

Appendix A

Toxicity Characteristic
Leaching Procedure
Analytical Results

1994 FUEL OIL ASH DATA



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903

WASTE MANAGEMENT
SECTION

ENVIRONMENTAL RESPONSE: (302) 739-3694
HAZARDOUS WASTE: (302) 739-3689
SOLID WASTE: (302) 739-3820
FAX: (302) 739-5060

November 29, 1994

Michael A. Terry
Engineering Specialist
E.I. du Pont de Nemours Company, Inc.
400 Woodland Road
Seaford, Delaware 19973-4399

Approval: SWA-94/75

Dear Mr. Terry:

Approval is hereby granted the E. I. du Pont de Nemours Company, Seaford, Delaware Plant to dispose of ash (from the cleanout of the nine fuel oil fired dowtherm vaporizers) into the industrial waste landfill owned and operated by du Pont at this location (permit SW-91/02).

The approval is granted based upon the information and analysis submitted in your November 18, 1994 letter. If process, fuel, or other changes are initiated which might alter the characteristics of this waste, notify the Solid Waste Management Branch prior to disposal. This approval expires on March 25, 1996.

If you have any questions concerning this letter, please contact Bob Hartman or me at (302) 739-3820.

Sincerely,

Richard A. Folmsbee
Program Manager
Solid Waste Management Branch

RAF:RDH:krc
RDH94207

cc: Peg Murphy

Seaford Plant
Seaford, DE 19973CC: G. E. Hipps/L. S. Salata
D. H. Thomas
W. J. Whitaker

November 18, 1994

Robert H. Hartman
Division of Air & Waste Mgmt.
Dept. of Natural Resources
and Environmental Control
P.O. Box. 1401
Dover, Delaware 19903

Dear Mr. Hartman:

DUPONT SEAFORD ASH LANDFILL
PERMIT SW 91/02

Per our phone conversation on November 17, 1994, the DuPont Seaford Site requests agreement to place ash from our fuel oil fired Dowtherm Vaporizers into our ash landfill.

Our site Power House utilizes nine (9) fuel oil fired dowtherm vaporizers to supply high temperature dowtherm vapor for the nylon process. These units burn No.6 and No.2 fuel oil and annual cleaning of their firing chambers produce approx. one (1) cubic yard of ash per unit or approx. nine (9) cubic yards total generation per year. The TCLP characterization of this material (Attachment I) indicates that this material is non-hazardous and similar to our coal/fuel oil fired Power House steam boiler ash (Attachment II) which is stored in our landfill.

In addition, the quantity of fuel oil ash which would be placed in the landfill compared to the present quantity of ash from the coal/fuel oil boilers should pose no significant impact on the engineering characteristics of our future ash utilization projects.

This ash will be placed in the bermed area of the landfill designated for the Power House coal ash cleaning process. Documentation of placement will be accomplished by completion of the "DUPONT SEAFORD SITE COAL ASH LANDFILL ASH DISPOSAL AUTHORIZATION" Document Number 32913 (Attachment III). Please note that this document has been revised to reflect fuel oil ash placement and quantity.

I trust this request meets your approval and await your permission to implement. Please contact me at (302) 629-1221 if you have questions concerning this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael A. Terry".

Michael A. Terry
Engineering Specialist

October 24, 1994

E.I. DuPont Nemours & Co. Inc.
400 Woodland Road
Seaford, DE 19973
Attn: Bill Davis

Project: Teresa Freeh-Enesco SER
Date/Time Received: 10/10/94 (1030)

TCLP CHARACTERIZATION
SAMPLE INFORMATION

Entek #: 94-6107
Sample ID: Code T-22 Ash
Date Sampled: 10/05/94
Time Sampled: (1500)
Date Analyzed: 10/20/94
Time Analyzed: (0117)

Parameter	Amount Detected (mg/L)	ICAP MDL (mg/L)	AA MDL (mg/L)	Analyst Initials
Arsenic	0.545	0.010		GS
Barium	0.034	0.001		GS
Cadmium	ND	0.004		GS
Chromium	0.802	0.003		GS
Lead	ND	0.010		GS
Mercury	ND		0.0009	GS
Selenium	ND	0.025		GS
Silver	ND	0.004		GS

QUALITY CONTROL AND METHOD OF ANALYSIS

Parameter	Blank	% Variance Duplicate	% Spike Recovery Control Matrix	ICAP Method SW-846	AA Method SW-846
Arsenic	ND	2	97	96	6010
Barium	ND	0	98	92	6010
Cadmium	ND	3	100	99	6010
Chromium	0.004	2	102	99	6010
Lead	ND	3	100	98	6010
Mercury	ND	6	98	104	7470, 7471
Selenium	ND	2	98	98	6010
Silver	0.008	0	NR	43	6010

MDL = Method Detection Limit

ND = None Detected (<MDL)

Method of Analysis: EPA Test Methods for Evaluating Solid Waste, 3rd, Edition, November, 1986.

