

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:

- 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, microns	Mass Fraction	Cumulative % Less Than Particle 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, microns	Mass Fraction	Cumulative % Less Than Particle 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/m³
Station 2: 0.1099 ug/m³
Station 3: 0.1030 ug/m³
Station 4: 0.0034 ug/m³

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/m³. 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.

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

Event	Date	Receptor Location	Modeled, ug/m3	Monitored, 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	

000007