

Reviewer's report

Title: Systematic Review of Epidemiological Studies on Health Effects Associated with Management of Municipal Solid Waste

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Reviewer: Martine Vrijheid

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This article aims to give a systematic review of epidemiological studies of health effects of different activities related to the management of municipal solid wastes. It also aims to extract relative risk estimates for use in health impact assessments. Given the number of new studies in recent years, such a review would be a timely and valuable addition for this field.

Major Revisions

A major concern with the current review is that the criteria for in and exclusion of studies are not clearly justified and explained. The authors state that their focus is on municipal solid waste and that they exclude any studies dealing hazardous and toxic wastes. There are some main problems:

1) The definition of different types of waste is far from clear-cut or standardised across the world. The terms hazardous, special, toxic, industrial, commercial, etc, are variously applied in different countries and time periods to designate non-household wastes. Municipal wastes may, for example, include wastes from small businesses. The term non-special wastes is used in the UK to define any wastes not classified as "special" but these wastes may still originate from very diverse sources, including industries. Many, especially older, sites contain wastes from mixed origins. In earlier time periods definitions were even less clear and some disposal sites may have switched categories (e.g. if they used to take industrial waste they may now only take municipal waste).

2) Apart from the type of waste a landfill takes, there are many other characteristics that determine its hazard: its age and management, techniques employed to contain pollution, etc. There is at this stage no evidence that health risks would be different around hazardous or municipal sites.

3) The studies included in this review do not just include municipal/household waste sites. For example, the Nant-y-Gwyddon site in Wales accepted commercial, industrial and household waste. The site investigated by Pukkala et al contained "industrial and household" wastes. The Comba study (2003) included an "industrial" waste incinerator. Similar for Parodi 2004. The Elliott et al studies gave risk estimates for "non-special" and "special" waste sites separately but non-special can include a range of non-municipal wastes. (are the risk estimates from quoted in the abstract just for the non-special sites included by Elliott et al?).

4) The review excludes some studies without justification. For example, why is Goldberg study on cancers (1999) included but not Goldberg, 1995, on low birth weight and preterm birth? Or Boyle 2004 on Irish landfill sites? The authors say they exclude Gillbreath et al (2006) in the text, why is this study in the table?

5) For exclusion of some studies a justification is given (e.g. EUROHAZCON). Some other major studies have been excluded without mention (e.g. Geschwind et al 1992, Marshall et al 1997, Croen et al 1997).

The above points make the in- and exclusion of studies very artificial; definitions of “hazardous” are very hard to disentangle. If this review claims to be systematic there is no reason why some “industrial” sites are included (inconsistently), but major studies of “hazardous” sites excluded. This review could be improved substantially by including all studies (at least in the tables) and, if possible, evaluating evidence for a difference in risk between different types of sites. If such a difference can be found, separate risk estimates can be deduced. If not, any quantitative evaluation should be based on all available evidence. At the moment, the risk estimates presented in the abstract are deduced from just one study and poorly reflect to full body of literature.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests