

**Author's response to reviews**

**Title:** Water quality monitoring records for estimating tap water arsenic and nitrate: a validation study

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## **Response to Reviewers**

We appreciate the comments by the editors and Dr. Jim VanDerslice. The resulting revisions are detailed below. In addition, we have made a few minor editorial changes.

### **Editors**

We have revised the conclusions in both the abstract and the main text. Both now speak more specifically to the particular contaminants we considered in the present work (arsenic and nitrate). In addition, we have moved some of the concepts originally in the concluding paragraph to the paragraph that precedes it (one additional sentence).

### **Dr. Jim VanDerslice**

Minor revision 1: Thank you very much for pointing out that our terminology about monitored community systems was state-specific. We describe the two types (Group A and B) more generically now (Methods, paragraph 5). Here we also now specify the extent to which each type contributes to the water quality monitoring database we used, in preparation for minor revision 3 (below). The footnotes in the tables are accurate without revision. All “public system” residences in the tables receive water from federally-monitored (Group A) systems. Although it is possible that up to three of the “private well” homes were on wells monitored under state regulations (Group B), our interview data neither indicated this, nor allowed us to link to a particular Group B system. We believe this is a minor limitation (not worth discussing in the manuscript) because it affects so few participating homes, and because the linkage-by-system method we evaluated therefore better parallels how it could be applied in states with federally-mandated monitoring only (without additional state-mandated monitoring).

Minor revision 2: We have edited the first paragraph of the Methods for clarity, and added one detail previously only in the footnotes of tables (that no “private sources” served more than 8 residences). Our intent in the second part of this paragraph was to provide the reader with confidence that none of our “private well” homes were connected to federally-monitored water systems.

Minor revision 3: The lack of Group B system water monitoring data in most other states would only affect the GIS-linkage method we assessed, not the linkage-by-system method. Therefore, we only briefly touch upon this limitation in the context of discussing that particular method when used for private wells (last sentence of the 2<sup>nd</sup> paragraph of the Discussion). Thank you for bringing this to our attention, and that not all regions have water system maps available online (we have revised the 3<sup>rd</sup> paragraph of the Discussion, accordingly).

Discretionary revision 1: We have made the recommended editorial change.

Discretionary revision 2: We revised “acceptable” to “modest” and “unacceptable” to “poor” where numerical values for rho were not provided in concert. We retain the terminology otherwise, for example, where we immediately follow it with “( $\rho > 0.40$ )”. In addition, we have added two sentences to the end of the “statistical analysis” section to define lower correlations as “unacceptable” based on the degree to which they affect one’s ability to detect associations.