

**3M Strategic Toxicology Laboratory**

**Study Title: Acute Inhalation Limit Toxicity Study of Perfluorooctanesulfonyl Fluoride (POSF) T-7098.3**

Test Number (sample): T-7098.3 (Perfluorooctanesulfonyl Fluoride (POSF))

Laboratory Project Identification: ST64

In-Life Initiation Date: 5/1/2001

In-Life Completion Date: 5/14/2001

Research Client: 3M Specialty Materials Division  
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## Summary:

An inhalation toxicity screen was conducted using 3 male rats for control (air-only) and 3 male rats exposed to perfluorooctanesulfonyl fluoride (POSF) at a nominal concentration of 1000 ppm for 4 hours. Overnight urines were collected on day zero to analyze for perfluorooctane sulfonate (PFOS) in the urine. Animals were observed for any adverse effects for up to 14 days after cessation of exposure. At necropsy, serum was collected for PFOS determination.

The control animals significantly gained weight ( $p < 0.05$ ) during the recovery period and showed no clinical pathology.

The POSF treated animals tolerated the 4 hour inhalation exposure, had significant ( $p < 0.05$ ) body weight gain over the 14 day recovery period. Organ weights were normal and histological evaluation of the liver, lungs, bladder, kidney and brain revealed no significant findings. The amount of PFOS in urine collected overnight on the day of dosing, and the amount of PFOS in serum on day 14 post-dose were  $3.08 \pm 1.60$  ppm ( $N=3$ ) and  $4.57 \pm 0.70$  ppm ( $N=3$ ), respectively. These data indicate that POSF was absorbed from the lungs, metabolized to PFOS and found present in the serum then excreted in urine as PFOS. The average percentage of inhaled POSF in the serum or urine, as PFOS, was  $< 1\%$

Conclusion: The 4-hour LC50 of POSF is greater than 1000 ppm..

## I. Study Objective:

This study was done to establish data on acute inhalation toxicity and to approximate the 4-hour LC50 value of POSF. The results of this range finder study will be used as guidance for a 13-week inhalation study.

## II. Test Articles:

### A. Identification:

| T#     | Name | Structure        | MW (g/mole) | Density (g/ml) |
|--------|------|------------------|-------------|----------------|
| 7098.3 | POSF | $C_8F_{17}SO_2F$ | 502         | 1.69           |

B. Purity and Stability: Responsibility of research client. The POSF sample has been lab-fractionated and acid/water washed. Chemical characterization by  $^1H$ -NMR and  $^{19}F$ -NMR Spectroscopy was conducted by 3M Specialty Adhesives & Chemicals Analytical Laboratory/ SMD to determine the purity of the nominal product and to characterize as many impurity components as possible. The sample was found to be a high purity form of the nominal POSF product (1).

C. Handling and Storage: Upon receipt, the test article was stored tightly sealed at room temperature.

D. Disposition of Test Material: Any remaining unused portion of the test article was returned to the research client after completion of the study.

## III. Test System:

Male rats were exposed to test compound in air for 4 hours for one day in 13-liter glass exposure chambers (3 rats/chamber/compound). The flow-through atmosphere was generated by mixing test compound from a syringe pump into a stream of fresh air flowing at 3.0 L/min into the chamber and exhausted through a vent. The syringe flow rate was calculated based on using the Ideal Gas Law equation:

$$((\text{target concentration})(\text{MW})/24.79) \times (1\text{g}/10^6 \mu\text{g}) \times (\text{airflow rate}) \times (1/\text{density}) \times (1000 \mu\text{L}/\text{mL})$$

Given:

target concentration (ppm)

MW = g/mole)

conversion factor: (1 gram)/(1 x 10<sup>6</sup> μg)

airflow rate: (L/min)

1/density: (mL/g)

conversion factor: 1000 μL/mL

The target concentrations of each test compound, the syringe flow rate and the airflow are provided in the following table:

| Dose Group        | C<br>(ppm) | Syringe Flow Rate<br>(μL/min) | Airflow Rate<br>(L/min) |
|-------------------|------------|-------------------------------|-------------------------|
| Treated: POSF     | 1000       | 30                            | 2.0 - 3.0               |
| Control: Air only |            |                               | 2.0 - 3.0               |

Standard target concentrations for each compound were prepared and analyzed by Fourier Transform Infrared Spectrometry (FTIR). Chamber air was monitored by FTIR for concentrations of test compound and oxygen (2). The day of dosing was designated day zero of the study. On day zero, an atmosphere of appropriate concentration was generated by adding a calculated amount of the test material to a test chamber of known volume containing the animals. Airflow was increased when necessary to maintain a level of 1000 ppm. Control animals were exposed to room air under equivalent chamber conditions as the POSF dose group animals.

