

**Jana Beth Milford**  
Department of Mechanical Engineering  
Environmental Engineering Program  
University of Colorado  
Boulder, CO 80309-0427  
(303) 492-5542  
jana.milford@colorado.edu

## **Education**

J.D., University of Colorado School of Law, May 2004.

Registered attorney in Colorado, October 2004 to present.

Ph.D., Engineering and Public Policy, Carnegie Mellon University, May 1988.

M.S., Civil Engineering, Carnegie Mellon University, May 1985.

B.S., with distinction, Engineering Science, Iowa State University, May 1983.

## **Professional History**

Professor, Department of Mechanical Engineering, University of Colorado at Boulder, June 2008 – present.

Chair, Department of Mechanical Engineering, University of Colorado at Boulder, July 2013 – June 30, 2014.

Director, Environmental Engineering Program, University of Colorado at Boulder, July 2010 – June 2012. (On sabbatical, July 2012 – June 2013.)

Associate Professor, Department of Mechanical Engineering and Environmental Engineering Program, University of Colorado at Boulder, August 1997 - present. (On leave, September 2001 – August 2002; half-time August 2002 – January 2007.)

Senior Scientist and Staff Attorney, Environmental Defense, May 2004 – January 2007. (Half-time).

Director, Environmental Engineering Program, University of Colorado at Boulder, June 1998 - July 2001.

Assistant Professor, Department of Mechanical Engineering, University of Colorado at Boulder, January 1994 - July 1997.

Assistant Professor, Department of Civil Engineering and Environmental Research Institute, University of Connecticut, September 1989 - December 1993.

Faculty-in-Residence, Washington Internships for Students of Engineering, American Society for Engineering Education, summer 1990.

Congressional Fellow and Analyst, Office of Technology Assessment, United States Congress, September 1987 - July 1989.

Research and Teaching Assistant, Carnegie Mellon University, 1983 - 1987.

Engineering Intern, General Motors Corporation, 1983.

## **Teaching Experience – Courses Taught**

Sustainable Energy (undergraduate/graduate), Environmental Law for Engineers (graduate), Environmental Modeling (graduate), Air Pollution Control Engineering (undergraduate/graduate), Engineering Projects (freshman engineering design course), Thermodynamics (undergraduate), Quantitative Methods for Policy Analysis (graduate), Computational Methods (undergraduate), Introduction to Research (graduate), Methods of Engineering Analysis I (graduate), Air Quality Modeling (graduate), Heat Transfer (undergraduate) Civil Engineering Projects (senior design course), Fundamentals of Environmental Engineering (undergraduate), Transport and Transformation of Air Pollution (graduate), Analysis of Civil Engineering Systems (undergraduate), Numerical Methods (graduate), Atmospheric Chemistry (professional development short course).

## **Consulting Experience**

Professional consulting on air quality modeling, alternative fuels, and environmental policy for: Baker and Hostetler, LLP; Croker, Huck & Assoc., P.C.; California Air Resources Board; Congressional Office of Technology Assessment; Environmental Defense Fund; Grand Canyon Visibility Transport Commission; Montana Environmental Information Center; the National Renewable Energy Laboratory; U.S. Department of Justice; U.S. Environmental Protection Agency; Western Resources Advocates; and the Wyoming Outdoor Council.

## **State and National Service**

Colorado Air Quality Control Commission, appointed by Governor John Hickenlooper, March 2013 – present. Vice-chairperson, June 2015 to present.

Health Effects Institute, Research Review Committee, January 2016 to present.

National Academy of Sciences, Committee on Science for EPA's Future, June 2011 to August 2012.

National Academy of Sciences, Board of Environmental Studies and Toxicology, January 2010 to August 2015.

National Academy of Engineering, Chinese Academy of Sciences and Chinese Academy of Engineering, Committee on U.S.-Chinese Cooperation on Electricity from Renewable Resources, November 2008 to December 2010.

Regional Air Quality Council, Board Member, August 2007 to March 2009, appointed by Governor Bill Ritter.

U.S. Environmental Protection Agency, Science Advisory Board, 2005 - 2011, appointed by Administrator Stephen Johnson. Lead reviewer for three SAB reports. Chair of the SAB Risk and Technology Review Methods panel.

National Academy of Engineering, Chinese Academy of Sciences and Chinese Academy of Engineering, Committee on Energy Futures and Air Pollution in Urban China and the United States, 2005 to 2008. Lead author for report chapter on institutional and regulatory frameworks; co-author for two additional chapters.

*Environmental Science and Technology*, Editorial Advisory Board, November 2002 to January 2006.

National Academy of Sciences, Committee on Air Quality Management in the United States, member, May 2001 to January 2004.

Regional Air Quality Council Ozone Modeling Review Panel, 2003-2004.

Department of Engineering and Public Policy, Carnegie Mellon University, Advisory Board, 1993 to 2008.

U.S. Environmental Protection Agency, Board of Scientific Counselors, Fine Particulate Matter Research Strategy Review Committee, October 1999.

California Air Resources Board, Reactivity Scientific Advisory Committee, April 1996 to May 2000.

Colorado Air Quality Control Commission, appointed April 1994 by Governor Roy Romer, vice-chairperson, June 1996 to May 1997.

Denver Metropolitan Area Blueprint for Clean Air (long-range air quality planning process) steering committee member, June 1996 to May 1997.

U.S. Environmental Protection Agency, North American Research Strategy for Tropospheric Ozone, science team member, January 1994 to December 1997.

New England Board of Higher Education, Council of Academic Advisors on Environmental Sciences and Engineering, 1993.

American Lung Association of Connecticut, Clean Air Advisory Committee, 1993.

*Atmospheric Environment, Bulletin of the American Meteorological Society, Environmental Health Perspectives, Environmental Science and Technology, Geophysical Research Letters, International Journal of Water, Air and Soil Pollution, International Journal of Wildland Fire, Journal of the Air & Waste Management Association, Journal of Geophysical Research, Risk Analysis, Science of the Total Environment* manuscript reviewer.

