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A SYSTEMATIC REVIEW AND META-ANALYSIS OF OCCUPATIONAL EXPOSURE TO TRICHLOROETHYLENE AND CANCERS OF THE KIDNEY AND LIVER AND NON-HODGKIN LYMPHOMA

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Objectives Two advisory panels reviewing the epidemiologic evidence on cancer and trichlorethylene (TCE) recommended meta-analysis as an approach to synthesise epidemiologic data, noting individual studies had limited statistical power for relatively uncommon cancers such as kidney, liver, and non-Hodgkin lymphoma (NHL) (NRC, 2006; Ward *et al*, 2010). We have conducted analyses focusing on studies with rigorous exposure definitions to provide quantitative evaluations of the evidence for associations between TCE and these specific cancers.

Methods A systematic review of over 70 studies on TCE and cancer documented essential design features, exposure assessment approaches, statistical analyses, and potential sources of confounding and bias. Twenty-four cohort and case-control studies with high exposure potential were identified. Fixed and random effects models were fitted to the data on overall exposure and on the highest exposure group. Sensitivity analyses examined the influence of alternative risk estimate selections.

Results For overall TCE exposure and kidney cancer, the summary risk estimate (RR_m) from the fixed effect model was 1.27 (95% CI 1.13 to 1.43) with a higher RR_m for the highest exposure groups (1.58, 95% CI 1.28 to 1.96). The RR_m were not overly sensitive to alternative selections or to removal of an individual study. There was no apparent heterogeneity or publication bias. Less evidence was found for liver cancer and NHL.

Conclusions Our findings support an association between TCE exposure and kidney cancer. Disclaimer: The findings and conclusions in this abstract are those of the authors and do not necessarily represent the views of the U.S. Environmental Protection Agency.