Inventory Certification Form(Title V)

Facility Name: DuPont Company – Fayetteville Works
22828 NC Highway 87 West
Fayetteville, NC 28302

Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

These forms must be completed and returned even if the facility did not operate or emissions were zero

The legally defined "Responsible Official" of record for your facility is Barry Hudson
This person or one that meets the definition below must sign this certification form.

The official submitting the information must certify that he/she complies with the requirements as specified in Title 15A NCAC 2Q.0520(b) which references and follows the federal definition. 40 CFR Part 70.2 defines a responsible as meaning one of the following:

1. For a corporation: a president, secretary, treasurer, or vice–president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the overall operation of one or more manufacturing, production, or operating facilities applying for a or subject to a permit and either
   i. the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million(in second quarter 1980 dollars); or
   ii. the delegation of authority to such representatives is approved in advance by the permitting authority;
2. For partnership or sole propietorship; a general partner or the proprietor, respectively;
3. for a muncipality, state, federal, or other public agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA).

CERTIFICATION STATEMENT:
(Important: Legally Responsible Official, read and sign after all submissions are final.)

I certify that I am the responsible official for this facility, as described above, and hereby certify that the information contained in this air emissions report, including attached calculations and documentation, is true, accurate and complete. (Subject to legal penalities of up to $10,000 per occurrence and possible imprisonment as outlined in G.S.§143–215.3(a)(2))

Responsible Official's Signature Below (**use blue ink**): Date Signed: 6/30/06

Printed Name: Barry Hudson

Signature: Barry Hudson

This form applies to Title V facilities. If this facility is not classified as Title V, please telephone your regional office Emission Inventory contact at once for proper forms.

Email address of Responsible Official: barry.l.hudson@usa.dupont.com

Information on this Form cannot be held confidential

Facility Total CY 2005 Emission Summary Recorded in ED CENTRAL FILES **Facility ID #:** 0900009

Facility Name: DuPont Company - Fayetteville Works **Permit #(s):** 03735T29

Criteria Pollutants		Actual Emissions (Tons/Year)		% Difference
Pollutant	CAS	CY 2005 from ED	CY 2004 from Fees	
CO	CO	17.32	15.61	11.0%
NOx	NOx	92.48	66.06	40.0%
PM(TSP)	TSP	43.70	26.46	65.2%
PM10	PM10	34.86	19.39	79.8%
PM2.5	PM2.5	23.40	12.85	82.1%
SO2	SO2	531.98	295.36	80.1%
VOC (Meeting Federal Definition as photochemically reactive)	VOC	240.95	221.60	8.7%

Hazardous Air Pollutants (HAPs) and/or Toxic Air Pollutants (TAPs)		Actual Emissions (Pounds/Year)		% Difference
Pollutant	CAS	CY 2005 from ED	CY 2004 from Fees	
Polycyclic Organic Matter (Specific Compounds from OAQPS for TV)		***4.31***	***2.95***	***46.1%***
Naphthalene (Component of 83329/POMTV)	91-20-3	4.31	2.95	46.3%
Nickel & Compounds, sum total mass, inc elemental		***290.52***	***146.83***	***97.9%***
Nickel Unlisted Compounds (Specify & Component of 373024/NIC)	NIC-Other	0.520000	6.83	-92.4%
Nickel, soluble compounds as nickel (Component of 373024/NIC)	NICKSOLCPDS	290.00	140.00	107.1%
Mercury & Compounds - all total mass, inc Hg Vapor		***0.910000***	***3.14***	***-71.0%***
Mercury Unlisted Compounds (Specify & Component of HGC)	HGC-Other	0.910000	3.14	-71.0%
Manganese & compounds		***11.04***	***7.60***	***45.3%***
Manganese Unlisted Compounds (Specify & Component of MNC)	MNC-Other	11.04	7.60	45.3%

Hazardous Air Pollutants (HAPs) and/or Toxic Air Pollutants (TAPs)		Actual Emissions (Pounds/Year)		% Difference
Pollutant	CAS	CY 2005 from ED	CY 2004 from Fees	
Lead and Lead compounds		***6.66***	***6.20***	***7.4%***
Lead Unlisted Compounds (Specify and Component of PBC)	PBC-Other	6.66	6.20	7.4%
Glycol ethers (total all individual glycol ethers-See http://daq.state.nc.us/toxics/glycol/)		***3,250.00***	***321.00***	***912.5%***
Glycol Ethers, Unlisted (Specify & Component of GLYET) (See http://daq.state.nc.us/toxics/glycol/)	GLYET-Other	3,250.00	321.00	**912.5%**
Cobalt compounds		***21.00***	***10.30***	***103.9%***
Cobalt Unlisted Compound (Specify & Component of COC)	COC-Other	21.00	10.30	**103.9%**
Chromium - All/Total (Inc Chromium (VI) categories, metal and Others)		***3.42***	***2.69***	***27.1%***
Chromium Unlisted Compounds (Specify & Component of CRC)	CRC-Other	3.42	2.69	**27.3%**
Cadmium & compounds (total mass inc elemental metal)		***1.92***	***1.92***	***0.0%***
Cadmium Unlisted Compounds (Specify & Component of CDC)	CDC-Other	1.92	1.92	0.2%
Beryllium & compounds (Total mass)		***0.615000***	***1.28***	***-52.0%***
Beryllium Compound, Unlisted (Specify & Component of BEC)	BEC-Other	0.615000	1.28	**-51.8%**
Arsenic & Compounds (total mass of elemental AS, arsine and all inorganic compounds)		***5.20***	***4.67***	***11.3%***
Arsenic Unlisted Compounds (Component of ASC - Specify)	ASC-Other	5.20	4.67	**11.3%**
Antimony & Compounds (total mass, inc elemental SB)		***18.00***	***8.95***	***101.1%***
Antimony Unlisted Compounds (Component of SBC - Specify)	SBC-Other	18.00	8.95	**101.1%**
Acetic acid	64-19-7	354.00	516.00	**-31.4%**

Facility Total CY 2005 Emission Summary Recorded in ED **Facility ID #:** 0900009

Facility Name: DuPont Company - Fayetteville Works **Permit #(s):** 03735T29

Hazardous Air Pollutants (HAPs) and/or Toxic Air Pollutants (TAPs)		Actual Emissions (Pounds/Year)		% Difference
Pollutant	CAS	CY 2005 from ED	CY 2004 from Fees	
Acetonitrile	75-05-8	6,827.00	2,859.00	**138.8%**
Ammonia (as NH3)	7664-41-7	811.50	6,628.90	**-87.8%**
Benzene	71-43-2	5.37	10.96	**-51.0%**
Bromine	7726-95-6	8.80	17.00	**-48.2%**
CFC- 113 (Trichloro-1,2,2-trifluoroethane, 1,1,2-)	76-13-1	5,667.00	17,895.00	**-68.3%**
CFC-12 (Dichlorodifluoromethane)	75-71-8	Not Reported	Not Reported	**N/A**
Chlorine	7782-50-5	64.00	64.00	0.0%
Chloroform	67-66-3	1.30	Not Reported	**N/A**
Dimethyl formamide	68-12-2	1,508.50	917.00	**64.5%**
Dimethyl sulfide	75-18-3	37.50	37.50	0.0%
Dioxane, 1,4-	123-91-1	Not Reported	Not Reported	**N/A**
Ethyl acetate	141-78-6	11.90	Not Reported	**N/A**
Ethyl benzene	100-41-4	1.23	2.47	**-50.3%**
Ethylene dichloride (1,2-dichloroethane)	107-06-2	Not Reported	132.00	**N/A**
Ethylene glycol	107-21-1	32.00	Not Reported	**N/A**
Fluorides (sum of all fluoride compounds)	16984-48-8	176.00	172.50	2.0%
Formaldehyde	50-00-0	200.00	212.80	-6.0%
Hexane, n-	110-54-3	2.90	Not Reported	**N/A**
Hydrogen chloride (hydrochloric acid)	7647-01-0	190.21	196.33	-3.1%
Hydrogen fluoride (hydrofluoric acid as mass of HF- Component of Fluorides)	7664-39-3	2,319.40	2,523.63	-8.1%

Facility Total CY 2005 Emission Summary Recorded in ED **Facility ID #:** 0900009

Facility Name: DuPont Company - Fayetteville Works **Permit #(s):** 03735T29

Hazardous Air Pollutants (HAPs) and/or Toxic Air Pollutants (TAPs)		Actual Emissions (Pounds/Year)		% Difference
Pollutant	CAS	CY 2005 from ED	CY 2004 from Fees	
Hydrogen sulfide	7783-06-4	140.00	140.00	0.0%
Methanol	67-56-1	82,283.00	73,992.00	11.2%
Methyl chloroform	71-55-6	1.09	1.10	-0.5%
Methyl mercaptan	74-93-1	3.10	3.10	0.0%
Methylene chloride	75-09-2	4,395.00	2,294.00	91.6%
Nitric acid	7697-37-2	Not Reported	87.00	N/A
Phosphorus Metal, Yellow or White	7723-14-0	32.00	16.62	92.5%
Polycyclic Organic Matter (Inc PAH, dioxins, etc. NC & AP 42 historic)	POM	8.20	11.68	-29.8%
Selenium Compounds	SEC	4.90	7.25	-32.4%
Sulfur trioxide	7446-11-9	307.00	127.70	140.4%
Sulfuric acid	7664-93-9	534.00	316.10	68.9%
Toluene	108-88-3	10,476.00	9,198.41	13.9%
Vinylidene chloride	75-35-4	Not Reported	Not Reported	N/A
Xylene	1330-20-7	2.09	4.29	-51.3%

DAQ's Comments Regarding Inventory

No. 6 fuel oil consumption doubled from CY 2004; therefore, most criteria pollutant emissions (SO2, NOx, PM) increased significantly for CY 2005.

DUPONT COMPANY - FAYETTEVILLE WORKS

2005 AIR EMISSIONS INVENTORY

AIR PERMIT NUMBER 03735T29

JUNE 30, 2006

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID: Group G–39 consisting of BS–B1.1, BS–B1.2, BS–B1.3, BS–B1.4, BS–B2.1, BS–B2.2, BS–B2.3, BS–B2.4

2. Emission Source Description: polyvinyl butyral flake reactors nos. 1–8

3. Operating Scenario ID/Description: OS – 41/Polyvinyl butyral (PVB) flake reactors nos. 1–8 vented through Control Device BCD–B1 or BCD–B2.

4. SCC Number/Description: 30199999/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
(% of Emissions from this Process Vented to Control Device or Stack): 38

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–14	BCD–B1	packed bed column scrubber with mist eliminator
2	CS–14	BCD–B2	packed bed column scrubber with mist eliminator

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–BEP–B1	VERTICAL STACK	50	1	100	0.98	46.18	pvb reactor lines 1–4 scrubber
EP–BEP–B2	VERTICAL STACK	50	1	100	0.98	46.18	pvb reactor lines 5–8 scrubber

Operating Scenario: OS – 41 **Emission Source/Group ID:** G–39

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	6	02	95		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Methanol	67–56–1	4150	02	95		

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID: Group G–42 consisting of WTS–B, WTS–C

2. Emission Source Description: wastewater sludge dryers

3. Operating Scenario ID/Description: OS – 21/wastewater sludge dryers

4. SCC Number/Description: 40188898/Fugitive Emissions

5. Throughput/units in 2005: (e.g. production or fuel use): 964519 LB/yr

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency (% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–12	WTCD–3	Impingement–type wet scrubber with mist eliminator

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–WEP–1	VERTICAL STACK	28	3	105	52	22053.98	wastewater sludge dryers

Operating Scenario: OS – 21 **Emission Source/Group ID:** G–42

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.07	02	95		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Ammonia (as NH3)	7664–41–7	809.5	02			
Dimethyl sulfide	75–18–3	37.5	02			
Hydrogen sulfide	7783–06–4	140	02			
Methyl mercaptan	74–93–1	3.1	02			

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Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID AS–A

2. Emission Source Description: APFO Manufacturing Facility

3. Operating Scenario ID/Description: OS – 42/Manufacture of ammonium perfluorooctanoate

4. SCC Number/Description: 30199999/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–15	ACD–A2	Condenser
2	CS–15	ACD–A1	Gaseous wet scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–AEP–A1	VERTICAL STACK	85	1.58	70	100	11764	APFO scrubber vent

Operating Scenario: OS – 42 **Emission Source/Group ID:** AS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	23%	March–May 2005	27%	June–Aug. 2005	29%	Sept.–Nov. 2005	21%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
TSP	TSP	0	02	98		
SO2	SO2	0.34	02	95		
VOC	VOC	0.07	02	93		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Ammonia (as NH3)	7664–41–7	2	02	0		
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	5.5	02	98		
Sulfur trioxide	7446–11–9	307	02	95		
Sulfuric acid	7664–93–9	401	02	95		

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1. **Emission Source ID (from permit) or Emission Source Group ID** BS–A
2. **Emission Source Description:** Butyraldehyde storage tank
3. **Operating Scenario ID/Description:** OS – 4/Butyraldehyde (BA) Storage Tank
4. **SCC Number/Description:** 40714698/Fixed Roof Tanks – Miscellaneous
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack): 33