### **Fellowships and Awards**

Mechanical Engineering, University of Colorado at Boulder, Outstanding Service Award, 2015-2016.

Abraham Lincoln High School, Council Bluffs, IA, Hall of Fame Inductee, March 2013.

Mechanical Engineering, University of Colorado at Boulder, Outstanding Graduate Education Award, 2010 - 2011.

Mechanical Engineering, University of Colorado at Boulder, Outstanding Service Award, 2009 - 2010.

Health and Environmental Stewardship Award, presented by the Colorado Air Pollution Control Division, September 2008.

Faculty Leadership Advancement Group, invited participant, College of Engineering and Applied Science, University of Colorado at Boulder, 2006.

Mechanical Engineering, University of Colorado at Boulder, Distinguished Achievement Award, 2004-2005.

Order of the Coif, University of Colorado School of Law, May 2004.

University of Colorado, Emerging Leaders Program, invited participant, 2002-2003.

Max S. Peters Faculty Service Award, College of Engineering and Applied Science, University of Colorado at Boulder, 2001.

## Publications

### *Textbook*

Ramaswami, A., Milford, J.B., Small, M.S., *Integrated Environmental Modeling: Pollutant Transport, Fate and Risk in the Environment*, John Wiley and Sons, 2005, 678 pp.

### *Congressional Testimony*

Friedman, R.M., Milford, J.B., Rapoport, R.D., testimony before the Subcommittee on Oversight and Investigations of the Energy and Commerce Committee, U.S. House of Representatives, July 17, 1989.

### *Dissertations*

Milford, J.B., *Photochemical Air Pollution Control Strategy Development*, Ph.D. Thesis, Department of Engineering and Public Policy, Carnegie Mellon University, 1988.

Milford, J.B., *The Sizes of Particulate Trace Elements in the Atmosphere*, M.S. Thesis, Department of Civil Engineering, Carnegie Mellon University, 1985.

### *Published Peer-Reviewed Monographs*

National Research Council of the National Academies, *Science for Environmental Protection: the Road Ahead*, The National Academies Press, Washington, DC, 2012, contributor.

National Academy of Engineering, Chinese Academy of Science, and Chinese Academy of Engineering, *The Power of Renewables: Opportunities and Challenges for China and the United States*, The National Academies Press, Washington, DC, 2010, contributor.

National Academy of Engineering and National Research Council in collaboration with the Chinese Academy of Engineering and Chinese Academy of Sciences, *Energy Futures and Urban Air Pollution: Challenges in China and the United States*, The National Academies Press, Washington, DC, September 2007, contributor.

National Research Council of the National Academies, *Air Quality Management in the United States*, The National Academies Press, Washington, DC, January 2004, contributor.

U.S. Congress, Office of Technology Assessment, *Changing by Degrees: Steps to Reduce Greenhouse Gases*, OTA-0-482, Washington, DC, February 1991, contributor.

U.S. Congress, Office of Technology Assessment, *Replacing Gasoline: Alternative Fuels for Light-Duty Vehicles*, OTA-E-364, Washington, DC, September 1990, contributor.

U.S. Congress, Office of Technology Assessment, *Catching Our Breath: Next Steps for Reducing Urban Ozone*, OTA-0-412, Washington, DC, July 1989, coauthor.

### *Law Review Articles*

Milford, J.B. "Out in Front? State and Federal Regulation of Air Pollution Emissions from Oil and Gas Production Activities in the Western United States," *Natural Resources Journal*, **55**:1-45, 2014.

Milford, J.B., "Tribal Authority Under the Clean Air Act: How Is It Working?," *Natural Resources Journal*, **44**:213-242, 2004.

### *Peer-Reviewed Scientific Journal Articles*

Capps, S.L., Driscoll, C.T., Fakhraei, H., Templer, P.H., Craig, K.J., Milford, J.B., Lambert, K., "Estimating Potential Productivity Co-benefits for Crops and Trees from Reduced Ozone with U.S. Coal Power Plant Carbon Standards," *J. Geophysical Research*, accepted 2016.

Brown, K.E., Henze, D., Milford, J.B. "How Accounting for Climate and Health Impacts of Emissions Could Change the US Energy System," *Energy Policy*, **102**:396-405, DOI

10.1016/j.enpol2016.12.052, in press, 2017.

