report – Fate of Fluorochemicals in the Environmental (sic) (Wasburg respirometer method for biodegradability of FC-128)
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Ready Biodegradability: "Modified OECD Screening Test" for Fluorad FC-129
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May 25, 2000
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Study Summary for Work Performed During 1977-1979
Toxicology Studies and Other Information on PFOA
PFOA
Acute Toxicity
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Technical Report Summary, Analysis of rat serum of FC-143, reported in terms of organic and inorganic fluorine, Central Research Labs
Final Report, Acute Oral Toxicity (LD ₅₀) Study in Rats, Intl R&D Corp, Study No. 137-091, 3M Reference No. Fluorad FC-143, Lot 340
Final Report, Acute Oral Toxicity Study of T-6669 in Rats, Corning Hazelton, Study No. CHW 61001760, 3M Ref. FC-143
Final Report, Primary Skin Irritation Study – Rabbits, Biosearch, 3M Reference No. T-1395, FC-143
Final Report, Primary Eye Irritation Study – Rabbits (Washout Procedure), Biosearch, 3M Reference No. T-1395, FC-143
Final Report, Primary Eye Irritation Study – Rabbits (Not Washed), Biosearch, 3M Reference No. T-1395, FC-143
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Final Report, Primary Eye Irritation Study – Rabbits, Biosearch, 3M Reference No. T-1585, FC-26 (perfluorooctanoic acid)
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<i>Genotoxicity</i>	
	An Assay of Cell Transformation and Cytotoxicity in the C3H 10T ½ Clonal Cell Line for the Test Chemical T-2942 CoC, Environmental Pathology Lab, Stone Research Lab, 3M Ref. No. FC-143 Lot 340, L138679
	Final Report, Mutagenic Evaluation of T-2015 CoC in the Ames Salmonella/Microsome Plate Test, Litton Bionetics, Study No. 20838, 3M Ref. No. FC-143
	Final Report, Mutagenicity Test on T-6564 in an In Vivo Mouse Micronucleus Assay, Corning Hazelton, Study No. 17750-0-455, 3M Ref. No. FC-1015, L-13167, straight-chain APFO
	Final Report, Mutagenicity Test on T-6564 Measuring Chromosomal Aberrations in Chinese Hamster Ovary (CHO) Cells: with a Confirmatory Assay with Multiple Harvests, Corning Hazelton, Study No. 17750-0-437CO, 3M Ref. No. FC-1015, L13167, straight-chain APFO
	Final Report, Mutagenicity Test with T-6564 in the Salmonella – Escherichia Coli / Mammalian – Microsome Reverse Mutation Assay with a Confirmatory Assay, Corning Hazelton, Study No. 17750-0-409R, 3M Ref. No. FC-1015, L13167, straight-chain APFO
	Final Report, Mutagenicity Test on T-6342 Measuring Chromosome Aberrations in Human Whole Blood Lymphocytes with a Confirmatory Assay with Multiple Harvests, Corning Hazelton, Study No. 17073-0-449CO, 3M Ref. No. FC-1090, L13364, F11426, Lot 1, sodium perfluorooctanoate
	Final Report, Mutagenicity Test on T-6342 Measuring Chromosomal Aberrations in Chinese Hamster Ovary (CHO) Cells: with a Confirmatory Assay with Multiple Harvests, Corning Hazelton, Study No. 17073-0-437CO, 3M Ref. No. FC-1090, L13364, F11426, Lot 1, sodium perfluorooctanoate
	Final Report, Mutagenicity Test on T-6342 in an In Vivo Mouse Micronucleus Assay, Corning Hazelton, Study No. 17073-0-455, 3M Ref. No. FC-1090, L13364, F11426, Lot 1, sodium perfluorooctanoate
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<i>Repeated-Dose Toxicity</i>	
	Final Report, Volumes 1-4, Two Year Oral (Diet) Toxicity / Carcinogenicity Study of Fluorochemical FC-143 in Rats, Riker Labs, Study No. 0281CR0012
	Final Report, Ninety Day Subacute Rat Toxicity Study on Fluorad Fluorochemical FC-143, Intl R&D Corp, Study No. 137-089, 3M Reference No. T-3141
	3M Internal Correspondence re FC-143 analysis of serum samples from rats of 90-day subacute study, from Jon Belisle to JE Long, dated March 20, 1978