8. **Control Device Information :**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–1	BCD–A	Brine cooled condenser

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–BEP–A	VERTICAL STACK	29	0.2	70	0.13	0.24	BA storage

Operating Scenario: OS – 4 **Emission Source/Group ID:** BS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	1.17	02	90		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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1. **Emission Source ID (from permit) or Emission Source Group ID** BS–C
2. **Emission Source Description:** Product recovery cyclone on flake dryer
3. **Operating Scenario ID/Description:** OS – 7/Butacite PVB Flake recovery cyclone on flake dryer
4. **SCC Number/Description:** 39999994/Miscellaneous Industrial Processes
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack): 100

8. **Control Device Information :**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–5	BCD–C1	Fabric filter (6,858 sq ft filter area)

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–BEP–C	VERTICAL STACK	60	4.5	125	42	40078.86	bagfilter on flake dryer

Operating Scenario: OS – 7 **Emission Source/Group ID:** BS–C

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
TSP	TSP	2.01	08	99.9		
PM10	PM10	2.01	08	99.9		
PM2.5	PM2.5	2.01	08	99.9		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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1. **Emission Source ID (from permit) or Emission Source Group ID** BS–D
2. **Emission Source Description:** Butacite tinting process
3. **Operating Scenario ID/Description:** OS – 8/Butacite tinting process
4. **SCC Number/Description:** 40500511/Printing – Gravure:
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack): 100

8. **Control Device Information :**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–4	BCD–D1	multi–stage horizontal spray scrubber

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–BEP–D	VERTICAL STACK	35	1.9	70	70	11908.2	Butacite scrubber

Operating Scenario: OS – 8 **Emission Source/Group ID:** BS–D

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.67	02	97		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Dimethyl formamide	68–12–2	1338.5	02	97		

As entered in AERO

Facility Name: DuPont Company – Fayetteville Works
22828 NC Highway 87 West
Fayetteville, NC 28302

Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID FS–A

2. Emission Source Description: Fluoroproducts polymer mfg development

3. Operating Scenario ID/Description: OS – 30/Fluoroproducts Polymer Mfg Development Facility (PMDF)

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–13	FCD–A2	Fabric filter (130 sq ft filter area)
2	CS–13	FCD–A1	Venturi scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–FEP	VERTICAL STACK	100	1.7	70	120	16342.56	Fluoroproducts polymer mfg development

Operating Scenario: OS – 30 **Emission Source/Group ID:** FS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**49%**	**March–May 2005**	**8%**	**June–Aug. 2005**	**10%**	**Sept.–Nov. 2005**	**33%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions–Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	19.3	03	90		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	**7664–39–3**	13	02	90		

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** Insig–B1
2. **Emission Source Description:** PVA Unloading System and Storage Silos
3. **Operating Scenario ID/Description:** OS – 32/Butacite(R) PVA Storage Silos
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–Insig–B1	VERTICAL STACK	85	2	78	40	7539.82	Butacite(R) PVA Storage Silo

Operating Scenario: OS – 32 **Emission Source/Group ID:** Insig–B1

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	3	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Methanol	67–56–1	6084	02			

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** Insig–B2
2. **Emission Source Description:** PVA Dissolver Tank System
3. **Operating Scenario ID/Description:** OS – 34/Butacite(R) PVA Dissolver Tank System
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–Insig–B2	VERTICAL STACK	85	1	78	40	1884.95	Butacite(R) PVA Dissolving Tank System

Operating Scenario: OS – 34 **Emission Source/Group ID:** Insig–B2

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.58	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Methanol	67–56–1	1150	02			

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** Insig–B8.1
2. **Emission Source Description:** Butacite extruder system – line no. 3
3. **Operating Scenario ID/Description:** OS – 9/Butacite extruder system – line no. 3
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–EXT	VERTICAL STACK	50	1	100	0.98	46.18	Butacite extruder systems

Operating Scenario: OS – 9 **Emission Source/Group ID:** Insig–B8.1

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	26%	March–May 2005	26%	June–Aug. 2005	22%	Sept.–Nov. 2005	26%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	1.17	02			

HAP/TAP Pollutants (In Alphabetical Order)	CAS (see instructions)	Emissions HAP/TAPS (Pounds/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	EF Control
		2005				

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** Insig–B8.2
2. **Emission Source Description:** Butacite extruder system – line no. 4
3. **Operating Scenario ID/Description:** OS – 10/Butacite extruder system – line no. 4
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–EXT	VERTICAL STACK	50	1	100	0.98	46.18	Butacite extruder systems

Operating Scenario: OS – 10 **Emission Source/Group ID:** Insig–B8.2

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (50)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	26%	March–May 2005	26%	June–Aug. 2005	22%	Sept.–Nov. 2005	26%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	1.24	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–A
2. **Emission Source Description:** Nafion HFPO process
3. **Operating Scenario ID/Description:** OS – 11/Nafion HFPO process
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack): 63

8. **Control Device Information :**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 11 **Emission Source/Group ID:** NS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	28%	March–May 2005	28%	June–Aug. 2005	27%	Sept.–Nov. 2005	17%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	49.73	02	90.5		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Benzene	71–43–2	1.24	02	0		
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	1354.2	02	99.6		
Toluene	108–88–3	10356	02	0		

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–B

2. Emission Source Description: Nafion Vinyl Ethers North process

3. Operating Scenario ID/Description: OS – 12/Nafion vinyl ethers north process

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
(% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 12 **Emission Source/Group ID:** NS–B

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	31%	March–May 2005	35%	June–Aug. 2005	32%	Sept.–Nov. 2005	3%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions– Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO	5.7	02	0		
VOC	VOC	31.5	02	22		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Acetonitrile	75–05–8	6676	02	0		
Glycol Ethers, Unlisted (Specify Component of GLYET) (See http://daq.state.nc.us/toxics/glycol/)	GLYET–Other	3250	02	0		
Hydrogen fluoride (hydrofluoric acid as mass of HF– Component of Fluorides)	7664–39–3	40	02	99.6		

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–C

2. Emission Source Description: Nafion Vinyl Ethers South process

3. Operating Scenario ID/Description: OS – 13/Nafion PEVE/PMVE and PPVE process

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–7	NCD–Hdr–2	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr2	VERTICAL STACK	81	2.3	75	46	11467.12	Nafion scrubber Hdr2

Operating Scenario: OS – 13 **Emission Source/Group ID:** NS–C

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	9.1	08	97		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Acetonitrile	75–05–8	151	08	0		
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	610	08	99.6		

As entered in AERO

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Permit : 03735
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DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–D

2. Emission Source Description: Nafion RSU process

3. Operating Scenario ID/Description: OS – 14/Nafion RSU process

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 14 **Emission Source/Group ID:** NS–D

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	0%	March–May 2005	31%	June–Aug. 2005	69%	Sept.–Nov. 2005	0%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
SO2	SO2	0	02	99.6		
VOC	VOC	1.29	02	99.6		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	28	02	99.6		
Sulfuric acid	7664–93–9	133	02	99.6		

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–D
2. **Emission Source Description:** Nafion RSU process
3. **Operating Scenario ID/Description:** OS – 35/Nafion RSU process
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 0
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description

Operating Scenario: OS – 35 **Emission Source/Group ID:** NS–D

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO		08			
NOx	NOx		08			
TSP	TSP		08			
PM10	PM10		08			
PM2.5	PM2.5		08			
SO2	SO2		08			
VOC	VOC		08			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

As entered in AERO

Facility Name: DuPont Company – Fayetteville Works
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Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–E

2. Emission Source Description: Nafion liquid waste stabilization

3. Operating Scenario ID/Description: OS – 15/Nafion liquid waste stabilization

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005: 1184533 LB/yr
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
(% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 15 **Emission Source/Group ID:** NS–E

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.28	02	99.6		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	125.3	02	99.6		

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DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–E
2. **Emission Source Description:** Nafion liquid waste stabilization
3. **Operating Scenario ID/Description:** OS – 40/Nafion liquid waste stabilization
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 0
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description

Operating Scenario: OS – 40 **Emission Source/Group ID:** NS–E

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO		08			
NOx	NOx		08			
TSP	TSP		08			
PM10	PM10		08			
PM2.5	PM2.5		08			
SO2	SO2		08			
VOC	VOC		08			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–F

2. Emission Source Description: Nafion MMF process

3. Operating Scenario ID/Description: OS – 16/Nafion MMF process

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
(% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 16 **Emission Source/Group ID:** NS–F

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	88%	March–May 2005	12%	June–Aug. 2005	0%	Sept.–Nov. 2005	0%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.24	02	99.6		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Hydrogen fluoride (hydrofluoric acid as mass of HF–Component of Fluorides)	7664–39–3	40	02	99.6		

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–G
2. **Emission Source Description:** Nafion Resins process
3. **Operating Scenario ID/Description:** OS – 17/Nafion SR/CR resin process
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–G	VERTICAL STACK	70	2.2	75	54	12316.29	SR/CR resin process

Operating Scenario: OS – 17 **Emission Source/Group ID:** NS–G

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**24%**	**March–May 2005**	**29%**	**June–Aug. 2005**	**27%**	**Sept.–Nov. 2005**	**20%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions–Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	16.3	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
CFC– 113 (Trichloro–1,2,2–trifluoroethane, 1,1,2–)	**76–13–1**	3442	02			
Hydrogen fluoride (hydrofluoric acid as mass of HF– Component of Fluorides)	**7664–39–3**	0.4	02			
Methanol	**67–56–1**	449	02			

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–H
2. **Emission Source Description:** Nafion Resin Membrane Treatment process
3. **Operating Scenario ID/Description:** OS – 18/Nafion resin membrane treatment process
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–H1	VERTICAL STACK	50	2	70	48	9047.78	Nafion resin membrane

Operating Scenario: OS – 18 **Emission Source/Group ID:** NS–H

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**24%**	**March–May 2005**	**26%**	**June–Aug. 2005**	**27%**	**Sept.–Nov. 2005**	**22%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions– Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	13	03			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Acetic acid	**64–19–7**	354	03			
Hydrogen fluoride (hydrofluoric acid as mass of HF– Component of Fluorides)	**7664–39–3**	88	02			

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–I
2. **Emission Source Description:** Nafion Membrane Coating process
3. **Operating Scenario ID/Description:** OS – 19/Nafion membrane coating process
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 4150 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** % of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–1	VERTICAL STACK	50	2	70	0.4	75.39	Nafion membrane coating

Operating Scenario: OS – 19 **Emission Source/Group ID:** NS–I

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (13)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**29%**	**March–May 2005**	**24%**	**June–Aug. 2005**	**27%**	**Sept.–Nov. 2005**	**20%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions– Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
TSP	**TSP**	0.15	02			
PM10	**PM10**	0.15	02			
PM2.5	**PM2.5**	0.15	02			
VOC	**VOC**	12.8	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–J
2. **Emission Source Description:** Nafion Semiworks
3. **Operating Scenario ID/Description:** OS – 26/Nafion Semiworks A/E Laboratory NS–J3
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 15 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–J2	VERTICAL STACK	26	1.9	70	23	3912.69	Nafion Semiworks SW–2

Operating Scenario: OS – 26 **Emission Source/Group ID:** NS–J

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (8) Days per Week (5) Weeks per Year (40)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :

Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.2	03			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

As entered in AERO

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** NS–K
2. **Emission Source Description:** Nafion E–2 process
3. **Operating Scenario ID/Description:** OS – 27/Nafion E–Fluids production process
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–1	VERTICAL STACK	50	2	70	0.4	75.39	Nafion membrane coating

Operating Scenario: OS – 27 **Emission Source/Group ID:** NS–K

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**7%**	**March–May 2005**	**61%**	**June–Aug. 2005**	**12%**	**Sept.–Nov. 2005**	**21%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions–Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	0.59	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. Emission Source ID (from permit) or Emission Source Group ID NS–L

2. Emission Source Description: Nafion Tetrafluoroethylene/HCl separation unit

3. Operating Scenario ID/Description: OS – 20/Nafion Tetrafluoroethylene purification process

4. SCC Number/Description: 30199998/*Other Organic Chemica Manufacture Not Listed

5. Throughput/units in 2005:
(e.g. production or fuel use):

6. Fuel Information (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. Capture Efficiency
% of Emissions from this Process Vented to Control Device or Stack): 100

8. Control Device Information :

Order	CS–ID	CD ID (as listed in permit)	Control Device Description
1	CS–6	NCD–Hdr–1	Baffle plate–type tower waste gas scrubber

9. Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–Hdr1	VERTICAL STACK	85	3	75	58	24598.67	Nafion scrubber Hdr1

Operating Scenario: OS – 20 **Emission Source/Group ID:** NS–L

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**25%**	**March–May 2005**	**25%**	**June–Aug. 2005**	**25%**	**Sept.–Nov. 2005**	**25%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions–Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	20.6	02	0		
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Hydrogen chloride (hydrochloric acid)	**7647–01–0**	126	02	99.6		