- Keshavarzmohammadian, A., Henze, D., Milford, J.B., "Emission Impacts of Electric Vehicles in the US Transportation Sector Following Optimistic Cost and Efficiency Projections," submitted, April 2016.
- Milford, J.B., Knight, D., "Increasing the Use of Earth Science Models and Data in Air Quality Management," *Journal of the Air & Waste Management Association*, accepted 2016.
- Clements, N., Hannigan, M.P., Miller, S.L., Peel, J.L., Milford, J.B., "Comparisons of Urban and Rural PM<sub>10-2.5</sub> and PM<sub>2.5</sub> Mass Concentrations and Semi-Volatile Fractions in Northeastern Colorado," *Atmospheric Chemistry and Physics*, **16**, 7469–7484, doi:10.5194/acp-16-7469-2016.
- Dilling, L., Kelsey, K.C., Fernandez, D.P., Huang, Y.D., Milford, J.B., Neff, J.C., "Where Carbon Management Hits the Road: the Intersection of Decision Context and Scientific Information on Public Lands in Southwestern Colorado," *Environmental Management*, DOI 10.1007/s00267-016-0714-2, 2016.
- Wu, K., Paranjothi, G., Milford, J.B., Kreith, F., "Transition to Sustainability with Natural Gas from Fracking," *Sustainable Technologies and Assessments*, **14**:26-34, 2016.
- Lapina, K., Henze, D., Milford, J.B., Travis, K. "Impacts of Foreign, Domestic and State-Level Emissions on Ozone-Induced Vegetation Loss in the U.S." *Environmental Science and Technology*, DOI 10.1021/acs.est.5b04887, 2015.
- Kim, S-Y, Dutton, S.J., Sheppard, L., Hannigan, M.P., Miller, S.L., Milford, J.B., Peel, J., Vedal, S., "The Short-Term Association of Selected Components of Fine Particulate Matter and Mortality in the Denver Aerosol Sources and Health (DASH) Study," *Environmental Health*, **14**:49, DOI 10.1186/s12940-015-0037-4, 2015.
- Lapina, K., Henze, D.K., Milford, J.B., Cuvelier, C., Seltzer, M., "Implications of RCP Emissions for Future Changes in Vegetative Exposure to Ozone in the Western U.S.," *Geophysical Research Letters*, DOI 10.1002/2015GL063529, 2015.
- McLeod, J., Brinkman, G., Milford, J.B., "Emissions Implications of Future Natural Gas Production and Use in the U.S. and in the Rocky Mountain Region," *Environ. Sci. Technol.*, **48**:13036-13044, 2014.
- Clements, N., Eav, J., Xie, M., Hannigan, M., Miller, S.L., Navidi, W., Peel, J., Schauer, J.J., Shafer, M., Milford, J.B., "Concentrations and Source Insights for Trace Elements in Fine and Coarse Particulate Matter," *Atmospheric Environment*, **89**:373-381, 2014.
- Archie, K., Dilling, L., Milford, J., Pampel, F., "Unpacking the 'Information Barrier': Comparing Perspectives on Information as a Barrier to Climate Change Adaptation in the Interior Mountain West," *Journal of Environmental Management*, **133**:397-410, 2014.
- Lapina, K., Henze, D.K., Milford, J.B., Huang, M., Lin, M., Fiore, A.M., Carmichael, G., Pfister, G., Bowman, K., "Assessment of Source Contributions to Seasonal Vegetative Exposure to Ozone in the U.S.," *Journal of Geophysical Research - Atmospheres*, **119**, doi:10.1002/2013JD020905, 2014.
- Clements, N., Milford, J.B., Miller, S.L., Navidi, W., Peel, J.L., Hannigan, M.P. "Errors in Coarse Particulate Matter (PM<sub>10-2.5</sub>) Mass Concentrations and Spatiotemporal Characteristics when Using Subtraction Estimation Methods," *Journal of the Air and Waste Management Association*, **63**(12):1386-1398, 2013.
- Helmig D., Daly R.W., Milford J., and Guenther A. "Seasonal trends in biogenic terpene emissions," *Chemosphere*, **93**:35-46, 2013.
- Brown, K., Henze, D., Milford, J.B. "Accounting for Climate and Air Quality Damages in Future US Electricity Generation Scenarios," *Environmental Science and Technology*, **47**:3065-3072, 2013.

- Xie, M., Piedrahita, R., Dutton, S., Milford, J., Hemann, J., Peel, J., Miller, S., Kim, S-Y, Vedal, S., Sheppard, L., Hannigan, M. "Positive Matrix Factorization of a 32-month Series of Daily PM<sub>2.5</sub> Speciation Data with Incorporation of Temperature Stratification," *Atmospheric Environment*, 65:11-20, 2013.
- Xie, M., Hannigan, M., Dutton, S., Milford, J., Hemann, J., Miller, S., Schauer, J., Peel, J., Vedal, S., "Positive Matrix Factorization of PM<sub>2.5</sub> – Comparison and Implications of Using Different Speciation Data Sets," *Environmental Science and Technology*, 46(21):11962-11970, 2012.
- Archie, K., Dilling, L., Milford, J.B., Pampel, F., "Climate Change and Western Public Lands: A Survey of U.S. Federal Land Managers on the Status of Adaptation Efforts," *Ecology and Society*, 17(4): article 20, 2012.
- Xie, M., Coons, T.L., Hemann, J., Dutton, S., Peel, J., Milford, J.B., Miller, S.L., Kim, S-Y, Vedal, S., Hannigan, M.P., "Intra-urban Spatial Variability and Uncertainty Assessment of PM<sub>2.5</sub> Sources Based on Carbonaceous Species," *Atmospheric Environment*, 60:305-315, 2012.
- Xie, M., Coons, T.L., Dutton, S.J., Milford, J.B., Miller, S.L., Peel, J.L., Vedal, S., Hannigan, M.P., "Intra-urban Spatial Variability of PM<sub>2.5</sub>-Bound Carbonaceous Components," *Atmospheric Environment*, 60:486-494, 2012.
- Ellenwood, M., Dilling, L., Milford, J.B. "Managing U.S. Public Lands in Response to Climate Change: A View From the Ground Up," *Environmental Management*, 49(5):954-967, 2012.
- Clements, N., Piedrahita, R., Ortega, J., Peel, J., Hannigan, M., Miller, S.L., Milford, J.B., "Characterization and Nonparametric Regression of Rural and Coarse Particulate Matter Mass Concentrations in Northeastern Colorado," *Aerosol Science and Technology*, 46(1):108-123, 2012.
- Brinkman, G.L., Denholm, P., Hannigan, M.P., Milford, J.B., "Effects of Plug-in Hybrid Electric Vehicles on Ozone Concentrations in Colorado," *Environmental Science and Technology*, 44:6256-6262, 2010.
- Dutton, S.J., Vedal, S., Piedrahita, R., Milford, J.B., Miller, S.L., Hannigan, M.P., "Source Apportionment Using Positive Matrix Factorization on Daily Measurements of Inorganic and Organic Speciated PM<sub>2.5</sub>," *Atmospheric Environment*, 44:2731-2741, 2010.
- Trenbath, K., Hannigan, M.P., Milford, J.B. "Evaluation of Retrofit Crankcase Ventilation Controls and Diesel Oxidation Catalysts for Reducing Air Pollution in School Buses," *Atmospheric Environment*, 43:5916-5922, 2009.
- Milford, J.B., Pienciak, A. "After the Clean Air Mercury Rule: Prospects for Reducing Mercury Emissions from Coal-Fired Power Plants," *Environmental Science and Technology*, 43:2669-2673, 2009.
- Brinkman, G., Milford, J.B., Schauer, J.J., Shafer, M.M., Hannigan, M.P. "Source Identification of Personal Exposure to Fine Particulate Matter Using Organic Tracers," *Atmospheric Environment*, 43:1972-1981, 2009.
- Vedal, S., Hannigan, M.P., Dutton, S.J., Miller, S.L., Milford, J.B., Rabinovitch, N., Kim, S.-Y., Sheppard, L. "The Denver Aerosol Sources and Health (DASH) Study: Overview and Early Findings," *Atmospheric Environment*, 43:1666-1673, 2009.
- Hemann, J.G., Brinkman, G.L., Dutton, S.J., Hannigan, M.P., Milford, J.B., Miller, S.L., "Assessing Positive Matrix Factorization Model Fit: A New Method to Estimate Uncertainty and Bias in Factor Contributions at the Measurement Time Scale," *Atmospheric Chemistry and Physics*, 9, 497-513, 2009.
- Sakulyanontvittaya, T., Guenther, A., Helmig, D., Milford, J., Wiedinmyer, C. "Secondary Organic Aerosol from Sesquiterpene and Monoterpene Emissions in the United States,"

