

Michael D. Hays, Physical Scientist in EPA's National Risk Management Research Laboratory

Air and Energy Management Division

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Areas of Expertise:

Application of analytical-chemical measurements for an improved understanding of organic matter composition of fine particulate matter (PM) and gas-phase PM precursors emitted from anthropogenic, biogenic, and pyrogenic sources. Data from these measurements are used as input to the National Emissions Inventory and support dispersion modeling efforts for improving policy and for regulatory decision-making. Emissions data are also used in efforts to better understand the toxicological and public health effects of PM—an EPA regulated criteria pollutant.

Select publications:

Martin et al. 2019. High-Throughput Video Processing of Heart Rate Responses to Xenobiotics in Multiple Wild-type Embryonic Zebrafish per Imaging Field. *Scientific Reports* 9:145.

Xie, M., X Chen, AL Holder, **MD Hays**, et al. 2019. Light absorption of organic carbon and its sources at a southeastern U.S. location in summer. *Environmental Pollution* 244: 38-46.

Chen, X., M Xie, **MD Hays**, and JT Walker. 2018. Characterization of organic nitrogen in aerosols collected at a forest site in the southern Appalachian Mountains. *Atmospheric Chemistry & Physics Discussions (in press)*.

Xie, M, G Shen, AL Holder, **MD Hays**, JJ Jetter. 2018. Light absorption of organic carbon emitted from burning wood, charcoal, and kerosene in household cookstoves. *Environmental Pollution* 240: 60-67.

Kim, YH, SH Warren, QT Krantz, C King, R Jaskot, WT Preston, BJ George, **MD Hays**, MS Landis, M Higuchi, DM DeMarini, MI Gilmour. 2018. [Mutagenicity and lung toxicity of biomass smoke is dependent on both fuel types and combustion phases](#). *Environmental Health Perspectives* 126(1):1.

Shen G., **MD. Hays**, KR Smith, C Williams, JW Faircloth, and JJ Jetter. 2018. [Evaluating the performance of household liquified petroleum gas cookstoves](#). *Environmental Science & Technology* 52(2): 904-915.

View more research publications by [Michael Hays](#).

Education:

- Ph.D. University of Massachusetts Lowell; Chemistry-Environmental Studies, 1997
- B.S. University of Massachusetts Lowell; Chemistry, 1989

Professional Experience:

Projects and Workgroups

- Studies on anthropogenic and biogenic emissions sources with a specific focus on the chemical characterization of submicron aerosol particles and their gas-phase chemical precursors

Memberships, Committees, and Affiliations

- Health Effects Chair, International Conference on Carbonaceous Particles in the Atmosphere, Berkeley, CA, 2015.
- Session Lead and Organizer, Novel Measurement Technologies for Aerosols, Helmholtz Zentrum-EPA Workshop, Prien Germany, 2015.
- Invited Judge, NC State University WREE Research Symposium, 2013-2015
- Session Lead, Aerosol Emissions from Fossil Fuel and Biomass Combustion Workshop, Prague, Czech Republic, 2013.
- Vice-Chair Candidate, AAAR Aerosol Chemistry Working Group, 2012
- ORD Committee Member, E15 and Bio-isobutanol Registration Decisions, 2011-2012
- Visiting Scientist, Technical University of Munich, 2008.
- Postdoctoral Research Associate, Case Western Reserve University, 1997-1998

Awards and Honors

- Exceptional Technical Assistance to Regions - Deepwater Horizon Team, 2017
- EPA Bronze Medal Award - E15 Renewable Fuel Standard Review Team, 2011
- ORD Honor Award for Exceptional Technical Assistance to the Program Office, 2011
- EPA Bronze Medal Award – ACE Research Action Team, 2011
- Outstanding Technical Reviewer – *Atmospheric Environment* Editors

[Science Matters: Health Effects of Biodiesel](#)

[Science Matters: Cleaning Up in the Kitchen – Cleaner Cookstoves](#)