NR = No Recovery

Analyzed by: Greg Sheridan
Greg Sheridan, Chemist

Reviewed by: Larry Wood
Larry Wood, Supervisor
Inorganic Chemistry



Patton Harris Rust & Assoc.
650 Bay Road
Suite #3
Dover, DE 19901
LP Non-volatile Extracion of Fly Ash Composite
Pont Seaford Coal Fly Ash

LLI Sample No. TL 1828869
Date Reported 6/26/92
Date Submitted 6/12/92
Discard Date 7/11/92
Collected 6/ 8/92 by RS.
Time Collected 1200
P.O.
Rel.

ANALYSIS	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
Mercury	< 0.002 mg/l	0.002	025902500
Arsenic	0.20 mg/l	0.05	133501400
Selenium	< 0.05 mg/l	0.05	133601400
Barium	3.1 mg/l	0.2	174601400
Cadmium	< 0.005 mg/l	0.005	174901400
Chromium	< 0.05 mg/l	0.05	175101400
Lead	< 0.05 mg/l	0.05	175501400
Copper	< 0.01 mg/l	0.01	176601400

The reported results for metals were corrected for the matrix spike recovery as specified in June 29, 1990 Federal Register, p. 26993. The metal analyses were performed on a non-volatile leachate prepared according to the procedure specified in the June 29, 1990 Federal Register. A sample is considered to have failed the Toxicity Characteristic (TC) test if it is considered a hazardous waste if any of the metal concentrations (mg/l) in the leachate exceed the following maxima (100 times the Primary Drinking Water Standards):

Arsenic	5.0	Cadmium	1.0	Lead	5.0	Selenium	1.0
Barium	100.0	Chromium	5.0	Mercury	0.2	Silver	5.0

The limits are published in March 29, 1990 Federal Register, pp. 11845-6.

COPY TO Patton Harris Rust & Assoc. ATTN: Hr. David F. Johns

Questions? Contact Environmental Client Services at (717) 656-2301
278 01907 194.00 031700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Ramona V. Layman, Group Leader
Instrumental Water Chemistry



Lancaster Laboratories, Inc.
2425 New Holland Pike
Lancaster, PA 17601-5994
717-656-2301

See reverse side for explanation of symbols and abbreviations.



ATTACHMENT III . .

WORK ORDER NO. _____

DUPONT SEAFORD SITE
COAL ASH LANDFILL
ASH DISPOSAL AUTHORIZATION

THE FOLLOWING REQUIREMENTS MUST BE MET AND VERIFIED PRIOR TO DISPOSING OF COAL/FUEL OIL ASH ON THE SITE ASH LANDFILL.

1. THE TRUCK/CONTAINER HAS BEEN CHECKED AND WAS CLEAN PRIOR TO LOADING MATERIAL.
2. THE TRUCK/CONTAINER SHALL CONTAIN COAL/FUEL OIL ASH ONLY FOR DISPOSAL.
3. QUANTITY OF ASH _____ CUBIC YARDS.

DATE

DUPONT REPRESENTATIVE _____

CONTRACT REPRESENTATIVE _____

- NOTE:
- SEND ONE COPY OF COMPLETED FORM TO THE SITE SHEA COAL ASH COORDINATOR.
 - FILE ORIGINAL IN POWER HOUSE FILES.

2005 COAL ASH DATA

**2005 SOUTH ASH POND
SAMPLING REPORT**

INVISTA NYLON PLANT
SEAFORD, DELAWARE



Infrastructure, environment, buildings

ARCADIS

2005 South Ash Pond
Sampling Report

INVISTA Nylon Plant
Seaford, Delaware



Siew-Ching Chin
Engineer I



Brian R. Stempowski, P.E., PMP
Senior Project Manager

Prepared for:
INVISTA/Reiss Remediation, LLC

Prepared by:
ARCADIS G&M, Inc.
1114 Benfield Boulevard
Suite A
Millersville
Maryland 21108
Tel 410 987 0032
Fax 410 987 4392

