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Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attn: TSCA Section 8(e) Coordinator

Dear Section 8(e) Docket Coordinator:

Re: TSCA 8(e) Supplemental Notice on Sulfonate-based Fluorochemicals

With this letter, 3M is providing final reports and other supplemental information related to previous TSCA Section 8(e) notifications. Many of the enclosed items are analytical reports providing blood serum and liver levels of test materials for which the in-life report referring to administered doses has already been submitted to the 8(e) docket. In other cases where the 8(e) notification consisted of preliminary data, we are submitting a final study report.

All of the enclosed items are already in EPA's possession and available in TSCA Docket AR-226. We believe, however, that placing these items in the 8(e) docket may allow for more convenient access to information directly related to previous 8(e) notifications by 3M.

The table below lists the enclosed items and references the study or data which already has been the subject of an 8(e) notification by 3M:

Attached Submission	Related Study/Data Already Filed Under 8(e)
1. Amended Analytical Study, 2(N-Ethylperfluorooctane sulfonamido)-ethanol in Two Generation Rat Reproduction, Determination of the Presence and Concentration of PFOS, M556, PFOSAA, and PFOSA in the Liver and PFOS, M556, PFOSAA, PFOSA and EtFOSE-OH in the Sera of Crl:CDBR VAF/Plus Rats Exposed to EtFOSE-OH, 3M Reference No. T-6316.5, Analytical Report TOX-013, LRN-U2095, June 11, 2001.	Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of N-EtFOSE in Rats, 3M Reference No. T-6316.5, June 30, 1999, full report submitted February 15, 2000 to supplement earlier filing

Contain NO CBI

Attached Submission	Related Study/Data Already Filed Under 8(e)
2. Analytical Laboratory Report, Determination of the Presence and Concentration of Potassium Perfluorooctanesulfonate (CAS Number: 2759-39-3) in the Serum and Liver of Sprague-Dawley® Rats Exposed to PFOS via Gavage, Laboratory Report No. U2006, Requestor Project No. 3M TOX 6295.9, October 27, 1999. 3. Report Amendment 1, Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of PFOS in Rats, Argus Research Laboratories, Inc., Protocol 418-008, Sponsor's Study No. 6295.9, April 13, 2000.	Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of PFOS in Rats, Argus Research Laboratories, Inc., Sponsor's Study No. 6295.9, June 10, 1999, full report submitted February 15, 2000 supplementing earlier filing
4. Analytical Report, Determination of the Presence and Concentration of Perfluorooctanesulfonate, Perfluorooctanesulfonylamide, M556, and M570 in the Liver and Sera Samples, 3M Environmental Laboratory Ref. No. U2636, TOX-028, February 23, 2001	13-Week Dietary Study of N-Methyl Perfluorooctanesulfonamido Ethanol (N-MeFOSE) in Rats, 3M Ref. No. T-6314.1, Covance Study No. 6329-225, dated June 30, 2000, Section 8(e) filing July 24, 2000
5. Analytical Laboratory Report, Determination of the Concentration of PFOS, PFOSA, PFOSAA, and EtFOSE-OH in the Sera and Liver of Crl:CDBR VAF/Plus Rats Exposed to N-EtFOSE, 3M Environmental Laboratory Report No. TOX-098, Laboratory Request No. U2402, 3M Ref. No. T-6316.7, February 6, 2001.	Final Report, Oral (Gavage) Developmental Toxicity Study of 2(N-Ethylperfluorooctanesulfonamido)-ethanol in Rats, 3M Reference No. T-6316.7, December 17, 1998, submitted to Section 8(e) docket per letter of August 21, 2000
6. Analytical Laboratory Report on the Determination of the Presence and Concentration of Potassium Perfluorooctanesulfonate (PFOS) or another metabolite of 2(N-ethylperfluorooctanesulfonamido)-ethanol (N-EtFOSE) in Liver and Serum Specimens, 3M Environmental Laboratory Report No. TOX-097, Laboratory Request No. U2452, 3M Ref. No. T-6316.8, February 8, 2001	Final Report, Oral (Stomach Tube) Developmental Toxicity Study of N-EtFOSE in Rabbits, 3M Reference No. T-6316.8, January 11, 1999, submitted to Section 8(e) docket per letter of August 21, 2000
7. Final Report, Alexander, B., Mortality Studies of Workers Employed at the 3M Decatur Facility, University of Minnesota, April 26, 2001.	Preliminary data submitted to Section 8(e) docket in letter of December 15, 2000

