

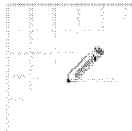
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 Larry R. Zobel  
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 01/16/1998 05:29:54 PM  
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To: John L. Butenhoff/US-Corporate/3M/US@3M-Corporate  
 cc:  
 Subject: Fluorochemical Projects Underway in the Environmental. Laboratory

John, what is the "support for toxicology studies on lactating goats" for EtFose and FC 95?

Larry

----- Forwarded by Larry R. Zobel/US-Corporate/3M/US on 01/16/98 11:15 AM -----



Bill Weppner  
 01/16/98 08:05 AM

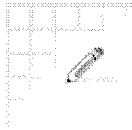
To: Dale L. Bacon/ET-ET&S/3M/US@3M-Corporate  
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cc:  
 Subject: Fluorochemical Projects Underway in the Environmental. Laboratory

See attached note from Sue Beach. This is information for the FC Steering Committee meeting Monday, January 19th.

Bill/Bev

----- Forwarded by Bill Weppner/US-Corporate/3M/US on 01/16/98 06:58 AM -----



Dan C. Hakes  
 01/15/98 01:50 PM

To: Bev Bahls/US-Corporate/3M/US@3M-Corporate  
 Bill Weppner/US-Corporate/3M/US@3M-Corporate  
 cc:  
 Subject: Fluorochemical Projects Underway in the Environmental. Laboratory



Bev, Bill wanted the attached information from the Environmental lab to go out to the Fluorochemical Steering Committee so they would have time to review it before Monday's meeting.

----- Forwarded by Dan C. Hakes/US-Corporate/3M/US on 01/15/98 01:43 PM -----

Susan A. Beach

01/15/98 01:39 PM

To: Dan C. Hakes/US-Corporate/3M/US@3M-Corporate  
cc: Dale L. Bacon/ET-ET&S/3M/US@3M-Corporate  
William K. Reagen/US-Corporate/3M/US@3M-Corporate  
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Subject: Fluorochemical Projects Underway in the Environmental. Laboratory

Below are the projects currently underway either in the 3M Environmental Laboratory, or in a contract lab being monitored by the Environmental Laboratory. As requested, they are divided into three categories. Please let me know if you have any questions. Those on the copy list should copy Dan and the others on the list if they have any comments.

### **A) A list of product-specific environmental studies planned or in progress within ET&SS**

#### **Studies in Progress**

- 1. BETI (C8F17SO2NH2) battery electrolyte.** Ecotox (measured concentrations), physical/chemical properties and environmental fate testing under Good Laboratory Practices (GLP) to support a PMN. Screening tests complete. Biodeg report being written. Analytical method still under development.
- 2. FC-3545.** For 3M Belgium. Routine ecotox battery (fish, *daphnia*, algae, bacteria toxicity, BOD/COD). BOD, COD, fish complete.
- 3. FC-290.** For 3M Belgium. Routine ecotox battery. BOD, COD, fish, bacteria complete. .
- 4. FC-807.** Compost study. Analyses of samples to determine microbial transformations during composting process. Composting complete. Some samples remain to be analyzed.
- 5. FC-807A.** Routine ecotox battery, except for fish. Studies just starting.
- 6. FC-845 treated paper.** Evaluation of biodegradability in soil. Study just starting.
- 7. FC-129.** Treatability study (lab-scale simulated wastewater treatment plant). Analyses of influent, effluent and sludge samples to determine biodegradation and sorption. Treatability study finished. some samples remain to be analyzed.
- 8. HFE-7200.** Octanol/water partition coefficient determination. Nearly complete.

**9. Ethyl FOSE alcohol.**

- Trout and chicken force-feeding studies as prelude to bioconcentration studies.
- Food packaging and food (french fries, pizza, burgers, chicken) analyses.
- Analytical support for toxicology studies on rats, primates, rabbits.
- Analytical support for toxicology studies on lactating goats.

