Sanitized Version for the AR-226 Public Electronic Docket

(CBI and copy restricted documents removed)

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1	March 7, 2007 letter from DuPont to EPA	1	No restriction
2	DuPont Investment in Fluorotelomer Environmental Fate Science 2004-2007	1	CBI – removed
3	Appendix I Divider Sheet	1	No restriction
4	Cost Summary – Telomers	1	CBI – removed
5	Testing Invoices – Set 1	1	CBI – removed
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7	Protocol H-26634	15	No restriction
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11	Appendix III Divider Sheet	1	No restriction
12	DuPont Investment in Fluorotelomer Environmental Fate Science	1	CBI – removed
13	Appendix IV Divider Sheet	1	No restriction
14	Summary of EPA Submissions (dated 07/11/2002)	7	No restriction
15	Biodegradation studies of fluorotelomer-based polymers in soils	1	Subject to copyright – removed; Contact information to request authorization to copy: Dr. Robert Buck (302-892-8935 robert.c.buck@usa.dupont.com)
16	Biodegradation studies of fluorotelomer-based polymers in activated sludge, soil, and sediments	1	Not for further distribution without author approval – removed; Contact information to request authorization to copy: Dr. Robert Buck (302-892-8935 or Robert.C.Buck@usa.dupont.com)

Company Sanitized

DuPont Chemical Solutions Enterprise
P. O. Box 80023
Wilmington, DE 19880-0023

March 7, 2007

Dear Jim,

Thank you for your time in meeting with us February 20th, as well as for the good discussion that ensued. Enclosed please find the additional information you requested on:

1) The comprehensive, peer reviewed study commissioned by DuPont and conducted by Environ on the global fate and exposure potential from DuPont Fluorotelomer products and
2) Information on the studies that DuPont has conducted and commissioned on the biodegradation of fluorotelomer intermediates and products.

Specifically, you will find the Wildlife International invoices in Appendix I (outlined in the attached document pages 2 and 3), invoices from ENVIRON in Appendix II (outlined in the attached document page 4), and Academic Studies we have supported in Appendix III pages 9, 10, and 19-41 (outlined in the attached document page 5). As well, I have included a document in Appendix IV that reviews the information we have shared with the EPA and at various scientific meetings. Included in this Appendix is the most recent information shared at the SETAC meeting in November. If you would like any of these documents please don't hesitate to ask.

As a follow up I would like to arrange a time to discuss these items and their significance for future work with you at your earliest convenience.

With best regards,

Henry E. Bryndza
Technology Directory
DuPont Chemical Solutions Enterprise
DuPont Central Research & Development

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 2

Document Description: DuPont Investment in Fluorotelomer Environmental Fate Science 2004-2007

Doc. 2

APPENDIX I

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 4

Document Description: Cost Summary - Telomers

Doc. 4

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 5

Document Description: Testing Invoices – Set 1

Doc. 5

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 6

Document Description: Testing Invoices – Set 2

Doc. 6

PROTOCOL

H-26634: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

This protocol complies with the
Organisation for Economic Cooperation and Development
OECD Guideline 307 Adopted April 2002

Submitted to

E.I. du Pont de Nemours and Company
Wilmington, Delaware 19898
USA

Wildlife International, Ltd.

8598 Commerce Drive
Easton, Maryland 21601
(410) 822-8600

February 17, 2005

Wildlife International, Ltd.

H-26634: TRANSFORMATION POTENTIAL
IN AEROBIC AND ANAEROBIC SOILS

SPONSOR:	E.I. du Pont de Nemours and Company
SPONSOR'S REPRESENTATIVE:	William Berti
TESTING FACILITY:	Wildlife International, Ltd. 8598 Commerce Drive Easton, Maryland 21601
STUDY DIRECTOR:	Edward C. Schaefer Wildlife International, Ltd.
LABORATORY MANAGEMENT:	Henry O. Krueger, Ph.D. Director of Aquatic Toxicology and Non-Target Plants

FOR LABORATORY USE ONLY

Proposed Dates:

Experimental Start Date: 15 MARCH 2005 Experimental Termination Date: 15 MARCH 2006

Project No.: 112E-108

Test Concentrations: 200 mg/kg ; 250 mg/kg ; 10 mg/kg 6828, 6826, 6829, 6849

Test Substance No.: 6918 Reference Substance No. (if applicable): 6944, 6943, 6945

PROTOCOL APPROVAL

P.J.C. Schaefer — 10 MARCH 2005
STUDY DIRECTOR — DATE

[signature] — 3/09/05
LABORATORY MANAGEMENT — DATE

William A. Berti — 17-Feb-2005
SPONSOR'S REPRESENTATIVE — DATE

INTRODUCTION

Soil may be exposed to chemicals by direct application, spray drift, run-off, drainage, waste disposal, industrial or agricultural effluent and atmospheric deposition. This protocol describes a laboratory test method to assess the transformation of the test substance in aerobic and anaerobic soil systems. No bias is expected in this type of study.

OBJECTIVE

The objective of the study is to assess the potential for transformation of the test substance in aerobic and anaerobic soils.

EXPERIMENTAL DESIGN

The test will be conducted with four test soils under both aerobic and anaerobic condition. Four groups will be established for each soil type and condition (aerobic or anaerobic): (1) untreated (control) live soil; (2) 200 mg test substance/kg dw treated live soil; (3) 200 mg test substance/kg dw treated sterile soil; (4) 250 µg 8-2 telomer B alcohol/kg dw treated sterile soil; 10 µg 8-2 telomer B acid /kg dw; 10 µg 8-2 unsaturated telomer B acid/kg; and 10 µg perfluorooctanoic acid/kg dw, C9, C10, and C11 at 10 µg/kg dw all added to a sterile soil. The test systems will be incubated in sealed containers at approximately 20°C for up to 1 year. Two incubation chambers from each of the groups will be removed at appropriate time intervals and the soil samples will be extracted and analyzed for potential metabolites. In addition to the day zero samples, a minimum of eight additional samplings will be performed. Sufficient incubation chambers to allow for 3 additional sampling intervals will be prepared for the untreated control (1) and 200 mg test substance/kg dw treated live soil (2) groups. These chambers will be sampled as needed at the request of the study monitor.

Additional untreated and test substance treated soil chambers will be prepared for use as matrix fortification samples, biomass determinations, viability controls and to monitor aerobic conditions as necessary.