Attached Submission	Related Study/Data Already Filed Under 8(e)
8. Final Report, Acute Oral Toxicity Screen with T-3290CoC in Albino Rats, Safety Evaluation Laboratory, Riker Laboratories, Inc., Project No. 0882AR0362, 3M Reference No. T-3290 (40 % K^+PFOSAA in 3 % EtOH, 17 % IPA and 40 % H_20, L-6778, F-6873, Lot 501), November 5, 1982 *[Bibliography entry in Docket AR-226, final report was to be moved to TSCA 8(e) docket]*	Acute Oral Toxicity Screen with T-3290CoC in Albino Rats, Safety Evaluation Laboratory, Riker Laboratories, Inc., Project No. 0882AR0362, 3M Reference No. T-3290 (40 % K^+PFOSAA in 3 % EtOH, 17 % IPA and 40 % H_20, L-6778, F-6873, Lot 501), November 5, 1982, submitted to Section 8(e) docket in August 21, 2000 self-audit letter (which erroneously refers to rabbits rather than rats)
9. Giesy, J.P., and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Fish Tissue, Michigan State University, June 20, 2001. 10. Giesy, J.P., and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Mink and River Otters, Michigan State University, June 20, 2001. 11. Giesy, J.P., and K. Kannan, Perfluorooctanesulfonate and Related Fluorochemicals in Oyster, Crassostrea Virginica, From the Gulf of Mexico and Chesapeake Bay, Michigan State University, June 20, 2001. 12. Giesy, J.P. and K. Kannan, Perfluorooctanesulfonate and Related Fluorochemicals in Fish-Eating Water Birds, Michigan State University, June 20, 2001. 13. Giesy, J.P. and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Marine Mammals, Michigan State University, June 20, 2001.	Preliminary data submitted to Section 8(e) docket May 26, 1999

If you have any questions about this submission, please contact me at (651)737-4795.

Sincerely,

Georjean Adams

Georjean Adams
Manager, 3M Corporate Product Responsibility

Enclosures

MR 51620

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PRIMEDICA

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905 Sheehy Drive, Building A
Horsham, PA 19044
Telephone: (215) 443-8710
Telefax: (215) 443-8587

REPORT AMENDMENT 1
13 APRIL 2000

PROTOCOL 418-008
SPONSOR'S STUDY NUMBER: 6295.9

COMBINED ORAL (GAVAGE) FERTILITY, DEVELOPMENTAL AND PERINATAL/POSTNATAL REPRODUCTION TOXICITY STUDY OF PFOS IN RATS

FINAL REPORT

1. Page I-9, paragraph 4 has been revised to:

Pregnancy occurred in 22 (95.6%), 21 (84.0%) and 24 (96.0) of the 23, 25 and 25 female rats assigned to cohabitation in the 0 (Vehicle), 0.1 and 0.4 mg/kg/day dosage groups, respectively. All pregnant dams delivered litters. The gestation index was comparable across the three dosage groups. ***Viability and growth of the second generation offspring (F2 pups) to weaning were also unaffected by the highest dosage tested, 0.4 mg/kg/day. There were no toxicologically important differences from the control group values.*** No clinical or necropsy observations in the F2 generation pups were attributable to dosages of the test article as high as 0.4 mg/kg/day.

2. Page I-10, paragraph 4 has been revised to:

The F1 generation reproductive NOEL is greater than a dosage of 0.4 mg/kg/day; no effects on mating or fertility occurred. The NOEL for viability and growth in the F2 generation offspring is ***also 0.4*** mg/kg/day. ***There were no toxicologically important effects on pup survival or growth at the highest dosage tested, 0.4 mg/kg/day.***

3. Page V-8, paragraph 3 has been revised to:

The viability of the second generation offspring (F2 pups) was unaffected at the highest dosage tested, 0.4 mg/kg/day. Small increases in the number of dams with stillborn pups and in the number of pup deaths after DL 2 in the 0.4 mg/kg/day dosage group were not toxicologically important because: 1) the values were not significantly different from the control group values; 2) the average for live litter sizes delivered and surviving to DL 21 were greater than or comparable to the control group values; and 3) neither the viability or lactation indices for the 0.4 mg/kg/day dosage group remarkably differed from the control group values.