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** PS–1
2. **Emission Source Description:** No. 6 fuel oil–fired boiler
3. **Operating Scenario ID/Description:** OS – 1/No. 6 fuel oil–fired boiler
4. **SCC Number/Description:** 10200401/Residual Oil (No. 6)
5. **Throughput/units in 2005:** (e.g. production or fuel use): 3408254 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur	1.973	% Ash	0.1	Heat Content (Btu/units)	150000 Btu/gallon

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–pep–1	VERTICAL STACK	100	5.6	650	36	53200.98	boilers

Operating Scenario: OS – 1 **Emission Source/Group ID:** PS–1

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (45)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO	8.52	09			
NOx	NOx	80.09	09			
TSP	TSP	38.94	09			
PM10	PM10	31.52	09			
PM2.5	PM2.5	20.53	09			
SO2	SO2	527.87	09			
VOC	VOC	0.48	09			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Antimony Unlisted Compounds (Specify Component of SBC)	SBC–Other	18	09			
Arsenic Unlisted Compounds (Specify Component of ASC)	ASC–Other	4.5	09			
Benzene	71–43–2	0.73	09			
Beryllium Compound, Unlisted (Specify Component of BEC)	BEC–Other	0.095	09			
Cadmium Unlisted Compounds (Specify Component of CDC)	CDC–Other	1.4	09			
Chromium Unlisted Compounds (Specify Component of CRC)	CRC–Other	2.9	09			
Cobalt Unlisted Compound (Specify Component of COC)	COC–Other	21	09			
Ethyl benzene	100–41–4	0.22	09			
Fluorides (sum of all fluoride compounds)	16984–48–8	130	09			

Formaldehyde	**50-00-0**	140	09			
Hydrogen chloride (hydrochloric acid)	**7647-01-0**	36.3	09			
Lead Unlisted Compounds (Specify and Component of PBC)	**PBC-Other**	5.1	09			
Manganese Unlisted Compounds (Specify Component of MNC)	**MNC-Other**	10	09			
Mercury Unlisted Compounds (Specify Component of HGC)	**HGC-Other**	0.39	09			
Methyl chloroform	**71-55-6**	0.8	09			
Naphthalene (Component of POMTV)	**91-20-3**	3.9	09			
Nickel, soluble compounds as nickel (Component of NIC)	**NICKSOLCPDS**	290	09			
Phosphorus Metal, Yellow or White	**7723-14-0**	32	09			
Polycyclic Organic Matter (Inc PAH, dioxins, etc. NC AP 42 historic amorphous glob)	**POM**	4.1	09			
Selenium Compounds	**SEC**	2.3	09			
Toluene	**108-88-3**	21	09			
Xylene	**1330-20-7**	0.37	09			

As entered in AERO

Facility Name: DuPont Company – Fayetteville Works
22828 NC Highway 87 West
Fayetteville, NC 28302

Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** PS–2
2. **Emission Source Description:** No. 2 and 6 fuel oil–fired boiler
3. **Operating Scenario ID/Description:** OS – 2/No. 6 fuel oil–fired boiler
4. **SCC Number/Description:** 10200401/Residual Oil (No. 6)
5. **Throughput/units in 2005:** (e.g. production or fuel use): 1 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–pep–1	VERTICAL STACK	100	5.6	650	36	53200.98	boilers

Operating Scenario: OS – 2 **Emission Source/Group ID:** PS–2

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO		09			
NOx	NOx		09			
TSP	TSP		09			
PM10	PM10		09			
PM2.5	PM2.5		09			
SO2	SO2		09			
VOC	VOC		09			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

As entered in AERO

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22828 NC Highway 87 West
Fayetteville, NC 28302

Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** PS–2
2. **Emission Source Description:** No. 2 and 6 fuel oil–fired boiler
3. **Operating Scenario ID/Description:** OS – 3/No. 2 fuel oil–fired boiler
4. **SCC Number/Description:** 10200501/Distillate Oil (No. 1 2)
5. **Throughput/units in 2005:** (e.g. production or fuel use): 727847 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur	0.042	% Ash	0.1	Heat Content (Btu/units)	140000 Btu/gallon

7. **Capture Efficiency**
% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–pep–1	VERTICAL STACK	100	5.6	650	36	53200.98	boilers

Operating Scenario: OS – 3 **Emission Source/Group ID:** PS–2

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (21)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO	1.82	09			
NOx	NOx	7.28	09			
TSP	TSP	1.2	09			
PM10	PM10	0.36	09			
PM2.5	PM2.5	0.09	09			
SO2	SO2	2.17	09			
VOC	VOC	0.07	09			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Antimony Unlisted Compounds (Specify Component of SBC)	SBC–Other	0	09			
Arsenic Unlisted Compounds (Specify Component of ASC)	ASC–Other	0.41	09			
Benzene	71–43–2	2	09			
Beryllium Compound, Unlisted (Specify Component of BEC)	BEC–Other	0.31	09			
Cadmium Unlisted Compounds (Specify Component of CDC)	CDC–Other	0.31	09			
Chromium Unlisted Compounds (Specify Component of CRC)	CRC–Other	0.31	09			
Cobalt Unlisted Compound (Specify Component of COC)	COC–Other	0	09			
Ethyl benzene	100–41–4	0.59	09			
Fluorides (sum of all fluoride compounds)	16984–48–8	27	09			

Formaldehyde	**50-00-0**	35	09			
Hydrogen chloride (hydrochloric acid)	**7647-01-0**	7.23	02			
Lead Unlisted Compounds (Specify and Component of PBC)	**PBC-Other**	0.92	09			
Manganese Unlisted Compounds (Specify Component of MNC)	**MNC-Other**	0.61	09			
Mercury Unlisted Compounds (Specify Component of HGC)	**HGC-Other**	0.31	09			
Methyl chloroform	**71-55-6**	0.17	09			
Naphthalene (Component of POMTV)	**91-20-3**	0.24	09			
Nickel Unlisted Compounds (Specify Component of NIC)	**NIC-Other**	0.31	09			
Phosphorus Metal, Yellow or White	**7723-14-0**	0	09			
Polycyclic Organic Matter (Inc PAH, dioxins, etc. NC AP 42 historic amorphous glob)	**POM**	2.4	09			
Selenium Compounds	**SEC**	1.5	09			
Toluene	**108-88-3**	58	09			
Xylene	**1330-20-7**	1	09			

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** PS–TEMP
2. **Emission Source Description:** No. 2 Fuel Oil–fired Rental Boiler
3. **Operating Scenario ID/Description:** OS – 36/No. 2 Fuel Oil–fired Rental Boiler which operated in 2005 while the Main Boiler was being repaired.
4. **SCC Number/Description:** 20200401/Diesel
5. **Throughput/units in 2005:** (e.g. production or fuel use): 511000 GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur	0.044	% Ash	0.1	Heat Content (Btu/units)	140000 Btu/gallon

. **Capture Efficiency**
(% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–pep–1	VERTICAL STACK	100	5.6	650	36	53200.98	boilers

Operating Scenario: OS – 36 **Emission Source/Group ID:** PS–TEMP

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (11)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	75%	March–May 2005	25%	June–Aug. 2005	0%	Sept.–Nov. 2005	0%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
CO	CO	1.28	09			
NOx	NOx	5.11	09			
TSP	TSP	0.84	09			
PM10	PM10	0.26	09			
PM2.5	PM2.5	0.06	09			
SO2	SO2	1.6	09			
VOC	VOC	0.05	09			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Arsenic Unlisted Compounds (Specify Component of ASC)	ASC–Other	0.29	09			
Benzene	71–43–2	1.4	09			
Beryllium Compound, Unlisted (Specify Component of BEC)	BEC–Other	0.21	09			
Cadmium Unlisted Compounds (Specify Component of CDC)	CDC–Other	0.21	09			
Chromium Unlisted Compounds (Specify Component of CRC)	CRC–Other	0.21	09			
Ethyl benzene	100–41–4	0.42	09			
Fluorides (sum of all fluoride compounds)	16984–48–8	19	09			
Formaldehyde	50–00–0	25	09			
Hydrogen chloride (hydrochloric acid)	7647–01–0	5.08	08			
Lead Unlisted Compounds (Specify and Component of PBC)	PBC–Other	0.64	09			

Manganese Unlisted Compounds (Specify Component of MNC)	**MNC–Other**	0.43	09			
Mercury Unlisted Compounds (Specify Component of HGC)	**HGC–Other**	0.21	09			
Methyl chloroform	**71–55–6**	0.12	09			
Naphthalene (Component of POMTV)	**91–20–3**	0.17	09			
Nickel Unlisted Compounds (Specify Component of NIC)	**NIC–Other**	0.21	09			
Polycyclic Organic Matter (Inc PAH, dioxins, etc. NC AP 42 historic amorphous glob)	**POM**	1.7	09			
Selenium Compounds	**SEC**	1.1	09			
Toluene	**108–88–3**	41	09			
Xylene	**1330–20–7**	0.72	09			

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** SGS–A
2. **Emission Source Description:** SentryGlas® Plus Manufacturing
3. **Operating Scenario ID/Description:** OS – 44/SentryGlas® Plus Manufacturing Facility
4. **SCC Number/Description:**
5. **Throughput/units in 2005:** (e.g. production or fuel use):
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control evice or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–SGEP–2	VERTICAL STACK	28.4	1	72	100	4712.38	SentryGlas Blower Stack
EP–SGEP–1	VERTICAL STACK	17	0.2	72	10	18.84	Vent from Vacuum Pump

Operating Scenario: OS – 44 **Emission Source/Group ID:** SGS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	0%	March–May 2005	0%	June–Aug. 2005	50%	Sept.–Nov. 2005	50%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
TSP	TSP	0.56	02			
PM10	PM10	0.56	02			
PM2.5	PM2.5	0.56	02			
VOC	VOC	6.44	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Methanol	67–56–1	511	02			

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** SW–1
2. **Emission Source Description:** Polymerization operation
3. **Operating Scenario ID/Description:** OS – 24/Nafion Semiworks SW–1
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 767 KG/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency**
(% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–J1	VERTICAL STACK	28	2.3	70	24	5982.84	Nafion Semiworks SW–1

Operating Scenario: OS – 24 **Emission Source/Group ID:** SW–1

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (8) Days per Week (5) Weeks per Year (20)

11. Typical Start & End Times For Operating Scenario: Start: 800 End: 1700

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	0%	March–May 2005	84%	June–Aug. 2005	16%	Sept.–Nov. 2005	0%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions– Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.58	03			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
CFC– 113 (Trichloro–1,2,2–trifluoroethane, 1,1,2–)	76–13–1	2225	03			
Hydrogen chloride (hydrochloric acid)	7647–01–0	0.3	03			
Hydrogen fluoride (hydrofluoric acid as mass of HF– Component of Fluorides)	7664–39–3	15	03			

As entered in AERO

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** SW–2
2. **Emission Source Description:** Laboratory hood
3. **Operating Scenario ID/Description:** OS – 25/Nafion Semiworks SW–2
4. **SCC Number/Description:** 30199999/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 0
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–NEP–J2	VERTICAL STACK	26	1.9	70	23	3912.69	Nafion Semiworks SW–2

Operating Scenario: OS – 25 **Emission Source/Group ID:** SW–2

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** U–Insig–N1
2. **Emission Source Description:** Waste DMSO Storage Tank
3. **Operating Scenario ID/Description:** OS – 37/Nafion(R) Waste DMSO Storage Tank
4. **SCC Number/Description:** 40714603/Fixed Roof Tanks – Miscellaneous
5. **Throughput/units in 2005:** (e.g. production or fuel use): 38000 LB/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency**
% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–DMSO Tank	GOOSE NECK STACK	15	0.25	78	0.1	0.29	Waste DMSO Storage Tank

Operating Scenario: OS – 37 **Emission Source/Group ID:** U–Insig–N1

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	**25%**	**March–May 2005**	**25%**	**June–Aug. 2005**	**25%**	**Sept.–Nov. 2005**	**25%**

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	**Pollutant Code**	**Emissions–Criteria Pollutants (Tons/Year)**	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**Ef Control**
		2005				
VOC	**VOC**	0.47	02			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				

As entered in AERO

Facility Name: DuPont Company – Fayetteville Works
22828 NC Highway 87 West
Fayetteville, NC 28302

Facility ID : 0900009
Permit : 03735
County : Bladen
DAQ Region : FRO

North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** U–Lab
2. **Emission Source Description:** Sitewide Laboratory Emissions
3. **Operating Scenario ID/Description:** OS – 39/Emissions of chemicals from laboratories throughout the site.
4. **SCC Number/Description:** 30199998/*Other Organic Chemica Manufacture Not Listed
5. **Throughput/units in 2005:** (e.g. production or fuel use): 1000 LB/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–Labs	VERTICAL STACK WITH RAIN CAP	20	0.25	78	20	58.9	Laboratory Hood Exhausts throughout the Site

Operating Scenario: OS – 39 **Emission Source/Group ID:** U–Lab

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	0.06	03			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Bromine	7726–95–6	8.8	03			
Chloroform	67–66–3	1.3	03			
Ethyl acetate	141–78–6	11.9	03			
Hexane, n–	110–54–3	2.9	03			
Hydrogen chloride (hydrochloric acid)	7647–01–0	15.3	03			

