

Wildfire and prescribed burning impacts on air quality in the United States

Samuel L. Altshuler

Critical Review Committee Chair



Samuel L. Altshuler Program has continuously provided key literature reviews of important environmental topics presented at the Annual Conference & Exhibition and recorded in *JA&WMA*. Watson (1995) overviewed the first quarter century of the program, highlighting the need for periodic consolidation of information on contemporary issues and establishing mileposts on the state-of-the-art at the time.

John S. Lagarias – President (1968–1969) of the Air Pollution Control Association (APCA; a forerunner to A&WMA) – played a key role in establishing the Critical Review as an important component of the Annual Conference. Lagarias (1970) stated: “It is not our purpose to agree or disagree with the presentations, but to understand their rationale and thus be able to respond in a constructive manner so as to achieve the objectives to which we are all dedicated. It is appropriate that members of APCA have an open forum not only to hear position papers on national standards but also to comment on them at a time when they still may be able to help shape national policy. This role is a very appropriate one for all concerned members.” The oral presentations were so well-received that written versions were later published (Barth et al. 1971; Heuss, Nebel, and Colucci 1971), and this tradition has continued to the present day. Though the topics have changed over the years, the spirit of his words still ring true today. It is with honor that I am able to continue Lagarias’ work and vision and help guide the Critical Review as it begins its next half-century.

For fifty years, the Critical Review has created a forum for engineers, scientists, meteorologists, consultants,

policymakers, and others representing industry, government agencies, academia, and the public to discuss emerging issues related to air and waste. Early reviews focused on regulations and the control of various criteria air pollutants. More recently, topics have expanded beyond the classic criteria pollutants into toxics, greenhouse gases, stratospheric ozone-depleting gases, visibility, and mercury, with increasing recognition of the interactions among multimedia – air, land, and water – environments. A complete list of past Critical Reviews can be found online with free access to each review and discussion available one year after publication. A&WMA members have access to all published papers anytime.

The 2020 Critical Review, “Wildfire and prescribed burning impacts on air quality in the United States,” by Daniel A. Jaffe, et al. (Jaffe et al. 2020), addresses the nature and effects of wildfires and controlled burns on air quality. The review is led by Dr. Daniel A. Jaffe (University of Washington), with significant contributions from colleagues Susan M. O’Neill and Narasimhan K. Larkin (U.S. Forest Service), Amara L. Holder (EPA), David L. Peterson and Jessica E. Halofsky (University of Washington), and Ana G. Rappold (EPA). Dr. Jaffe is a Professor of Atmospheric Chemistry in the Department of Atmospheric Sciences, and Chair of the Physical Sciences Division in the School of Science, Technology, Engineering, and Mathematics (STEM), at the University of Washington (UW), Bothell Campus. He is an expert on atmospheric chemistry, mercury, ozone, urban and regional smog, and long-range transport of pollutants, and the author of more than 150 peer-reviewed publications on these topics. Appointed to the National Academy of Sciences’ panel on Global Sources of Air Pollutants and the recipient of UW Bothell’s first Distinguished Research Award, Dr. Jaffe is recognized as an expert on global transport of pollutants, especially transport from Asia to the United States, and has published papers on the influence of background sources on regional and urban air quality. Dr. Jaffe established and manages the Mt. Bachelor Observatory in Central Oregon, the only high-elevation research station on the West Coast,

and his research has been supported by EPA, NASA, the National Science Foundation, the National Oceanic and Atmospheric Administration, the National Park Service, the Electric Power Research Institute, the American Petroleum Institute, and other organizations. Most recently, Dr. Jaffe has focused his research on air quality issues related to wildland fires and prescribed burning.

The Review synthesizes and summarizes knowledge on wildfires and controlled burns with respect to their impacts on air quality, regulatory issues, management challenges, forecasting, and health effects. Just as the air pollution trends are improving in the United States, wildfires have created unforeseen impacts. How do wildfires vary in different regions? What are the direct emissions and the chemical processing of the resulting air pollution? What are the health effects of smoke, and what populations are most at risk? What can be done to reduce the health effects? What are the policy implications for communities trying to attain the national air quality standards? How should we manage our forests to provide optimum benefit for all, while minimizing fire risks? Should we try to eliminate fire from our forests and wildlands? Should we use prescribed fires to minimize the risk, and what about the air pollution these generate? These, and other questions, are addressed.

Current events with the pandemic and worldwide response to the COVID-19, Coronavirus have a unique connection to this burning topic and its relationship to air pollution. Infected populations are likely to experience greater recovery challenges when exposed to particulate matter and other air pollutants. Should victims of the virus also experience degraded air quality impacted by fires, metrics might show a greater rate of mortality.

A&WMA members and interested parties are invited to read, attend, and comment on the 50th Annual Critical Review livestream event, which will be held as part of A&WMA's 2020 Virtual Annual Conference & Exhibition, on July 2, 2020, 11:00 a.m.–1:30 p.m. ET. (www.awma.org/ace2020registration). This year's invited discussants are Merlyn L. Hough, Director of the Lane Regional Air Protection Agency in Springfield-Eugene, Oregon, invited to address regulatory perspectives; Fernando Garcia Menendez, Assistant Professor, Department of Civil, Construction and Environmental Engineering, North Carolina State University, invited to discuss air quality and public health impacts of wildland fire in the Southeastern United States; Charles Thomas (Tom) Moore, Jr., Air Quality Program Manager for the Western Regional Air Partnership, invited to address visibility issues; Luke Naehner, Professor of Environmental Health Science in the College of Public Health at the University of Georgia, invited to address health effects;

and Qi Zhang, Professor in the Department of Environmental Toxicology at the University of California, Davis, invited to discuss fine and ultrafine particulates.

The five invited discussants will offer different perspectives on the Review and will be asked to identify additional issues and offer alternative commentary based on their scientific expertise. Comments also will be accepted from written submissions to the Chair of Critical Review Committee until August 1, 2020. The Chair will condense and summarize these points in the October 2020 issue of *JA&WMA*. Members are encouraged to suggest topics and authors for future critical reviews and to apply for membership on the Critical Review Committee. If you are interested in joining the committee, please inquire with the Chair at altshule@pacbell.net.

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