**10. FC-95**

- Trout and chicken force-feeding studies as prelude to bioconcentration studies.
- Analytical support for toxicology studies on rats, primates, rabbits.
- Analytical support for toxicology studies on lactating goats.
- Analytical support for soil partition studies underway at Griffin. Analyses done, writing report.

**11. Perfluorobutyric acid (iso and normal)**

- Headspace analyses to evaluate decarboxylation in water. Just started
- Ecotox evaluation (fish, *daphnia*, algae, bacteria toxicity) under GLP with measured concentrations. Just started.
- Evaluation of basic ecotox data by Don Crosby (UC, Davis) and recommendations for further testing. Will begin when ecotox testing complete

**Proposed Studies**

**1. HFE-301.** Ecotox (measured concentrations), physical/chemical properties and environmental fate testing under Good Laboratory Practices (GLP) to support a PMN. Evaluating necessity for testing.

**2. PDMCH (Perfluorodimethylchlorohexane).** Ecotox (measured concentrations), physical/chemical properties and environmental fate testing under Good Laboratory Practices (GLP) to support a PMN. Evaluating necessity for testing.

**3. FC-95.**

- Soil column studies at MSU to determine fluorochemical binding to soil. Env Lab to provide analytical support.
- Determination of uptake into plants.
- Biodegradation in soil and water. Being considered by Tony Manzara's Degradable Surfactant Committee. Also probably of use for plant site risk assessments (Antwerp, Cottage Grove, Decatur, Cordova).

**4. FC-143.**

- Biodegradation in soil and water. Being considered by Tony Manzara's Degradable Surfactant Committee. Also probably of use for plant site risk assessments (Antwerp, Cottage Grove, Decatur, Cordova).
- Analytical support for cooperative primate study.

5. **Perfluorobutyl formate ester**. Study of atmospheric fate by Molina at MIT.
6. **Newer surfactants**. Control of foam with available antifoam products.

**B) Specific environmental studies planned or in progress within ET&SS for R&D material.**

**Studies in Progress**

1. **L-14755 (new amine oxide foamer)**. Study of sorption/desorption to carpet materials (nylon, cotton, etc) at the request of Griffen. Just started.
2. **C8F17CF(CF3)CO2(CH2CH2O)nCH3**. For Tony Manzara. Breakdown in water study at varying pH and temperature. Nearly complete.

**Proposed Studies**

1. **Materials from Tony Manzara's Degradable Surfactant Committee**. New substances to be selected at the next committee meeting.
  - Microbial toxicity screens
  - Soil and aquatic biodegradation studies on promising (non-toxic) new materials

**C. New\* analytical procedures being worked on to support either of the two categories or to support toxicological testing.**

\*within the last six weeks

**Studies in Progress**

1. HPLC separation of fluorochemical mixes, separation of compounds and isomers.
  - supports: Antwerp and Decatur site characterization, toxicological studies (ecotox and regular tox), sera characterization.
2. High pressure solvent extraction of FCs from sludges, soils, and other matrices (e.g. rat chow).
  - supports: Antwerp remediation studies, toxicological studies.
3. Flow injection electrospray mass spectrometry (ESMS) characterization of wastewater, groundwater, others.
  - supports: Antwerp characterization, remediation, and ecotox.

4. Flow injection ESMS characterization of FC lots prior to animal dosing.  
- supports: toxicology studies.
5. Validation of Dohrmann combustion method for determination of total fluorine (solids and liquids).  
- supports: Antwerp characterization, toxicology studies.
6. Validation of Hereaus combustion method for determination of total fluorine (solids and liquids).  
- supports: Antwerp characterization.
7. Separation and quantitation of n- and iso-perfluorobutyric acid in water.
8. Validation of extraction and analytical method for FOSE from food matrices.

#### **Proposed Studies**

Method development to be initiated within the next 4 weeks:

1. ESMS characterization of POSA interactions with fatty acid binding proteins.  
- supports: toxicology studies
2. Inorganic fluorine determination using acid distillation.  
supports: Antwerp characterization, remediation, and ecotox studies
3. High resolution FC analysis using LC-ES/MSMS  
- supports: Antwerp studies, toxicological studies, sera characterization.