

### DERIVATION OF PROBABILISTIC DISTRIBUTIONS FOR THE W.H.O. MAMMALIAN TOXIC EQUIVALENCY FACTORS

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#### Introduction

The World Health Organization (W.H.O) recently developed revised mammalian toxic equivalency factors (TEFs) for the 2,3,7,8-substituted dioxins and furans and the coplanar PCB congeners. As shown in Figures 1-3, the ranges of the relative estimates of potency (REPs) for most congeners span several orders of magnitude (usually 2-4 fold), which raises some concerns regarding the representativeness of the "point estimate" TEFs. More importantly, there appear to be significant inconsistencies in the degree of conservatism in the various TEFs. For example, some TEFs exceed the maximum value in the REP range (e.g., 1,2,3,7,8,9-HxCDD), while some TEFs are below the minimum REP value (e.g., 1,2,3,4,7,8,9-HpCDF). Also, it appears that the PCB TEFs are typically more representative of central tendencies while the PCDD/F TEFs are more representative of upper-bound values. The use of distributions to represent the TEFs, rather than point estimates, should minimize these inconsistencies and uncertainties. In this preliminary analysis, we derive TEF distributions that we believe would be suitable for use in probabilistic risk assessments.

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