The test groups will be prepared using 25 grams (dry weight equivalent) of soil. While this amount of soil is less than the 50 to 200 grams specified in the OECD 307 guideline, it was chosen to allow for 1) the extraction of the entire test chamber contents and internal surfaces; 2) sufficient

headspace to minimize the need for active aeration which could result in a loss of potential transformation products.

METHODS AND MATERIALS

The test system and study conditions are based on the OECD Guideline for Testing of Chemicals, Guideline 307, *Aerobic and Anaerobic Transformation in Soil* (1). As this guideline is designed for low molecular weight substances, but not for polymers, adaptations of the method may be necessary for feasibility reasons. Nevertheless, the study will be carried out in such a way that the recommendations given in the guideline will be followed as closely as possible.

Test Substances

Information on the characterization of test, control or reference substances is required by Good Laboratory Practice (GLP) Standards and Principles. The Sponsor is responsible for providing Wildlife International, Ltd. verification that the test substance has been characterized prior to its use in the study. If verification of GLP test substance characterization is not provided to Wildlife International, Ltd., it will be noted in the compliance statement of the final report. The Sponsor is responsible for all information related to the test substance and agrees to accept any unused test substance and/or test substance containers remaining at the end of the study.

The test substance is not radiolabeled and has no single molecular formula. It is a mixture containing perfluoroalkyl groups of varying carbon numbers as polymer side chains.

Test Soils

Four freshly collected US soils will be used to evaluate the test substances under aerobic and anaerobic conditions. The soils will be collected from each of the following soil orders:

Soil Order	Percent of US Land*
Alfisol	13
Mollisol	25
Inceptisol	16
Ultisol	13

*Percent of total land in the US, from Foth, H.D. 1990. Fundamentals of Soil Science 8 ed. John Wiley & Sons, New York)

The soils will be processed as soon as possible after sampling. Vegetation, larger soil fauna and stones will be removed prior to passing the soil through a 2 mm sieve. The soil used in the sterile groups will be sterilized by cobalt irradiation. The soils may be stored in the dark at 4 ± 2 °C, if necessary. However, storage and pre-incubation time together will not exceed 3 months.

Characterization of the soils will be conducted by Agvise Laboratories (Northwood, North Dakota, USA). The following is a list of the minimum physicochemical properties of the soil to be determined.

- Texture (i.e., percentage of sand, silt and clay)
- pH
- Organic carbon
- Bulk density
- Field moisture capacity
- Cation exchange capacity

The percent moisture and water holding capacity of each of the soil types will be determined. In addition, the microbial biomass of a live sample of each soil type will be determined. The soil microbial biomass will be determined at the beginning of the test prior to adding the test substance and in test and control soil samples at four months, at six months, and at 12 months using the fumigation-extraction method.

Test Apparatus and Conditions

The test chambers will be glass serum bottles with foil lined closures and will be identified by project number, test substance ID, test concentration, and unique identifier. The chambers will be incubated statically at approximately 20 ± 2°C.

Soil Pre-Incubation

The soil moisture of each test soil content will be adjusted to 40 to 60% of water holding capacity (which is equivalent to a pF of between 2.0 and 2.5, or from 0.1 to 0.33 bar). The test soil then will be allowed to warm to the test temperature for a least 2 days. A pre-incubation period of at least 7 days for the aerobic soils and 14 days for the anaerobic soils will be performed under the appropriate conditions (i.e. temperature, soil moisture content, aerobic or anaerobic). Approximately 25 grams dry weight equivalent of test soil will be added to the test chambers. Sterile soil treatments will be dosed at approximately 200 mg/kg (dw) with both chloramphenicol and cycloheximide to inhibit microbial growth. The chambers to be incubated under aerobic conditions will be sealed with septa and incubated. The chambers to be incubated under anaerobic conditions will be flushed with anaerobic mixed gas, sealed with septa and incubated. The soil moisture content should be maintained in the optimal microbial growth range of 40 to 60% water holding capacity (WHC). The soil moisture content should be checked and adjusted, if necessary, at least once during the pre-incubation period by weighing the test vessels. Sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will be added as necessary to compensate for water losses.

Preparation of the Test Chambers

The soil moisture content will be checked and adjusted, if necessary, prior to the addition of the test substance. Sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will be added as necessary to compensate for water. Anaerobic treatments and controls will be prepared within an anaerobic environment. The test substance will be applied to the soil within the test chambers as described below.

Background Blank Control: Soils with no test substance added will be tested in duplicate to check for background concentrations of analytes (see Sampling and Measurements). The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Test Substance: The test substance dosed treatments will be prepared by dosing approximately 25 grams (dry weight equivalent) of soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The test chambers will be sealed with septum lined with aluminum foil, mixed and incubated. The entire bottle

will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Abiotic Controls: The abiotic controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of ^{60}Co-sterilized soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Spike Recovery Controls: The spike recovery controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of ^{60}Co-sterilized soil with appropriate volumes of 8-2 TBA stock (250 µg/mL in ethanol) and fluorinated acid stocks (10 µg/mL in water). The stocks will be injected directly into the soil using a glass microsyringe. The test chambers will be immediately sealed with septum lined with aluminum foil and the content of the chambers will be mixed. The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Viability Controls (untreated): The metabolic activity of untreated test soil will be assessed on a monthly basis. Duplicate incubation chambers for each test soil and condition (aerobic and anaerobic) will be dosed at approximately 100 mg/kg dw with a combination of radiolabeled and non-labelled glucose. The evolved $^{14}CO_2$ (aerobic and anaerobic conditions) and $^{14}CH_4$ (anaerobic conditions) will be measured and the percent biodegradation calculated. The methods and procedures used will be documented in the study records and in the final report.

Aerobic Controls (treated): The aerobic controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The test chambers will be sealed with septum lined with aluminum foil, mixed and incubated. The oxygen content of a sacrificial chamber will be measured at monthly intervals. The methods and procedures used will be documented in the study records and in the final report.

Maintenance of Test Chambers

The soil moisture content should be maintained in the optimal microbial growth range of 40 to 60% water holding capacity (WHC; a pF of between 2.0 and 2.5, or from 0.1 to 0.33 bar). The soil moisture content should be checked and adjusted, if necessary, at regular 1 to 2 week intervals by weighing the test vessels. Adding sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will compensate water losses.

The oxygen content in the headspace of two aerobic control chambers will be assessed on a monthly basis to ensure aerobic conditions. If the mean measured oxygen content within the control chambers is less than 19%, aerobic test chambers will be aerated with filter-sterilized, oil-free air.