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Ongoing
26-Week Capsule Toxicity Study with Ammonium Perfluorooctanoate (APFO) in Cynomolgus Monkeys, Covance Labs, No. 6329-231, 3M Ref. No. T-6889.3. In Progress. Protocol provided.
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Final Report, Analytical Study, Single-Dose Intravenous Pharmacokinetic Study of T-6067 in Rabbits, 3M Ref. No. L13492, Study No. AMDT-120694.1; report includes Final Report, Single-Dose Intravenous Pharmacokinetic Study of T-6067 in Rabbits, Hazelton, Study No. HWI 6329-151
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Final Report, Absorption of FC-143- ¹⁴ C in Rats After and Single Oral Dose, Riker Labs
Final Report, Synthesis and Characterization of FC-143- ¹⁴ C, Commercial Chemicals Division and Riker Labs
Final Report, Extent and Route of Excretion and Tissue Distribution of Total Carbon-14 in Male and Female Rats After a Single IV Dose of FC-143- ¹⁴ C, Riker Labs

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Final Report, Enhanced Elimination of FC-95- ¹⁴ C and FC-143- ¹⁴ C in Rats with Cholestyramine Treatment, Riker Labs.
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Teratology
Oral Rangefinder Study of T-2998CoC in Pregnant Rats, Riker Labs, Study No. 0680RR0018
Final Report, Oral Teratology Study of T-2998 CoC in Rats, Riker Labs, Study No. 0681TR0110, with Amendment to Final Report and Protocol
Oral Rangefinder Study of T-3141 CoC in Pregnant Rabbits, Riker Labs, Study No. 0681RB0331
Final Report, Oral Teratology Study of T-3141 CoC in Rabbits, Riker Labs, Study No. 0681TB0398
3M Internal Correspondence re analytical analyses of T-3141 CoC, from L.D. Winter to D.R. Ricker
Letter re further testing from E. Marshall Johnson to Dr. Franklin D. Griffith
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<i>PFOS</i>
Letter from E. Marshall Johnson to William C. McCormick, III, re Hazelton teratology studies
Letter from E. Marshall Johnson to William C. McCormick, III re Riker teratology studies on PFOS and ethyl FOSE
<i>N-EtFOSE alcohol</i>
Letter from E. Marshall Johnson to William C. McCormick, III re Riker Teratology studies on PFOS and ethyl FOSE
Final Report, Biological Phase, Metabolism of N-Ethyl Perfluorooctane Sulfanomido Ethanol (N-EtFOSE; T-6316) In Cynomolgus Monkeys Following Administration of a Single Capsule Dose, Covance, Study No. 6929-2206
<i>PFOA and Associated Salts</i>
<i>Physical/Chemical Properties</i>
Water, acetone and toluene solubility estimates – FC-143
<i>Environmental Fate and Transport</i>
Ready biodegradation of FC-143 (BOD/COD/TOC)
Technical Report Summary – Adsorption of FC-95 and FC-143 on Soil, and a critique from Dr. S. Boyd, Michigan State University
Technical Report Summary – Biodegradation Studies of Fluorocarbons – III (FC-143)

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Technical Report Summary – FC-143 Photolysis Study Using Simulated Sunlight
Technical Report Summary – Analysis for Fluorochemicals in Bluegill Fish, and a critique by J.W. Gillett of Cornell University
Ready biodegradation of FC-143 (BOD/COD)
Calculated octanol water partition coefficient – FC-143
Ready biodegradation of FX-1001 (BOD/COD)
Ready biodegradation of FC-126 (BOD/COD)
Technical Report Summary – Assessment of the Bioaccumulative Properties of Ammonium Perfluorooctanate: Static (fish test)
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96-hour acute toxicity to fathead minnow- FC-143
96-hour acute static toxicity to fathead minnow – FC-26
96-hour acute static toxicity to bluegill sunfish – FC-143
96-hour acute static toxicity to bluegill sunfish - FC-143
Two Reports: "The Effects of Continuous Aqueous Exposure to 78.03 on Hatchability of Eggs and Growth and survival of Fry of Fathead Minnow (Pimephales promelas)" and "Summary of Histopathological Examinations of Fathead Minnow (Pimephales promelas) Exposed to 78.03 for 30 Days"
Technical Report Summary – Aquatic Toxicity Testing: FC-143 (Lot-37) L.R. 5625 S
Toxicity to activated sludge – FC-143
Technical Report Summary – Multi-Phase Exposure/Recovery Algal Assay Test method (FC-143)
48-hour acute static toxicity to Daphnia magna – FC-143 (3 studies on diet)
Chronic Toxicity of Fluorochemicals to Daphnia magna (Water Flea) – FC-143, and statistical analysis of data
96-hour acute static toxicity to fathead minnow – FX-1001
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Static Acute Toxicity of FX-1003 to the Daphnid, Daphnia magna
Growth and Respiration Toxicity Test with N2803-3 and the Freshwater alga, <i>Selénstrum capricornutum</i>
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Activated Sludge Respiration Inhibition Test -FC-1015-X
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Growth Inhibition of P3025 Green Alga (<i>Selenastrum capricornutum</i>)
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May 30, 2000

