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May 25, 2004

Mary Dominiak  
U.S. Environmental Protection Agency  
Office of Pollution Prevention and Toxics  
EPA East, Room 4410  
1201 Constitution Avenue, NW  
Washington, DC 20460  
564-4760

**VIA OVERNIGHT MAIL**

Attention: Docket No. AR-226 and/or OPPT-2003-0012  
Re: Submission of Air Data - DuPont Washington Works Facility

Dear Mary:

As discussed in various meetings with USEPA on monitoring around the DuPont Washington Works facility in West Virginia (the Site), DuPont is in the process of conducting an Air Modeling Verification Study (the Study). The first part of the Study, pertaining to air monitoring/modeling at the fenceline of the Site (Phase I), has been completed. The following data and information are attached with respect to the first part of this Study:

- 4 page document entitled Air Data (Attachment 1) – this document provides comment on the Phase I work. Note that the Air Modeling Verification Study is not complete; therefore comments at this juncture represent only intermediate results. We are summarizing some of the observations to assist in understanding of the data being submitted with this letter.

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- 9 analytical reports from Exygen Research, each entitled Air Sampling Fluorochemical Report (Attachment 2).

In addition, DuPont has undertaken another effort aimed at evaluating the particle size distribution (PSD) of PFOA in ambient air at the Site. This effort is designed to verify/refine inputs to air deposition modeling. The results to date for this effort are provided with this letter (see Attachment 3, Analytical Report from Exygen Research entitled Fluorochemical Characterization of Filter Samples; Particle Size Distribution Study). A report documenting results from the Particle Size Distribution analysis is under review and will be submitted to EPA upon its completion.

A copy of this entire submission is also being provided to the West Virginia Department of Environmental Protection and the Ohio Environmental Protection Agency.

If you need further clarification on the information and data presented with this letter, please contact me at the number provided above.

Very truly yours,



Andrea V. Malinowski  
Counsel for E. I. DuPont de Nemours and Company

Attachments

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ATTACHMENTS

1. Air Data – DuPont Washington Works Site (4 pages)
2. The following are bound analytical reports from Exygen Research, all entitled Air Sampling Fluorochemical Report:

Round 1 – Report No. L0001277  
Round 2 – Report No. L0001308  
Round 4 – Report No. L0001359  
Round 5 – Report No. L0001400  
Round 7 – Report No. L0001444  
Round 8 – Report No. L0001448  
Round 9 – Report No. L0001508  
Round 10 – Report No. L0001667  
Round 11 – Report No. L0001668

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Note that samples were not analyzed for Events 3 and 6. Event 3 was conducted on November 17, 2003, when the on-site meteorological station recorded 17 calm hours out of 24 hours. The ISCST3 model would treat these calm hours by using a default wind speed value of 1 meter per second. Because these data are being used for a modeling verification study, actual data, when possible, should be used as opposed to default information. In fact, it is recommended in the Guideline on Air Quality Models (40 CFR Part 51, Appendix W) that model results are most accurate when no more than 6 calm hours occur. As a result, these samples were not analyzed. Event 6 was attempted on December 5, 2003, but was aborted when it was determined that the major sources of PFOA in the manufacturing process were not operating that day.

3. Bound analytical report from Exygen Research entitled Fluorochemical Characterization of Filter Samples; Particle Size Distribution Study – Report No. L0002178

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**AR226-1775****AIR DATA  
DUPONT WASHINGTON WORKS SITE**

This submittal summarizes available information from the following two data collection efforts, both of which are associated with PFOA in air at the DuPont Washington Works site:

1. The first effort has been described to EPA as the "Air Modeling Verification Study" (the Study). The Study is being conducted in 2 parts. The first part pertains to air monitoring/modeling at the fenceline of the Washington Works site and is part of Phase I activities. The second part pertains to air monitoring/modeling in the community and is part of Phase II activities. This submittal provides EPA with data from the Phase I work. Laboratory data from this work is included as Attachment 1.
2. The second effort is a Particle Size Distribution Analysis. This effort was undertaken as an internal DuPont program designed to verify/refine inputs to air deposition modeling. The laboratory data for this effort is included as Attachment 2.

Note that the Air Modeling Verification Study is not complete; therefore comments at this juncture represent only intermediate results. We are summarizing some of the observations to assist in understanding of the data. A report documenting results from the Particle Size Distribution analysis is under review and will be submitted to EPA upon its completion.

**Intermediate results from the Air Modeling Verification Study**

As stated above, DuPont is in the midst of conducting a two-phased study to compare monitored ambient air measurements with concurrent air dispersion modeling results. Ambient air samples from the first phase of the field program have been analyzed. In addition, initial modeling runs have been conducted to begin the process of understanding how modeled and monitored results compare. Table 1 includes a summary of intermediate monitoring data and draft modeling runs for this Phase I activity.

Thirty-three pairs of modeled/monitored results were generated in Phase I. Results showed that at no time in this phase of the program did the model under-predict the concentration of PFOA in air, as compared to quantifiable monitored values. Rather, in all cases the modeled value either over-predicted or was in agreement with the measured value. Note that over-prediction is considered an acceptable response since an over-prediction results in a conservative estimate of air concentrations. The following observations can be made at this intermediate stage:

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- Modeled values over-predict measured values 33% of the time (for 11 of the 33 cases). On average, the model over-predicted by approximately 5 times, with a range of 1.2 to 7.3 for all but one case. In one case, the model over-predicted 24 times the measured value. This larger over-prediction is a result of changing wind conditions that occurred throughout the 24-hour period and are apparent from the wind rose for that day.
- Modeled values are in agreement with sampling results that measured below the quantifiable limit. For 22 of the 33 cases, or 67% of the time, the monitored value was below the quantifiable limit and the model predicted a quantifiable number that was also below the detectable analytical value.