If test chambers have to be opened to add water or for monitoring purposes, a sample of the head space will be taken first using a C18 cartridge as described below. The chamber will then be recapped as soon as possible. The septum and cap previously removed will be stored at –10°C or lower. The C18 will subsequently extracted and analyzed. Sample extracts will be stored at –10°C or lower if analysis is delayed more than 24 hours.

Sampling and Measurements

Duplicate chambers from each of the control, treated and spike recovery soils will be extracted (e.g., acetonitrile or other suitable solvent) and analyzed. Proposed sampling intervals will be at 0, 1 and 2 weeks and 1, 2, 4, 6, 9, and 12 months (9 sampling times), however the actual sampling intervals will be documented in the study records and in the final report. More or less frequent intervals may be conducted at the discretion of the Study Director. Potential volatile transformation products in the headspace of the soils chambers will be collected using an appropriate trap (i.e. C18 cartridge). At each sampling time prior to opening the test vessel, the septum will be pierced using a needle connected to a C18 cartridge and syringe. A volume of headspace gas from within the chamber will be pulled through the C18 cartridge using the attached syringe. The C18 will be subsequently extracted and analyzed. Sample extracts will be stored at –10°C or lower if analysis is delayed more than 24 hours. Extracts will be analyzed for:

1. $CF_3(CF_2)_7CH_2CH_2OH$ (perfluorooctyl ethanol, 8-2 TBA, CAS# 678-39-7)
2. $CF_3(CF_2)_7CH_2COOH$ (2-perfluorooctyl ethanoic acid, 8-2 Saturated Acid , CAS#27854-31-5)
3. $CF_3(CF_2)_6CF{=}CH_2COOH$ (2-H-hexadecafluoro-2-decenoic acid, 8-2 Unsaturated Acid, CAS# 70887-84-2)
4. $CF_3(CF_2)_6COOH$ (Octanoic acid, pentadecafluoro-; PFOA; CAS# 335-67-1)
5. Heptadecafluorononaoic Acid; CAS#375-95-1 (C9)
6. Nonadecafluorodecanoic Acid; CAS#335-76-2 (C10)

7. Perfluoroundecanoic Acid; CAS#4234-23-5 (C11)

Analytical Methods

Methods of analysis will be verified prior to the start of the study. Analytical reference standards that are used to aid the identification of the test substance and its potential degradation products will be documented in the study records. All chemicals and solvents will be reagent grade or purer. Certificates of analysis (COA) will be provided for all test substances, reference standards, chemicals and solvents, when available. Sources will be documented in the study records. Demineralized water will be used in the study.

Quality Criteria

Recovery for a given sampling time point should range between 70 to 120% for the analysis of the 8-2 TBA, 8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11, and PFOA from the spike recovery control samples. These ranges should be interpreted as targets and should not be used as criteria for acceptance of the test. If recoveries and analysis do not meet the criteria of between 70 to 120%, then the study director will consult with the Sponsor's Representatives.

8-2 TBA

Liquid Chromatography/ Mass Spectrometry (LC/MS), Gas Chromatography/Mass Spectrometry (GC/MS), or other suitable method can be used to analyze 8-2 TBA in the extracts of soil and headspace samples. Sample collection, preparation, and analytical methods used will be documented in the study records and the final report.

8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11, and PFOA

Liquid Chromatography with Tandem Mass Spectrometry (LC/MS/MS) or other suitable method, will be used to analyze 8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11 and PFOA in the extracts of soil samples. Sample collection, preparation, and analytical methods used will be documented in the study records and the final report.

EVALUATION OF THE RESULTS

Statistical methods including means, standard deviations, and regression lines, will be used as appropriate. The concentration of the transformation products in the soil and headspace will be given as

mg kg^{-1} (dry weight) and as mole kg^{-1} (dry weight) for each sampling interval. Transformation products listed in soil and headspace samples will be plotted against time.

HEALTH AND SAFETY

It is advisable to read the MSDS for the reference chemical and test substance when available. If an MSDS is not available (e.g., the substance is a product of research and development) it is important to review what is known about the substance with a person knowledgeable about the safe handling of the substance, such as the person supplying the substance for testing.

It is advisable to follow guidelines on Storage and Handling of Chemicals; Personal Protective Equipment, Waste Disposal Guide.

TEST SUBSTANCE DISPOSAL

After the issuance of the final report, the remaining test substance will be stored at the testing lab until its expiration date and then destroyed, unless other arrangements are made between the Sponsor and the testing lab.

RECORDS TO BE MAINTAINED

Records to be maintained will include, but not limited to, the following:

1. A copy of the signed protocol.
2. Identification and characterization of the test substance as provided by Sponsor.
3. Study initiation and termination dates.
4. Experimental initiation and termination dates.
5. Test and reference substance preparation and dosing calculations.
6. Soil source and pretreatment data.
7. Results of analytical methods performed.
8. Temperature range recorded during test period.
9. Copy of final report.

FINAL REPORT

A final report of the results of the study will be prepared by Wildlife International, Ltd. and submitted to the Study Monitor no later than one month after the conclusion of the definitive study. The report will include, but not be limited to the following, when applicable:

1. Name and address of facility performing the study.
2. Dates on which the study was initiated and completed.
3. Objectives and procedures stated in the approved protocol, including any changes in the original protocol.
4. Identification and characterization of the test substance as provided by Sponsor.
5. A summary and analysis of the data .
6. A description of the transformations and calculations performed on the data.
7. A description of the methods used and reference to any standard method employed.
8. A description of the test system.
9. A description of the preparation of the test solutions, the testing concentrations, and the duration of the test.
10. A description of all circumstances that may affect the quality or integrity of the data.
11. The name of the study director, the names of other scientists or professionals, and the names of all supervisory personnel, involved in the study.
12. The signed and dated reports of each of the individual scientists or other professionals involved in the study, if applicable.
13. The location where the raw data and final report are to be stored.

CHANGES TO THE FINAL REPORT

If it is necessary to make corrections or additions to the final report after it has been accepted, such changes shall be made in the form of an amendment issued by the Study Director. The amendment shall clearly identify the part of the study that is being amended and the reasons for the alteration. Amendments shall be signed and dated by the Study Director and Laboratory QA.

CHANGES TO PROTOCOL

Planned changes to the protocol will be in the form of written amendments signed by the Study Director and approved by the Sponsor's Representative. Amendments will be considered as part of the protocol and will be attached to the final protocol. Any other changes will be in the form

of written deviations signed by the Study Director and filed with the raw data. All changes to the protocol will be indicated in the final report.

