

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

December 20, 1994

TO: Octadecyl dimethyl (3-(trimethoxysilyl) propyl) ammonium chloride file
(CAS # 27668-52-6)

FROM: Gary Butterfield

SUBJECT: ITSL for Octadecyl dimethyl (3-(trimethoxysilyl) propyl) ammonium chloride

There is no EPA RfC or RfD for octadecyl dimethyl (3-(trimethoxysilyl) propyl) ammonium chloride. There is no occupational exposure level set by ACGIH, OSHA or NIOSH for this material. A Nov. 21, 1994 CAS and NLM search located only one study usable for calculation of the screening level (Siddiqui and York 1993). This one study was an oral exposure developmental toxicity study in Sprague-Dawley rats. The test material was identified by the manufacturer's name of quaternary silsesquioxane. There were no observed teratogenic or developmental effects at any of the doses tested, 0, 100, 300 or 1000 mg/kg. At the highest dose tested there was maternal toxicity observed - significantly increased relative liver weights. The next lower dose, 300 mg/kg, was identified by the authors as the NOAEL.

The ITSL can be calculated from NOAEL and the equation in R 232 (1) (e) as follows.

$$\frac{300 \frac{mg}{kg}}{20 \times 100} \times \frac{kg}{0.9 m^3} = 170 \frac{\mu g}{m^3} \text{ annual average}$$

The 35 fold factor in the equation from R232(1) (e) was reduced to 20 in this calculation to account for the study being longer than the 7 exposure days as described in R 232 (1) (e). The default rat inhalation rate of 0.9 m³/kg was used.

The ITSL is being established as 170 µg/m³ with an annual average.

References:

Siddiqui and York. 1993. Quaternary silsesquioxane: a developmental toxicity study in rats. Fund Appl Toxicol 21:66-70.