Animals were handled in accordance with an animal usage protocol approved by the 3M LARC. Body weights were determined immediately prior to dosing and immediately prior to euthanasia. At the termination of the study, all animals were humanely euthanized by CO<sub>2</sub> asphyxiation and necropsies were performed.

Serum was collected at necropsy for PFOS analysis. Analysis of PFOS levels by high-pressure liquid chromatography/tandem electrospray mass spectroscopy (HPLC-MS/MS) was performed according to published methods (3). Urine was collected overnight on day zero from rats of the limit test group. Urine PFOS levels were determined following a validated extraction procedure (4), with a slight modification in that no surrogate standard (THPFOS) was added.

Lungs, liver, kidney, bladder and brain were collected at necropsy on day 14 from the limit test group. A portion of each tissue was immediately fixed in a 10% formalin solution for subsequent histological evaluation. The remaining sections were placed directly into propylene tubes filled with liquid nitrogen for possible future evaluation.

#### **IV. Results and Discussion:**

##### Test Atmosphere

The POSF atmosphere generated in the exposure chamber averaged  $912 \pm 91$  ppm for the limit test group (5). The measured concentration in the chamber was 91% of the target concentration for the limit test group. Factors which may account for this include the fact that the calculated concentration based on the Ideal Gas Law and the actual concentration in the flow-through chambers when the system reaches equilibrium may not be the same. The airflow was increased to 3 liters/ minutes to adjust chamber concentration.

##### Control Group:

The three control group male rats had no adverse clinical observations noted during the 4 hr air-only exposure. The average body weight was  $378 \pm 12$  g at the initiation of the study. The control group gained an average of 22 g (5.5%) of body weight during the 14 day study period. Liver weights averaged  $14.1 \pm 1.0$  g and the average liver to body weight ratio was  $0.035 \pm 0.001$  (Table 1).

Necropsy findings and the histopathology report by Dr. Elden Lamprecht, 3M Surgical and Histopathology Services, is found in Appendix 1. All rat lungs (both control and treated groups) had mild to moderate congestion of alveoli with occasional extravasation of blood around arterioles and bronchioles. This was possibly an agonal change associated with CO<sub>2</sub> euthanasia. It was noted that some of the lungs were not well insufflated. Other than these artifacts, histological analysis revealed no significant changes in lungs and urinary bladder in all three of the controls.

##### POSF Limit Group:

The three POSF group male rats were exposed to  $912 \pm 91$  ppm POSF measured continuously for four hours. There were no biologically significant effects over a 14-day recovery period after exposure for the POSF treated group. As a gross observation, the POSF treated animals had an increase of urine and feces output on day one post-exposure as compared to control. The average body weight was  $404 \pm 31$  g (N =3) fourteen days post exposure. The limit group gained an average of 19g (4.9%) of body weight during the 14-day study period. Liver weights averaged  $14.2 \pm 2.0$ g and the average liver to body weight ratio was  $0.035 \pm 0.002$  (Table 2), similar to controls.

Day zero, overnight urine samples were collected and extracted, to measure the levels of PFOS. Each urine sample was prepared in duplicate. Independent dilutions of the urine were done with each value calculated from the average of the duplicate determination. The average amount of PFOS in urine was  $3.08 \pm 1.60$  ppm and the average percentage of PFOS in urine was  $0.05 \pm 0.03\%$  (Table 3). The standard curve

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used to calculate the levels of PFOS in extracted urine samples is shown in Figure 1, and the area under the curve (AUC) for these extracted urine standards are in Table 4.