GOOD LABORATORY PRACTICES

This study will be conducted in accordance with Good Laboratory Practice Standards for EPA; will be consistent with OECD Principles of Good Laboratory Practice. Each study conducted by Wildlife International, Ltd. is routinely examined by the Wildlife International, Ltd. Quality Assurance Unit for compliance with Good Laboratory Practices, Standard Operating Procedures and the specified protocol. A statement of compliance with Good Laboratory Practices will be prepared for all portions of the study conducted by Wildlife International, Ltd. The Sponsor will be responsible for compliance with Good Laboratory Practices for procedures performed by other laboratories (e.g., residue analyses or pathology). When the final report is completed, original copies of the study data and magnetically encoded records generated by Wildlife International, Ltd. for this study will be sent to the Sponsor. A certified copy will be retained in the archives of Wildlife International, Ltd.

REFERENCES

1 **Organisation for Economic Cooperation and Development.** April 2002. *Aerobic and Anaerobic Transformation in Soil.* OECD Guideline 307.

Wildlife International, Ltd.

Project No.: 112E-108
Page 1 of 1

AMENDMENT TO STUDY PROTOCOL

STUDY TITLE: H-26634: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

PROTOCOL NO: 112/021705/SED-TRANSa/SUB112 **AMENDMENT NO.:** 1

SPONSOR: E.I du Pont de Nemours and Company **PROJECT NO.:** 112E-108

EFFECTIVE DATE: 06 May 2005

AMENDMENT: Maintenance of Test Chambers, Page -7-

CHANGE: The soil moisture content should be checked and adjusted, if necessary, at regular 1 to 2 week intervals by weighing the test vessels.

TO: The soil moisture content should be checked and adjusted, if necessary, at monthly intervals by weighing the test vessels.

REASON: The frequency at which the soil moisture content was checked was reduced based on observed losses.

E. C. [signature]
STUDY DIRECTOR

6 May 2005
DATE

[signature]
LABORATORY MANAGEMENT

5 Oct 06
DATE

Reviewed by QA.
JHC 10-9-06

Wildlife International Ltd.

DEVIATION TO STUDY PROTOCOL

STUDY TITLE: H-26634: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

PROTOCOL NO: 112/021705/SED-TRANSa/SUB112 **DEVIATION NO.:** 1

SPONSOR: E.I du Pont de Nemours and Company **PROJECT NO.:** 112E-108

DEVIATION: Preparation of Test Chambers; Viability Controls (untreated), Page -7-

The protocol indicated that duplicate incubation chambers for each test soil and condition (aerobic and anaerobic) would be dosed at approximately 100 mg/kg dw with a combination of radiolabelled and non-labelled glucose. The test chambers were actually dosed at 3000 mg/kg dw with a combination of radiolabelled and non-labelled glucose.

REASON: Oversight by study personnel.

IMPACT: In the best judgment of the Study Director, this deviation did not impact the integrity of study. A concentration of 2000 to 4000 mg glucose per kg dry weight soil is a common for the determination of glucose-induced respiration rates.

E.C [illegible]
STUDY DIRECTOR

25 Sept 2006
DATE

[illegible]
LABORATORY MANAGEMENT

5 Oct 06
DATE

PROTOCOL

H-26665: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

This protocol complies with the
Organisation for Economic Cooperation and Development
OECD Guideline 307 Adopted April 2002

Submitted to

E.I. du Pont de Nemours and Company
Wilmington, Delaware 19898
USA

Wildlife International, Ltd.

8598 Commerce Drive
Easton, Maryland 21601
(410) 822-8600

February 17, 2005

Wildlife International, Ltd.

H-26665: TRANSFORMATION POTENTIAL
IN AEROBIC AND ANAEROBIC SOILS

SPONSOR:	E.I. du Pont de Nemours and Company
SPONSOR'S REPRESENTATIVE:	William Berti
TESTING FACILITY:	Wildlife International, Ltd. 8598 Commerce Drive Easton, Maryland 21601
STUDY DIRECTOR:	Edward C. Schaefer Wildlife International, Ltd.
LABORATORY MANAGEMENT:	Henry O. Krueger, Ph.D. Director of Aquatic Toxicology and Non-Target Plants

FOR LABORATORY USE ONLY

Proposed Dates:

Experimental Start Date: 15 MARCH 2005 Experimental Termination Date: 15 MARCH 2006

Project No.: 112E-109

Test Concentrations: 200 MG/KG ; 250 MG/KG , 1000 MG/KG 6826, 6826, 6829, 6849

Test Substance No.: 6919 Reference Substance No. (if applicable): 6944, 6943, 6945

PROTOCOL APPROVAL

STUDY DIRECTOR	10 MARCH 2005 DATE
LABORATORY MANAGEMENT	3/09/05 DATE
SPONSOR'S REPRESENTATIVE	17-Feb-2005 DATE

INTRODUCTION

Soil may be exposed to chemicals by direct application, spray drift, run-off, drainage, waste disposal, industrial or agricultural effluent and atmospheric deposition. This protocol describes a laboratory test method to assess the transformation of the test substance in aerobic and anaerobic soil systems. No bias is expected in this type of study.

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The test will be conducted with four test soils under both aerobic and anaerobic condition. Four groups will be established for each soil type and condition (aerobic or anaerobic): (1) untreated (control) live soil; (2) 200 mg test substance/kg dw treated live soil; (3) 200 mg test substance/kg dw treated sterile soil; (4) 250 µg 8-2 telomer B alcohol/kg dw treated sterile soil; 10 µg 8-2 telomer B acid /kg dw; 10 µg 8-2 unsaturated telomer B acid/kg; and 10 µg perfluorooctanoic acid/kg dw, C9, C10, and C11 at 10 µg/kg dw all added to a sterile soil. The test systems will be incubated in sealed containers at approximately 20°C for up to 1 year. Two incubation chambers from each of the groups will be removed at appropriate time intervals and the soil samples will be extracted and analyzed for potential metabolites. In addition to the day zero samples, a minimum of eight additional samplings will be performed. Sufficient incubation chambers to allow for 3 additional sampling intervals will be prepared for the untreated control (1) and 200 mg test substance/kg dw treated live soil (2) groups. These chambers will be sampled as needed at the request of the study monitor.

