



April 12, 2021

Editorial Board

Science of the Total Environment

Dear Editorial Board,

I am writing to submit our manuscript titled, "Upstream oil and gas production and ambient air pollution in California" for consideration as an original research article in *Science of the Total Environment*.

An estimated 600 million people live near oil and gas wells globally, including 17 million in the United States. Recent studies have reported higher risk of a range of adverse health outcomes with exposure to oil and gas wells, but the potential mechanisms are not well understood. This study examines the intersections of the atmosphere, anthroposphere, and the lithosphere. In this study, we applied a quasi-experimental design with daily observations of ambient air pollution, oil and gas production, and meteorological variables including wind direction. We leveraged daily changes in wind direction as an exogenous source of variation for exposure to wells. We found that marginal increases in exposure to preproduction wells and production volume resulted in higher exposure to five types of routinely monitored air pollutants. Our findings corroborate that proximity is an effective indicator of air pollution exposure from oil and gas wells, as applied in many population health studies. To our knowledge, this is the first study to empirically investigate air pollution-related exposures from oil and gas wells at the population level.

All authors were involved with drafting and critically reviewing the manuscript, and all of the authors have read and approved the manuscript. This manuscript and data have not previously been published, either in whole or in part, except as an abstract and in preprint. The authors have no conflicts of interest to declare.

Thank you for considering our submission. I am available by email (david.gonzalez@stanford.edu) and phone if you or other editorial staff have questions or need further information regarding the manuscript.

Sincerely,

David J.X. Gonzalez, MS, MEd