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Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** U–MeCl
2. **Emission Source Description:** Fugitive Emissions of Methylene Chloride
3. **Operating Scenario ID/Description:** OS – 31/Fugitive emissions of methylene chloride from the Nafion(R) Division's heat transfer liquid system.
4. **SCC Number/Description:** 30188805/*Fugitive Emissions
5. **Throughput/units in 2005:** (e.g. production or fuel use): 16671 LB/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–MeCl	FUGITIVE (NO STACK)		1	72		Area = 1	Methylene Chloride Fugitive Emissions

Operating Scenario: OS – 31 **Emission Source/Group ID:** U–MeCl

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Methylene chloride	75–09–2	4395	03			

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** U–RiverTreat
2. **Emission Source Description:** Chlorination of Riverwater to control mussel growth in equipment
3. **Operating Scenario ID/Description:** OS – 38/Chlorination of Riverwater to control mussel growth in equipment
4. **SCC Number/Description:** 31299999/Miscellaneous Machinery
5. **Throughput/units in 2005:** (e.g. production or fuel use): 300 LB/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–Fugitive	FUGITIVE (NO STACK)		1	72		Area = 1	Fugitive Emissions

Operating Scenario: OS – 38 **Emission Source/Group ID:** U–RiverTreat

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Chlorine	**7782–50–5**	64	02			

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North Carolina Department of Environment and Natural Resources
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Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

1. **Emission Source ID (from permit) or Emission Source Group ID** WTS–A
2. **Emission Source Description:** An extended aeration biological wastewater treatment facility
3. **Operating Scenario ID/Description:** OS – 43/Treatment of process wastewater and domestic wastewater in a NPDES permitted central wastewater treatment plant
4. **SCC Number/Description:** 68282001/Wastewater, Aggregate
5. **Throughput/units in 2005:** (e.g. production or fuel use): 365 E6GAL/yr
6. **Fuel Information** (If fuel is used)

% Sulfur		% Ash		Heat Content (Btu/units)	

7. **Capture Efficiency** (% of Emissions from this Process Vented to Control Device or Stack):

8. **Control Device Information :None**

Order	CS–ID	CD ID (as listed in permit)	Control Device Description

9. **Emission Release Point (ERP) Information: (Sources vented to more than one ERP use additional entry lines):**

ERP ID	ERP Type	Height (in feet)	Diameter Circle (enter #): Rectangle (L x W) (in 0.1 feet)	Temperature (F)	Velocity (Feet/sec)	Volume Flow Rate (Acfm)	ERP Description
EP–WWTP	FUGITIVE (NO STACK)		200	72		Area = 31416	Central Wastewater Treatment Plant

Operating Scenario: OS – 43 **Emission Source/Group ID:** WTS–A

10. Operating Schedule: (Source/Operating Scenario that best characterizes Calendar Year 2005)
Hours per Day (24) Days per Week (7) Weeks per Year (52)

11. Typical Start & End Times For Operating Scenario: Start: 0 End: 2359

12. Seasonal Periods Percent Annual Throughput:

Jan–Feb + Dec 2005	25%	March–May 2005	25%	June–Aug. 2005	25%	Sept.–Nov. 2005	25%

13. Actual Emissions per Pollutant Listed :
Attach calculations and documentation of emission factors or other estimation methods used.

Criteria (NAAQS) Pollutants	Pollutant Code	Emissions–Criteria Pollutants (Tons/Year)	Emission Estimation Method Code (See Instructions)	Control Efficiency (Net after all controls)	Emission Factor	Ef Control
		2005				
VOC	VOC	43.9	08			
HAP/TAP Pollutants (In Alphabetical Order)	**CAS** (see instructions)	**Emissions HAP/TAPS** (Pounds/Year)	**Emission Estimation Method Code** (See Instructions)	**Control Efficiency** (Net after all controls)	**Emission Factor**	**EF Control**
		2005				
Dimethyl formamide	68–12–2	170	08			
Ethylene glycol	107–21–1	32	02			
Methanol	67–56–1	69939	08			

Facility Total CY 2005 Emissions Summary

As entered in AERO

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North Carolina Department of Environment and Natural Resources
Division of Air Quality
Air Pollutant Point Source Emissions Inventory – Calendar Year 2005

Record Facility–Wide Totals From all Permitted and Non–Permitted Air Pollutant Emission Sources

Criteria Pollutants

		Actual Emissions (Tons/Year)		
Pollutant	**CAS**	**2005**	**2004**	**% Difference**
CO	CO	17.32	15.61	10.954516%
NOx	NOx	92.48	66.06	39.993954%
PM(TSP)	TSP	43.7	26.46	65.15496%
PM10	PM10	34.86	19.39	79.7834%
PM2.5	PM2.5	23.4	12.85	82.10116%
SO2	SO2	531.98	295.36	80.11241%
VOC (Meeting Federal Definition as photochemically reactive)	VOC	240.95	221.6	8.731945%

Hazardous Air Pollutants(HAPS) and/or Toxic Air Pollutants(TAPs)

		Actual Emissions (Pounds/Year)		
Pollutant	**CAS**	**2005**	**2004**	**% Difference**
Pollutant Group: Antimony Compounds (total mass, inc elemental SB) **Group Sum:**18				
Antimony Unlisted Compounds (Specify Component of SBC)	SBC–Other	18.0	8.95	101.11732%
Pollutant Group: Arsenic Compounds (total mass of elemental AS, arsine and all inorganic compounds) **Group Sum:**5.2				
Arsenic Unlisted Compounds (Specify Component of ASC)	ASC–Other	5.2	4.67	11.3490305%
Pollutant Group: Beryllium compounds (Total mass) **Group Sum:**0.615				
Beryllium Compound, Unlisted (Specify Component of BEC)	BEC–Other	0.615	1.276	–51.802505%
Pollutant Group: Cadmium compounds (total mass inc elemental metal) **Group Sum:**1.92				
Cadmium Unlisted Compounds (Specify Component of CDC)	CDC–Other	1.92	1.916	0.20876558%
Pollutant Group: Cobalt compounds **Group Sum:**21				
Cobalt Unlisted Compound (Specify Component of COC)	COC–Other	21.0	10.3	103.88349%
Pollutant Group: Glycol ethers (total all individual glycol ethers–See http://daq.state.nc.us/toxics/glycol/) **Group Sum:**3250				
Glycol Ethers, Unlisted (Specify Component of GLYET) (See http://daq.state.nc.us/toxics/glycol/)	GLYET–Other	3250.0	321	912.46106%

Pollutant Group: Lead and Lead compounds **Group Sum:**6.66				
Lead Unlisted Compounds (Specify and Component of PBC)	PBC–Other	6.66	6.2	7.419356%
Pollutant Group: Manganese compounds **Group Sum:**11.04				
Manganese Unlisted Compounds (Specify Component of MNC)	MNC–Other	11.04	7.6	45.263157%
Pollutant Group: Mercury Compounds – all total mass, inc Hg Vapor **Group Sum:**0.91				
Mercury Unlisted Compounds (Specify Component of HGC)	HGC–Other	0.91	3.1375	–70.99602%
Pollutant Group: Nickel Compounds, sum total mass, inc elemental **Group Sum:**290.52				
Nickel Unlisted Compounds (Specify Component of NIC)	NIC–Other	0.52	6.83	–92.38653%
Nickel, soluble compounds as nickel (Component of NIC)	NICKSOLCPDS	290.0	140	107.14286%
Pollutant Group: Chromium (VI) Non–Specific Compounds, as Chrom(VI) (Component CRC) **Group Sum:**0.0				
Chromium (VI) Non–Specific, Unlisted (Specify Component of NSCR6 CRC)	NSCR6–Other	0.0	Not reported	N/A
Pollutant Group: Chromium – All/Total (Inc Chromium (VI) categories, metal and Others) **Group Sum:**3.42				
Chromium (VI) Non–Specific, Unlisted (Specify Component of NSCR6 CRC)	NSCR6–Other	0.0	Not reported	N/A
Chromium Unlisted Compounds (Specify Component of CRC)	CRC–Other	3.42	2.686	27.326878%
Pollutant Group: Polycyclic Organic Matter (Specific Compounds from OAQPS for TV) **Group Sum:**4.31				
Naphthalene (Component of POMTV)	91–20–3	4.31	2.945	46.349747%
Acetic acid	64–19–7	354.0	516	–31.39535%
Acetonitrile	75–05–8	6827.0	2859	138.78978%
Ammonia (as NH3)	7664–41–7	811.5	6628.9	–87.75815%
Benzene	71–43–2	5.37	10.964	–51.021523%
Bromine	7726–95–6	8.8	17	–48.235294%
CFC– 113 (Trichloro–1,2,2–trifluoroethane, 1,1,2–)	76–13–1	5667.0	17895	–68.33194%
CFC–12 (Dichlorodifluoromethane)	75–71–8	0.0	Not reported	N/A
Chlorine	7782–50–5	64.0	64	0.0%
Chloroform	67–66–3	1.3	Not reported	N/A
Dimethyl formamide	68–12–2	1508.5	917	64.503815%
Dimethyl sulfide	75–18–3	37.5	Not reported	N/A
Dioxane, 1,4–	123–91–1	0.0	Not reported	N/A
Ethyl acetate	141–78–6	11.9	Not reported	N/A
Ethyl benzene	100–41–4	1.23	2.4742	–50.28696%
Ethylene dichloride (1,2–dichloroethane)	107–06–2	0.0	132	–100.0%
Ethylene glycol	107–21–1	32.0	Not reported	N/A
Fluorides (sum of all fluoride compounds)	16984–48–8	176.0	172.5	2.0289855%
Formaldehyde	50–00–0	200.0	212.8	–6.0150385%
Hexane, n–	110–54–3	2.9	Not reported	N/A
Hydrogen chloride (hydrochloric acid)	7647–01–0	190.21	196.33	–3.1171982%
Hydrogen fluoride (hydrofluoric acid as mass of HF– Component of Fluorides)	7664–39–3	2319.4	2523.633	–8.092823%

Hydrogen sulfide	7783-06-4	140.0	140	0.0%
Methanol	67-56-1	82283.0	73992	11.205265%
Methyl chloroform	71-55-6	1.09	1.096	-0.5474382%
Methyl mercaptan	74-93-1	3.1	3.1	0.0%
Methylene chloride	75-09-2	4395.0	2294	91.58675%
Nitric acid	7697-37-2	0.0	87	-100.0%
Phosphorus Metal, Yellow or White	7723-14-0	32.0	16.62	92.5391%
Polycyclic Organic Matter (Inc PAH, dioxins, etc. NC AP 42 historic amorphous glob)	POM	8.2	11.679	-29.788511%
Selenium Compounds	SEC	4.9	7.245	-32.36715%
Sulfur trioxide	7446-11-9	307.0	Not reported	N/A
Sulfuric acid	7664-93-9	534.0	316.1	68.93388%
Toluene	108-88-3	10476.0	9198.41	13.889246%
Vinylidene chloride	75-35-4	0.0	Not reported	N/A
Xylene	1330-20-7	2.09	4.2872	-51.250233%

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Comments From Facility:

Form D6

Engineering Analysis to Document Emissions

For **Oleum Storage tank and Delivery Piping to Reactor**:

Emissions are accounted for in this process from flanges and valves throughout the process:

Accounting for emissions from flanges, we have 40 flanges and valves around the entire oleum system. Wherever possible, we have used welded pipe to eliminate flange leaks. There are no valves on the bottom of the tank. The feed line to the reactor will be drained back to the tank when not in use to minimize the potential for plugging from the unintended polymerization of SO_3. Using rates of 0.0002 lb/hr for both flanges and valves, counting 40 each, we find:

(80 valve/flange connections) × 0.0002 lb/hr SO_3 = 0.016 lb/hr SO_3

Over 365 days/year and 24 hours/day we have: (365 days/year) × (24 hours/day) × 0.0002 lb/hr = 140 lb/year SO_3.

Note that pump is immersed inside tank, therefore no seals to leak.

Reactor System:

Around the reactor system we count 40 flanges and valves and a pump to deliver starting material $C_8F_{17}I$ to reactor.

Ten valves and flanges for $C_8F_{17}I$ system, 100% VOC

Valve Emissions: 10 × 0.0002 lb/hr = 0.002 lb/hr

Flange Emissions: 10 × 0.0002 lb/hr = 0.002 lb/hr

For $C_8F_{17}I$ = 0.004 lb/hr:

Total for year = 4300 hours/year = 17.5 pounds per year. No equivalent HF

For SO_3 and $C_7F_{15}COF$ around reactor, assume 50 wgt % each from reactor & neutralization staging tank:

Twenty Valves & Flanges

Valve Emissions = 20 × 0.0002 lb/hr = 0.004 lb/hr (50% each SO_3 and $C_7F_{15}COF$)

Flange emissions = 20 × 0.002 lb/hr=0.004 lb/hr (50% each $SO_3$and $C_7F_{15}COF$)

Total SO_3 = 0.004 lb/hr × 4300 hours = 17.5 pounds per year

Total $C_7F_{15}COF$ = 0.004 lb/hr × 4300 hours = 17.5 pounds per year

Equivalent HF = (17.5 pounds $C_7F_{15}COF$) × (20 lb/lb-mole HF) / (416 lb/lb-mole $C_7F_{15}COF$)
= 0.8 pounds per year equivalent HF

Form D-6

Engineering Analyses to Document Emissions

Flange & Pump Emissions around Simple Neutralization Tank

This vessel receives 65% oleum, iodine, sulfur dioxide and a minor amount of $C_7F_{15}COF$.

