458 RISK SCREENING WITH DATA FROM THE TOXIC CHEMICAL RELEASE INVENTORY. J Darr, N Chiu, A Battin. Office of Toxic Substances/US EPA, Washington, DC Sponsor: G M Wang.

The Office of Toxic Substances (OTS) developed an innovative approach for rapid quantitative risk screening of Toxic Chemical Release Inventory (TRI) chemicals. Sophisticated exposure models were used to estimate ambient air and drinking water exposure levels resulting from environmental releases reported under §313 of the Emergency Planning and Community Right-To-Know Act. Using EPA-derived cancer potency factors and US Census data, individual lifetime risks and total population risks were estimated. Results indicated potentially significant cancer risks for several chemicals, including acrylonitrile, 1,2-dichloroethane, hydrazine, and 2-nitropropane. These chemicals are currently undergoing more detailed assessment in OTS. Risks from other toxicologic endpoints were evaluated by comparing projected exposures to EPA Reference Doses or by Margin-of-Exposure calculations that compared exposure levels to NOELs or LOELs from reliable toxicologic studies. Testing needs were identified for chemicals that lack adequate data.

459 A TIME-TO-TUMOR APPROACH TO 1,3-BUTADIENE RISK ASSESSMENT. D A Dankovic, R J Smith, A J Bailer, and L T Stayner. National Institute for Occupational Safety and Health, Cincinnati, OH.

Previous risk assessments of 1,3-butadiene have been based on studies using 625 and 1250 ppm exposures for mice, and 1000 and 8000 ppm exposures for rats. We have re-assessed the low-dose carcinogenicity of BD, based on a new study in B6C3F$_1$ mice using exposures of 6.25 to 625 ppm BD. Maximum likelihood estimates of excess risk based on tumors observed at 6 sites in male mice, and 8 sites in females, were calculated using a multistage Weibull time-to-tumor model, with chamber concentration as "dose." Mouse to human extrapolation was based on (body weight)$^{3/4}$, equating a human age of 74 years to an age of 900 days in mice. Lifetime occupational exposure to 2 ppm BD was estimated to result in an excess cancer risk of 6.0%, based on lung tumors in female mice (the most sensitive site). A risk estimate of 1.1% was derived from lymphomas in male mice, which are of interest due to the epidemiological association of BD with hematopoietic tumors. Discrepancies between these estimates and prior risk estimates for BD are partially attributable to the use of external exposure concentration, rather than an "internal" measure of dose, and to the use of allometric scaling relationships for interspecies extrapolation, as well as to the availability of the new data. The results support the previous NIOSH recommendation that occupational exposures to 1,3-butadiene should be reduced to the lowest feasible level.

460 RISK ASSESSMENT TO SUPPORT CERCLA DELISTING OF RESIDUES FROM THERMAL TREATMENT OF DIOXIN-CONTAINING MATERIALS. E J Hixson, J R Beck, and M A Robbins. Radian Corporation, Austin, TX.

Thermal treatment (incineration) is a feasible method for treatment of dioxin-containing materials. The resulting residue must be delisted to preclude its disposal as hazardous waste. This is done by demonstrating that the residue will not present an unreasonable risk to human health or the environment. Materials contaminated with dioxin present a particular challenge because the thermal treatment residue can contain some residual organic contaminants. Even small amounts of residual contaminants may appear to present a risk because of the magnitude of the EPA-derived cancer slope factors. A risk assessment was performed to support delisting of the residue from treatment of contaminated soils and other materials from a midwestern site. The materials and soils will be removed, treated, and replaced at the site. The residues were expected to contain chlorinated aromatic chemicals and polyaromatic hydrocarbons. Because the residue was to be used as fill (covered by a foot of clean soil) in an area to be used as a park, the assessment focused on indirect exposure pathways: leaching to groundwater, transport to water supply wells, and discharge to an adjacent river. Even using extremely conservative exposure assumptions, the total carcinogenic risk ranged from 2×10^{-20} to 1×10^{-16}. This was due primarily to the low mobility of the carcinogenic organic constituents.

461 NDMA CONTAMINATION OF DRINKING WATER: A COMPARISON OF RISK ASSESSMENT APPROACHES. R W Brecher, R E Haley and H C Light. Human Health Assessment Division, ELI Eco Logic International Inc., Rockwood, Ontario, Canada. Sponsor: J. Doull.

N-Nitrosodimethylamine (NDMA), a potent animal and probable human carcinogen, was detected in an Ontario municipal drinking water supply in 1989. Risk assessments by the United States Environmental Protection Agency, the State of California Department of Health Services, the Canadian Department of National Health and Welfare, Environment Ontario, and two independent consulting firms led to a range of suggested NDMA drinking water guidelines ranging from less than 1 ng/L to more than 200 ng/L. The approaches of the various organizations are compared and discussed. It is shown that the mathematical extrapolation models are not a major factor in accounting for the differences in the risk analyses. Variations between the suggested guidelines are largely due to differences in study selection, biological assumptions (dose scaling factors, inclusion of various tumour types, assumed lifetime of rat and man) and assumed exposure rates.

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