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1170 QUANTITATIVE UNCERTAINTY ANALYSIS OF AB 2588 DEFAULT EXPOSURE PARAMETERS KM Connor, TL Copeland, AM Holbrow, DJ Paustenbach. ChemRisk, a Division of McLaren/Hart, Irvine, CA.

This paper presents a case study that employs a probabilistic approach for the risk assessment of particulate emissions regulated under the Air Toxics "Hot Spots" Act (AB 2588). Similar to other regulatory guidelines, AB 2588 guidelines require the use of upperbound, often the 95th percentile, values associated with each parameter. Repetitive use of upperbound values in the exposure equations can lead to a serious overestimate of the true risk, even for the maximally exposed individual. Recognizing the conservatism in the guidelines, AB 2588 guidelines allow risk assessors to conduct quantitative uncertainty analyses. A well accepted uncertainty model is the Monte Carlo statistical simulation, a model in which parameter distributions are varied simultaneously to estimate a range of exposures, or risk, by repeatedly solving the exposure equations. For the purposes of this study, a Monte Carlo analysis was conducted using site-specific emissions data from one of many facilities for which we have conducted an AB 2588 health risk assessment. The static AB 2588 results were contrasted with the results using the probabilistic methodology. The results of the analysis indicated that the use of the default AB 2588 exposure parameters resulted in a risk which was far greater than the 95th percentile calculated using the Monte Carlo simulation.

1171 INFLUENCE OF VENTILATORY PARAMETERS AND RESPIRATORY SURFACE AREA IN DOSIMETRIC MODELS FOR RISK ASSESSMENT. M G Menache^a, R R Mercer^a, J S Tepper^b, L M Hanna^c, E A Gross^d, and A M Jarabek^e. ^aDuke University Medical Center, Durham, NC, ^bManTech, Inc., RTP, NC, ^cJohns Hopkins University, Baltimore, MD, ^dChemical Industry Institute of Toxicology, RTP, NC, ^eU.S. Environmental Protection Agency, RTP, NC.

The predicted dose of an inhaled pollutant delivered to specific regions (nasal, airways and pulmonary) of the respiratory tract is needed to extrapolate toxicity data from laboratory animals to humans. A dosimetry model for calculating regional deposited doses (RDD) for particles has used the following equation:

$$RDD = \frac{10^{-6} \times C \times \dot{V}_E}{A_g} \times \sum_{i=1}^n P_i \times E_i.$$

where C=the exposure level, VE=minute volume, AS=regional surface area, Pi=the mass fraction of aerosol in the ith size range for a particle distributed log-normally and Ei=the deposition efficiency for that particle. This equation incorporates the differing regional deposition patterns of a polydisperse particle, but assumes that total VE equals regional VE and that changes in VE and AS are mostly multiplicative. Since published data on AS and VE can vary by more than 2-fold, calculated RDD may vary widely depending on what values are used. To improve the usefulness of this model, VE data were critically examined for the rat and new estimates of AS representative of normal breathing calculated.

1172 COMPARISON OF THE NO-OBSERVED-ADVERSE-EFFECT-LEVEL (NOAEL) AND THE LOWEST-OBSERVED-ADVERSE-EFFECT-LEVEL (LOAEL) WITH THE 10% EFFECTIVE CONCENTRATION LEVEL (EC10) IN INHALATION STUDIES OF AIR TOXICS. C Shoaf¹, C Spencer², and D Duke³. ¹Environmental Criteria and Assessment Office/RTP, ²Health Effects Research Laboratory, ³ManTech Environmental Technology Inc., RTP, N.C.

Use of concentration-response relationships in risk assessment includes application of multiple concentrations for benchmark analyses or single NOAELs or LOAELs for inhalation reference concentration (RFC) derivation. The benchmark methodology defines the threshold region of the concentration-response curve and may also permit more extensive calculation of risks (e.g. risk above the RFC). This study looked at chemicals with sufficient data to derive a total of 15 concentration-response relationships suitable to determine maximum likelihood estimates (MLE) and 95% confidence lower bounds (LB95%) of the EC10. The LOAEL was greater than the MLE and the LB95% in all cases, but the LOAEL was never more than 10-fold greater than the LB95%. The available NOAEL was always less than the MLE and less than or equal to the LB95% in all cases. Results indicate that the NOAEL and LOAEL are generally conservative concentrations from which to estimate threshold effect levels. (This abstract of a proposed presentation does not necessarily reflect EPA policy.)

1173 A COMPARATIVE REVIEW OF THE METABOLISM AND TOXICITY OF METAM SODIUM AND METHYLISOTHIOCYANATE. L Jowa¹, J A Wisniewski¹, and M J DiBartolomeis². Office of Environmental Health Hazard Assessment, Cal-EPA, ¹Sacramento and ²Berkeley, CA.

As a result of the spill of metam sodium into the Upper Sacramento River in California, a review was performed of the metabolism and toxicity of metam sodium and its principal breakdown product, methylisothiocyanate (MITC). It was found that approximately 75% of metam sodium is converted to MITC *in vivo*, and the remainder to carbon disulfide. The conversion of metam sodium primarily to MITC may explain why both compounds produce similar toxic effects. For example, both compounds are strong irritants to the digestive and respiratory tracts and to the skin, and both appear to be sensitizers. Neither metam sodium nor MITC have been proven to be carcinogenic or mutagenic; however, chromosomal damage has been reported for both compounds. There are some differences in the toxicity profiles of these two chemicals. For example, in reproductive and developmental studies, metam sodium has been demonstrated to be a developmental toxicant, whereas the evidence is insufficient to classify MITC as a developmental toxicant. Metam sodium also appears to be more toxic to red blood cells than MITC. Carbon disulfide and other products may contribute to the toxicity of metam sodium; however, it is also likely that MITC has not been evaluated at doses comparable to those that produce the toxicities seen with metam sodium.