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DuPont Haskell Laboratory  
for Health and Environmental Sciences  
Elkton Road, P.O. Box 50  
Newark, DE 19714-0050

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Attention: 8(e) Coordinator  
Office of Pollution Prevention and Toxics  
U.S. Environmental Protection Agency, ICC Building  
1201 Constitution Ave., NW  
Washington, DC 20460

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Dear 8(e) Coordinator:

Ammonium Perfluorooctanoate  
8EHQ-0381-0394

This letter is submitted "For Your Information" to supplement the letter of September 7, 2004 submitted by Mr. Edward E. Shea, representing MIC Specialty Chemicals, Inc. (Attachment I). Overall, the letter and accompanying trip report are an accurate reflection of the proceedings of the meeting held at the Inn at Montchanin Village on August 20-21, 2004. Our conclusions from the meeting are summarized as follows:

1. No effects were observed on the general health of the workers at the Miteni plant.
2. No changes in clinical chemistry parameters were observed with the exception of an apparent slight alteration of serum lipid levels that correlated with exposure. The cause and biological significance of this observation is unclear and requires further analysis.
3. Although the observed changes appear to be correlated with exposure, it does not demonstrate a causal association with exposure to these substances.
4. Average serum levels of PFOA were higher in the Miteni workers than have been reported for occupational exposure, and significantly higher than levels reported in the general population.

For the sake of completeness, we are submitting with this letter a copy of the data slides that summarize DuPont's preliminary analysis of the serum lipid data (Attachment II). We note that 3M actually led the initial analysis of the Miteni data including the 37 blood parameters mentioned in Dr. Costa's trip report. After seeing the preliminary analysis of the serum lipid data, DuPont subsequently undertook an independent statistical analysis of the serum lipid data only, and presented our preliminary analysis at the August 20-21 meeting. With respect to the data referenced in Mr. Shea's letter we note the following:

1. In Table 1 it should be noted that analyses of the sera of the "PFOA-exposed" group also revealed the presence of PFOS (perfluorooctanoic sulfonate). Dr. Costa confirmed that the plant worked with both perfluorinated compounds. The average serum PFOA concentration was ~ 16 ppm with a range of 0.04-92 ppm and for serum PFOS the average was ~ 0.5 ppm with a range of 0.06-3.3 ppm. It should be noted that no analyses for these same perfluorinated compounds was undertaken for the sera of workers in the non-PFOA/non-PFOS area ("Non-PFOA" group).

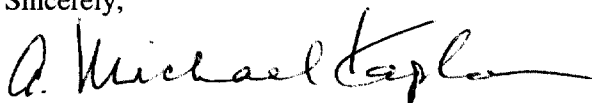
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2. There are a number of caveats that are germane to the interpretation of the data in addition to the fact that workers were exposed to both PFOA and PFOS; notably:
  - a. The dataset consists of a small and arbitrary collection of subjects (~35 employees).
  - b. There are no pre-employment/baseline lipid levels for historical reference in the study population.
  - c. Concomitant exposure to other chemicals in the plant is an unknown variable.
  - d. Serum lipids are well known to be affected by many different factors including family history, diet, and lifestyle; data on these factors were not available for inclusion for analysis.
3. There was a strong correlation observed between PFOA and PFOS levels. Therefore, we analyzed the relationship between the various serum lipids with respect to three dependent variables: total perfluorinated compound (the sum of PFOA + PFOS), PFOA alone and PFOS alone.
4. The data have been analyzed in terms of a linear model; however, other models may fit the data better. In general, there is no *a priori* reason to expect a linear dose-response relationship in a biological system.

As indicated in Mr. Shea's letter, DuPont has additional ongoing studies that may enable a broader interpretation of this small study in the Miteni workers. Notably, we are conducting a study, "Ammonium Perfluorooctanoate: Cross-Sectional Surveillance of Clinical Measures of General Health Status Related to a Serum Biomarker of Exposure and Retrospective Cohort Mortality Analyses in a Polymer Production Plant" of over 1,000 employees at our Washington Works plant. Currently we are analyzing the data and expect to issue a final report by year's end. In addition, we are evaluating the effects of perfluorinated compounds on the activation of various nuclear receptors, e.g., PPAR $\alpha$ , in an effort to better understand the biological activity of this class of chemicals. Finally, we are exploring the hypothesis that hyperlipidemia prolongs retention of PFOA in the serum, thus accounting for the observed correlations.

A copy of the final report(s)/manuscript(s) for the DuPont studies will be submitted to the Agency when available.

Sincerely,



A. Michael Kaplan, Ph.D.  
Director – Regulatory Affairs and Occupational Health

AMK/RWR/PJG:clp  
(302) 366-5260

Attachments: (I) "Mr. Edward E. Shea's TSCA Letter, September 7, 2004"  
(II) "DuPont Statistical Analysis of Serum Lipid Data of Miteni Workers"