Serum samples were collected at necropsy on day 13 post-dose to measure the concentration of PFOS (Table 5). The average amount of PFOS in serum was  $0.058 \pm 0.004$  mg. The average percentage of inhaled POSF in serum at necropsy was  $0.101 \pm 0.007\%$  (Table 5).

These findings are similar to the PFOS levels observed in an accompanying toxicokinetic study of POSF (T-7098.4) in which a small percentage of PFOS was also found in the serum and urine (4).

**V. Conclusion:**

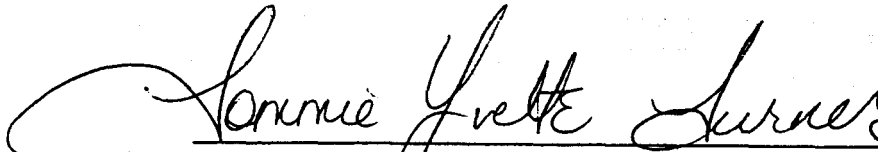
The apparent inhalation 4-hour LC50 in rats for POSF is greater than 1000 ppm.

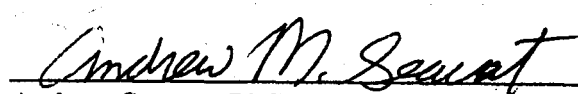
## VI. References:

1. Kestner, T. Chemical Characterization of POSF (FM-3270) by  $^1\text{H}$ -NMR &  $^{19}\text{F}$ -NMR Spectroscopy. 3M Specialty Materials & Manufacturing Division Analytical Laboratory. Request No. 6370. May 15, 2001.
2. Modified EPA Method 320. Pace Analytical. (2001).
3. Hansen, K.J., Clemen, L. A., Ellefson, M. E., Johnson, H.O. (2001). Compound-Specific, Quantitative Characterization of Organic Fluorochemicals in Biological Matrices. *Environ. Sci. and Tech.* **35**, 766-770.
4. Method Number: ETS-8-96.0. Extraction of potassium perfluorooctanesulfonate or other fluorochemical compounds from urine for analysis using HPLC-electrospray/mass spectrometry/mass spectrometry. 3M Environmental Laboratory.
5. Gutzkow, T. (2001) POSF Animal Exposure Test Report. Pace Analytical Services, Inc. 3M Laboratory Request No. E01-0648. 3M ET&SS Field Analytical Services and Technologies.
6. Seacat, A. and Turner, T. (2001) Acute Inhalation Toxicokinetic Study of Pefluooctanesulfonyl Fluoride (POSF) T-7098.4.

**VI. Signature Page**

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**Table 1: Control Group Biological Data**

|           |                  |                                                      |                                                       |                                                       |                                                       |                                 |                                                    | 5/14/01<br>Necropsy  |                   |                     |
|-----------|------------------|------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|---------------------------------|----------------------------------------------------|----------------------|-------------------|---------------------|
| Exposure  | animal<br>number | 5/1/01 Animal<br>weight<br>Pre exposure<br>Day 0 (g) | 5/2/01 Animal<br>weight Post<br>exposure<br>Day 1 (g) | 5/3/01 Animal<br>weight Post<br>exposure<br>Day 2 (g) | 5/7/01 Animal<br>weight Post<br>exposure<br>Day 6 (g) | 5/14/01<br>Animal<br>weight (g) | T-Test<br>p-value<br>Predose<br>vs day 6 BW<br>(1) | Liver weights<br>(g) | Liver/BW<br>ratio | notes               |
| Control 1 | R01462           | 374                                                  | 372                                                   | 369.1                                                 | 376                                                   | 391                             | 0.04                                               | 14.1                 | 0.036             |                     |
| Control 2 | R01463           | 368                                                  | 364.5                                                 | 360.1                                                 | 373                                                   | 386                             |                                                    | 13.1                 | 0.034             |                     |
| Control 3 | R01464           | 392                                                  | 376                                                   | 386                                                   | 401                                                   | 422                             |                                                    | 15                   | 0.036             | (overnight<br>fast) |
| avg       |                  | 378                                                  | 371                                                   | 372                                                   | 383                                                   | 400                             |                                                    | 14.1                 | 0.035             |                     |
| SD        |                  | 12                                                   | 6                                                     | 13                                                    | 15                                                    | 20                              |                                                    | 1                    | 0.001             |                     |

(1) p-value for a 2-tailed Student's T-test, assuming equal variance. Predose vs. day 6 body weight. Statistically significant if  $P < 0.05$ .

