Subject: TPTH -Revised Q_1^*, (3/4's Interspecies Scaling Factor),
Female Wistar Rat Study

Caswell No.896E

From: Bernice Fisher, Biostatistician
                        and
         Hugh Pettigrew, Section Head
         Statistics Section
         Science Analysis Branch/HED (7509C)

To: Michael S. Metzger, Acting Chief
         Risk Characterization & Analysis Branch/HED (7509C)

Thru: William L. Burman, Chief,
         Science Analysis Branch/HED (7509C)

         The revised unit risk, Q_1^*(mg/kg/day)$^{-1}$ of Triphenyltin
Hydroxide (TPTH), based upon fatal pituitary gland adenoma tumor
rates is 1.83×10^0 in human equivalents (converted from animals to
humans by use of the 3/4's scaling factor-1994,Tox_Risk,3.5-
K.Crump)[a]. The dose levels used in the rat study were 0, 5, 20
and 80 ppm of TPTH. The corresponding tumor rates in female rats
14/19, 20/29, 33/38 and 43/46. The memorandum, TPTH -
Qualitative Risk Assessment , Dietary Studies in Mice and Rats,
B.Fisher, 11/28/89 contained the underlying data and statistical
evaluation that was used for the above revision of the unit risk
of TPTH.

[a] See Memo - Deriving Q_1's Using the Unified Interspecies Scaling
    Factors, P.A. Fenner-Crisp, Director-HED, 7/1/94.

192

cc: Caswell file   K.Baetcke
    B.Doyle   M.Copley
    C.L.Schltema   J.Doherty
    P.Lewis

Dose-Response Analysis

The estimate of unit risk, Q_1^*, was based upon fatal pituitary gland adenoma tumor rates in female rats.

Since the female rats had significant differential mortality with incremental doses of TPTH, the estimates of unit risk, Q_1^* were obtained by the application of the Multi-Stage Weib model (Tox_Risk program, version 3.5 - K.Crump).

The resulting estimate of unit risk, Q_1^*, is as follows:

Species,Strain,Sex	Tumor	Q_1^* (mg/kg/day)$^{-1}$ in Human Equivalents
Rat,Wistar,Female	Pituitary Adenoma (fatal)	1.83×10^0

For the conversion to human equivalents, weights of .035 kg for the rats, 70 kg for humans and the 3/4's scaling factor were used.

It is to be noted that Q_1^* (mg/kg/day)$^{-1}$ is an estimate of the upper bound on risk and that (as stated in the EPA Risk Assessment Guidelines) "the true value of the risk is unknown, and may be as low as zero."

242