Our Ref.:
MD000886.0001.00002

Date:
12 December 2005

ARCADIS

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Appendices

A	Laboratory Analytical Report
B	Data Validation Report

ARCADIS**2005 South Ash Pond
Sampling Report**INVISTA Nylon Plant
Seaford, Delaware**1. Introduction**

ARCADIS completed the South Ash Pond ash monitoring program in October 2005 for the INVISTA Nylon Plant located at 25876 DuPont Road, Seaford, Delaware 19973 (Site). The ash monitoring program was conducted on 7 October 2005 and included collecting ash samples and submitting them for laboratory analysis in accordance with Section III (III.C and III.D) of the State of Delaware Solid Waste Permit SW-98/01 (DNREC, 2005). In accordance with Section IV.A.8 of the permit, this report presents the following:

- A description of the field procedures utilized to complete the ash sampling program;
- Analytical results of the ash samples collected from the South Ash Pond; and,
- The data validation report for the laboratory analytical data packages.

ARCADIS

2005 South Ash Pond
Sampling ReportINVISTA Nylon Plant
Seaford, Delaware**2. Field Sampling Methods and Results****2.1 Ash Sampling**

The ash sampling procedures were conducted in accordance with *DuPont Seaford's Toxicity Characteristic Leaching Procedure (TCLP) Analysis Ash Pond Sampling Plan* dated 16 May 2002. Six equally spaced ash boring locations within the pond were composited into one sample, plus a duplicate sample. The composited sample comprised the full vertical recovery from each ash boring. The locations of the ash borings are shown on Figure 1.

A clean stainless steel bucket auger was used to advance each boring to a depth of 36 to 40 inches below ground surface (bgs). The top two inches of each boring were discarded. As the bucket auger was advanced, each bucket was composited in a clean stainless steel spoon, and the composite ash samples were transferred into two laboratory 500-mL wide mouth sample jars. Each bottle was labeled, sealed and packed on ice. Proper sample identifications were noted on the chain of custody.

The ash samples including a composite field sample and a duplicate sample were sent to Severn Trent Laboratory (STL) Edison, New Jersey for analysis of TCLP metals following SW-846 methodologies. The laboratory report is included as Appendix A. A summary of the ash sample analytical data is provided in Table 1.

2.2 Analytical Data Quality Evaluation

The data associated with this investigation meet the project and analytical data quality objectives. One hundred percent of the samples were analyzed as collected and as requested on the chains of custody. Based on the data evaluation and validation, the data were qualified, as appropriate, using U.S. Environmental Protection Agency (USEPA) guidance. One hundred percent of the data generated are usable as reported. A complete data validation report is provided as Appendix B.

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2005 South Ash Pond
Sampling Report

INVISTA Nylon Plant
Seaford, Delaware

3. References

State of Delaware Department of Natural Resources and Environmental Control (DNREC). 2005. Permit SW-98/01 to INVISTA S.à.r.l. for the operation of the industrial waste landfill. July 12.

DuPont Seaford Site Coal Ash Landfill Solid Waste Permit SW-98/01 Toxicity Characteristic Leaching Procedure (TCLP) Analysis Ash Pond Sampling Plan. 16 May 2002.

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Table 1
Summary of Ash Sample Analytical Results
South Ash Pond
INVISTA Nylon Plant
Seaford, Delaware