**Table 2: POSF Limit Dose Group Liver Weights**

| Exposure POSF (ppm) | animal number | 5/1/01 Animal weight Pre exposure Day 0 (g) | 5/2/01 Animal weight Post exposure Day 1 (g) | 5/3/01 Animal weight Post exposure Day 2 (g) | 5/7/01 Animal weight Post exposure Day 6 (g) | 5/14/01 Animal weight (g) | T-Test p-value Preexpo vs day 6 BW (1) | Liver weights (g) 5/14/01 Necropsy | Liver/BW ratio |
|---------------------|---------------|---------------------------------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|---------------------------|----------------------------------------|------------------------------------|----------------|
| 1000                | R01465        | 374                                         | 372                                          | 370.7                                        | 379                                          | 390                       | 0.01                                   | 12.8                               | 0.033          |
| 1000                | R01466        | 364                                         | 355                                          | 360.7                                        | 368                                          | 383                       |                                        | 13.6                               | 0.036          |
| 1000                | R01467        | 416                                         | 392.6                                        | 409.8                                        | 429                                          | 440                       |                                        | 16.1                               | 0.037          |
| avg                 |               | 385                                         | 373                                          | 380                                          | 392                                          | 404                       |                                        | 14.2                               | 0.035          |
| SD                  |               | 28                                          | 19                                           | 26                                           | 33                                           | 31                        |                                        | 2                                  | 0.002          |
| P-value (2)         |               | 0.72                                        | 0.85                                         | 0.63                                         | 0.70                                         | 0.84                      |                                        | 0.93                               | 0.880          |

(1) p-value for a 2-tailed Students' T-test, assuming equal variance. Predose vs. body weight on day 6. Statistically significant if  $p < 0.05$

(2) p-value comparing control vs. treated group body weights. Statistically significant if  $p < 0.05$