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*Percent of total land in the US, from Foth, H.D. 1990. Fundamentals of Soil Science 8 ed. John Wiley & Sons, New York)

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Characterization of the soils will be conducted by Agvise Laboratories (Northwood, North Dakota, USA). The following is a list of the minimum physicochemical properties of the soil to be determined.

- Texture (i.e., percentage of sand, silt and clay)
- pH
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- Field moisture capacity
- Cation exchange capacity

The percent moisture and water holding capacity of each of the soil types will be determined. In addition, the microbial biomass of a live sample of each soil type will be determined. The soil microbial biomass will be determined at the beginning of the test prior to adding the test substance and in test and control soil samples at four months, at six months, and at 12 months using the fumigation-extraction method.

Test Apparatus and Conditions

The test chambers will be glass serum bottles with foil lined closures and will be identified by project number, test substance ID, test concentration, and unique identifier. The chambers will be incubated statically at approximately 20 ± 2°C.

Soil Pre-Incubation

The soil moisture of each test soil content will be adjusted to 40 to 60% of water holding capacity (which is equivalent to a pF of between 2.0 and 2.5, or from 0.1 to 0.33 bar). The test soil then will be allowed to warm to the test temperature for a least 2 days. A pre-incubation period of at least 7 days for the aerobic soils and 14 days for the anaerobic soils will be performed under the appropriate conditions (i.e. temperature, soil moisture content, aerobic or anaerobic). Approximately 25 grams dry weight equivalent of test soil will be added to the test chambers. Sterile soil treatments will be dosed at approximately 200 mg/kg (dw) with both chloramphenicol and cycloheximide to inhibit microbial growth. The chambers to be incubated under aerobic conditions will be sealed with septa and incubated. The chambers to be incubated under anaerobic conditions will be flushed with anaerobic mixed gas, sealed with septa and incubated. The soil moisture content should be maintained in the optimal microbial growth range of 40 to 60% water holding capacity (WHC). The soil moisture content should be checked and adjusted, if necessary, at least once during the pre-incubation period by weighing the test vessels. Sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will be added as necessary to compensate for water losses.

Preparation of the Test Chambers

The soil moisture content will be checked and adjusted, if necessary, prior to the addition of the test substance. Sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will be added as necessary to compensate for water. Anaerobic treatments and controls will be prepared within an anaerobic environment. The test substance will be applied to the soil within the test chambers as described below.

Background Blank Control: Soils with no test substance added will be tested in duplicate to check for background concentrations of analytes (see Sampling and Measurements). The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Test Substance: The test substance dosed treatments will be prepared by dosing approximately 25 grams (dry weight equivalent) of soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The test chambers will be sealed with septum lined with aluminum foil, mixed and incubated. The entire bottle

will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Abiotic Controls: The abiotic controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of ^{60}Co-sterilized soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Spike Recovery Controls: The spike recovery controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of ^{60}Co-sterilized soil with appropriate volumes of 8-2 TBA stock (250 µg/mL in ethanol) and fluorinated acid stocks (10 µg/mL in water). The stocks will be injected directly into the soil using a glass microsyringe. The test chambers will be immediately sealed with septum lined with aluminum foil and the content of the chambers will be mixed. The entire bottle will be extracted after a sample of the headspace has been taken. The methods and procedures used will be documented in the study records and in the final report.

Viability Controls (untreated): The metabolic activity of untreated test soil will be assessed on a monthly basis. Duplicate incubation chambers for each test soil and condition (aerobic and anaerobic) will be dosed at approximately 100 mg/kg dw with a combination of radiolabeled and non-labelled glucose. The evolved $^{14}CO_2$ (aerobic and anaerobic conditions) and $^{14}CH_4$ (anaerobic conditions) will be measured and the percent biodegradation calculated. The methods and procedures used will be documented in the study records and in the final report.

Aerobic Controls (treated): The aerobic controls will be prepared by dosing approximately 25 grams (dry weight equivalent) of soil with sufficient test substance to deliver 200 mg/kg dry weight. The test substance will be administered by direct weight addition. The test chambers will be sealed with septum lined with aluminum foil, mixed and incubated. The oxygen content of a sacrificial chamber will be measured at monthly intervals. The methods and procedures used will be documented in the study records and in the final report.

Maintenance of Test Chambers

The soil moisture content should be maintained in the optimal microbial growth range of 40 to 60% water holding capacity (WHC; a pF of between 2.0 and 2.5, or from 0.1 to 0.33 bar). The soil moisture content should be checked and adjusted, if necessary, at regular 1 to 2 week intervals by weighing the test vessels. Adding sterile-filtered demineralized water (degassed sterile-filtered demineralized water for the anaerobic soils) will compensate water losses.

The oxygen content in the headspace of two aerobic control chambers will be assessed on a monthly basis to ensure aerobic conditions. If the mean measured oxygen content within the control chambers is less than 19%, aerobic test chambers will be aerated with filter-sterilized, oil-free air.

If test chambers have to be opened to add water or for monitoring purposes, a sample of the head space will be taken first using a C18 cartridge as described below. The chamber will then be recapped as soon as possible. The septum and cap previously removed will be stored at –10°C or lower. The C18 will subsequently extracted and analyzed. Sample extracts will be stored at –10°C or lower if analysis is delayed more than 24 hours.

Sampling and Measurements

Duplicate chambers from each of the control, treated and spike recovery soils will be extracted (e.g., acetonitrile or other suitable solvent) and analyzed. Proposed sampling intervals will be at 0, 1 and 2 weeks and 1, 2, 4, 6, 9, and 12 months (9 sampling times), however the actual sampling intervals will be documented in the study records and in the final report. More or less frequent intervals may be conducted at the discretion of the Study Director. Potential volatile transformation products in the headspace of the soils chambers will be collected using an appropriate trap (i.e. C18 cartridge). At each sampling time prior to opening the test vessel, the septum will be pierced using a needle connected to a C18 cartridge and syringe. A volume of headspace gas from within the chamber will be pulled through the C18 cartridge using the attached syringe. The C18 will be subsequently extracted and analyzed. Sample extracts will be stored at –10°C or lower if analysis is delayed more than 24 hours. Extracts will be analyzed for:

1. $CF_3(CF_2)_7CH_2CH_2OH$ (perfluorooctyl ethanol, 8-2 TBA, CAS# 678-39-7)
2. $CF_3(CF_2)_7CH_2COOH$ (2-perfluorooctyl ethanoic acid, 8-2 Saturated Acid , CAS#27854-31-5)
3. $CF_3(CF_2)_6CF{=}CH_2COOH$ (2-H-hexadecafluoro-2-decenoic acid, 8-2 Unsaturated Acid, CAS# 70887-84-2)
4. $CF_3(CF_2)_6COOH$ (Octanoic acid, pentadecafluoro-; PFOA; CAS# 335-67-1)
5. Heptadecafluorononaoic Acid; CAS#375-95-1 (C9)
6. Nonadecafluorodecanoic Acid; CAS#335-76-2 (C10)

7. Perfluoroundecanoic Acid; CAS#4234-23-5 (C11)

Analytical Methods

Methods of analysis will be verified prior to the start of the study. Analytical reference standards that are used to aid the identification of the test substance and its potential degradation products will be documented in the study records. All chemicals and solvents will be reagent grade or purer. Certificates of analysis (COA) will be provided for all test substances, reference standards, chemicals and solvents, when available. Sources will be documented in the study records. Demineralized water will be used in the study.

