

Author's response to reviews

Title: An Examination of Cancer Epidemiology Studies Among Populations Living Close to Toxic Waste Sites

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Author's response to reviews:

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Dear Sir or Madam:

We appreciate the opportunity to respond to the thoughtful input of our peer reviewers.

Dr. Carpenter suggested two discretionary revisions. We did review the EHP article addressing International Joint Commission Areas of Concern around the Great Lakes, but made the decision not to include it because it addressed water pollution from a variety of sources, rather than from a distinct toxic waste site. We also decided not to include Gilbertson and Brophy's compelling article addressing morbidity and mortality in the Windsor, Ontario, area due to its consideration of pollution from a number of sources (automobile manufacture and use, transboundary air, and water pollution from Detroit). We agree with Dr. Carpenter that increased emphasis should be placed on socioeconomic status and the likelihood that populations living in the immediate vicinity of a toxic waste site are likely to be of lower socioeconomic status. We added language referring to socioeconomic status in the Methods and Results/Discussion section of the paper, referencing Bibergenova's paper addressing low birth weight associated with residential proximity to PCB-contaminated waste sites.

Dr. Clapp suggested two major compulsory revisions. In response to the first, we did not include studies of Woburn, Massachusetts, because the source of pollution in Woburn was a contaminated water supply from previous industrial activities, rather than a distinct toxic waste site. In response to the second, we have decreased the number of references to multiple comparisons. We do believe that many of the associations reported occurred by chance alone, and that readers would benefit from the knowledge of whether authors who carried out large numbers of comparisons employed some adjustment of the p value in response to the increased likelihood of chance associations as the number of comparisons increased. We appreciate Dr. Clapp's suggestion that we review

Modern Epidemiology, 2nd edition, p. 225-229, which we have done.

Under minor essential revisions, we have eliminated religion from the list of competing risk factors, though we believe that persons of different religions may have different practices with respect to certain lifestyle-related cancer risk factors. We have corrected the typo referred to for reference 16 (now reference 17).

Under discretionary revisions, we have changed the word “modulate” to “modify”.

Dr. Ducatman made a number of suggestions. We limited our review to papers addressing cancer incidence or mortality due to the high level of concern associated with cancer outcomes among those who reside in the vicinity of toxic waste sites, the fact that a reasonable number of articles has been published over the past quarter century addressing cancer around toxic waste sites, and the fact that cancer outcomes are more easily quantified than are many other health conditions. We agree that a meta-analysis of the primary data on which the reviewed studies were based would be of interest. We did not have the resources to carry out such a project.

We have attempted to reduce repetition in the article through a number of changes to the text, as well as by combining the Results and Discussion sections. In particular we have reduced a somewhat repetitive emphasis on the multiple comparisons issue.

The single reference to Superfund sites was eliminated.

We have added biomonitoring to the Methods section list of outcomes which would have comprised individual level (rather than ecological) data. (None of the reviewed papers contained biomonitoring data.) The section also makes some mention of water consumption patterns as part of an exposure assessment.

We did not intend to mix the concepts of power and ecological analysis, but rather to point out the effect of heterogeneity of exposure in a population ecologically and simply defined as exposed. We have changed the word “power” to the word “capacity” in the paragraph in which the concern was raised.

A tone of criticism with respect to the reviewed studies was not intended, and we have made several changes to guard against this perception. Our goal was to point out the challenges of undertaking study of this very difficult problem, and to point out some of the underlying reasons that a consensus has not yet emerged with respect to whether populations living close to toxic waste sites are at increased cancer risk due to exposures from the waste sites. We have also clarified in the abstract of the paper that the reviewed papers have been hypothesis-generating in nature.

Dr. Ducatman's point is well taken with respect to high rates of cancer among both urban and rural poor. We included urban-rural differences in a list of other potential competing risk factors near the end of the Methods section, principally because urbanization indices were emphasized in a number of the New Jersey studies by Najem and colleagues. To the extent that we could, we tried to reflect in our discussion, as well as in the appendix, the competing risk factors that were actually assessed by authors of the reviewed studies.

With respect to the suggestion regarding bladder cancer, we made the decision not to attempt to summarize weight of evidence for individual tumor outcomes, but rather to concentrate our discussion on the methods employed in the reviewed waste site studies. We agree with Dr. Ducatman that a meta-analysis using primary data would be the best means to accomplish the former.

The population studied in Goldberg's 1995 paper did not obtain its drinking water from groundwater potentially contaminated by the waste site. Because there was a pipe network in place to capture gases emanating from the site, and because public concern was high regarding contamination from airborne gases, emphasis was placed on this exposure index. We agree that in general, groundwater contamination is a more likely vehicle of exposure in the vicinity of a waste site. The Mirion Quarry contamination was unusual in this regard.

We appreciate the opportunity to respond to the thoughtful and perceptive suggestions of our peer reviewers. We believe that the paper is improved as a result of our incorporating their input, and that the journal's readership will benefit from the discussion we have presented.

Sincerely,

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