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Subject: Screening-Level Risk Assessment for Organofluorine Substances in Philippines Well Water

At Mark and Sheryl's request, residential exposure assessment was performed on two organofluorine substances: PFOS, and PFOA. These two substances, along with their respective homologues (PFHS and PFHA) co-occur in monitoring wells at the Philippines site. PFBS is also detected in these wells.

Exposure Scenario : Residential adult .

Exposure Pathway : Drinking water.

Exposure Route : Ingestion of well water.

Recommended Exposure Factors/Assumptions for Residential Noncarcinogen Exposure:

- Intake rate (IR) = 2L/ day.
- Body weight (BW) = 70kg.
- Averaging time (AT) = 30 years x 365 day/ year.
- Exposure frequency (EF) = 350 day/ year.
- Exposure duration (ED) = 30 years.

Calculated Exposure Dose:

The exposure dose is a calculation of chronic daily intake expressed as mg chemical/kg body weight/day.

The calculation is performed using the following equation :

Exposure Dose(mg/kg/d) = (EPC) . (IR/BW) . (EF, ED/AT)

Where:

EPC is exposure point concentration in mg/L.

IR is intake rate = 2L/day.

BW is body weight = 70kg.

EF, ED and AT define exposure period.

Estimated Risks :

Noncarcinogen risk or Hazard Quotient is an estimation of risk associated with the calculated exposure dose. Hazard Quotient is the ratio of calculated exposure dose over the acceptable daily exposure dose. Chemical-specific acceptable daily exposure or "threshold exposure" is termed the Reference Dose or RfD, and is expressed in mg chemical/Kg body weight/day.

HQ = Calculated Exposure Dose/ RfD

Where:

HQ is Hazard Quotient.

Oral RfD value for PFOS = 0.00015 mg/Kg/d

Oral RfD value for PFOA = 0.0003 mg/Kg/d

The following table shows the noncarcinogen risk estimates for ingestion of well water with PFOS and PFOA occurring. The reported duplicate analytical values were averaged to derive a single value for each monitoring well.

**Exhibit
1731**

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

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1731.0001