6EHQ-80-373

4. V-8, paragraph 4 has been revised to:

Pup body weights of the second generation offspring (F2 pups) were unaffected at the highest dosage tested, 0.4 mg/kg/day. Small reductions in pup body weights in the 0.1 and 0.4 mg/kg/day dosage groups were not toxicologically important because: 1) the small differences between the pup body weights for the control and 0.1 mg/kg/day dosage groups were not statistically significant and were associated with the larger live litter sizes of the 0.1 mg/kg/day dosage group on DLs 1 through 4, as compared with the control group values, and the random selection of pups for continued observations on DL 4; 2) the small reductions in pup body weights in the 0.4 mg/kg/day dosage group were associated with a minimally larger live litter size at birth (DL 1) and on DL 4 preculling, as compared with the control group values, and the random selection of pups for continued observation on DL 4; the statistically significant reductions ($p \leq 0.05$ and $p \leq 0.01$, respectively) present on DLs 7 and 14, as compared to the control group values, were transient and disappeared by DL 21.

5. Page V-9: Revisions to paragraph 4 on page V-8 caused it to extend onto page V-9.

These revisions were made to clarify the interpretation of the observations reported and the NOEL for the second generation offspring (F2 generation).

13-APR-00

Raymond G. York, Ph.D., DABT Date
Associate Director of Research
and Study Director

13 Apr 00

Nancy J. Gongliewski Date
Quality Assurance Manager

feed consumption values were reduced during lactation in the 0.4 mg/kg/day dosage group.

Dosages of the test article as high as 0.4 mg/kg/day did not affect the average day of vaginal patency in the F1 generation female rats. There were no biologically important differences in the values for learning, short-term retention, long-term retention or response inhibition in the F1 generation female rats, as evaluated by performance in a passive avoidance or watermaze performance paradigm.

Dosages of the test article as high as 0.4 mg/kg/day did not affect any mating and fertility parameters evaluated in the F1 generation female rats.

All necropsy observations in the F1 generation female rats were considered unrelated to the test article.

Pregnancy occurred in 22 (95.6%), 21 (84.0%) and 24 (96.0) of the 23, 25 and 25 female rats assigned to cohabitation in the 0 (Vehicle), 0.1 and 0.4 mg/kg/day dosage groups, respectively. All pregnant dams delivered litters. The gestation index was comparable across the three dosage groups. Viability and growth of the second generation offspring (F2 pups) to weaning were also unaffected by the highest dosage tested, 0.4 mg/kg/day. There were no toxicologically important differences from the control group values. No clinical or necropsy observations in the F2 generation pups were attributable to dosages of the test article as high as 0.4 mg/kg/day

C. Conclusions

On the basis of these data, the Fo generation maternal and paternal no-observable-effect-level (NOEL) of PFOS is 0.1 mg/kg/day (0.4 mg/kg/day and higher dosages caused reductions in body weight gain and reduced feed consumption values).

The Fo generation reproductive NOEL is greater than 3.2 mg/kg/day; no effects on mating, fertility or estrous cycling occurred. The NOEL for viability and growth in the F1 generation offspring is 0.4 mg/kg/day (1.6 mg/kg/day and higher dosages caused preimplantation loss and reductions in litter size, pup viability, growth and survival).

The F1 generation maternal and paternal NOEL of PFOS is 0.1 mg/kg/day (0.4 mg/kg/day dosage caused reductions in body weight gain and reduced feed consumption values).

The F1 generation reproductive NOEL is greater than a dosage of 0.4 mg/kg/day; no effects on mating or fertility occurred. The NOEL for viability and growth in the F2 generation offspring is also 0.4 mg/kg/day. There were no toxicologically important effects on pup survival or growth at the highest dosage tested, 0.4 mg/kg/day.