Quality Criteria

Recovery for a given sampling time point should range between 70 to 120% for the analysis of the 8-2 TBA, 8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11, and PFOA from the spike recovery control samples. These ranges should be interpreted as targets and should not be used as criteria for acceptance of the test. If recoveries and analysis do not meet the criteria of between 70 to 120%, then the study director will consult with the Sponsor's Representatives.

8-2 TBA

Liquid Chromatography/ Mass Spectrometry (LC/MS), Gas Chromatography/Mass Spectrometry (GC/MS), or other suitable method can be used to analyze 8-2 TBA in the extracts of soil and headspace samples. Sample collection, preparation, and analytical methods used will be documented in the study records and the final report.

8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11, and PFOA

Liquid Chromatography with Tandem Mass Spectrometry (LC/MS/MS) or other suitable method, will be used to analyze 8-2 Saturated Acid, 8-2 Unsaturated Acid, C9, C10, C11 and PFOA in the extracts of soil samples. Sample collection, preparation, and analytical methods used will be documented in the study records and the final report.

EVALUATION OF THE RESULTS

Statistical methods including means, standard deviations, and regression lines, will be used as appropriate. The concentration of the transformation products in the soil and headspace will be given as

mg kg^{-1} (dry weight) and as mole kg^{-1} (dry weight) for each sampling interval. Transformation products listed in soil and headspace samples will be plotted against time.

HEALTH AND SAFETY

It is advisable to read the MSDS for the reference chemical and test substance when available. If an MSDS is not available (e.g., the substance is a product of research and development) it is important to review what is known about the substance with a person knowledgeable about the safe handling of the substance, such as the person supplying the substance for testing.

It is advisable to follow guidelines on Storage and Handling of Chemicals; Personal Protective Equipment, Waste Disposal Guide.

TEST SUBSTANCE DISPOSAL

After the issuance of the final report, the remaining test substance will be stored at the testing lab until its expiration date and then destroyed, unless other arrangements are made between the Sponsor and the testing lab.

RECORDS TO BE MAINTAINED

Records to be maintained will include, but not limited to, the following:

1. A copy of the signed protocol.
2. Identification and characterization of the test substance as provided by Sponsor.
3. Study initiation and termination dates.
4. Experimental initiation and termination dates.
5. Test and reference substance preparation and dosing calculations.
6. Soil source and pretreatment data.
7. Results of analytical methods performed.
8. Temperature range recorded during test period.
9. Copy of final report.

FINAL REPORT

A final report of the results of the study will be prepared by Wildlife International, Ltd. and submitted to the Study Monitor no later than one month after the conclusion of the definitive study. The report will include, but not be limited to the following, when applicable:

1. Name and address of facility performing the study.
2. Dates on which the study was initiated and completed.
3. Objectives and procedures stated in the approved protocol, including any changes in the original protocol.
4. Identification and characterization of the test substance as provided by Sponsor.
5. A summary and analysis of the data .
6. A description of the transformations and calculations performed on the data.
7. A description of the methods used and reference to any standard method employed.
8. A description of the test system.
9. A description of the preparation of the test solutions, the testing concentrations, and the duration of the test.
10. A description of all circumstances that may affect the quality or integrity of the data.
11. The name of the study director, the names of other scientists or professionals, and the names of all supervisory personnel, involved in the study.
12. The signed and dated reports of each of the individual scientists or other professionals involved in the study, if applicable.
13. The location where the raw data and final report are to be stored.

CHANGES TO THE FINAL REPORT

If it is necessary to make corrections or additions to the final report after it has been accepted, such changes shall be made in the form of an amendment issued by the Study Director. The amendment shall clearly identify the part of the study that is being amended and the reasons for the alteration. Amendments shall be signed and dated by the Study Director and Laboratory QA.

CHANGES TO PROTOCOL

Planned changes to the protocol will be in the form of written amendments signed by the Study Director and approved by the Sponsor's Representative. Amendments will be considered as part of the protocol and will be attached to the final protocol. Any other changes will be in the form

of written deviations signed by the Study Director and filed with the raw data. All changes to the protocol will be indicated in the final report.

GOOD LABORATORY PRACTICES

This study will be conducted in accordance with Good Laboratory Practice Standards for EPA; will be consistent with OECD Principles of Good Laboratory Practice. Each study conducted by Wildlife International, Ltd. is routinely examined by the Wildlife International, Ltd. Quality Assurance Unit for compliance with Good Laboratory Practices, Standard Operating Procedures and the specified protocol. A statement of compliance with Good Laboratory Practices will be prepared for all portions of the study conducted by Wildlife International, Ltd. The Sponsor will be responsible for compliance with Good Laboratory Practices for procedures performed by other laboratories (e.g., residue analyses or pathology). When the final report is completed, original copies of the study data and magnetically encoded records generated by Wildlife International, Ltd. for this study will be sent to the Sponsor. A certified copy will be retained in the archives of Wildlife International, Ltd.

REFERENCES

1 **Organisation for Economic Cooperation and Development.** April 2002. *Aerobic and Anaerobic Transformation in Soil.* OECD Guideline 307.

Project No.: 112E-109
Page 1 of 1

Wildlife International, Ltd.

AMENDMENT TO STUDY PROTOCOL

STUDY TITLE: H-26665: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

PROTOCOL NO: 112/021705/SED-TRANSb/SUB112 **AMENDMENT NO.:** 1

SPONSOR: E.I du Pont de Nemours and Company **PROJECT NO.:** 112E-109

EFFECTIVE DATE: 06 May 2005

AMENDMENT: Maintenance of Test Chambers, Page -7-

CHANGE: The soil moisture content should be checked and adjusted, if necessary, at regular 1 to 2 week intervals by weighing the test vessels.