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Perfluorooctanesulfonamide
Perfluorooctane sulfonylamido (ethyl) acetate
Perfluorodecanesulfonate
N-ethyl perfluorooctanesulfonamide
N-methyl perfluorooctanesulfonamide
N-ethylperfluorooctane sulfonamidoethanol
N-methylperfluorooctane sulfonamidoethanol
N-ethylperfluorooctanesulfonamidoethyl acrylate
N-ethylperfluorooctanesulfonamidoethyl methacrylate
N-methyl perfluorooctanesulfonamidoethyl acrylate

June 8, 2000

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June 28, 2000

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<i>Toxicological Studies and Other Relevant Information on PFOS Mixtures</i>
<i>Genotoxicity</i>
Final Report, In Vitro Microbiological Mutagenicity Assays of Three 3M Company Compounds, 3M Reference Nos. T-2136 [FC-206], T-2138, T-2140, SRI Intl, Project No. LSC 4442-16

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Final Report, In Vitro Microbiological Mutagenicity Assays of 3M Company's Compound T-3651, SRI Intl, Project No. LSC-3145	
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Ready biodegradability of FC-185F (BOD/COD)	
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Aquatic Toxicity Testing: FC-185F (cc817-19) L 1-2303 LR 7544 (Fathead Minnow)	
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Summary fos work performed for the German Government Agency for Military Technology and Procurement on fire extinguishing foam compounds from multiple companies	
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Acute static renewal of FC-201AF to fathead minnow	
Acute toxicity of FC-201AF to green algae, Selenastrum capricornutum	
Growth Inhibition Test with the Marine Alga Skeletonema coastatum – FC-201 AF Light Water Brand AFFF	
Acute Toxicity Test with the Marine Copepod Acartia tonsa – FC-201 AF Light Water Brand AFFF	
Acute Toxicity Sediment Test with the Marine Amphipod Corophium volutator – FC-201 AF Light Water Brand AFFF	
Acute static toxicity of FC-201AF to Daphnia magna	
Acute toxicity of FC-201AF to Mircotox	
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Acute toxicity to fish (leuciscus idus)
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Acute toxicity of FC-201F-X to Microtox
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Summary of biodegradability tests of FC-203 (BOD/COD)
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Acute toxicity of FC-203 to rainbow trout
Acute toxicity of Light Water to bluegill (Lepomis macrochirus)
Summary of acute static toxicity tests of FC-203 to bluegill
Acute Toxicity of 3M Samples (A and B) to the Water Flea (Daphnia magna) and Scud (Gammarus fasciatus) – robust summary of Gammarus fasciatus
Acute Toxicity of 3M Samples (A and B) to the Water Flea (Daphnia magna) and Scud (Gammarus fasciatus) – robust summary for Gammarus fasciatus
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Algicidal Activity of Two Samples Labeled "A" and "B"
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Acute toxicity of 3M Company's sample 7902 to grass shrimp (Palaemonetes pugio)
Acute Toxicity of 7902 to the Common Mummichog (Fundulus heteroclitus)
Acute Toxicity of 3M Company's Sample 7902 to embryos – larvae of eastern oysters (Crassostrea virginica)
Acute toxicity of Sample #5729 to embryo – larvae of eastern oysters (Crassostrea virginica)
Static Acute Toxicity of FC-203 to the Alga, Selenastrum capricornutum
Acute toxicity of FC-203 without Tolytirazole (VW160390) to Microtox
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Acute Toxicity Sediment Test with the Marine Amphipod Corophium volutator
Acute Toxicity Test with the Marine Copepod Acartia tonsa
Growth Inhibition Test with the Marine Alga Skeletonema costatum
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Environmental Effects of LIGHT WATER Brand AFFF and Components – Robust Summary for FC-203
Environmental Effects of LIGHT WATER Brand AFFF and Components – Robust Summary for VW160390 (FC-203 without tolyltriazole)
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Acute Toxicity of 81-1/8 to Fathead Minnow (Pimephales Promelas)
Acute Toxicity of a Surfactant Solution (81-1/8) to the Mummichog Fundulus heteroclitus in a Flow-through System.
Algal Assay: Bottle Test (AA:BT), Toxicity Testing FC-203C
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Ready biodegradability (BOD/COD) & TOC of FC-203CE
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Acute toxicity of FC-203CF-X to nitrifying bacteria (Nitroseed Method)
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Acute Toxicity of Sample C to Mummichog (<i>Fundulus heteroclitus</i>), Grass Shrimp (<i>Palaemonetes vulgaris</i>) and Fiddler Crab (<i>Uca pugilator</i>) – Robust summary for mummichog
Acute Toxicity of Sample C to Mummichog (<i>Fundulus heteroclitus</i>), Grass Shrimp (<i>Palaemonetes vulgaris</i>) and Fiddler Crab (<i>Uca pugilator</i>) – Robust summary for grass shrimp
Acute Toxicity of Sample C to Mummichog (<i>Fundulus heteroclitus</i>), Grass Shrimp (<i>Palaemonetes vulgaris</i>) and Fiddler Crab (<i>Uca pugilator</i>) – Robust summary for fiddler crab
Acute Toxicity of Sample C to Atlantic Oyster (<i>Crassostrea virginica</i>)

