

Edward O. Edney, Senior Research Scientist, in EPA's National Exposure Research Laboratory

Exposure Methods and Measurements Division

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Area of Expertise: Between 1988 and 2007 Dr. Edney played the lead role in atmospheric chemistry in NERL designing and conducting in-house atmospheric chemistry laboratory, modeling, and field studies, the results of which were used to develop and evaluate EPA air quality regulations. The many investigations conducted included (1) measuring kinetic rate constants and product yields of a wide range of atmospherically relevant gas phase compounds; (2) conducting homogeneous and heterogeneous laboratory studies to assess the fate of CFC substitutes; (3) measuring the bacterial mutagenicity of atmospherically relevant smog chamber mixtures; (4) designing and carrying out laboratory experiments and field studies to assess whether acidic deposition significantly damages materials of constructions including metals and organic coatings as well as structures of artistic and/or historical significance; and (5) designing and conducting laboratory and field studies, the results of which he used to develop for CMAQ, a secondary organic aerosol chemistry model containing improved treatments of aromatic hydrocarbons as well as mechanisms for isoprene and sesquiterpenes. Since 2008 his research has focused on assessing whether computational chemistry could serve as a timely and cost-effective tool for improving EPA air quality models including CMAQ.

Select Publications:

Piletic, I., E. Edney, AND L. Bartolotti. A Computational Study of Acid Catalyzed Aerosol Reactions of Atmospherically Relevant Epoxides. *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*. Royal Society of Chemistry, Cambridge, Uk, 15(41):17707-18302, (2013).

Lin, Y., H. Zhang, H. Pye, Z. Zhang, W. Marth, S. Park, M. Arashiro, T. Cui, S. Budisulistiorini, K. Sexton, W. Vizuete, Y. Xie, D. Luecken, I. Piletic, E. Edney, L. Bartolotti, A. Gold, AND J. Surratt. Epoxide as a Precursor to Secondary Organic Aerosol Formation from Isoprene Photooxidation in the Presence of Nitrogen Oxides. *PNAS (PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES)*. National Academy of Sciences, WASHINGTON, DC, 110(17):6718-6723, (2013).

Pye, H., R. Pinder, I. Piletic, Y. Xie, S. Capps, Y. Lin, J. Surratt, Z. Zhang, A. Gold, D. Luecken, Bill Hutzell, M. Jaoui, J. Offenber, Tad Kleindienst, M. Lewandowski, AND E. Edney. Epoxide pathways improve model predictions of isoprene markers and reveal key role of acidity in aerosol formation. *ENVIRONMENTAL SCIENCE & TECHNOLOGY*. American Chemical Society, Washington, DC, 47(19):11056-11064, (2013).

View more research publications by [Edward Edney](#).

Education:

- Ph.D., Physics, University of North Carolina at Chapel Hill, 1978
- B.S., Physics, The American University, 1972

Professional Experience:

- Senior Research Scientist, USEPA, ORD, NERL-HEASD, 2004-Present
- Adjunct Professor of Chemistry, East Carolina University, Greenville, NC, 2004-present
- Fellow at Center for Applied Computational Chemistry at East Carolina University, Greenville, NC, 2004-present
- Term Faculty Member, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, Chapel Hill, NC, 2005-2010
- Research Physical Scientist, USEPA, Atmospheric Research & Exposure Assessment Laboratory, 1988-2004
- Atmospheric Chemistry Team Leader, USEPA, ORD, NERL, 1996-2007
- Associate Director for Atmospheric Sciences, USEPA, ORD, NERL-HEASD, 1997-2000
- Principal Scientist, Northrop Services, Inc-Environmental Sciences, Research Triangle Park, NC, 1982-1988
- Adjunct Associate Professor of Physics, North Carolina State University, Raleigh, NC, 1987-1989
- Research Physicist, Mobil Research and Development Corporation, Paulsboro, NJ, 1981-1982
- Research Physicist, Environmental Sciences Research Laboratory, EPA, 1977-1981