TO: The soil moisture content should be checked and adjusted, if necessary, at monthly intervals by weighing the test vessels.

REASON: The frequency at which the soil moisture content was checked was reduced based on observed losses.

STUDY DIRECTOR — DATE: 25 Sept 2006

LABORATORY MANAGEMENT — DATE: 5 Oct 06

Reviewed by QA
JHC 10-9-06

DEVIATION TO STUDY PROTOCOL

STUDY TITLE: H-26665: TRANSFORMATION POTENTIAL IN AEROBIC AND ANAEROBIC SOILS

PROTOCOL NO: 112/021705/SED-TRANSb/SUB112 **DEVIATION NO.:** 1

SPONSOR: E.I du Pont de Nemours and Company **PROJECT NO.:** 112E-109

DEVIATION: Preparation of Test Chambers; Viability Controls (untreated), Page -7-

The protocol indicated that duplicate incubation chambers for each test soil and condition (aerobic and anaerobic) would be dosed at approximately 100 mg/kg dw with a combination of radiolabelled and non-labelled glucose. The test chambers were actually dosed at 3000 mg/kg dw with a combination of radiolabelled and non-labelled glucose.

REASON: Oversight by study personnel.

IMPACT: In the best judgment of the Study Director, this deviation did not impact the integrity of study. A concentration of 2000 to 4000 mg glucose per kg dry weight soil is a common for the determination of glucose-induced respiration rates.

E. A. Kapp
STUDY DIRECTOR

25 Sept 2006
DATE

K. Kern
LABORATORY MANAGEMENT

5 Oct 06
DATE

APPENDIX II

Doc. 9

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 10

Document Description: Testing Invoices

Doc. 10

APPENDIX III

Doc. 11

CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT REMOVED

Document Number in Index: 12

Document Description: DuPont Investment in Fluorotelomer Environmental Fate Science

Doc. 12

APPENDIX IV

Doc. 13

U.S. EPA - DuPont

Created By: Robert C Buck on 07/11/2002 at 02:50 PM

		Security
Workgroup:	Product Stewardship	
Category:	General	
Sub Category:	General	

U.S. ENVIRONMENTAL PROTECTION AGENCY

4 March 2007 :

1) DuPont Investment in Fluorotelomer Environmental Fate Science:

DuPont Investment in Fluorotelomer Environmental Fate Science 2004-06.pdf

Presentation: 2007_7March_USEPA Slides_RCB.pdf **(DuPont Confidential Information)**

2) Wildlife Intl a) Invoices: 2007_Feb_2005-06 Wildlife Intl Invoices.pdf **b) Quote for 307/311**

2006_WLI_Costs to date and Est Future Studies Costs.pdf

(DuPont Confidential Information)

3) ENVIRON Invoices: Environ invoices, DEM Study 2005-2006_ALL.pdf **(DuPont Confidential Information)**

Historical Archive Document of EPA Presentations : Surface Protections Solutions -.pdf

Soil Biodegradtion Study Protocols:

Urethane Polymer Protocol: 112E-108protocol_CBI.pdf Acrylate Polymer Protocol: 112E-109protocol_CBI.pdf

Note: The studies started with a suite of 7 analytes. Two additional analytes were added at 15 months.

SETAC Presentations: SETAC NA 2005_642_Polymer Biodeg.pdf

2006_SETAC NA_Polymer Biodeg Poster_RCB_DRAFT_One Page.pdf **(not confidential)**

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3 November 2006 : Preliminary Aerobic Soil Studies Information

sent as DuPont Confidential Information. Contains TSCA CBI. Subject to Copyright.

Contents of CD 1 of 3

Cover Letter: 2006_3 Nov_Cover Letter Soil Studies_USEPA_CBI.pdf

Draft Study Reports: 2006_02 Nov_H26665_DRAFT REPORT_RPT109_CBI.pdf

2006_02 Nov_H26634_DRAFT REPORT_RPT108_CBI.pdf

Raw Data Index: 2006_02 Nov_DRAFT_Soil Studies Records Index_CBI.pdf

Analytical Data Summary: 2006_02 Nov_DRAFT 12 Month Analytical Summary_CBI.pdf

Test Substance Certificates of Analysis: 4_2006_11Oct_DRAFT_H-26665_COA_CBI.pdf

3_2006_11Oct_DRAFT_H-26634_COA_CBI.pdf

Contents of CD 2 of 3

Contents of CD 3 & 3

DuPont Soil Biodegradation Study Update, October 2006, Washington, DC

CBI Documents Provided in Advance:

1_1_Cover Letter for CBI Documents_12Oct2006_CBI.pdf

Test Substance COAs:


1_H26634_COA_17 Oct2005.pdf


2_H26665_COAl_17Oct2005.pdf


3_2006_11Oct_DRAFT_H-26634_COA.pdf


4_2006_11Oct_DRAFT_H-26665_COA.pdf

Study Protocols:


5_H26634_Soil Study_112E-108protocol.pdf


6_H26665_Soil Study_112E-109protocol.pdf

Analytical Metehods:


7_Soil Study Analytical Methods.pdf


12_Analytical Method_Added analytes.pdf

Data:


10_Mollisol Raw Data Anayttical Summary.xls

Interpretation:


8_2006_11Oct_Interpretation Algortihm & AE Calculations.pdf


9_2006_10Oct_Interpretation Agorithm Workbook.xls

Modeling the Study Results:


11_Modeling of Fluorotelomer-based Polymeric Products_Soil Biodeg Studies_DRAFT.pdf

Non-CBI Documents Provided in Advance:


A_12 October 2006 Email to D Lynch EPA_NOT CBI.pdf


B_2006_11 Oct_ Publication & Report References_NOT CBI.pdf


C_8-2 FTOH Biodegradation Pathways_NOT CBI.pdf


D_2006_JChromA_1110_pp117-124.pdf

DuPont Presentation, 15 September, 2006


2006_15Sept_DD Review with USEPA.ppt

DuPont Presentation, 16 August 2006 PMN Meeting


Premanufacture Notice slides 081606 final Company Sanitized.ppt


EPA Meeting 081606 final CBI.ppt


EPA Meeting 081606 final Company Sanitized.ppt


EPA Meeting Introduction 081506 final CBI.ppt

EPA Meeting Introduction 081506 final Company Sanitized.ppt Premanufacture Notice slides 081606 final CBI.ppt