#### Results from a Particle Size Distribution Analysis

A sampling program was conducted to evaluate the particle size distribution (PSD) of PFOA in ambient air at the Washington Works site. Laboratory data generated during this sampling program are included in Attachment 2. PSD information is an input for air deposition modeling. Deposition of PFOA is considered a migration pathway and providing an updated PSD is one accepted way to verify deposition estimates. In addition to providing a measure of the PSD, the sampling program also was used to calculate 72-hour average ambient air concentrations at 4 fence-line locations.

Results from the sampling program are summarized below.

- An average PSD was calculated using data collected during a 72-hour sampling event at four fence-line locations. The average PSD is shown in the following table.

| Particle Diameter,<br>microns | Mass Fraction | Cumulative %<br>Less Than Particle<br>Size |
|-------------------------------|---------------|--------------------------------------------|
| 4.0                           | 0.056         | 94.4%                                      |
| 1.7                           | 0.129         | 81.5%                                      |
| 0.8                           | 0.092         | 72.3%                                      |
| 0.5                           | 0.072         | 65.1%                                      |
| 0.3                           | 0.053         | 59.8%                                      |
| 0.28                          | 0.598         |                                            |

- These results compare favorably with previous PSD measurements for PFOA collected at the Washington Works site (circa 1995), shown in the table below.

| Particle Diameter,<br>microns | Mass Fraction | Cumulative %<br>Less Than Particle<br>Size |
|-------------------------------|---------------|--------------------------------------------|
| 4.0                           | 0.033         | 96.7%                                      |
| 2.0                           | 0.127         | 84.0%                                      |
| 0.75                          | 0.035         | 80.5%                                      |
| 0.4                           | 0.267         | 53.8%                                      |
| 0.2                           | 0.538         |                                            |

- The overall mass concentration of APFO/PFOA for the 3-day test period is as follows:

Station 1: 0.0099 ug/m<sup>3</sup>  
Station 2: 0.1099 ug/m<sup>3</sup>  
Station 3: 0.1030 ug/m<sup>3</sup>  
Station 4: 0.0034 ug/m<sup>3</sup>

Concentrations compare favorably to previous 24-hour sampling collected using OSHA Versatile Sampling (OVS) tubes, where that majority of monitored data was below a quantitation limit of approximately 0.14 ug/m<sup>3</sup>. Co-located samples from Stations 2 and 3 differ by less than 6%, showing acceptable precision in the sampling methodology. Also, the concentrations above are consistent with predicted model results and with previous OVS tube sampling which show Station 4 as the predominant upwind location and Stations 2 and 3 as the predominant downwind location.

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Table 1. Summary of Phase 1 Intermediate Results for Modeling and Monitoring

| Event | Date     | Receptor Location | Modeled,<br>ug/m3 | Monitored,<br>ug/m3 | Overpredictions |
|-------|----------|-------------------|-------------------|---------------------|-----------------|
| 1     | 11/05/03 | AMS-1             | 0.00              | <0.14               |                 |
| 2     | 11/12/03 |                   | 0.23              | <0.14               | 1.6             |
| 5     | 11/29/03 |                   | 0.00              | <0.14               |                 |
| 7     | 12/10/03 |                   | 1.28              | 0.3                 | 4.3             |
| 8     | 12/11/03 |                   | 0.00              | <0.12               |                 |
| 9     | 12/18/03 |                   | 0.00              | <0.14               |                 |
| 11    | 01/15/04 |                   | 0.00              | <0.14               |                 |
| 1     | 11/05/03 | AMS-2,3           | 1.79              | 0.075               | 23.9            |
| 2     | 11/12/03 |                   | 3.84              | 0.9                 | 4.3             |
| 5     | 11/29/03 |                   | 3.00              | 0.7                 | 4.3             |
| 7     | 12/10/03 |                   | 0.83              | 0.3                 | 2.8             |
| 8     | 12/11/03 |                   | 0.11              | <0.14               |                 |
| 9     | 12/18/03 |                   | 0.67              | 0.11                | 6.0             |
| 11    | 01/15/04 |                   | 0.00              | <0.17               |                 |
| 1     | 11/05/03 | AMS-4             | 0.10              | <0.14               |                 |
| 2     | 11/12/03 |                   | 0.00              | <0.14               |                 |
| 7     | 12/10/03 |                   | 0.02              | <0.12               |                 |
| 8     | 12/11/03 |                   | 1.02              | <0.14               | 7.3             |
| 9     | 12/18/03 |                   | 0.17              | <0.14               | 1.2             |
| 11    | 01/15/04 |                   | 0.03              | <0.14               |                 |
| 1     | 11/05/03 | AMS-5             | 0.01              | <0.14               |                 |
| 2     | 11/12/03 |                   | 0.21              | <0.14               | 1.5             |
| 5     | 11/29/03 |                   | 0.00              | <0.14               |                 |
| 7     | 12/10/03 |                   | 0.00              | <0.14               |                 |
| 8     | 12/11/03 |                   | 0.00              | <0.14               |                 |
| 9     | 12/18/03 |                   | 0.08              | <0.14               |                 |
| 11    | 01/15/04 |                   | 0.53              | 0.3                 | 1.8             |
| 1     | 11/05/03 | AMS-6             | 0.02              | <0.14               |                 |
| 2     | 11/12/03 |                   | 0.00              | <0.14               |                 |
| 5     | 11/29/03 |                   | 0.00              | <0.14               |                 |
| 7     | 12/10/03 |                   | 0.10              | <0.12               |                 |
| 9     | 12/18/03 |                   | 0.00              | <0.14               |                 |
| 11    | 01/15/04 |                   | 0.00              | <0.14               |                 |

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