Studies of Chemical Workers: A Revised Systematic Review and Meta-analysis

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The aim of this study was to build on and extend an earlier meta-analysis of mortality and cancer incidence within the chemical industry conducted by Greenberg et al. (2001; A meta-analysis of cohort studies describing mortality and cancer incidence among chemical workers in the United States and western Europe; *Epidemiology* 12(6), 727-740), which included references published from 1966-1997.

This study used references written in English from all countries, published from 1966-2003, and includes, where appropriate, non-peer reviewed literature as well as peer-reviewed references. Only industrial cohort studies have been considered. Systematic online literature searching and reference explosion have been used with the aim of identifying the knowledge base as completely as possible. Attention has been paid to the potential effects of publication and reporting bias. Meta-analysis methodology has been used to analyse groups of studies relating to six specific sectors of the chemical industry (and sub-sectors when appropriate/possible), and to assess disease incidence/mortality rates related to workers in these occupational groups. A database in Access has been created to enable the handling and storage of data extracted from individual references. A suite of programs in Stata has been developed to facilitate the meta-analysis of this diverse data, and to address difficulties that may arise due to the nature of the data (such as instances when there are zero observed cases of a particular outcome).

Preliminary results were presented at a workshop in Arlington, Virginia, in January 2005. These results related to six sectors of the chemical industry: Textiles, Fibers; Fabrics; Mixed Synthetic Fertilisers; Molded/Extruded Products; Crop Protection Chemicals; Synthetic Rubber and Paints; Varnishes, Lacquers. An overall executive summary for the final results and technical reports for each sector were completed and submitted to the ACC. A paper reporting the results for the rubber sector was submitted to the American Journal of Epidemiology and is under revision following review. Papers reporting results for the other sectors and guidelines for meta-analysis of occupational epidemiology studies are also being written for publication.

Start and end date: May 2003 - April 2005.

Presentation(s):

Rushton L., Jones, D.R., Warren, F.C., Fenty, J., Sutton, A.J., and Abrams, K. (2004). The challenges of systematic review and meta-analysis in occupational epidemiology: an illustration from the chemical industry. Presented at EPICOH – Reducing the Global Burden of Occupational Disease and Injury, Melbourne, Australia, October 13-16, 2004.

Rushton, L., Jones, D.R., Warren, F.C., Fenty, J., Sutton, A.J., and Abrams, K. (2004). Systematic review and meta-analysis of mortality and cancer incidence among workers in the textiles, fibers and fabrics sector of the chemical industry. Presented at EPICOH – Reducing the Global Burden of Occupational Disease and Injury, Melbourne, Australia, October 13-16, 2004.

Peer-reviewed publication(s):

Alder, N., Fenty, J, Warren, F., Sutton, A.J., Rushton, L., Jones, D.R., Abrams, K.R. Meta-analysis of mortality and cancer incidence among workers in the synthetic rubber producing industry. (Submitted to American Journal of Epidemiology).

Other publication(s): None to date.

Sponsors in addition to the LRI: None.

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