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Acute Toxicity of Sample C to Water Flea (<i>Daphnia magna</i>) and Scud (<i>Gammarus fasciatus</i>) – Robust summary for <i>Daphnia magna</i>
Acute Toxicity of Sample C to Water Flea (<i>Daphnia magna</i>) and Scud (<i>Gammarus fasciatus</i>) – Robust summary for Scud
Acute static toxicity of FC-206 to fathead minnow
Acute static toxicity of FC-206 amended to soil to fathead minnow
Acute flow-through toxicity of FC-206 to bluegill sunfish
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Investigations of toxic effects and biological degradability of foam extinguishing agents in the waste water
Summary for work performed for the German Government Agency for Military Technology and Procurement on fire extinguishing foam compounds from multiple companies
FC-206A
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Ecotoxicity Elements
FC-206A cc 785-22: Results of Aquatic 96-hr. LC50 Tests (bluegill sunfish)
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Acute flow-through toxicity of FC-206A to fathead minnow
Acute toxicity of FC-206A to <i>Daphnia magna</i>
Microbial inhibition (dehydrogenase activity) of FC-206A
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Acute Toxicity of 81-2/8 to Fathead Minnow (<i>Pimephales promelas</i>)
Acute Toxicity of a Surfactant Solution to the Mummichog (<i>Fundulus heteroclitus</i>) in a Flow-through System. (FC-206C)
Algal Assay: Bottle Test (AA:BT), Toxicity Testing FC-206C
FC-206CE
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Ready biodegradability (OECD 301E) of FC-206CE
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Acute static toxicity of FC-206CE to <i>Daphnia magna</i>
Acute static-renewal toxicity of FC-206CE to fathead minnow
Acute toxicity of FC-206CE to green algae, <i>Selenastrum capricornutum</i>
Acute toxicity of FC-206CE to Microtox
Acute toxicity of FC-206CE to activated sludge mixed liquor
Acute toxicity of FC-206CE to activated sludge mixed liquor