- Environmental Science and Technology*, **42**:8784-8790, doi: 10.1021/es800817r, 2008.
- Sakulyanontvittaya, T., Duhl, T., Wiedinmyer, C., Helmig, D., Matsunaga, S., Potosnak, M., Milford, J.B., Guenther, A., "Monoterpene and Sesquiterpene Emission Estimates for the United States," *Environmental Science and Technology*, **42**:1623-1629, doi 10.1021/es702274e, 2008.
- Helmig, D., Ortega, J., Duhl, T., Tanner, D., Guenther, A., Harley, P., Wiedinmyer, C., Milford, J., Sakulyanontvittaya, T., "Sesquiterpene Emissions from Pine Trees – Identifications, Emission Rates and Flux Estimates for the Contiguous United States," *Environmental Science and Technology*, **41**:1545-1553, 2007.
- Brinkman, G., Vance, G., Hannigan, M., Milford, J.B., "Use of Synthetic Data to Evaluate Positive Matrix Factorization as a Source Apportionment Tool for PM<sub>2.5</sub> Exposure Data," *Environmental Science and Technology*, **40**:1892-1901, 2006.
- Henderson, D., Milford, J.B., Miller, S.L., "Prescribed Burns and Wildfires in Colorado: Impacts of Mitigation Measures on Indoor Air Particulate Matter," *J. Air & Waste Management Association*, **55**:1516-1526, 2005.
- Hakami, A., Harley, R.A., Milford, J.B., Odman, M.T., Russell, A.G., "Regional, Three-Dimensional Assessment of the Ozone Formation Potential of Organic Compounds" *Atmospheric Environment*, **38** (1):121-134, 2004.
- Martien, P.T., Harley, R.A., Milford, J.B., Russell, A.G., "Evaluation of Incremental Reactivity and Its Uncertainty in the South Coast Air Basin," *Environmental Science and Technology*, **37**:1598-1608, 2003.
- Miller, S.L., Anderson, M.J., Daly, E.P., Milford, J.B., "Source Apportionment of Exposures to Volatile Organic Compounds, I. Evaluation of Receptor Models Using Simulated Exposure Data," *Atmospheric Environment*, **36**:3629-3641, 2002.
- Anderson, M.J., Daly, E.P., Miller, S.L., Milford, J.B. "Source Apportionment of Exposures to Volatile Organic Compounds, II. Application of Receptor Models to TEAM Study Data," *Atmospheric Environment*, **36**:3643-3658, 2002.
- Wang, L., Milford, J.B., Carter, W.P.L. "Analysis of Chamber-Derived Incremental Reactivity Estimates for N-Butyl Acetate and 2-Butoxy Ethanol," *Atmospheric Environment*, **36**:115-135, 2002.
- Anderson, M., Miller, S.L., Milford, J.B., "Source Apportionment of Exposure to Toxic Volatile Organic Compounds Using Positive Matrix Factorization," *International Journal of Exposure Analysis and Environmental Epidemiology*, **11**:295-307, 2001.
- Wang, L., Milford, J.B., "Reliability of Optimal Control Strategies for Photochemical Air Pollution," *Environmental Science and Technology*, **35**:1173-1180, 2001.
- Wang, L., Milford, J.B., Carter, W.P.L. "Reactivity Estimates for Aromatic Compounds: 1. Uncertainty in Chamber-Derived Parameters," *Atmospheric Environment*, **34**:4337-4348, 2000.
- Wang, L., Milford, J.B., Carter, W.P.L. "Reactivity Estimates for Aromatic Compounds: 2. Uncertainty in Incremental Reactivities", *Atmospheric Environment*, **34**:4349-4360, 2000.
- Bergin, M.S., Milford, J.B. "Application of Bayesian Monte Carlo Analysis to a Lagrangian Photochemical Air Quality Model," *Atmospheric Environment*, **34**:781-792, 2000.