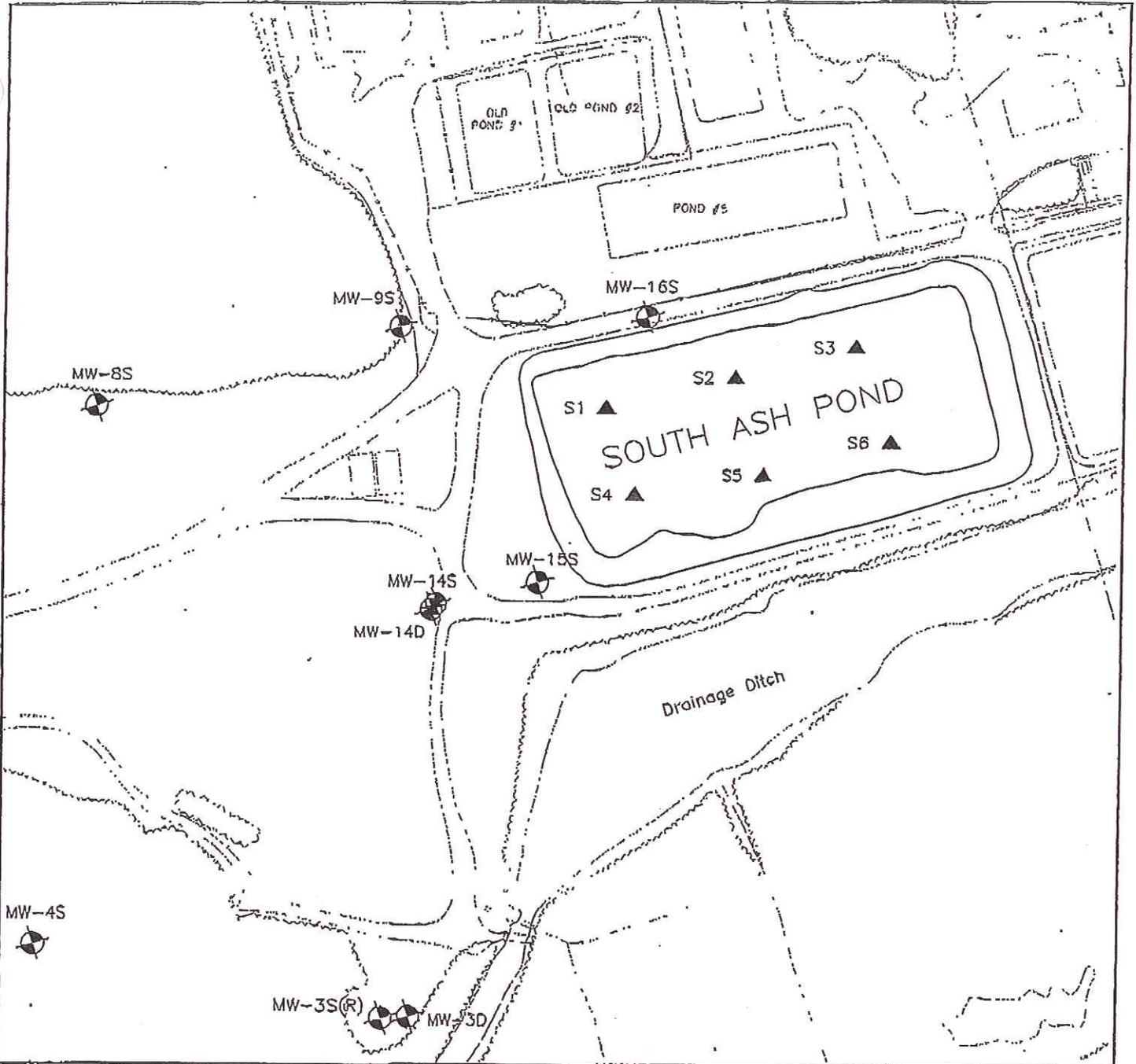
Sample ID	SAP-1-100705	DUP-2-100705
Lab Sample Number	676274	676275
Sampling Date	10/07/05	10/07/05
Matrix	SOLID	SOLID
Units	mg/L	mg/L
TCLP METALS		
Arsenic	0.13	0.15
Barium	2.3	2.3
Cadmium	0.0030 U	0.0030 U
Chromium	0.015 U	0.015 U
Lead	0.013 U	0.01 B
Mercury	0.00010 U	0.00010 U
Selenium	0.025 U	0.025 U
Silver	0.013 U	0.013 U

Qualifiers:

- U - The compound was not detected at the indicated concentration.
- B - Reported value is less than the Reporting Limit but greater than the Instrument Detection Limit.

Note:

Except mercury, all TCLP metals were analyzed by USEPA Method SW-846 6010B
 Mercury was analyzed by USEPA Method SW-846 7470A
 mg/L - milligrams per Liter



LEGEND:

- MW-2D  MONITORING WELL
- S1  ASH SAMPLE LOCATION



SCALE: FEET



1114 Benfield Boulevard, Suite A
 Millersville, Maryland 21108
 Tel (410) 987-0032 Fax (410) 987-4382

**SITE PLAN AND ASH SAMPLE LOCATIONS
 SOUTH ASH POND**

**INVISTA NYLON PLANT
 SEAFORD, DELAWARE**

PROJECT MANAGER BRS	DEPARTMENT MANAGER EUS
DRAWN BY JSG	CHECKED Mak
PROJECT NUMBER MD00866.001	FIGURE 1

Path Name: E:\Projects\INVESTA\Seaford\Drawings\ASSE-06.dwg
 Date/Time: Wed, Nov 2003 - 9:58am
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