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New Data

- **Completion of two generation reproductive studies for perfluorooctane sulfonate and EtFOSE, and cross-fostering follow up to perfluorooctane sulfonate study**
- **Pharmacokinetics during pregnancy studies**
- **Second species (rabbit) teratology study**
- **Completion of 180 day repeat dose study in primates with one year recovery**

3M Medical Department

March 7, 2000

Pending

- **Two-year feeding studies**
 - **EtFOSE - In-life done 4/2000**
 - **Perfluorooctane sulfonate - In-life done 4/2000**
- **6 month and one year recovery after 180 day feeding study in primates**
- **ADME study in primates**

Pending

- **Human sera studies**
- **Health claims study**
- **Update mortality study**
- **Mechanistic and metabolic studies**

Results - Reproduction/Cross-Fostering Studies

- **0.4 mg/kg/d of perfluorooctane sulfonate is NOEL for reproductive endpoints**
- **Perinatal mortality is predominantly a pup effect rather than a maternal effect**
- **Effect on cholesterol metabolism is hypothesized mechanism - studies planned to test hypothesis**

Results - Primate Repeat

Dose Study

- **0.15 mg/kg/d well tolerated for 6 months (apparent NOEL)**
- **Cholesterol level decreased at perfluorooctane sulfonate serum concentrations greater than 100 ppm (in the high dose group)**
- **2 deaths in males at 0.75 mg/kg/d that were apparently compound related**
- **At the high dose (0.75 mg/kg/d) body weight liver weight and liver morphology were affected**

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Results - Sera Concentrations

- **Perfluorooctane sulfonate serum concentrations increase linearly with dose in low and mid dose groups (16-20 ppm and 83-107 ppm)**
- **Perfluorooctane sulfonate serum concentrations followed a biphasic curve in the high dose groups, with maximum values at 250-300 ppm**

Background

- **“Organic fluorine” reported in human sera in 1968**
- **3M medical surveillance from 1976 to present**
- **Analyses for specific fluoroorganic compounds dose after 1992 - detection limit less than 50 ppb in 1997**
- **Multiple analysis from historic and contemporary sera samples (non-occupationally exposed) find perfluorooctane sulfonate at less than 50 ppb**

Background

- **Various studies, including medical surveillance, done over the last 25 years**
- **In the last two years have used outside experts to identify needs and help define studies**
- **Have created Scientific Advisory Panel for additional review**

Review - Data in Health

Effects Paper

- **ADME**
- **Metabolic precursors to perfluorooctane sulfonate**
- **Repeat dose feeding studies - rat and primate**
- **Genotoxicity**
- **Teratology**

Review - Data in Health Effects Paper (Continued)

- **Cross-sectional study of exposed employees**
- **Mortality study at production plant site**
- **Interim data from 2-generation
reproductive study**
- **Interim data from new repeat dose primate
study**

Results

The additional data does not suggest a health risk associated with the levels of perfluorooctane sulfonate found in the sera of occupationally or non-occupationally exposed employees, blood bank samples or commercially available serum.