- Bergin, M.S., Noblet, G.S., Petrini, K., Dhieux, J.R., Milford, J.B., Harley, R.A. "Formal Uncertainty Analysis of a Lagrangian Photochemical Air Pollution Model," *Environmental Science and Technology*, **33**:1116-1126, 1999.
- Das, M., Milford, J.B. "Factors Influencing Ozone Chemistry in Subsonic Aircraft Plumes," *Atmospheric Environment*, **33**:869-880, 1999.
- Bergin, M.S., Russell, A.G., Milford, J.B., "Effects of Chemical Mechanism Uncertainties on the Reactivity Quantification of Volatile Organic Compounds Using a Three-Dimensional Air Quality Model," *Environmental Science and Technology*, **32**:694-703, 1998.
- Kuhn, M., Builtjes, P.J.H., Poppe, D., Simpson, D., Stockwell, W.R., Andersson-Skoeld, Y., Baart, A., Das, M., Fiedler, F., Hov, O., Kirchner, F., Makar, P.A., Milford, J.B., Roemer, M.G.M., Ruhnke, R., Strand, A., Vogel, B., Vogel, H. "Intercomparison of the Gas-Phase Chemistry in Several Chemistry and Transport Models," *Atmospheric Environment*, **32**:693-709, 1998.
- Harley, R.A., Sawyer, R.F., Milford, J.B. "Updated Photochemical Modeling for California's South Coast Air Basin: Comparison of Chemical Mechanisms and Motor Vehicle Emission Inventories," *Environmental Science and Technology*, **31**:2829-2839, 1997.
- Gao, D., Stockwell, W.R., Milford, J.B. "Global Uncertainty Analysis of a Regional Scale Gas-Phase Chemical Mechanism," *J. Geophysical Research*, **101**:9107-9119, 1996.
- Yang, Y-J, Stockwell, W.R., Milford, J.B., "Effect of Chemical Product Yield Uncertainties on Reactivities of VOCs and Emissions from Reformulated Gasolines and Methanol Fuels," *Environmental Science and Technology*, **30**:1392-1397, 1996.
- Yang, Y-J, Milford, J.B., "Quantification of Uncertainty in Reactivity Adjustment Factors from Reformulated Gasolines and Methanol Fuels," *Environmental Science and Technology*, **30**:196-203, 1996.
- Bergin, M.S., Russell, A.G., Milford, J.B., "Quantification of Individual VOC Reactivity Using a Chemically Detailed, Three-Dimensional Photochemical Model," *Environmental Science and Technology*, **29**:3029-3037, 1995.
- Gao, D., Stockwell, W.R., Milford, J.B. "First Order Sensitivity and Uncertainty Analysis for a Regional-Scale Gas-Phase Chemical Mechanism," *J. Geophysical Research*, **100**:23153-23166, 1995.
- Russell, A.G., Milford, J.B., Bergin, M.S., McBride, S., McNair, L., Yang, Y-J, Stockwell, W.R., Croes, B. "Urban Ozone Control and Atmospheric Reactivity of Organic Gases," *Science*, **269**: 491-495, 1995.
- Stockwell, W.R., Milford, J.B., Gao, D., Yang, Y-J, "The Effect of Acetyl Peroxy - Peroxy Radical Reactions on Peroxyacetyl Nitrate and Ozone Concentrations," *Atmospheric Environment*, **29**:1591-1599, 1995.
- Yang, Y-J, Stockwell, W.R., Milford, J.B., "Uncertainties in Incremental Reactivities of Volatile Organic Compounds," *Environmental Science and Technology*, **29**:1336-1345, 1995.
- Lin, C., Milford, J.B., "Decay-Adjusted Chemical Mass Balance Receptor Modeling for Volatile Organic Compounds," *Atmospheric Environment*, **28**:3261-3276, 1994.
- Milford, J.B., Gao, D., Zafirakou, A., Pierce, T.E., "Ozone Precursor Levels and Responses to Emissions Reductions: Analysis of Regional Oxidant Model Results," *Atmospheric Environment*, **28**:2093-2104, 1994.



- Milford, J.B., Gao, D., Sillman, S., Blossey, P., Russell, A.G., "NO<sub>y</sub> as an Indicator of the Sensitivity of Ozone to ROG and NO<sub>x</sub> Emissions," *J. Geophysical Research*, **99**:3533-3542, 1994.
- Milford, J.B., Gao, D., Russell, A.G., McRae, G.J., "Comparing the Sensitivities of Condensed Chemical Mechanisms for Photochemical Air Pollution," *Environmental Science and Technology*, **26**:1179-1189, 1992.
- Russell, A.G., St. Pierre, D., Milford, J.B., "Ozone Control and Methanol Fuel Use," *Science*, **247**:201-205, 1990.
- Milford, J.B., Russell, A.G., McRae, G.J., "Spatial Patterns in Photochemical Pollutant Response to NO<sub>x</sub> and ROG Reductions," *Environmental Science and Technology*, **23**:1290-1301, 1989.
- McRae, G.J., Milford, J.B., Slompak, B.J., "Changing Roles for Supercomputing in Chemical Engineering," *International J. Supercomputing Applications*, **2**:16-40, 1988.
- Stockwell, W.R., Milford, J.B., McRae, G.J., Middleton, P., Chang, J.S., "Nonlinear Coupling in the NO<sub>x</sub> - SO<sub>x</sub> - Reactive Organic System," *Atmospheric Environment*, **22**:2481-2490, 1988.
- Hahn, R.W., McRae, G.J., Milford, J.B., "Coping with Complexity in the Design of Environmental Policy," *J. Environmental Management*, **27**:109-125, 1988.
- Milford, J.B., Davidson, C.I., "The Sizes of Particulate Sulfate and Nitrate in the Atmosphere: A Review," *J. Air Pollution Control Association*, **37**:125-134, 1987.
- Milford, J.B., Davidson, C.I., "The Sizes of Particulate Trace Elements in the Atmosphere: A Review," *J. Air Pollution Control Association*, **35**:1249-1260, 1985.
- Peer-Reviewed Book Chapters and Encyclopedia Articles*
- Russell, A.G., Milford, J.B., "Air Quality Modeling," in *Encyclopedia of Energy Technology and the Environment*, John Wiley and Sons, 1995.
- Russell, A.G., Milford, J.B., "Atmospheric Modeling," *Encyclopedia of Chemical Technology*, **3**, John Wiley and Sons, 1992.
- Nriagu, J.O., Pacyna, J.M., Milford, J.B., Davidson, C.I., "Distribution and Characteristic Features of Chromium in the Atmosphere," in Nriagu, J.O., and Nieboer, E., eds., *Chromium in the Natural and Human Environments*, John Wiley and Sons, 1988.
- Other Book Chapters*
- Milford, J.B., "Environmental Law for Engineers," forthcoming in Kutz, M. ed., *Environmental Engineer's Handbook*, John Wiley and Sons, 2017 (expected publication date).
- Milford, J.B., Russell, A.G., "Atmospheric Models: Atmospheric Pollutant Dynamics, Meteorology and Climate," in *Environmental Modeling - Vol. 1: Computer Methods and Software for Simulating Environmental Pollution and its Adverse Effects*, P. Zannetti, ed., Computational Mechanics Publications and Elsevier Applied Science, 1993.
- Conference Proceedings, Papers, and Presentations*
- Capps, S., Paranjothi, G., Kurashima, K., Pierce, G., Milford, J.B., "Evaluating Oil and Gas Speciation Profiles with Factor Analysis of Ambient Volatile Organic Compound Concentrations in the Colorado Front Range, paper presented at the Fall Meeting of the American Geophysical Union, San Francisco, CA, Dec. 12-16, 2016.
- Alongi, M., Estep, M., Kasprzyk, J., Milford, J., Ryan, J., "Multi-Objective Policy Analysis to