SO_2 & I_2 both form low vapor pressure complexes with SO_3 from our experience with this chemistry. Sulfur dioxide in the neutralizer is converted to the water-soluble sulfate by its reaction with I_2 to form HI. $C_7F_{15}COF$ is converted to HF and $C_7F_{15}COOH$. SO_3 is converted to H_2SO_4.

In actual practice, waste oleum described above will be dropped to neutralization tank over ten hour period. The species described may also be converted to the associated sodium salts. (We may operate either in a hydrolysis mode or neutralization mode). For calculations here we have used hydrolysis as a worst case.

Over 1/3 of a typical day, the pressure in this tank could rise above ambient and have the component of SO_2 present in the vapor space. Calculating emissions from flanges & seals:

Modeling

40% H_2SO_4, 30% SO_2, 30% SO_3

One (1) 20-inch manway	×	0.0008 lb/hr	=	0.0008 lb/hr
One (1) mechanical seal for agitator	×	0.001 lb/hr	=	0.001
Three (3) pump seals, three flanges	×	0.003 lb/hr	=	0.009
Six (6) 2-inch nozzles & valves	×	0.0004 lb/hr	=	0.0024

Total Emissions from Equipment Leaks = 0.0132 lb/hr

8760 hours/year × 0.0132 lb/hr = 115.6 pounds per year

46.6 pounds per year H_2SO_4
34.5 pounds per year of SO_2
34.5 pounds per year of SO_3

Engineering Analyses to Document Emissions

Distillation Column Leaks out of flanges/valves

(Column does not have any leaks out while operating under vacuum)

Modeling 100 % $C_7F_{15}COF$

10" Column-6 Flange sets (Under vacuum 4760 hrs)	6 × 0.0004 lb/hr = 0.0024 lb/hr, 4000 hours × 0.0024 lb/hr = 9.6 lb/year
Twenty 2" or smaller nozzles, (Misc. transmitters) (Under vacuum 4760 hrs)	20 × 0.0002 lb/hr = 0.0040 lb/hr, 4000 hours * 0.004 lb/hr = 16 lb/year
Three (3) pumps	3 × 0.001 lb/hr = 0.003 lb/hr, 3 × 8760 hours = 26.28 pounds/year

Total Flange Leaks per year from distillation = 9.6 lb/year + 16 lb/year + 26.28 lb/year = 51.9 pounds/year

Equivalent HF = 51.9 lb/year × (20 lb/lb-mole) / (416 lb/lb-mole) = 2.5 lb/year of hydrogen fluoride

Form D-6 Cont.

Engineering Analyses to Document Emissions

Emissions from Blowing down of hoses on tank truck to clear prior to disconnection

Modeling Component 100% SO_3

Prior to disconnecting lines of the tanker we purge them with hot N2 back to the storage tank to minimize the pooling of liquid oleum. When this volume of N2 flows back to the 90F tank, it carries with it the partial pressure of SO_3. From figure 2 of DuPont publication "**Sulfur Trioxide and Oleum Storage and Handling**, the vapor pressure of SO_3 over 65% oleum @ 90F is 210 mm Hg.

From Thomas L. Muller, PE of DuPont Chemical Solutions Enterprise, Sulfur Products, 10 scfm for ten minutes for the liquid line and five minutes for the vapor line is sufficient to clear these lines. That equates into 150 ft^3/tank car change-out. This equates into:

(210 mm Hg/760 mm Hg) × (80 lb/lb-mole) × (150 ft^3/ 359 ft^3/lb-mole) = 9.23 pounds.

This blow-down may need to be taken over a 15-minute period since the scrubbing system "pound per hour" capacity is limiting. Instantaneous 10-minute hourly rate here would be 6 × 9.23 = 55 pph.

Purged separately, instantaneous rate would be 2/3 of this value or 36 pph.

Taking six tank cars in 2005 emissions from this source would be 9.23 lb/truck × 6 trucks/year = 55.4 lb/year

Emissions from level transmitter N2 purge. (Carries away SO_3 vapors)

Assume 2 scfh x 8760 hours = 17,520 ft^3

(17,520 ft^3 / 359 ft^3/lb-mole) × (210 mm Hg / 760 mm Hg) × 80 lb/lb-mole = 1078 lb/yr SO_3 into scrubber

Adjusting for molecular weight of air versus fluorochemical for this basis (9/22/95 HFPO expansion Project Permit) We will calculate an inlet leak rate of air.

(16 flanges/valves) × 0.0006 pounds/hr × (28.8/166) × (220 days/year) × (24 hours/day)

= 8.79 pounds/year of air leakage into Vessel

(8.8 pounds/year / 28.8 lb/ft^3)= 0.305 lb. moles/year

Vapor pressure of $C_7F_{15}COOH$ at 55C for an approach temperature, assume 10 mm Hg

Assuming vacuum of 140 mm Hg, partial pressure of 1.6 mm Hg

(1.6/140) × (0.305 lb-moles/year) × (411 lb/lb-mole) = 1.43 pounds/year (before-controls) exit condensor

Scrubbing efficiency for this component is expected to be 98% so actual VOC emissions would be about 0.028

Engineering Analyses to Document Annual Emissions in Pounds

2005 Process Equipment Vent Quantities

System	Vents to	SO_3 (lb)	SO_2 (lb)	HF (lb)	H_2SO_4 (lb)	C7F15-$COONH_4$ (lb)	VOC C7F15-COF (lb)	VOC C7F15-OOH (lb)	VOC C8-I (lb)
Foreshot Receiver	scrubber	0	0	1.5	0	0	24*	0	0
Oleum storage/reactor	room	175	0	1.7	0	0	17.5	0	17.5
Neutralization	room	35	35	0	47	0	0	0	0
Distillation flanges	room	0	0	2.5	0	0	52	0	0
SO_3 tank truck/tank	scrubber	1,113	0	0	0	0	0	0	0
Hydrolysis/separator	scrubber	0	0	0	0	0	0	105.3	0
Receiver condenser	scrubber	0	0	1.0	0	0	6.5	0	0
Distillation Col. Cond.	scrubber	0	0	9.1	0	0	188	0	0
Reactor/neutralization	scrubber	813	1459	15	0	0	316	0	0
APFO Neutralizer/ Tote Filling**	scrubber	0	0	0	0	28	0	0	0
APFO Neutralizer/ Tote Filling**	room	0	0	0	0	4.8	0	0	0
Octyl Iodide trailer	stack	0	0	0	0	0	0	0	33.6

Total Potential Emission by Pollutant

Pollutant	Entering Scrubber (lb)	Exiting Scrubber (lb)	Entering Into Room*** (lb)	Combined Vent to Stack (lb)
SO_3	1946	97.3	210	307
SO_2	1,458	72.9	35	717
HF	26.6	1.3	4.2	5.5
H_2SO_4	0	97.3 ****	304 ****	401 ****
$C_7F_{15}COF$	534	10.7	52	62.6
$C_7F_{15}COOH$	105.3	2.1	0	2.1
$C_7F_{15}COONH_4$	28	1.56 *****	4.8	6.36
C8-I	33.6	33.6	35	68.6
NH3	1.8	1.8		2 **

* Foreshot Material is actually $C_5F_{11}COF$. We have corrected for molecular weight.

** NH3 Component is only present in APFO Neutralization. We have assumed 0% efficiency through scrubber.

*** Room Air is combined with scrubber flow. Stack is 85 ft high, 19" tip, 11,500 scfm, 100 FPS.

**** H_2SO_4 emissions primarily as SO_3 emissions, assuming hydrolysis to the acid in the atmosphere. We use 5% of fed SO3 to H2SO4

***** Includes one (1) pound of material released from incident with abatement equipment.

Powerhouse Fuel Oil Summary

	Boiler #1		Boiler #2				Rental Boiler	
	No. 6 Fuel Oil Burned		No. 2 Fuel Oil Burned		No. 6 Fuel Oil Burned		No. 2 Fuel Oil Burned	
	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)
January 2005	364,989	1.990	91,000	0.041	0	n/a	9,000	0.041
February 2005	97,038	2.019	188,000	0.041	0	n/a	203,000	0.041
March 2005	119,991	1.485	209,000	0.047	0	n/a	231,000	0.047
April 2005	236,669	1.930	60,000	0.041	0	n/a	68,000	0.041
May 2005	342,386	2.016	0	n/a	0	n/a	0	n/a
June 2005	372,192	2.016	6,000	0.041	0	n/a	0	n/a
July 2005	310,997	1.942	0	n/a	0	n/a	0	n/a
August 2005	380,343	1.957	7,571	0.035	0	n/a	0	n/a
September 2005	329,663	2.004	7,437	0.037	0	n/a	0	n/a
October 2005	211,075	2.028	7,035	0.039	0	n/a	0	n/a
November 2005	358,977	2.007	48,090	0.038	0	n/a	0	n/a
December 2005	283,934	2.009	103,714	0.037	0	n/a	0	n/a
TOTAL	3,408,254	1.973	727,847	0.042	0		511,000	0.044

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION C 3/19/2003 - OUTPUT SCREEN

NCDENR

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	DuPont Company - Fayetteville Works	MAX HEAT INPUT:	139.40	MMBTU/HR
FACILITY ID NO.:	900009	FUEL HEAT VALUE:	150,000	BTU/GAL
PERMIT NUMBER:	03735T28	ACTUAL ANNUAL FUEL USAGE:	3,408,254	GAL/YR
FACILITY CITY:	Duart Township	MAXIMUM ANNUAL FUEL USAGE:	8,140,960	GAL/YR
FACILITY COUNTY:	Bladen County	MAXIMUM SULFUR CONTENT:	2.0	%
USER NAME:	Michael E. Johnson	REQUESTED PERMIT LIMITATIONS		
EMISSION SOURCE DESCRIPTION:	No. 6 oil-fired Boiler	MAX. FUEL USAGE:	8,140,960	GAL/YR
EMISSION SOURCE ID NO.:	PS-1	MAX. SULFUR CONTENT:	2.1	%