13 Apr 00

Mildred S. Christian, Ph.D., Fellow, ATS Date
Executive Director of Research

for

Alan M. Hoberman, Ph.D., DABT Date
Director of Research

13-APR-00

Raymond G. York, P.D., DABT Date
Associate Director of Research and Study Director

B.8. Necropsy Observations (Summary - Table E18; Individual Data - Table E34)

All necropsy observations in the F1 generation female rats were considered unrelated to the test article because: 1) the observations occurred in rats in the control group; and 2) the observation commonly occurs in this strain of rat. These observations included rough and/or pitted cortex of the kidneys with calculi in the kidney and/or urinary bladder of two control group rats. One of these rats also had a tan granular material in the renal cortex and thickened walls of the urinary bladder. Necropsy observations for the 0.4 mg/kg/day dosage group dam that died as the result of an intubation error were described previously.

B.9. Natural Delivery and Litter Observations (Summaries - Tables E19 and E20; Individual Data - Tables E35 through E38)

Pregnancy occurred in 22 (95.6%), 21 (84.0%) and 24 (96.0%) of the 23, 25 and 25 female rats assigned to cohabitation in the 0 (Vehicle), 0.1 and 0.4 mg/kg/day dosage groups, respectively. All pregnant dams delivered litters. The gestation index (the percentage of pregnant rats with live offspring) was comparable across the three dosage groups.

The viability of the second generation offspring (F2 pups) was unaffected at the highest dosage tested, 0.4 mg/kg/day. Small increases in the number of dams with stillborn pups and in the number of pup deaths after DL 2 in the 0.4 mg/kg/day dosage group were not toxicologically important because: 1) the values were not significantly different from the control group values; 2) the average for live litter sizes delivered and surviving to DL 21 were greater than or comparable to the control group values; and 3) neither the viability or lactation indices for the 0.4 mg/kg/day dosage group remarkably differed from the control group values.

Pup body weights of the second generation offspring (F2 pups) were unaffected at the highest dosage tested, 0.4 mg/kg/day. Small reductions in pup body weights in the 0.1 and 0.4 mg/kg/day dosage groups were not toxicologically important because: 1) the small differences between the pup body weights for the control and 0.1 mg/kg/day dosage groups were not statistically significant and were associated with the larger live litter sizes of the 0.1 mg/kg/day dosage group on DLs1 through 4, as compared with the control group values, and the random selection of pups for continued observations on DL 4; 2) the small reductions in pup body weights in the 0.4 mg/kg/day dosage group were associated with a minimally larger live litter size at birth (DL 1) and on DL 4 preculling, as compared with the control group values, and the random selection of pups for continued observation on DL 4; the statistically significant reductions

($p \leq 0.05$ and $p \leq 0.01$, respectively) present on DLs 7 and 14, as compared to the control group values, were transient and disappeared by DL 21.

Administration of the test article at dosages as high as 0.4 mg/kg/day did not adversely affect any other parameter evaluated at natural delivery or during the 21-day lactation period (duration of gestation, averages for implantations and live litter sizes, numbers of dams with all pups dying during lactation, viability and lactation indices, surviving pups per litter and pup sex ratios).

B.10. Clinical Observations from Birth to Day 21 Postpartum and Necropsy Observations (Summaries - Tables E21 and E22; Individual Data - Tables E39 and E40)

No clinical or necropsy observations were attributable to dosages of the test article as high as 0.4 mg/kg/day because: 1) the incidences were not dosage-dependent; and/or 2) the observation occurred in only one or two pups. These clinical observations included one control group pup that was not nesting or nursing, had decreased motor activity and was cold to the touch, one pup in each of the control and 0.4 mg/kg/day dosage groups that had a missing tip of tail and one 0.4 mg/kg/day dosage group pup that had an umbilical hernia.

No milk in stomach occurred in 2, 4 and 4 pups that were found dead in the three respective dosage groups. One control group pup had hydrocephaly and one 0.1 mg/kg/day dosage group pup had a raised tan area on the median and left lateral lobes of the liver at necropsy on DL 21.