- Evaluate Air Quality Impacts of Unconventional Oil and Gas Development (UOGD) Regulations,” poster presented at the Fall Meeting of the American Geophysical Union, San Francisco, CA, Dec. 12-16, 2016.
- Capps, S., Paranjothi, G., Kurashima, K., Milford, J.B., “Source Influences on Ambient Ozone Precursor Concentrations in the Colorado Front Range,” paper presented at the 15<sup>th</sup> Annual CMAS Conference, Chapel Hill, NC, Oct. 24 – 26, 2016.
- Brown, K., Henze, D., Milford, J.B., “Air Quality Co-Benefits of Greenhouse Gas Emissions Fees in the U.S. Energy System,” poster presented at the Health Effects Institute Annual Conference 2016, Denver, CO, May 1-3, 2016.
- Capps, S., Nsanzineza, R., Turner, M.D., Henze, D., Zhao, S., Russell, M.G., Hakami, A., Milford, J.B., “Estimating the Influence of Oil and Gas Emissions on Urban Ozone and Associated Health Risks,” poster presented at the Fall Meeting of the American Geophysical Union, San Francisco, CA, Dec. 12 – 16, 2015.
- Brown, K., Henze, D.K., Milford, J.B., “Air Quality Impacts of Damage Based Emissions Fees,” paper presented at the 14<sup>th</sup> Annual CMAS Conference, Chapel Hill, NC, October 5 – 6, 2015.
- Starling, A.P., Peel, J., Dutton, S.J., Hannigan, M.P., Miller, S.L., Milford, J.B., Vedal, S. “Ambient Air Pollution and the Risk of Preterm Birth,” poster presented at the Society for Epidemiological Research Annual Conference, Denver, CO, June 2015.
- Kelsey, K., Barger, N., Dilling, L., Fernandez, D., Milford, J., Redmond, M., Neff, J., “Managing Forest Carbon on Public Lands Under a Changing Climate,” poster presented at the Fifth Annual National American Carbon Program Principal Investigators Meeting, Washington, DC, Jan. 26 – 29, 2015.
- Lapina, K., Milford, J.B., Henze, D.K., “Implications of RCP Scenarios for Future Changes in Vegetative Exposure to Ozone in the Western US,” poster presented at the Fall Meeting of the American Geophysical Society, San Francisco, CA, Dec. 15 – 19, 2014.
- Brown, K., Henze, D., Milford, J.B., “The Effect of Criteria Pollutant and Greenhouse Gas Damage Based Fees on Emissions from the US Energy System,” paper presented at the 13<sup>th</sup> Annual CMAS Conference, Chapel Hill, NC, October 27 – 29, 2014.
- Brown, K., Henze, D., Milford, J. “Internalizing Life Cycle Externalities in the US Energy System,” paper presented at LCA XIV, San Francisco, CA, October 6 – 8, 2014.
- McLeod, J., Milford, J., Brinkman, G., “Scenario-Based Characterization of Emissions Associated with Future Natural Gas Production and Use,” poster presented at the GEIA 2014 Conference, Boulder, CO, June 10-11, 2014.
- Clements, N., Miller, S., Peel, J., Milford, J., Hannigan, M., “The Colorado Coarse Rural-Urban Sources and Health Study: Spatiotemporal Variability of Coarse and Fine Particulate Matter Mass Concentrations and Composition,” paper presented at the DUST 2014 International Conference on Atmospheric Dust, Taranto Italy, June 2 – 6, 2014.
- Milford, J.B., “Air Quality Impacts of Oil and Gas Production,” invited presentation to the Southwest Kansas Royalty Owners Association, Hugoton, KS, April 26, 2014.
- McLeod, J., Milford, J., Brinkman, G., “Development of Emissions Scenarios to Assess the Impact of Future Natural Gas Production on Air Quality in the Rocky Mountain Region,” poster presented at the NSF AWG Workshop on Air Quality and Oil and Gas Development in the Rocky Mountain Region, Boulder CO, October 21 – 22, 2013.
- Clements, N., Duhl, T., Lee, E., Chhun, B., Rosario-Ortiz, F., Milford, J.B., Miller, S.L., Hannigan, M.P. “Exploring the Composition of Urban and Rural Organic Matter Found in