TYPE OF CONTROL DEVICES	POLLUTANT	CONTROL EFF.
NONE/OTHER	PM	0
NONE/OTHER	SO2	0
NONE/OTHER	NOx	0

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr	EMISSION FACTOR (lb/10^3 gal) uncontrolled	EMISSION FACTOR (lb/10^3 gal) controlled
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	21.24	38.94	21.24	93.02	21.24	93.02	2.29E+01	2.29E+01
FILTERABLE PM (FPM)	19.84	36.39	19.84	86.91	19.84	86.91	2.14E+01	2.14E+01
CONDENSABLE PM (CPM)	1.39	2.56	1.39	6.11	1.39	6.11	1.50E+00	1.50E+00
FILTERABLE PM<10 MICRONS (PM_{10})	17.19	31.52	17.19	75.29	17.19	75.29	1.85E+01	1.85E+01
FILTERABLE PM<2.5 MICRONS ($PM_{2.5}$)	11.20	20.53	11.20	49.04	11.20	49.04	1.20E+01	1.20E+01
SULFUR DIOXIDE (SO2)	287.87	527.87	287.87	1260.88	306.40	1342.04	3.10E+02	3.10E+02
NITROGEN OXIDES (NOx)	43.68	80.09	43.68	191.31	43.68	191.31	4.70E+01	4.70E+01
CARBON MONOXIDE (CO)	4.65	8.52	4.65	20.35	4.65	20.35	5.00E+00	5.00E+00
VOLATILE ORGANIC COMPOUNDS (VOC)	0.26	0.48	0.26	1.14	0.26	1.14	2.80E-01	2.80E-01
LEAD	0.00	0.00	0.00	0.01	0.00	0.01	1.51E-03	1.51E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT		CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/yr	EMISSION FACTOR (lb/10^3 gal) uncontrolled	EMISSION FACTOR (lb/10^3 gal) controlled
Antimony & compounds	(H)	SBC	4.9E-03	1.8E+01	4.9E-03	4.3E+01	4.9E-03	4.3E+01	5.25E-03	5.25E-03
Arsenic & compounds	(TH)	ASC	1.2E-03	4.5E+00	1.2E-03	1.1E+01	1.2E-03	1.1E+01	1.32E-03	1.32E-03
Benzene	(TH)	71432	2.0E-04	7.3E-01	2.0E-04	1.7E+00	2.0E-04	1.7E+00	2.14E-04	2.14E-04
Beryllium & compounds	(H)	BEC	2.6E-05	9.5E-02	2.6E-05	2.3E-01	2.6E-05	2.3E-01	2.78E-05	2.78E-05
Cadium & compounds	(TH)	CDC	3.7E-04	1.4E+00	3.7E-04	3.2E+00	3.7E-04	3.2E+00	3.98E-04	3.98E-04
Chromium - All/Total	(H)	CRC	7.9E-04	2.9E+00	7.9E-04	6.9E+00	7.9E-04	6.9E+00	8.45E-04	8.45E-04
Cobalt compounds	(H)	COC	5.6E-03	2.1E+01	5.6E-03	4.9E+01	5.6E-03	4.9E+01	6.02E-03	6.02E-03
Ethylbenzene	(H)	100414	5.9E-05	2.2E-01	5.9E-05	5.2E-01	5.9E-05	5.2E-01	6.36E-05	6.36E-05
Fluorides (sum fluoride compounds)	(T)	16984488	3.5E-02	1.3E+02	3.5E-02	3.0E+02	3.5E-02	3.0E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.9E-02	1.4E+02	3.9E-02	3.5E+02	3.9E-02	3.5E+02	4.25E-02	4.25E-02
Lead and Lead compounds	(H)	PBC	1.4E-03	5.1E+00	1.4E-03	1.2E+01	1.4E-03	1.2E+01	1.51E-03	1.51E-03
Manganese & compounds	(TH)	MNC	2.8E-03	1.0E+01	2.8E-03	2.4E+01	2.8E-03	2.4E+01	3.00E-03	3.00E-03
Mercury & compounds	(TH)	HGC	1.1E-04	3.9E-01	1.1E-04	9.2E-01	1.1E-04	9.2E-01	1.13E-04	1.13E-04
Methyl chloroform	(TH)	71566	2.2E-04	8.0E-01	2.2E-04	1.9E+00	2.2E-04	1.9E+00	2.36E-04	2.36E-04
Napthalene	(H)	91203	1.1E-03	3.9E+00	1.1E-03	9.2E+00	1.1E-03	9.2E+00	1.13E-03	1.13E-03
Nickle & compounds	(H)	NIC	7.9E-02	2.9E+02	7.9E-02	6.9E+02	7.9E-02	6.9E+02	8.45E-02	8.45E-02
Phosphorus Metal, Yellow or White	(H)	7723140	8.8E-03	3.2E+01	8.8E-03	7.7E+01	8.8E-03	7.7E+01	9.46E-03	9.46E-03
POM rates uncontrolled	(H)	POM	1.1E-03	4.1E+00	1.1E-03	9.8E+00	1.1E-03	9.8E+00	1.20E-03	1.20E-03
Selenium compounds	(H)	SEC	6.3E-04	2.3E+00	6.3E-04	5.6E+00	6.3E-04	5.6E+00	6.83E-04	6.83E-04
Toluene	(TH)	108883	5.8E-03	2.1E+01	5.8E-03	5.0E+01	5.8E-03	5.0E+01	6.20E-03	6.20E-03
Xylene	(TH)	1330207	1.0E-04	3.7E-01	1.0E-04	8.9E-01	1.0E-04	8.9E-01	1.09E-04	1.09E-04
Total HAP	(H)		1.5E-01	5.6E+02	1.5E-01	1.3E+03	1.5E-01	1.3E+03	1.6E-01	1.6E-01
Larget HAP	(H)		7.85E-02	2.88E+02	7.85E-02	6.88E+02	7.85E-02	6.88E+02	8.45E-02	8.45E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

TOXIC AIR POLLUTANT		CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr	EMISSION FACTOR (lb/10^3 gal) uncontrolled	EMISSION FACTOR (lb/10^3 gal) controlled
Arsenic & compounds	(TH)	ASC	1.23E-03	2.94E-02	1.07E+01	1.32E-03	1.32E-03
Benzene	(TH)	71432	1.99E-04	4.77E-03	1.74E+00	2.14E-04	2.14E-04
Cadium & compounds	(TH)	CDC	3.70E-04	8.88E-03	3.24E+00	3.98E-04	3.98E-04
Fluorides (sum fluoride compounds)	(T)	16984488	3.47E-02	8.32E-01	3.04E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.95E-02	9.48E-01	3.46E+02	4.25E-02	4.25E-02
Manganese & compounds	(TH)	MNC	2.79E-03	6.69E-02	2.44E+01	3.00E-03	3.00E-03
Mercury & compounds	(TH)	HGC	1.05E-04	2.52E-03	9.20E-01	1.13E-04	1.13E-04
Methyl chloroform	(TH)	71566	2.19E-04	5.26E-03	1.92E+00	2.36E-04	2.36E-04
Toluene	(TH)	108883	5.76E-03	1.38E-01	5.05E+01	6.20E-03	6.20E-03
Xylene	(TH)	1330207	1.01E-04	2.43E-03	8.87E-01	1.09E-04	1.09E-04

Hydrogen Chloride (HCl) **CAS No. 7647-01-0**

The EPA Industrial Boiler MACT rulemaking emission factor for uncontrolled residual and distillate oil firing is given as 7.1E-5 lb/MMBtu in Docket Document Number II-B-8, Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP, October 2002; so that figure is used as the latest information from

EPA emission factor : **7.1E-05** pounds of HCl per million BTUs generated in the boiler.

= **7.1E-11** pounds of HCl per BTU generated in the boiler.

PS-1 emissions of HCl:

Basis: 3,408,254 gallons of No. 6 fuel oil burned 2005

$$3{,}408{,}254 \text{ gal \#6 F.O.} \times 150{,}000 \frac{\text{BTU}}{\text{gal \#6 F.O.}} = 5.11\text{E+11 BTU}$$

$$5.11\text{E+11 BTU} \times 7.1\text{E-11} \frac{\text{lb HCl}}{\text{BTU}} = \mathbf{36.30\ lb.\ HCl}$$

Powerhouse Fuel Oil Summary

	Boiler #1		Boiler #2				Rental Boiler	
	No. 6 Fuel Oil Burned		No. 2 Fuel Oil Burned		No. 6 Fuel Oil Burned		No. 2 Fuel Oil Burned	
	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)	(Gallons)	(% Sulur)
January 2005	364,989	1.990	91,000	0.041	0	n/a	9,000	0.041
February 2005	97,038	2.019	188,000	0.041	0	n/a	203,000	0.041
March 2005	119,991	1.485	209,000	0.047	0	n/a	231,000	0.047
April 2005	236,669	1.930	60,000	0.041	0	n/a	68,000	0.041
May 2005	342,386	2.016	0	n/a	0	n/a	0	n/a
June 2005	372,192	2.016	6,000	0.041	0	n/a	0	n/a
July 2005	310,997	1.942	0	n/a	0	n/a	0	n/a
August 2005	380,343	1.957	7,571	0.035	0	n/a	0	n/a
September 2005	329,663	2.004	7,437	0.037	0	n/a	0	n/a
October 2005	211,075	2.028	7,035	0.039	0	n/a	0	n/a
November 2005	358,977	2.007	48,090	0.038	0	n/a	0	n/a
December 2005	283,934	2.009	103,714	0.037	0	n/a	0	n/a
TOTAL	3,408,254	1.973	727,847	0.042	0		511,000	0.044

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SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	DuPont Company - Fayetteville Works	MAX HEAT INPUT:	88.40	MMBTU/HR
FACILITY ID NO.:	900009	FUEL HEAT VALUE:	140,000	BTU/GAL
PERMIT NUMBER:	03735T28	ACTUAL ANNUAL FUEL USAGE:	727,847	GAL/YR
FACILITY CITY:	Duart Township	MAXIMUM ANNUAL FUEL USAGE:	5,531,314	GAL/YR
FACILITY COUNTY:	Bladen County	MAXIMUM SULFUR CONTENT:	0.0	%
USER NAME:	Michael E. Johnson	REQUESTED PERMIT LIMITATIONS		
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler	MAX. FUEL USAGE:	5,531,314	GAL/YR
EMISSION SOURCE ID NO.:	PS-2	MAX. SULFUR CONTENT:	0.5	%

TYPE OF CONTROL DEVICES	POLLUTANT	CONTROL EFF.
NONE/OTHER	PM	0
NONE/OTHER	SO2	0
NONE/OTHER	NOx	0

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR (lb/10^3 gal)	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr	uncontrolled	controlled
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	2.08	1.20	2.08	9.13	2.08	9.13	3.30E+00	3.30E+00
FILTERABLE PM (FPM)	1.26	0.73	1.26	5.53	1.26	5.53	2.00E+00	2.00E+00
CONDENSABLE PM (CPM)	0.82	0.47	0.82	3.60	0.82	3.60	1.30E+00	1.30E+00
FILTERABLE PM<10 MICRONS (PM_{10})	0.63	0.36	0.63	2.77	0.63	2.77	1.00E+00	1.00E+00
FILTERABLE PM<2.5 MICRONS ($PM_{2.5}$)	0.16	0.09	0.16	0.69	0.16	0.69	2.50E-01	2.50E-01
SULFUR DIOXIDE (SO2)	3.77	2.17	3.77	16.49	44.83	196.36	5.96E+00	5.96E+00
NITROGEN OXIDES (NOx)	12.63	7.28	12.63	55.31	12.63	55.31	2.00E+01	2.00E+01
CARBON MONOXIDE (CO)	3.16	1.82	3.16	13.83	3.16	13.83	5.00E+00	5.00E+00
VOLATILE ORGANIC COMPOUNDS (VOC)	0.13	0.07	0.13	0.55	0.13	0.55	2.00E-01	2.00E-01
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03	1.26E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT		CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS)		POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS)		POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS)		EMISSION FACTOR (lb/10^3 gal)	
			lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	uncontrolled	controlled
Antimony & compounds	(H)	SBC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Arsenic & compounds	(TH)	ASC	3.5E-04	4.1E-01	3.5E-04	3.1E+00	3.5E-04	3.1E+00	5.60E-04	5.60E-04
Benzene	(TH)	71432	1.7E-03	2.0E+00	1.7E-03	1.5E+01	1.7E-03	1.5E+01	2.75E-03	2.75E-03
Beryllium & compounds	(H)	BEC	2.7E-04	3.1E-01	2.7E-04	2.3E+00	2.7E-04	2.3E+00	4.20E-04	4.20E-04
Cadium & compounds	(TH)	CDC	2.7E-04	3.1E-01	2.7E-04	2.3E+00	2.7E-04	2.3E+00	4.20E-04	4.20E-04
Chromium - All/Total	(H)	CRC	2.7E-04	3.1E-01	2.7E-04	2.3E+00	2.7E-04	2.3E+00	4.20E-04	4.20E-04
Cobalt compounds	(H)	COC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Ethylbenzene	(H)	100414	5.2E-04	5.9E-01	5.2E-04	4.5E+00	5.2E-04	4.5E+00	8.17E-04	8.17E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.4E-02	2.7E+01	2.4E-02	2.1E+02	2.4E-02	2.1E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.0E-02	3.5E+01	3.0E-02	2.7E+02	3.0E-02	2.7E+02	4.80E-02	4.80E-02
Lead and Lead compounds	(H)	PBC	8.0E-04	9.2E-01	8.0E-04	7.0E+00	8.0E-04	7.0E+00	1.26E-03	1.26E-03
Manganese & compounds	(TH)	MNC	5.3E-04	6.1E-01	5.3E-04	4.6E+00	5.3E-04	4.6E+00	8.40E-04	8.40E-04
Mercury & compounds	(TH)	HGC	2.7E-04	3.1E-01	2.7E-04	2.3E+00	2.7E-04	2.3E+00	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.5E-04	1.7E-01	1.5E-04	1.3E+00	1.5E-04	1.3E+00	2.36E-04	2.36E-04
Napthalene	(H)	91203	2.1E-04	2.4E-01	2.1E-04	1.8E+00	2.1E-04	1.8E+00	3.33E-04	3.33E-04
Nickle & compounds	(H)	NIC	2.7E-04	3.1E-01	2.7E-04	2.3E+00	2.7E-04	2.3E+00	4.20E-04	4.20E-04
Phosphorus Metal, Yellow or White	(H)	7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
POM rates uncontrolled	(H)	POM	2.1E-03	2.4E+00	2.1E-03	1.8E+01	2.1E-03	1.8E+01	3.30E-03	3.30E-03
Selenium compounds	(H)	SEC	1.3E-03	1.5E+00	1.3E-03	1.2E+01	1.3E-03	1.2E+01	2.10E-03	2.10E-03
Toluene	(TH)	108883	5.0E-02	5.8E+01	5.0E-02	4.4E+02	5.0E-02	4.4E+02	7.97E-02	7.97E-02
Xylene	(TH)	1330207	8.8E-04	1.0E+00	8.8E-04	7.7E+00	8.8E-04	7.7E+00	1.40E-03	1.40E-03
Total HAP	(H)		9.1E-02	1.0E+02	9.1E-02	7.9E+02	9.1E-02	7.9E+02	1.4E-01	1.4E-01
Larget HAP	(H)		5.03E-02	5.80E+01	5.03E-02	4.41E+02	5.03E-02	4.41E+02	7.97E-02	7.97E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

TOXIC AIR POLLUTANT		CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS			EMISSION FACTOR (lb/10^3 gal)	
			lb/hr	lb/day	lb/yr	uncontrolled	controlled
Arsenic & compounds	(TH)	ASC	3.54E-04	8.49E-03	3.10E+00	5.60E-04	5.60E-04
Benzene	(TH)	71432	1.74E-03	4.17E-02	1.52E+01	2.75E-03	2.75E-03
Cadium & compounds	(TH)	CDC	2.65E-04	6.36E-03	2.32E+00	4.20E-04	4.20E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.36E-02	5.65E-01	2.06E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.03E-02	7.27E-01	2.66E+02	4.80E-02	4.80E-02
Manganese & compounds	(TH)	MNC	5.30E-04	1.27E-02	4.65E+00	8.40E-04	8.40E-04
Mercury & compounds	(TH)	HGC	2.65E-04	6.36E-03	2.32E+00	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.49E-04	3.58E-03	1.31E+00	2.36E-04	2.36E-04
Toluene	(TH)	108883	5.03E-02	1.21E+00	4.41E+02	7.97E-02	7.97E-02
Xylene	(TH)	1330207	8.84E-04	2.12E-02	7.75E+00	1.40E-03	1.40E-03

Hydrogen Chloride (HCl) **CAS No. 7647-01-0**

The EPA Industrial Boiler MACT rulemaking emission factor for uncontrolled residual and distillate oil firing is given as 7.1E-5 lb/MMBtu in Docket Document Number II-B-8, Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP, October 2002; so that figure is used as the latest information from

EPA emission factor : **7.1E-05** pounds of HCl per million BTUs generated in the boiler.