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DuPont Presentation, 8 September 2005 : EPA Mtg 9-8-05-CBI.ppt

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DuPont Presentation, 8 April 2005 :

Supply Chain Review 08 April'05 EPA.ppt EPA Meeting 08 April'05.ppt

GDEM April 2005 SHK.ppt Paper PS Summary April 2005 SHK.ppt

DuPont Presentation, 31 January 2005 :

DuPont Global Strategy Presentation : 31Jan2005 DuPont Presentation to USEPA_AR226-1914.pdf

DuPont Supply Chain Review : Supply Chain Review 31Jan'05 Final_CBI.ppt

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DuPont Presentation, 15 December 2004 : DuPont Biodegradation Studies :

15Dec2004_DuPont-EPA Meeting Presentation.ppt 15Dec2004_DuPont-EPA Meeting Agenda.pdf

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DuPont Presentation, 10 November 2004 :

USEPA_DuPont Ongoing Research Summary_9Nov2004_NOCBI.ppt

US10 Nov2004_EPA_DuPont Ongoing Research Summary_CBI-RWR.ppt

DuPont Presentation, 17 June 2004 : DuPont Consumer Article Exposure & Risk Characterization (FINAL VERSION)

DuPont Risk Assessment - Article Presentation_USEPA_17June2004.pdf

DuPont Risk Assessment - Article Presentation for EPA_17June2004.ppt

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DuPont Presentation, 30 April 2004

(FINAL CBI VERSION) DuPont PFOA Reduction R

DuPont PFOA Reduction Report (

NON-CBI VERSION DuPont PFOA Reduction Report 04300

DuPont Report_30April2004_n

U.S. EPA-OPPTS

DuPont Presentation, 16 March 2004 (FINAL: CBI VERSION)

Brand Presentation US EPA 16 Ma

U.S. EPA-OPPTS

DuPont Presentation, 25 November 2002

(FINAL: CBI VERSION) 25Nov2002_USEPA_DuPont PS Update

(FINAL: NON-CBI VERSION) 25Nov2002_USEPA_DuPont PS Update_F

Copy of the Non-CBI Document in the Public Record (AR-226) :

25Nov2002_DuPont Presentation to USEF

U.S. EPA-OPPTS DuPont Presentation, 17 December 2001

17 DEC 2001 DUPONT 17Dec2001 DuPont FPA CBI **(CBI VERSION : 17 Dec 2001 RCB)**

17 DEC 2001 DUPONT 17Dec2001 DuPont FPA NonCBI **(NON-CBI VERSION : 17 Dec 2001 RCB)**

17Dec2001 EPA Presentation with Post Meeting Corrections/Updates

Dec2001 DuPont FPA Presentation Copy w P

U.S. EPA-OPPTS DuPont Presentation, 17 December 2001, RESUBMITTED 12 FEB, 2002

17Dec2001 DuPont FPA NonCBI 12Feb20(17Dec2001 DuPont FPA CBI 12Feb200

USEPA Updated Presentation Cover Lette

U.S. EPA-OPPTS TRP Presentation (20 JUN 2000) 20 June 2000 Mtg TRP mtg_w EPA Charts

U.S. EPA-OPPTS TRP Presentation (23 OCT 2000) EPA Review Presentation OCT23_2000_fina

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U.S. EPA-OPPTS Presentations DuPont & TRP (21 Feb 2001) (DO NOT MAKE ANY CHANGES)

EPA Review DUPONT Presentation FEB21 EPA Fil E TRP Presentation FEB

(CHARTS GIVEN TO THE EPA-OPPTS on 21 FEB 2001 non-CBI Versions of the Above)

EPA Review DUPONT Presentation FEB21 2001 FINA EPA Fil E TRP Presentation FEB21 2001 nor

U.S. EPA-ORD, Duluth, MN, 7 June 2001 (R. C. Buck) 7Jun2001 EPA_ORD Discussion.

Miscellaneous Presentations to and by U.S. EPA

August 3. 2000 EPA Staff Presentation on PFOS 226-0619.pdf

SPI-FMG Presentation to U.S. EPA 23 April 2002 Final No CBI April 23 EPA Presentatior

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Edit History:

Rev.	Editor	Edit Date
70.	Robert C Buck	03/08/2007 03:48:37 PM
69.	Robert C Buck	03/07/2007 04:32:26 PM
68.	Robert C Buck	03/07/2007 07:53:07 AM
67.	Robert C Buck	03/07/2007 07:48:16 AM
66.	Robert C Buck	03/07/2007 07:47:59 AM

**Only past five edits are shown*

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Document Number in Index: 15

Document Description: Biodegradation studies of fluorotelomer-based polymers in soils

Comment: DuPont has provided a Read Only copy of this document to EPA for inclusion in the AR-226 printed paper file. The document may be viewed (but not copied) from the EPA public printed paper copy file located at the EPA Public Reading Room. Information from the EPA web-site on the Public Reading Room is provided below. Note that this information reflects information on EPA's website as of the date of this letter. Readers should verify with EPA that the information has not changed.

The EPA/DC Public Reading Room is located in the EPA Headquarters West Building, Room 3334, located at 1301 Constitution Ave., NW, Washington, DC. The EPA/DC Public Reading Room hours of operation are 8:30 a.m. to 4:30 p.m. Eastern Standard Time, Monday through Friday, excluding federal holidays. Please visit the EPA/DC website (http://www.epa.gov/epahome/dockets.htm) for the latest status concerning the Public Reading Room and public access to docket materials.

Pollution Prevention and Toxics Docket
Email: oppt.ncic@epa.gov
Phone Number: 202-566-0280
Fax Number: 202-566-9744
Mail Code: 2822T

DuPont Contact Information: Contact information to request author permission to copy the document -

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302-892-8935
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Document Number in Index: 16

Document Description: Biodegradation studies of fluorotelomer-based polymers in activated sludge, soil, and sediments

Comment: DuPont has provided a Read Only copy of this document to EPA for inclusion in the AR-226 printed paper file. A printed copy of the document may be viewed (but not copied) from the EPA public printed paper copy file located at the EPA Public Reading Room. Information from the EPA web-site on the Public Reading Room is provided below. Note that this information reflects information on EPA's website as of the date of this letter. Readers should verify with EPA that the information has not changed.

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Pollution Prevention and Toxics Docket
Email: oppt.ncic@epa.gov
Phone Number: 202-566-0280
Fax Number: 202-566-9744
Mail Code: 2822T

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Doc. 16