- Coarse Particles (PM<sub>10-2.5</sub>) in Northeastern Colorado,” paper presented at the 2013 Annual American Association for Aerosol Research Conference, Portland, OR, October 2013.
- Peel, J.L., Ross, Z., Clements, N., Navidi, W., Milford, J., Miller, S., Hannigan, M., “Coarse Particulate Matter and Hospital Visits: The Colorado Coarse PM Rural Urban Source and Health Study,” Abstracts of the 2013 Conference of the International Society of Environmental Epidemiology (ISEE), the International Society of Exposure Science (ISES), and the International Society of Indoor Air Quality and Climate (ISIAQ), Basel, Switzerland, August 19-23, 2013.
- Milford, J.B., Petron, G., “Atmospheric Perspectives on Oil and Gas Operations,” invited presentation for FrackingSENSE, University of Colorado Boulder, April 2013.
- Lapina, K., Henze, D., Milford, J., Fiore, A., Lin, M., Carmichael, G., Huang, M., Pfister, G., Emmons, L., Herrick, J., Dutton, S., Smith, T., Sandiford, V., Porter, E., "Source contributions to seasonal vegetative exposure to ozone in the US," paper presented at the American Geophysical Union 2012 annual meeting, San Francisco, CA, December 2012.
- Jorgenson, J., Brinkman, G., Milford, J., “Project FEVER (Fostering Electric Vehicle Expansion in the Rockies): Discerning the Air Quality Impacts of EV Penetration in Colorado by 2020,” Presentation and poster at the Carbon Management Center Launch Forum, National Renewable Energy Laboratory, Golden, CO, October 11, 2012.
- Clements, N., Milford, J., Miller, S., Hannigan, M., Peel, J., “Characterization of Rural and Urban PM<sub>2.5</sub> and PM<sub>10-2.5</sub> Mass Concentrations in Colorado from 3 Years of Continuous Monitoring,” Poster presented at the 2012 Annual American Association for Aerosol Research Conference, Minneapolis, MN, October 2012.
- Clements, N., Milford, J., Hannigan, M., Solheim, F., “Using Boundary Layer Dynamics for Air Pollution Concentration Prediction,” EPA National Air Quality Conference, Denver, CO, May 2012.
- Brown, K.E., Henze, D., Milford, J.B. “Incorporating Climate and Air Quality Externalities in the U.S. Electricity System,” Paper presented at the World Renewable Energy Forum 2012, Denver, CO, May 13-17, 2012.
- Xie, M, Coons, TL, Dutton, SJ, Hemann, JG, Miller, S, Milford, JB, Peel, J, Vedal, S, Hannigan, MP, “Spatial variability of PM<sub>2.5</sub> carbonaceous components and sources in Denver,” Paper presented at the 2011 Annual American Association for Aerosol Research Conference, Orlando, FL, October 2011.
- Clements, N., Albano, K., Moore, A., Hannigan, M., Miller, S., Milford, J., Schauer, J., Sioutas, C., “The Spatial and Temporal Variability of Fine and Coarse Particulate Matter Composition in Colorado,” Poster presented at the 2011 Annual Conference of the American Association for Aerosol Research, Orlando, FL, October 2011.
- Brown, K.E., Milford, J.B., Henze, D. “Effect of Incorporating Air Quality and Climate Externalities in Future U.S. Electricity Scenarios,” Paper presented at the Fall 2011 Annual Meeting of the American Chemical Society, Denver, CO, September 2011.
- Ennis, T. Sullivan, J., Milford, J.B., Myers, B. “GoldShirt Transitional Program: First Year Results and Lessons Learned on Creating Engineering Capacity and Expanding Diversity,” ASEE Conference Proceedings, Vancouver, B.C., Canada, June 2011.
- Kim, S-Y, Hannigan, MP, Peel, JL, Barsanti, K, Dutton, SJ, Piedrahita, R, Milford, JB, Miller, SL, Sheppard, L, Vedal, S, “Sources of semi-volatile organic gases and fine particulate matter and day lag patterns of cardiovascular hospitalizations,” Annual American Thoracic Society Conference, Denver, CO, May 2011.

