

Review of: "Crude Oil Spills and Respiratory Health of Clean-up Workers: A Systematic Review of Literature"

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Potential competing interests: No potential competing interests to declare.

Review of Crude Oil Spills and Respiratory Health of Clean-up Workers: A Systematic Review of Literature. Open Access
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This is an important topic. The authors highlight the fact that such workers are potentially a very vulnerable group of workers either as first responders or dedicated clean-up workers and data may be inadequate.

The abstract clearly sets out the paper's aims, objectives, methods, results and conclusions. Some explanation of what is meant by 'independent crude oil spills' referred to in the abstract would be helpful.

The introduction is generally informative. It provides much necessary background to the study. Data on clean up workers involved in early clean-up operations is sometimes either non-existent or very limited. This includes the 1967 Torrey Canyon spill in England which the paper references, and oil spills such as the Amoco Cadiz spill in France in 1978, the Braer spill in Scotland in 1993, the Sea Empress in Wales in 1996, the 1999 Erika spill in France. The introduction would be an appropriate place to discuss these pre 2001 studies and identify if the literature in that period had nothing or little to say about the respiratory occupational risks to these clean-up workers? Some discussion on the definition of what exactly are 'oil spills' (size, persistence etc), 'clean-up workers' and 'first responders' would also be helpful at the beginning of the introduction. The 'worker' definition is referred to in section 4 (the Discussion), paragraph 3 and usefully tabulated in Table 2 but it would be helpful for the readers if it was mentioned here and in the methods section? This could be viewed as more relevant than the early and longer sections on air pollution and the human respiratory system? This would also help to make the paper clearer for the reader.

The authors have excluded reviews from their search but in the introduction, where past reviews have shed light on the issues, it might be worth briefly mentioning them along with any sources from government, industry, workers and NGOs that discuss best practice in clean-up operations? For these bodies and their guidance and regulation/ inspection/ enforcement will often determine what practices are used in the oil spills and what does and does not work in some instances.

The methods section sensibly adopts well-used systematic review and meta-analysis guidelines. However, some further information in the paper about how oil spills are defined and what exactly are 'clean up workers' and 'first responders' would be helpful in the methods section. The search terms used do not include 'first responders' or 'emergency workers' and nor do they include 'occupational health and safety'. The reason for their exclusion could usefully be explained in the

paper, perhaps because the authors considered such topics would be automatically caught with the terms they did use although the additional terms might have helped to catch additional papers beyond the 20 that finally emerged?

The time span of the review and types of studies excluded are described. Readers will assume the time span of 2001 onwards related to the lack of or poor quality studies in the earlier period? If so, some comment on this would be helpful.

As papers not in English were not included - bearing in mind significant oil spills have occurred in countries where for example French or Spanish were possibly the first languages of researchers, or Arabic and Korean where the authors also found spill study accounts— some reflection on whether this could have skewed the paper's results would be useful. Also some expansion of what exactly 'weak precision' means in the exclusion criteria would be helpful.

Something on the strengths and weaknesses of the chosen methods would also be useful to include in this section perhaps including the pitfalls of the 'narrative method' that can lead to very long papers being produced. These are very briefly mentioned towards the end of the paper The focus on just four spills may also potentially have skewed results but would have been unavoidable if these were the only cases that fitted the search criteria? Is like being compared with like in the four cases?

The results section provides detailed information on the four spills captured in the study including estimates of exposure times. This again begs the question of who were the clean up workers and first responders – most must have spent only part of their time on oil spills? What other work did they do, what other exposures in other settings did they face that might have affected respiratory function, what were the confounders and what were the contributory factors at play? How effective were masks , respirators (even protective clothing and gloves) etc in the four cases that might have affected airborne exposures directly or indirectly (with 'offgassing of contaminated PPE stored in vehicles etc?) .

Balancing the need to give sufficient detail of the studies selected and the authors' analysis of those studies against the need to be concise and not duplicating information or overloading the reader is difficult. But it may well be that the paper could have a much more condensed results section without losing the necessary detail? Using the summaries given in Table 2, and cutting much of the narrative, looks like a way that greater brevity in the text could be rapidly achieved?

The discussion section is again informative and addresses some of the important limitations which arise in such reviews and the problems of comparing studies in different settings and with different exposure indicators included. Complex factors will affect exposures and exposure estimates. The paper highlights the fact that very few studies used estimates of actual exposure to crude oil pollutants. With the long history of major oil spills dating back to at least the 1960s and the supposed expertise of the oil industry in measuring exposures. this is revealing .

The final paragraph of the discussion section does tend to drop off the end somewhat. At the beginning of the review, mention is made of the possible policy relevance of the paper and solutions for the future. These are not really addressed nor filled out in the discussion and so there is a missed opportunity here. The authors of course and rightly flag the caveat that the review is limited by methods used, outcome variables recall bias etc. Nevertheless the results generated would still seem to offer an opportunity to develop some more ideas on policy and practice.

The challenges and recommendation section, although very brief, highlights the very important point that there were few studies of the topic especially in developing countries and this should be rectified along with the need for more longitudinal studies.

The Conclusion reasonably calls for more research-driven policies but it could be argued there is already sufficient evidence available to improve clean up policies and practices globally. The integrated approach advocated by the authors perhaps begs the question why this approach has not already been better and more fully adopted already.

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