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| Table 3: Limit Group PFOS in Urine                                                                                                                                                                      |                            |                                      |      |                 |                            |                                |                                |                                                           |                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------|------|-----------------|----------------------------|--------------------------------|--------------------------------|-----------------------------------------------------------|---------------------|
| Samples                                                                                                                                                                                                 | Area under the curve (AUC) | Concentration of PFOS in urine (ppb) |      | Dilution factor | Undiluted urine PFOS (ppm) | Collected Volume of Urine (ml) | Amount Average Total PFOS (ug) | Amount of PFOS in Overnight Urine Average Total PFOS (mg) | % PFOS in urine (3) |
| MeOH Solvent Blank                                                                                                                                                                                      | 8888                       | -94                                  |      |                 |                            |                                |                                |                                                           |                     |
| RO1645 d1PD                                                                                                                                                                                             | 1154557                    | 1936                                 | 1.94 | 2               | 3.88                       |                                |                                |                                                           |                     |
| RO1645 d1PD                                                                                                                                                                                             | 949883                     | 1573                                 | 1.57 | 2               | 3.14                       |                                |                                |                                                           |                     |
| avg                                                                                                                                                                                                     | 1052220                    | 1755                                 | 2    |                 | 3.51                       | 10                             | 35.1                           | 0.04                                                      | 0.06                |
| SD                                                                                                                                                                                                      | 144726                     | 256                                  | 0.26 |                 | 0.52                       |                                |                                |                                                           |                     |
| RO1646 d1PD                                                                                                                                                                                             | 394606                     | 590                                  | 0.59 | 2               | 1.18                       |                                |                                |                                                           |                     |
| RO1646 d1PD                                                                                                                                                                                             | 460644                     | 707                                  | 0.71 | 2               | 1.42                       |                                |                                |                                                           |                     |
| avg                                                                                                                                                                                                     | 427625                     | 648                                  | 1    |                 | 1.3                        | 17                             | 22.1                           | 0.02                                                      | 0.04                |
| SD                                                                                                                                                                                                      | 46696                      | 83                                   | 0.08 |                 | 0.17                       |                                |                                |                                                           |                     |
| RO1647 d1PD                                                                                                                                                                                             | 1384246                    | 2343                                 | 2.34 | 2               | 4.68                       |                                |                                |                                                           |                     |
| RO1647 d1PD                                                                                                                                                                                             | 1238595                    | 2085                                 | 2.08 | 2               | 4.16                       |                                |                                |                                                           |                     |
| avg                                                                                                                                                                                                     | 1311420.5                  | 2214                                 | 2    |                 | 4.42                       | 18                             | 79.56                          | 0.08                                                      | 0.14                |
| SD                                                                                                                                                                                                      | 102991                     | 182                                  | 0.18 |                 | 0.37                       |                                |                                |                                                           |                     |
| Overall AVG                                                                                                                                                                                             |                            |                                      |      |                 | 3.08                       |                                |                                | 0.05                                                      | 0.08                |
| Overall SD                                                                                                                                                                                              |                            |                                      |      |                 | 1.60                       |                                |                                | 0.03                                                      | 0.05                |
| (1) Standard curve equation where Y= area under the curve (AUC) in units of relative abundance multiplied by time (minutes) , and X = ppb of PFOS in urine. $X = (Y-61687)/564.53$                      |                            |                                      |      |                 |                            |                                |                                |                                                           |                     |
| (2) Mean + SD of PFOS in urine are shown for N=3, where each of the 3 values are the mean of duplicate determinations.                                                                                  |                            |                                      |      |                 |                            |                                |                                |                                                           |                     |
| (3) Inhaled Dose of POSF: $(2.0 \text{ ml/breath}) \times (120 \text{ breaths/min}) \times (1 \text{ mg POSF/ L of air}) \times (240 \text{ min}) / ((\text{Body weight day 0 (g)})/(1000\text{g/Kg}))$ |                            |                                      |      |                 |                            |                                |                                |                                                           |                     |

**Table 4: Extracted Urine Combined Standard Curve for PFOS**

| Sample                     | POSF AUC (MI) |
|----------------------------|---------------|
| MeOH Solvent Blank         | 11952         |
| Milli Q water              | 36312         |
| Control urine Matrix blank | 35330         |
| MS 4 ppb                   | 32394         |
| MS 8 ppb                   | 53129         |
| MS 20 ppb                  | 56366         |
| MS 40 ppb                  | 77325         |
| MS 80 ppb                  | 119932        |
| MS 202 ppb                 | 147773        |
| MS 404 ppb                 | 220143        |
| MS 808 ppb                 | 442924        |
| Control urine Matrix blank | 45441         |
| MS 4 ppb                   | 71331         |
| MS 8 ppb                   | 54846         |
| MS 20 ppb                  | 70255         |
| MS 40 ppb                  | 63918         |
| MS 80 ppb                  | 197266        |
| MS 202 ppb                 | 304118        |
| MS 404 ppb                 | 293452        |
| MS 808 ppb                 | 592511        |

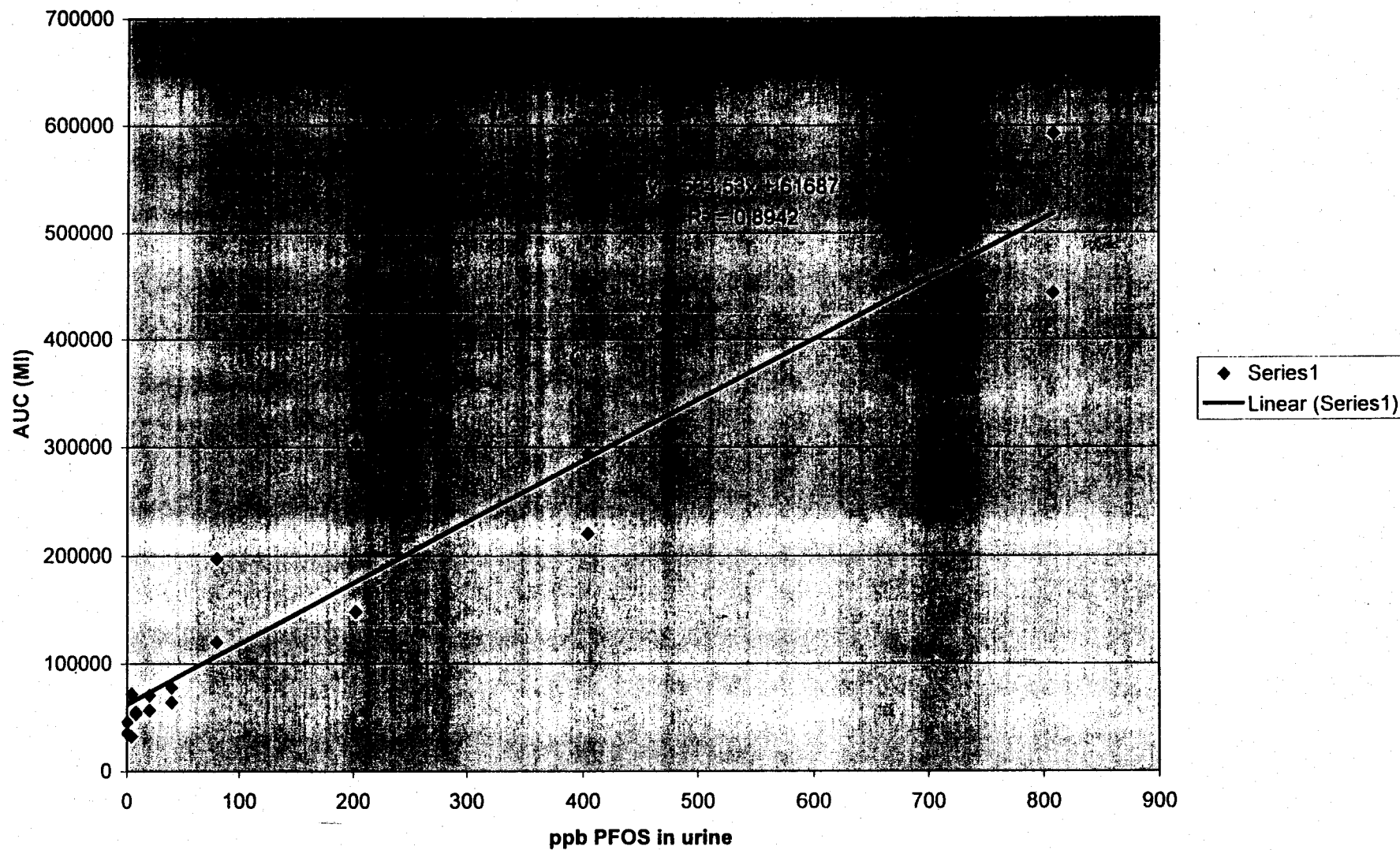
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Table 5: POSF Limit Dose Group Serum PFOS Data

| Dose (ppm)    | Animal # | Predose Body weight Day 0 (g) | Inhaled Dose POSF(1) (mg/kg) | Body weight day 1 post dose (g) | Body weight day 2 post dose (g) | B.W. day 5 post dose (g) | Body weight day 13 post dose (at necropsy) (g) | Serum volume (2) (ml) | serum ppm (PFOS) (3) (ug/ml) | Amount of PFOS in serum (4) (mg) | Available POSF in inhaled air (5) (mg) | % of inhaled POSF in serum as PFOS at necropsy serum) |
|---------------|----------|-------------------------------|------------------------------|---------------------------------|---------------------------------|--------------------------|------------------------------------------------|-----------------------|------------------------------|----------------------------------|----------------------------------------|-------------------------------------------------------|
| 1000 ppm POSF | R01645   | 374                           | 154.01                       | 372                             | 370.7                           | 379                      | 390                                            | 12.02                 | 5.1                          | 0.061                            | 57.60                                  | 0.11                                                  |
| 1000 ppm POSF | R01646   | 364                           | 158.24                       | 355                             | 360.7                           | 368                      | 383                                            | 12.37                 | 4.8                          | 0.059                            | 57.60                                  | 0.10                                                  |
| 1000 ppm POSF | R01647   | 416                           | 138.46                       | 392.6                           | 409.8                           | 429                      | 440                                            | 14.21                 | 3.8                          | 0.054                            | 57.60                                  | 0.09                                                  |
| Avg           |          | 385                           | 150.24                       | 373                             | 380                             | 392                      | 411.5                                          | 12.87                 | 4.57                         | 0.058                            | 57.60                                  | 0.10                                                  |
| STD           |          | 28                            | 10.42                        | 19                              | 26                              | 32.5                     | 40                                             | 1.18                  | 0.7                          | 0.004                            | 0.00                                   | 0.01                                                  |

