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July 13, 2000

Attn: TSCA Section 8(e) Coordinator
Document Processing Center (7407)
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Re: TSCA 8e Supplemental Submission, Docket Nos. 8EHQ-0373/0374
New Data on Half-Life of Perfluorochemicals in Serum

Dear Docket Coordinator:

3M is providing an interim report regarding the half-life of certain perfluorochemicals in human blood serum. New data suggest that the serum half-life of perfluorooctane sulfonate (PFOS) following cessation of occupational exposure is likely to be four-fold lower than the 1000-1500 days previously suggested (median from 18 retirees sampled three times in 18 months = 270 days).

In our paper entitled "Perfluorooctane Sulfonate: Current Summary of Human Sera, Health and Toxicology Data," dated January 21, 1999, 3M presented limited data from three retirees regarding the half-life of elimination for PFOS following cessation of occupational exposure. Based on those data, we estimated the half-life for PFOS at 1182-1575 days (between three and four years) following the cessation of occupational exposure. See also Olsen, et al., "Serum perfluorooctane sulfonate and hepatic and lipid clinical chemistry tests in fluorochemical production employees," *J. Occup. Env. Med.* 41:799-806 (1999) (estimating half-life for PFOS at 1000-1500 days); Ubel, et al., "Health status of plant workers exposed to fluorochemicals: a preliminary report," *Am. Ind. Hyg. Assoc. J.* 41:584-589 (1980) (estimating half-life for perfluorochemicals including perfluorooctanoic acid at 365-530 days).

Since these reports, 3M has been conducting an expanded study of the half-life of PFOS and perfluorooctanoic acid (PFOA) in 27 retired perfluorochemical production workers. The study will run from 1999 to 2003, testing retirees' serum levels every six months. We have recently received the first Interim Report from this study. A copy is enclosed.

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To date, preliminary analyses from three serum collection periods utilitizing a one-compartment model suggest that the serum half-life of PFOS is likely to be four-fold lower than the 1000-1500 days previously suggested. The serum half-life for PFOA appears to be approximately one year, which is comparable to the estimate suggested by Ubel (1980). Because of the number of samples below the lower limit of quantitation for other fluorochemical analytes (including N-ethyl perfluorooctanesulfonamideoacetate, N-methyl perfluorooctanesulfonamideoacetate, perfluorooctanesulfonamide, and perfluorooctanesulfonamideoacetate), or in the case of perfluorohexanesulfonate because of inconsistencies in measurements, additional collection periods are necessary before half-life values can be calculated for those analytes.

Thus far, serum has been analyzed for three collection periods in Decatur plant retirees (whose exposure is primarily to PFOS) and for two collection periods in Cottage Grove plant retirees (whose exposure is primarily to PFOA). Participants are all long-term employees, averaging 28 years of service in the Decatur or Cottage Grove chemical division. Their measured PFOS serum concentrations ranged from 0.2 to 2 ppm for PFOS and 0.1 to 3.1 ppm for PFOA.

Data from the retirees with at least three data points and for whom the linear one compartmental model was judged to have a good fit ($r2 \geq 0.6$), show a median serum half-life for PFOS of 270 days (range 139-640) for 18 male retirees. The median serum half-life for PFOA was 344 days for 18 male and 2 female retirees. Serum half-lives were not associated with age, but the highest half-life calculations were for the two female retirees in the study.

Additional collection cycles will further refine these half-life estimates and take into account the retirees who were excluded from this interim report due to lack sufficient data or fit of the one-compartment model.

3M will continue to apprise EPA of the results of this ongoing study.

Sincerely yours,

LRZobel MD

Larry R. Zobel, M.D., M.P.H.
Staff Vice President & Medical Director

Enclosure:
3M Medical Dept., Interim Report # 1, Determination of Serum Half-Lives of Several Perfluorochemicals, June 8, 2000

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