Ambient Air Quality (A)

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Supplement Aims and Scope

This supplement is intended to focus on the identification and characterization of air quality hazards and associated risks for human health and the environment and development, implementation and evaluation of prevention or intervention strategies to limit air quality hazards and associated risks.

Environmental Health Insights aims to provide environmental health practitioners, researchers and the general public with online, open access to scholarly articles on environmental health hazards and associated risks. The journal aims to explore how these hazards and risks can be eliminated or limited or prevented to help protect human health and our environment.

In a field where the literature is ever-expanding, practitioners and researchers increasingly need to have ready access to up-to-date, high-quality scholarly articles on areas of on-going interest in environmental health. This supplement aims to address this need by presenting contemporary articles by leading scholars, allowing readers to distinguish the signal from noise. We hope that through this effort practitioners and researchers will be aided in finding answers to some of the most complex and pressing issues of our time.

Science and policy pertaining to air quality and its impacts on human health are undergoing a quiet but potentially game-changing development. Monitoring and modeling methods have been affected considerably by innovations in optical and chemical techniques, by an exponential growth in computational capabilities, and by the Internet. At the same time, new engineering and policy challenges have been posed by the rapid growth of oil and gas exploration and production in shale formations, by tighter criteria pollutant standards motivated by advancements in the science of human health risk, and ever increasing public concern regarding the ubiquity and human health impacts of chemicals in the environment. This special supplement on air quality is an attempt to provide a snapshot of how these rapid changes are affecting the practice of environmental health science.

On the methodological side, the article by Brown et al. on the application of the QUIC model to public health assessments of motor vehicle emissions gives us a glimpse of how computational fluid dynamics is likely to change our understanding of human exposure to both outdoor and indoor air pollution in urban areas. Lary et al., on the other hand, provide examples of how machine learning and "big data," a novel area of study of increasing interest to researchers, can be used to enhance assessment of the human health impacts of particulate matter exposure. Finally, Higgs et al. show us how advanced techniques for remote sensing of particulate matter can be used to improve our understanding of asthma prevalence.

On the engineering and policy side, Rich and Patel provide a new dimension to the assessment of climate change impacts due to the upstream oil and gas industry by calling attention to carbon disulfide from natural gas production processes as an atmospheric precursor to CO_2. Sexton and Linder summarize the City of Houston's experience with respect to controlling hazardous air pollution emitted by the downstream petrochemical industry so vital to the Houston economy, as well as by mobile sources. Lastly, the article by Hallberg et al. analyzes the impact of contemporary diesel engine control technology on human exposure to air pollution. Together, the six articles that make up the current supplement on ambient air quality challenge us to re-imagine the practice of environmental health science in response to progress in air quality science and policy.

Lead Guest Editor **Dr Eduardo Olaguer**

Dr Eduardo Olaguer is Program Director for Air Quality Science at the Houston Advanced Research Center. He completed his PhD at MIT and has previously worked at The Dow Chemical Company and MCNC, a non-profit based in Research Triangle Park, North Carolina. He now works primarily in the development of advanced monitoring and modeling tools for micro-scale and urban air quality. Dr Olaguer is the author or co-author of twenty-four published papers, twenty technical reports, and forty conference presentations, and served on the editorial board of Environmental Science and Pollution Research-International.

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