(1) Inhaled Dose of POSF: (2.0 ml/breath) x (120 breaths/min) x (1 mg POSF/ 1000ml air) x (240 min)/[( Body weight day 0 (g)/(1000g/Kg)]  
(2) Given: (32.3 mls serum)/(kg of body weight). Serum volume =(BW day 13 (g)/1000g/Kg) x 32.3 ml/Kg  
(3) Serum ppm: Analytical work done by Dave Ehresman PFOS in serum measured by HPLC/MS (see appendix 2).  
(4) PFOS in serum (mg): [(Serum volume ml )(Serum PFOS ug/ml)] /1000 ug/mg  
(5) POSF in inhaled air (mg): (2.0 ml/breath) x (120 breaths/min) x (1 mg/ 1000ml) x (240 min) = 57.6 mg POSF in inhaled air  
(6) % inhaled POSF in serum: [PFOS in serum (mg)/POSF in inhaled air (mg)]\*100

Figure 1: extracted urine combined standard curve for PFOS



**Appendix 1**

**Histopathology Results**

Necropsy 5/3/01

All rats lungs have generalized mild to moderate congestion of alveoli with occasional extravasation of blood around arterioles and bronchioles. This is possibly an agonal change associated with CO2 euthanasia. Some lungs were not well insufflated.

Animal #

Control RO1462:

No significant changes in lung and bladder.

Toxicokinetic RO1468:

No significant changes in lung and bladder.

Toxicokinetic RO1471:

One macroscopic focus of atelectasis (collapsed alveoli) is present in one lung lobe. The change was chronic in duration. No significant change is present in bladder.

Toxicokinetic RO1472:

No significant changes in lung and bladder

**Appendix 2**  
**Serum PFOS**

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cc: John L. Butenhoff/US-Corporate/3M/US@3M-Corporate  
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Sue Tanaka/US-Corporate/3M/US@3M-Corporate  
Kathy Thompson/US-Corporate/3M/US  
Deanna J. Luebker/US-Corporate/3M/US@3M-Corporate  
Subject: PFOS Levels from rats exposed to POSF via inhalation T-7098.3

Andrew and Tommie:

The 1 to 100 estimate for the serum levels of PFOS was right on target. The following results are based on the rat serum being diluted 1:100 prior to extraction. The extraction was carried out at pH 3.0 using a single shake out in Ethyl Acetate. The EA was transferred to a clean polypropylene tube and blown to dryness using nitrogen gas. The resultant residue was re-dissolved in 100 uL of 25% acetonitrile and 75% 10 mM ammonium acetate. Of this solution 20 uL were injected onto a Betasil C18 reversed phase HPLC column (50 x 2 mm, 5 micron particle size). The flow rate was maintained at 0.5 ml/min. A gradient flow of acetonitrile was used to elute the compounds of interest starting with 15% acetonitrile and ending with 65% acetonitrile over 5.5 minutes. Return to initial operational parameters and column equilibration requires an additional 2.5 minutes for a run time cycle of 8.0 minutes per run.

The MS was operated in the Electro Spray negative ionization mode with a constant 3.0 kV potential applied to the source. The method used was an MS/MS method involving the transition of the following ions:

| Compound                 | Base Peak | MS/MS Ion |
|--------------------------|-----------|-----------|
| Q-2 Offset Voltage       |           |           |
| Internal Standard (PFHS) | 299 amu   | 80 amu    |
| 60 volts                 |           |           |
| PFOS                     | 499 amu   | 80 amu    |
| 60 volts                 |           |           |

The capillary heater was held at a constant 300 degrees C. All quantitative calculations were based on the MS/MS ion ratios between the compound of interest (PFOS) and the internal standard (PFHS). The standard curve ranged from 5 ng/mL (ppb) to 250 ng/mL (ppb). A quadratic curve fit was used with the standard value weighted 1/X. This curve fit produced an R squared value of 0.9935.

