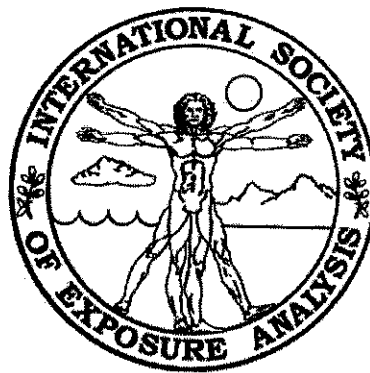


ISEA 2005

15<sup>th</sup> Annual Conference of the  
International Society of Exposure Analysis



*Diversity of Exposure Analysis and the Southwest*

October 30th – November 3rd, 2005

Westin La Paloma Resort  
Tucson, Arizona, USA

ABSTRACT BOOK

**Poster Mp Exposure Modeling****Abstract M-10p****Development of Exposure Assessment Models for Indoor Air Exposure to Elemental Mercury**

**Kenneth M Unice,**  
Julie M Panko, Paul K. Scott  
*ChemRisk, Inc.*

Recently, investigators completing a survey of randomly selected New York City homes found that indoor levels of elemental mercury were an order of magnitude higher than outdoor levels in 6 of 9 homes surveyed. Also, despite efforts to reduce the use of elemental mercury in homes and schools, news reports of accidental and intentional indoor releases of elemental mercury continue to persist. Most of the recent research on mercury has emphasized exposure to environmental food-chain sources which contain organic mercury originating from incinerator or fossil fuel combustion products. However, for some children or prospective mothers, a past indoor elemental mercury spill may be an appreciable source of mercury exposure relative to other food-chain or environmental exposures. The indoor air models described here provide a methodology that can be used to estimate historical exposure to elemental mercury based on details of the spill including the amount and dispersiveness of mercury spilled, disturbance of the spilled mercury and human activity patterns including proximity of the breathing zone to the spill. The results of these models compare favorably with measured data from published accounts of indoor mercury spills. The models presented illustrate many of the considerations necessary in reconstructing long term exposure to an indoor air pollutant including: assessing the indoor air exchange rate, accounting for decreasing evaporation rates due to material aging or surface contamination, accounting for near-field exposures, determining evaporation rates based on theory, empirical equations or measured data and accounting for the effect of temperature and indoor air currents on evaporation rate.