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Acute toxicity of FC-206CE + antifoamer to activated sludge mixed liquor
Static Acute Toxicity of FC-206CE to the Daphnid, <i>Daphnia magna</i>
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Environmental Effects of LIGHT WATER Brand AFFF and components – Robust summary for FC-206CE
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Static Acute Toxicity of FC-206CF to the Daphnid, <i>Daphnia magna</i>
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Summary of ready biodegradability studies on FC-600, Lab Worksheets, Tech Report Summaries
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Acute static toxicity of FC-600 to bluegill sunfish
Acute static toxicity of FC-600 to <i>Daphnia magna</i> – first of 3 studies of effluent from an FC-600 – exposed SCAS reactor
Acute static toxicity of FC-600 to <i>Daphnia magna</i> – second of 3 studies of effluent from an FC-600 – exposed SCAS reactor (treated reactor after 4- hours of treatment)
Acute static toxicity of FC-600 to <i>Daphnia magna</i> – third of 3 studies of effluent from an FC-600 – exposed SCAS reactor (blank control reactor after 4-hours of treatment)
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Acute toxicity of FC-600 (from Antwerp, Belgium) to activated sludge minnow
Range-finding study of acute toxicity of FC-600 (US) to fathead minnow
Range-finding study of acute toxicity of FC-600 (Belgium) to fathead minnow
Range-finding study of acute toxicity of FC-600 (US) to fathead minnow
Range-finding study of acute toxicity of FC-600 (Belgium) to fathead minnow
Dynamic Acute Toxicity of 3M-I to Fathead Minnows (<i>Pimephales promelas</i>)
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FX-601
Ecotoxicity Elements
Acute static toxicity of FX-601 to fathead minnow
Acute toxicity of FX-601 to activated sludge mixed liquor
FC-602
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Ready biodegradability (BOD/COD) of FC-602
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Growth Inhibition Test with the Marine Alga <i>Skeletonema costatum</i> (FC-602)
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Ready biodegradability (BOD/COD) of FC-603EF
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Acute toxicity of FC-603EF to the Golden Orfe (<i>Leuciscus idus</i>)
Acute toxicity of FC-603EF to the alga, <i>Scenedesmus subspicatus</i>
Acute toxicity of FC-603EF to Daphnia magna
Bacterial dehydrogenase activity of FC-603EF by the TTC method
Toxicity of FC-603EF to activated sludge
Toxicity of FC-603EF to Microtox
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Growth Inhibition of FC-603EF, Light Water™ ATC 3%, AR-AFFF to Green Alga (<i>Selenastrum capricornutum</i>)
Acute Toxicity of FC-603EF, Light Water™ ATC 3% AR-AFFF to Fathead Minnow (<i>Pimephales promelas</i>)
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Toxicity of FC-603F to Microtox
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FC-780
<i>Environmental Fate and Transport</i>
Ready biodegradability (BOD/COD) of FC-780
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FC-780B
<i>Environmental Fate and Transport</i>
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<i>Ecotoxicity Elements</i>
780B (lot 788-20): Results of Aquatic 96 Hr. LC ₅₀ Tests
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Dynamic 96-Hour Acute Toxicity of 3M Sample 1-3 to Fathead Minnows (<i>Pimephales promelas</i>)
FC-783
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FC-3003
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Acute Toxicity of R1331 to Fathead Minnow (<i>Pimephales promelas</i>)
FC-3017
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Biodegradation of "Light Water" Products in OECD Test - 6/80

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N3688 BOD Report for 3M Company
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Acute static renewal toxicity of FC-3017 to fathead minnow
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Investigation for the Eco-toxicological Evaluation of the Fluoro-surfactant Base FC-3041. Anaerobic Degradation. Part g
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Acute Toxicity of FC-3052 to Rainbow Trout (Oncorhynchus mykiss)
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Acute Toxicity of FC-3072 to Fathead Minnow (Pimephales Promelas)
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Ready biodegradability (BOD/COD) of FX-3103
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Acute static toxicity of FX-3103 to fathead minnow
Acute static toxicity of FX-3103 to Selenastrum capricornutum
Acute static toxicity of FX-3103 to Daphnia magna
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Acute toxicity of FX-3103 to activated sludge mixed liquor

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FX-3104
<i>Environmental Fate and Transport</i>
Ready biodegradability (BOD/COD) of FX-3104
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Acute static toxicity of FX-3104 to Selenastrum capricornutum
Acute static toxicity of FX-3104 to Daphnia magna
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FX-3106
<i>Environmental Fate and Transport</i>
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L-4647
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<i>Miscellaneous Studies</i>
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