The first tube of two available for control animal number 1R01464 was diluted and run with the initial extractions. This tube (1:100 dilution) had a PFOS level of 2.3 ppm. Repeat of this tube dilution produced comparable results (2.1 ppm). The second tube labeled 1R01464 was diluted 1:100 and extracted. The second tube on this control animal had a result of less than the lowest standard (5.0 ppb on the diluted serum).

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Only one serum tube was available for animal 1R01465, unfortunately this tube was labeled 1R0465 with the correct date and T # recorded. I diluted and extracted this tube and recorded results under the animal number 1R01465.

The sample for 1R01468 was noted as hemolyzed (2+ hemolysis). The initial result of 1R01472 appeared to be significantly lower than 1R01468 and 1R01471. This sample was also re-extracted and the analysis repeated. No significant difference was noted on re-extraction.

**Results:**

| Rat #   | Control | PFOS Level                     |
|---------|---------|--------------------------------|
| 1R01462 | yes     | < 5.0 ppb (on diluted serum)   |
| 1R01463 | yes     | <5.0 "                         |
| 1R01464 | yes     | <5.0 "                         |
| 1R01465 | no      | 5.1 ppm                        |
| 1R01466 | no      | 4.8 ppm                        |
| 1R01467 | no      | 3.8 ppm                        |
| 1R01468 | no      | 8.6 ppm                        |
| 1R01471 | no      | 9.3 ppm                        |
| 1R01472 | no      | 5.0 ppm (5.1 ppm on duplicate) |

dje

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Druckat 1

PFHS

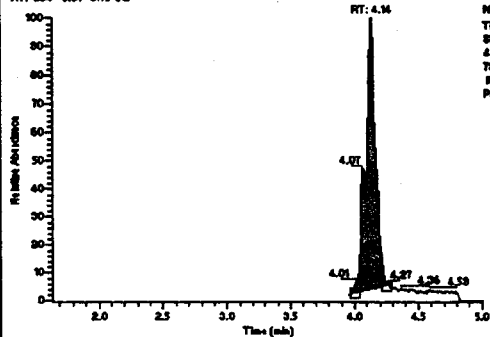
|              |               |        |        |         |         |       |               |   |       |      |
|--------------|---------------|--------|--------|---------|---------|-------|---------------|---|-------|------|
| Pfos_AS_J803 | 5 ng/mL Std   | 34923  | 313701 | 5.000   | 4.895   | -2.07 | Response Low  | 1 | ng/mL | 4.18 |
| Pfos_AS_J804 | 10 ng/mL Std  | 36058  | 222760 | 10.000  | 14.669  | 46.69 | Excluded      | 2 | ng/mL | 4.14 |
| Pfos_AS_J805 | 25 ng/mL Std  | 76487  | 368159 | 25.000  | 23.748  | -5.01 |               | 3 | ng/mL | 4.15 |
| Pfos_AS_J806 | 50 ng/mL Std  | 95190  | 231311 | 50.000  | 57.291  | 14.58 |               | 4 | ng/mL | 4.22 |
| Pfos_AS_J807 | 100 ng/mL Std | 181310 | 350304 | 100.000 | 91.527  | -8.47 |               | 5 | ng/mL | 4.20 |
| Pfos_AS_J808 | 250 ng/mL Std | 424390 | 414210 | 250.000 | 253.642 | 1.46  | Response High | 6 | ng/mL | 4.12 |

Standards

Pfos\_AS\_J804 (Method Settings)

01/11/01 09:00:00 PM

RT: 184 - 5.01 S/N: 30



PFOS

$$Y = 0.08555 + 0.005295X - 6.27986 \times 10^{-6}X^2 \quad R^2 = 0.9935 \quad W: 1X$$

