Abstract 144 — Poster Presentation: Session II-4 "Risk Assessment"

Use of the Zebrafish Developmental Screen and Estimation of Internal Concentration to Assess Toxicity

J Hamm[1], N Kleinstreuer[1], W Casey[2], D Allen*[1], S Padilla[3]

[1]ILS/NICEATM, RTP, NC, USA; [2]NIH/NIEHS/DNTP/NICEATM, RTP, NC, USA; [3]EPA/ORD/NHEERL, RTP, NC, USA

**Presenting author*

Abstract

Environmental chemicals from the ToxCast™ Phase I chemical library were screened to assess developmental toxicity endpoints. Zebrafish embryos were immersed in media containing one of 309 chemicals tested, at concentrations ranging from 0.001 to 80 μM. The half-maximal activity concentration (AC_{50}) for toxicity (lethality, non-hatching, or dysmorphology) was determined. The relationship between lipophilicity (LogP) and bioconcentration was used to estimate a body burden associated with developmental toxicity (EC_{50}). Toxicity potency rankings derived from AC_{50} and EC_{50} calculations were compared. Some chemicals were highly toxic regardless of how toxicity was expressed while use of EC_{50} values substantially affected the toxicity ranking of others. The pyrethroids (n=12) were among the most toxic chemicals with a mean AC_{50} of 4.01 μM. However, due to their high lipophilicity, the mean EC_{50} for the class was estimated at 843.25 μM. The ability of the zebrafish developmental screen to predict mammalian toxicity was assessed by examining the correlation between chemical potencies based on EC_{50}, chemical class, and known *in vivo* effects. *This abstract does not necessarily reflect EPA policy.* This project was funded in whole or in part with Federal funds from the NIEHS, NIH under Contract Nos. N01-ES-35504 and HHSN27320140003C.