= **7.1E-11** pounds of HCl per BTU generated in the boiler.

PS-2 emissions of HCl:

Basis: 727,847 gallons of No. 2 fuel oil burned 2005
0 gallons of No. 6 fuel oil burned 2005

$$727{,}847 \text{ gal \#2 F.O.} \times 140{,}000 \frac{\text{BTU}}{\text{gal \#2 F.O.}} = 1.02\text{E+11 BTU}$$

$$1.02\text{E+11 BTU} \times 7.1\text{E-11} \frac{\text{lb HCl}}{\text{BTU}} = \mathbf{7.23\ lb.\ HCl}$$

$$0 \text{ gal \#6 F.O.} \times 150{,}000 \frac{\text{BTU}}{\text{gal \#6 F.O.}} = 0.00\text{E+00 BTU}$$

$$0.00\text{E+00 BTU} \times 7.1\text{E-11} \frac{\text{lb HCl}}{\text{BTU}} = \mathbf{0.00\ lb.\ HCl}$$

Total emissions of HCl is equal to **7.23** plus **0.00** or **7.23** **lb. HCl**

Powerhouse Fuel Oil Summary

	Boiler #1	
	No. 6 Fuel Oil Burned	
	(Gallons)	(% Sulur)
January 2005	364,989	1.990
February 2005	97,038	2.019
March 2005	119,991	1.485
April 2005	236,669	1.930
May 2005	342,386	2.016
June 2005	372,192	2.016
July 2005	310,997	1.942
August 2005	380,343	1.957
September 2005	329,663	2.004
October 2005	211,075	2.028
November 2005	358,977	2.007
December 2005	283,934	2.009
TOTAL	3,408,254	1.973

Boiler #2			
No. 2 Fuel Oil Burned		No. 6 Fuel Oil Burned	
(Gallons)	(% Sulur)	(Gallons)	(% Sulur)
91,000	0.041	0	n/a
188,000	0.041	0	n/a
209,000	0.047	0	n/a
60,000	0.041	0	n/a
0	n/a	0	n/a
6,000	0.041	0	n/a
0	n/a	0	n/a
7,571	0.035	0	n/a
7,437	0.037	0	n/a
7,035	0.039	0	n/a
48,090	0.038	0	n/a
103,714	0.037	0	n/a
727,847	0.042	0	

Rental Boiler	
No. 2 Fuel Oil Burned	
(Gallons)	(% Sulur)
9,000	0.041
203,000	0.041
231,000	0.047
68,000	0.041
0	n/a
0	n/a
0	n/a
0	n/a
0	n/a
0	n/a
0	n/a
511,000	0.044

FUEL OIL COMBUSTION EMISSIONS CALCULATOR REVISION C 3/19/2003 - OUTPUT SCREEN

Instructions: Enter emission source / facility data on the "INPUT" tab/screen. The air emission results and summary of input data are viewed / printed on the "OUTPUT" tab/screen. The different tabs are on the bottom of this screen.

This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

SOURCE / FACILITY / USER INPUT SUMMARY (FROM INPUT SCREEN)

COMPANY:	DuPont Company - Fayetteville Works	MAX HEAT INPUT:	90.00	MMBTU/HR
FACILITY ID NO.:	900009	FUEL HEAT VALUE:	140,000	BTU/GAL
PERMIT NUMBER:	03735T28	ACTUAL ANNUAL FUEL USAGE:	511,000	GAL/YR
FACILITY CITY:	Duart Township	MAXIMUM ANNUAL FUEL USAGE:	5,631,429	GAL/YR
FACILITY COUNTY:	Bladen County	MAXIMUM SULFUR CONTENT:	0.0	%
USER NAME:	Michael E. Johnson	REQUESTED PERMIT LIMITATIONS		
EMISSION SOURCE DESCRIPTION:	No. 2 oil-fired Boiler	MAX. FUEL USAGE:	5,631,429	GAL/YR
EMISSION SOURCE ID NO.:	PS-Temp	MAX. SULFUR CONTENT:	0.5	%

TYPE OF CONTROL DEVICES	POLLUTANT	CONTROL EFF.
NONE/OTHER	PM	0
NONE/OTHER	SO2	0
NONE/OTHER	NOx	0

CRITERIA AIR POLLUTANT EMISSIONS INFORMATION

AIR POLLUTANT EMITTED	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) tons/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) tons/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
TOTAL PARTICULATE MATTER (PM) (FPM+CPM)	2.12	0.84	2.12	9.29	2.12	9.29	3.30E+00	3.30E+00
FILTERABLE PM (FPM)	1.29	0.51	1.29	5.63	1.29	5.63	2.00E+00	2.00E+00
CONDENSABLE PM (CPM)	0.84	0.33	0.84	3.66	0.84	3.66	1.30E+00	1.30E+00
FILTERABLE PM<10 MICRONS (PM_{10})	0.64	0.26	0.64	2.82	0.64	2.82	1.00E+00	1.00E+00
FILTERABLE PM<2.5 MICRONS ($PM_{2.5}$)	0.16	0.06	0.16	0.70	0.16	0.70	2.50E-01	2.50E-01
SULFUR DIOXIDE (SO2)	4.02	1.60	4.02	17.59	45.64	199.92	6.25E+00	6.25E+00
NITROGEN OXIDES (NOx)	12.86	5.11	12.86	56.31	12.86	56.31	2.00E+01	2.00E+01
CARBON MONOXIDE (CO)	3.21	1.28	3.21	14.08	3.21	14.08	5.00E+00	5.00E+00
VOLATILE ORGANIC COMPOUNDS (VOC)	0.13	0.05	0.13	0.56	0.13	0.56	2.00E-01	2.00E-01
LEAD	0.00	0.00	0.00	0.00	0.00	0.00	1.26E-03	1.26E-03

TOXIC / HAZARDOUS AIR POLLUTANT EMISSIONS INFORMATION

TOXIC / HAZARDOUS AIR POLLUTANT		CAS NUMBER	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/hr	ACTUAL EMISSIONS (AFTER CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (BEFORE CONTROLS / LIMITS) lb/yr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/hr	POTENTIAL EMSSIONS (AFTER CONTROLS / LIMITS) lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Antimony & compounds	(H)	SBC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Arsenic & compounds	(TH)	ASC	3.6E-04	2.9E-01	3.6E-04	3.2E+00	3.6E-04	3.2E+00	5.60E-04	5.60E-04
Benzene	(TH)	71432	1.8E-03	1.4E+00	1.8E-03	1.5E+01	1.8E-03	1.5E+01	2.75E-03	2.75E-03
Beryllium & compounds	(H)	BEC	2.7E-04	2.1E-01	2.7E-04	2.4E+00	2.7E-04	2.4E+00	4.20E-04	4.20E-04
Cadium & compounds	(TH)	CDC	2.7E-04	2.1E-01	2.7E-04	2.4E+00	2.7E-04	2.4E+00	4.20E-04	4.20E-04
Chromium - All/Total	(H)	CRC	2.7E-04	2.1E-01	2.7E-04	2.4E+00	2.7E-04	2.4E+00	4.20E-04	4.20E-04
Cobalt compounds	(H)	COC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
Ethylbenzene	(H)	100414	5.3E-04	4.2E-01	5.3E-04	4.6E+00	5.3E-04	4.6E+00	8.17E-04	8.17E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.4E-02	1.9E+01	2.4E-02	2.1E+02	2.4E-02	2.1E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.1E-02	2.5E+01	3.1E-02	2.7E+02	3.1E-02	2.7E+02	4.80E-02	4.80E-02
Lead and Lead compounds	(H)	PBC	8.1E-04	6.4E-01	8.1E-04	7.1E+00	8.1E-04	7.1E+00	1.26E-03	1.26E-03
Manganese & compounds	(TH)	MNC	5.4E-04	4.3E-01	5.4E-04	4.7E+00	5.4E-04	4.7E+00	8.40E-04	8.40E-04
Mercury & compounds	(TH)	HGC	2.7E-04	2.1E-01	2.7E-04	2.4E+00	2.7E-04	2.4E+00	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.5E-04	1.2E-01	1.5E-04	1.3E+00	1.5E-04	1.3E+00	2.36E-04	2.36E-04
Napthalene	(H)	91203	2.1E-04	1.7E-01	2.1E-04	1.9E+00	2.1E-04	1.9E+00	3.33E-04	3.33E-04
Nickle & compounds	(H)	NIC	2.7E-04	2.1E-01	2.7E-04	2.4E+00	2.7E-04	2.4E+00	4.20E-04	4.20E-04
Phosphorus Metal, Yellow or White	(H)	7723140	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.00E+00	0.00E+00
POM rates uncontrolled	(H)	POM	2.1E-03	1.7E+00	2.1E-03	1.9E+01	2.1E-03	1.9E+01	3.30E-03	3.30E-03
Selenium compounds	(H)	SEC	1.4E-03	1.1E+00	1.4E-03	1.2E+01	1.4E-03	1.2E+01	2.10E-03	2.10E-03
Toluene	(TH)	108883	5.1E-02	4.1E+01	5.1E-02	4.5E+02	5.1E-02	4.5E+02	7.97E-02	7.97E-02
Xylene	(TH)	1330207	9.0E-04	7.2E-01	9.0E-04	7.9E+00	9.0E-04	7.9E+00	1.40E-03	1.40E-03
Total HAP	(H)		9.2E-02	7.3E+01	9.2E-02	8.1E+02	9.2E-02	8.1E+02	1.4E-01	1.4E-01
Larget HAP	(H)		5.12E-02	4.07E+01	5.12E-02	4.49E+02	5.12E-02	4.49E+02	7.97E-02	7.97E-02

TOXIC AIR POLLUTANT EMISSIONS INFORMATION (FOR PERMITTING PURPOSES)

TOXIC AIR POLLUTANT		CAS Num.	EXPECTED ACTUAL EMISSIONS AFTER CONTROLS / LIMITATIONS lb/hr	lb/day	lb/yr	EMISSION FACTOR (lb/10³ gal) uncontrolled	EMISSION FACTOR (lb/10³ gal) controlled
Arsenic & compounds	(TH)	ASC	3.60E-04	8.64E-03	3.15E+00	5.60E-04	5.60E-04
Benzene	(TH)	71432	1.77E-03	4.24E-02	1.55E+01	2.75E-03	2.75E-03
Cadium & compounds	(TH)	CDC	2.70E-04	6.48E-03	2.37E+00	4.20E-04	4.20E-04
Fluorides (sum fluoride compounds)	(T)	16984488	2.40E-02	5.75E-01	2.10E+02	3.73E-02	3.73E-02
Formaldehyde	(TH)	50000	3.09E-02	7.41E-01	2.70E+02	4.80E-02	4.80E-02
Manganese & compounds	(TH)	MNC	5.40E-04	1.30E-02	4.73E+00	8.40E-04	8.40E-04
Mercury & compounds	(TH)	HGC	2.70E-04	6.48E-03	2.37E+00	4.20E-04	4.20E-04
Methyl chloroform	(TH)	71566	1.52E-04	3.64E-03	1.33E+00	2.36E-04	2.36E-04
Toluene	(TH)	108883	5.12E-02	1.23E+00	4.49E+02	7.97E-02	7.97E-02
Xylene	(TH)	1330207	9.00E-04	2.16E-02	7.89E+00	1.40E-03	1.40E-03

Hydrogen Chloride (HCl) **CAS No. 7647-01-0**

The EPA Industrial Boiler MACT rulemaking emission factor for uncontrolled residual and distillate oil firing is given as 7.1E-5 lb/MMBtu in Docket Document Number II-B-8, Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP, October 2002; so that figure is used as the latest information from

EPA emission factor : **7.1E-05** pounds of HCl per million BTUs generated in the boiler.

= **7.1E-11** pounds of HCl per BTU generated in the boiler.

PS-TEMP emissions of HCl:

Basis: 511,000 gallons of No. 2 fuel oil burned 2005

$$511{,}000 \text{ gal \#2 F.O.} \times 140{,}000 \frac{\text{BTU}}{\text{gal \#2 F.O.}} = 7.15\text{E+10 BTU}$$

$$7.15\text{E+10 BTU} \times 7.1\text{E-11} \frac{\text{lb HCl}}{\text{BTU}} = \mathbf{5.08\ lb.\ HCl}$$

2005 AIR EMISSIONS INVENTORY

BUTYRALDEHYDE STORAGE TANK

(BS-1)

EMISSIONS SUMMARY

PROCESS EMISSIONS:	VOC EMISSIONS (lb. / year)	VOC EMISSIONS (TYP)
BA Condenser	751	0.38

FUGITIVE EMISSIONS:	VOC EMISSIONS Worst case scenario based on AP-42 (lb. / year)	VOC EMISSIONS With 67% Reduction for "Good" control (lb. / year)	VOC EMISSIONS With 67% Reduction for "Good" control (TYP)
Unloading System	2750	908	0.45
Recirculation System	126	42	0.02
BA Storage Tank	1917	633	0.32
TOTAL EMISSIONS		2334	1.17

2005 AIR EMISSIONS INVENTORY

BUTYRALDEHYDE STORAGE TANK

(BS-1)

EMISSIONS DETERMINATION

Butyraldehyde (BA) emissions from Storage Tank Condenser (BCD-1):

BA (breathing losses) to condenser = 2482 lbs. / year

BA Vapor Pressure at 71.37 °F = 1.844 psi

BA Vapor Pressure at 32 °F = 0.558 psi

$$\text{BA emissions from condenser} = \left(2482 \frac{\text{lb.}}{\text{yr.}}\right) \times \left(\frac{0.558 \text{ psi}}{1.844 \text{ psi}}\right) = 751 \frac{\text{lb.}}{\text{yr.}}$$

(See information from Title V – Form D6 on the following pages.)

Butyraldehyde (BA) fugitive emissions from BA Storage Tank:

(See information on the following pages.)

2005 EMISSIONS AIR INVENTORY

SECTION D - FORM D6
ENGINEERING ANALYSIS TO SUPPORT PERMIT APPLICATION

Emission Unit ID: BS-1
Emission source Description: Butyraldehyde Storage Tank

A. Emission Estimation Approach

Emissions from this unit are based on EPA Publication AP-42 (using EPA-developed Tanks 2.0 software). Actual working losses are zero because when being loaded, the tank is vented back to the railcar. Breathing losses are calculated form the ambient temperature changes in the tank, and are controlled by an 70% efficient brine cooled condenser. Thus control on working losses is 100% and control on breathing losses is 70%, and as shown by the calculations below, this gives an overall control efficiency of approximately 92 – 94%.

Actual Emission Calculations

BA (Breathing Losses) to Condenser	2482	Lbs. / year
Uncontrolled Working Losses [1] (Actual 2001)	7438	Lbs. / year
Uncontrolled Working Losses [1] (Potential)	9905	
Total Uncontrolled Emissions [2] (Actual 2001)	9920	Lbs. / year
Total Uncontrolled Emissions [2] (Potential)	12387	Lbs. / year
Vapor Pressure [3] at 71.37 °F (21.87 °C)	1.844	Psi
Vapor Pressure [3] at 32 °F (0 °C)	0.558	Psi
Condenser efficiency [4]	70%	Or greater
BA Emissions From Condenser [5] (Annual)	751	Lbs. / year
BA Emissions From Condenser [5] (Hourly Average)	0.086	Lbs. / hour
Actual Working Loss Emissions	0	Lbs. / year
Overall Control Efficiency [6] (Based on Actual 2001 Emissions)	92%	Or greater
Overall Control Efficiency [6] (Based on Potential Emissions)	94%	Or greater

SECTION D - FORM D6
ENGINEERING ANALYSIS TO SUPPORT PERMIT APPLICATION

Emission Unit ID: BS-1
Emission source Description: Butyraldehyde Storage Tank

Note:

1. Actual 2005 uncontrolled working losses based on 34 turnover.
   Potential uncontrolled working losses based on 95 turnovers.

2. Total uncontrolled emissions equal breathing losses plus working losses.

3. Vapor pressure calculated using Antoine Equation

   $\text{Log } p^*\ (T°C) = A - [\,B / (T°C + C)\,]$

   Where p^* = vapor pressure
   A = 6.3854
   B = 913.590
   C = 185.480

4. Condenser control efficiency is calculated:
   1 – (vapor pressure at 32 / vapor pressure at 71.4)
   This is based o the assumption that the condenser exit temperature will be at 32°F (because of the low flow associated with breathing losses the gas will be completely chilled to the coolant temperature in the condenser and 32°F is the upper value of the condenser temperature; 71.37°F is the average surface temperature in the BA storage tank – See Tanks 2.0 Output).

5. Emissions from condenser calculated as: Uncontrolled BA to condenser x (1 – control efficiency)
   Hourly emissions calculated by dividing annual emissions by 8760.

6. Overall Control Efficiency = 1 – [(annual breathing losses from condenser + actual working loss emissions) / total uncontrolled emissions]

2005 BUTYRALDEHYDE

FUGITIVE EMISSIONS CALCULATIONS

I. FIXED LOSSES

A. Unloading System

Leak Rate = (pump losses + liquid valve losses + gas valve losses + flange losses) x (weight fraction BA) x (total hours)

= [(1) (0.109) + (9) (0 .016) + (1) (0.012) + (27) (0.0018)] (1.0) (8760 hours)

= [0.109 + 0.144 + 0.012 + 0.049] (1.0) (8760)

= (0.314 lbs. / hr.) (8760 hrs. / yr.)

= 2750 lbs. / year

B. Vapor Return System

Area Average Temperature = 75°F
BA Vapor Pressure = 110 mmHg (from Hercules vapor pressure curve)

BA mole fraction in vapor

= $\frac{\text{Vapor pressure of BA}}{\text{Total Pressure}}$

= $\frac{\text{Vapor Pressure of BA}}{\text{Gauge Pressure + Atmospheric Pressure}}$

= $\frac{\text{(110 mmHg) (1 atm / 760 mmHg)}}{\text{(4 in } H_2O \text{ = 406.8 in } H_2O \text{) (1 atm / 406.8 inch } H_2O \text{)}}$

= 0.143 mole BA / mole of gas

Leak Rate = [gas valve losses + flange losses] (fraction BA)(total operating hours)

$$= [(2) (0.015) + (5) (0.0018)] \left(\frac{0.143 \text{ mol BA}}{\text{mole BA}} \right) \left(\frac{72 \text{ lbs. BA}}{28 \text{ lbs. gas}} \right) \left(\frac{\text{mole gas}}{\text{yr.}} \right) (8760 \text{ hr.})$$

= (0.030) + 0.0090) (0.0143) (2.57) (8760)

= 125.6 lbs. / year

C. Storage Tank

1. Liquid Flanges / Valves

Leak Rate = (liquid valve losses + flange losses) (weight fraction BA) (total operating hours)

= [2 (0.016) + (8) (0.0018)] (1.0) (8760)

= [0.032 + 0.014] (1) (8760)

= 406 lbs. / year

2. Vapor Flanges / Conservation Vents

Leak Rate = (C / V losses + vapor flange losses) (weight fraction BA) (total operating hours)

= [(2) (0.224) + (12) (0.0018)] (0.143) (2.57) (8760)

= [0.448 + 0.0216] (0.143) (2.57) (8760)

= 1511 lbs. / year

3. Total Leak Rate

= 406 + 1511 = 1917 lbs. / year

2005 AIR EMISSIONS INVENTORY

BUTACITE® CHEMICAL REACTOR LINE

(BS-B)

EMISSIONS SUMMARY

PROCESS EMISSIONS:	VOC EMISSIONS (lb. / year)	VOC EMISSIONS (TYP)
BA Scrubbers	4482	2.24

FUGITIVE EMISSIONS:	VOC EMISSIONS Worst case scenario based on AP-42 (lb. / year)	VOC EMISSIONS With 67% Reduction for "Good" control (lb. / year)	VOC EMISSIONS With 67% Reduction for "Good" control (TYP)
Condensation Reactors / Vent System	828	273	0.14
Charging System	16474	5436	2.72
Recirculation System	5207	1718	0.86
TOTAL EMISSIONS		11360	6.0

EMISSIONS AIR INVENTORY

Emission Unit ID: BS-B
Emission source Description: Butacite® Flake Reactors

A. Emission Estimation Approach

Emissions from the flake reactors include unreacted Butyraldehyde and residual methanol in the PVA. (PVA contains a maximum of approximately 1.1% methanol.) Emissions are calculated on a per batch basis. Butyraldehyde vented per batch is calculated based on the nitrogen sparging rate and the concentration of Butyraldehyde in the vapor space. For methanol, it is assumed that it is all vented.

Emission Calculations

Butyraldehyde per batch

Sparging Time = 30 Minutes

N_2 Flow During Sparging = 25 cfm

Simulation model data = 0.015 mole fraction BA in N_2 during sparging

N_2 Density (lb. / cu. ft.) = PM / RT

$$= \frac{(14.7 \text{ psia} * 28 \text{ lb.} / \text{lb.–mole})}{10.73 \text{ psia-cu. ft.} / (\text{lb.-mole-degR}) * 520 \text{ degR}}$$

= 0.0738 lbs. N_2 / cu. ft.

Lbs. N_2 to scrubber (lbs. N_2) = 25 ft^3 / min * 0.0738 lb. N_2 / cu. ft. N_2 * 30 min.

= 55.35 lbs. N_2

Lbs. BA in N_2 purge (lbs. BA / lbs. N_2) = 0.015 mole BA / mole N_2 * 72 lbs. BA / mole BA * mole N_2 / 28 lbs. N_2

= 0.04 lb. BA / lb. N_2

Lbs. BA to scrubber (lbs. BA / batch) = 55.35 lbs. N_2 * 0.04 lbs. BA / lbs. N_2

= 2.2 lbs. BA

2005 AIR EMISSIONS INVENTORY SUPPORTING DOCUMENTATION

Emission Source ID No.: BS-C

Emission Source Description: Butacite® Flake Dryer

Process & Emission Description:

The Butacite® Flake Dryer air exhaust vents to a cyclone separator with a 90% removal efficiency for Total Suspended Particulates (TSP) which in turn vents to a bag filter house with a 99% removal efficiency for TSP.

Basis and Assumptions:

The above stated control efficiencies are based on efficiency tests with the Flake Dryer running at full capacity.

All emissions from this permitted source are totally polyvinyl butyral (PVB) flake particles that are reported as Total Suspended Particulates (TSP).

Information Inputs and Source Inputs:

Information Input	Source of Inputs
Flake Dryer Process Throughput	Butacite® Production Clerk
Flake Dryer Hours of Operation	Butacite® Production Clerk

Point Source Emissions Determination:

Shown on the following page.

Fugitive Emissions Determination:

None; all emissions are point source emissions.

Point Source Emission Determination For the year of 2005

Dimethylformamide
DMF **CAS No. 68-12-2**

Emissions of dimethylformamide (DMF) from the Butacite® Tinting Process are reported as both a Volatile Organic Compound (VOC) and as a Hazardous Air Pollutant (HAP). All emissions of DMF are from the multi-stage horizontal spray water scrubber (BCD-D1) that has a documented DMF control efficiency of 97%.

DMF Before-Control Emissions:

The before-control DMF emission rate is determined by the hours that each of the various tinted bandwidths are produced during the year. The hours of production for a specific bandwidth is then multiplied by the DMF emission factor for that bandwidth to determine the before-contol quantity of DMF that would have been emitted from the tinting process. The emitted DMF quantities for each bandwidth is then summed to obtain the total before-control DMF emission quantity. That determination is shown in the preceeding Butacite® Tinting Process DMF Emissions Report.

For 2005 , the before-control DMF emission to the scrubber was 44,615.7 pounds.

DMF After-Control Emissions:

Before-control DMF emissions = **44,615.7** pounds

DMF control efficiency of the Tinting water scrubber (BCD-D1) = **97%**

After-control emissions utilizing the 97% control efficient water scrubber (BCD-D1):

After-control DMF emissions would be: 100% – 97% = **3%** of the incoming DMF

Therefore, after-control emissions = **44,615.7** pounds
X **3%**
1,338.5 pounds DMF

Fugitive and Equipment Emissions Determination (Non-point Source):

The Butacite Tinting Process is wholly contained in a Permanent Total Enclosure. As such, all emissions are ultimately discharged to and through the horizontal spray water scrubber (BCD-D1). Therefore, there are no non-point source emissions from this process.