- Ennis, T., Sullivan, J., Milford, J.B., Myers, B., Scarritt, A., "GoldShirt Transitional Program: Creating Engineering Capacity and Expanding Diversity through a Performance-Enhancing Year," American Society of Engineering Education Conference Proceedings, Louisville, KY, June 2010.
- Piedrahita, R, Dutton, SJ, Vedal, S, Hannigan, MP, Miller, S, Milford, JB, "A 3-year Time-Series of Daily PM2.5 Source/Process Contributions in Denver," Poster presented at the American Association for Aerosol Research Specialty Conference, San Diego, CA, March 2010.
- Coons, T, Dutton, SJ, Peel, J, Vedal, S, Milford, JB, Hannigan, MP, "Spatial and Temporal Variation of Speciated PM2.5 in Denver, CO," Poster presented at the American Association for Aerosol Research Specialty Conference, San Diego, CA, March 2010.
- Hemann, J, Piedrahita, R, Dutton, SJ, Vedal, S, Miller, S, Milford, JB, Hannigan, MP, "Time-Series PM2.5 Source Apportionment – Value of the Measurements" Paper presented at the American Association for Aerosol Research Specialty Conference, San Diego, CA, March 2010.
- Hannigan, MP, Hemann, JG, Piedrahita, R, Miller, SL, Milford, JB, Peel, J, Dutton, SJ, Vedal, S, "Time-Series PM2.5 Source/Factor Apportionment – Value of the Measurements," Paper presented at the 2010 Symposium on Air Pollution and Cardiovascular Disease sponsored by the NIEHS and the EPA, Seattle, WA, May 2010.
- Hannigan, MP, Peel, JL, Kim, S-Y, Sheppard, L, Milford, JB, Miller, S, Piedrahita, R, Dutton, SJ, Clark, ML, Vedal, S, "The Denver Aerosol Sources and Health Study (DASH): Synthesis of Results," Paper presented at the Annual American Association for Aerosol Research Conference, Portland, OR, Fall 2010.
- Eisele, A.P., Hannigan, M.P., Milford, J.B., Helmig, D., Milmoë, P., "Understanding Air Toxics and Carbonyl Pollutant Sources at the Urban/Mountain Interface in Boulder County, Colorado," paper presented at the 101st Annual Meeting of the Air and Waste Management Association, Portland, OR, June 2008.
- Milford, J., Sakulyanontvittaya, T., Helmig, D., Wiedinmyer, C., Guenther, A., Harley, P., "Atmospheric Aerosols from Biogenic Hydrocarbon Oxidation," U.S. Environmental Protection Agency Atmospheric Science Progress Review Meeting, Research Triangle Park, NC, June 21-22, 2007.
- Milford, J., Duhl, T., Helmig, D., Ortega, J., Pollmann J., Sakulyanontvittaya, T., Guenther, A., Harley, P., Wiedinmyer, C., Herrick, J., "Secondary Organic Aerosols from Biogenic Hydrocarbon Oxidation," American Association for Aerosol Research Supersites Conference, Atlanta, GA, February 10, 2005.
- Brinkman, G., Dutton, S., Miller, S., Hannigan, M., Milford, J., Vedal, S., "Comparison of Chemical Analysis Scenarios for Source Apportionment of Synthetic PM2.5 Using Positive Matrix Factorization," Twenty-third Annual Conference of the American Association for Aerosol Research, Atlanta, GA, October 4-8, 2004.
- Milford, J., Guenther, A., Helmig, D., Wiedinmyer, C., Harley, P., Sakulyanontvittaya, S., Duhl, T., "Atmospheric Aerosols from Biogenic Hydrocarbon Oxidation," paper presented at the U.S. Environmental Protection Agency Organic Carbon Aerosols workshop, June 7, 2004.
- Henderson, D., Milford, J., Miller, S. "Prescribed Burns in Colorado: Impacts of Mitigation Measures on Indoor Particulate Matter," Indoor Air 2002, The 9<sup>th</sup> International Conference on Indoor Air Quality and Climate, Monterey, CA, June 30 - July 5, 2002.

- Coen, J., Mahalingam, S., Milford, J.B., Clark, T.L., Daily, J.W. "Data Reduction of Ground-Based Black and White and IR Imaging from the Frostfire Controlled Burn," FIRE 2000, San Diego, CA, November 29-December 1, 2000.
- Anderson, M.J., Miller, S.L., Milford, J.B. "Source Apportionment of Exposure to Toxic Volatile Organic Compounds in California," 10<sup>th</sup> Annual Conference of the International Society of Exposure Analysis, Monterey, CA, October 24-27, 2000.
- Anderson, M.J., Miller, S.L., Milford, J.B. "Source Apportionment of Exposure to Toxic Volatile Organic Compounds in California," International Symposium on the Measurement of Toxic and Related Air Pollutants, Sponsored by the Air & Waste Management Assoc. and U.S. Environmental Protection Agency, Durham, NC, September 12-14, 2000.
- Anderson, M.J., Miller, S.L., Milford, J.B. "Source Apportionment of Exposure to Toxic Volatile Organic Compounds," Engineering Solutions to Indoor Air Quality Problems Symposium, Sponsored by the Air & Waste Management Assoc. and U.S. Environmental Protection Agency, Raleigh, NC, July 17-19, 2000.
- Wang, L., Milford, J.B., Carter, W.P.L. "Analysis of Chamber-Derived Incremental Reactivity Estimates for N-Butyl Acetate and 2-Butoxy Ethanol," U.S.-German Environmental Chamber Workshop, Riverside, CA, October 4-6, 1999.
- Noblet, G., Harley, R., Dhieux, J., Milford, J. "Formal Uncertainty Analysis for Wind Fields and a Lagrangian Photochemical Air Quality Model," 91st Annual Meeting of the Air & Waste Manage. Assoc., San Diego, CA, June 1998.
- Moulik, M.D., Milford, J.B. "The Impact of Uncertainties in Reaction Rate Parameters and Initial Concentrations on the Chemistry in Subsonic Aircraft Plumes" invited paper presented at the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 8-12, 1997.
- Das, M., Milford, J.B. "The Effect of Uncertainties in Reaction Rate Parameters, and of Dilution and Mixing on the Chemistry in Subsonic Aircraft Plumes" poster presented at the 1997 Conference on the Atmospheric Effects of Aviation, Virginia Beach, VA, March 10-14, 1997.
- Das, M., Milford, J.B., "Uncertainties Related to the Environmental Impacts of Emissions from Subsonic Aircraft at Cruise Altitudes," 89th Annual Meeting of the Air & Waste Manage. Assoc., Nashville, TN, June 1996.
- Moucheron, M.C., Milford, J.B., "Development and Testing of a Process Model for Secondary Organic Aerosols," 89th Annual Meeting of the Air & Waste Manage. Assoc., Nashville, TN, June 1996.
- Stockwell, W.R., Milford, J.B., "New Mechanisms for Atmospheric Chemistry: Uncertainty and Chemical Kinetic Data," Air Pollution Research Report Series, Research Report 57, Homogeneous and Heterogeneous Chemical Processes in the Troposphere Joint Workshop LACTOZ-HALIPP, September 25-26, Strasbourg, France, Luxembourg: Office for Official Publications of the European Communities, pp. 206-211, 1996.
- Stockwell, W.R., Kirchner, F., Milford, J.B. "Sensitivity and uncertainty in mechanisms for atmospheric chemistry," in Borrell, P.M., Borrell, P., Kelly, K., Cvitas, T., Seiler, W., eds., *Proceedings of the EUROTRAC Symposium '96, Transport and Transformation of Pollutants in the Troposphere, Volume 1: Clouds, Aerosols, Modelling and Photo-oxidants*, Computational Mechanics Publications, Southampton, 1996, pp 711-714.

- Gao, D., Milford, J.B., "Sensitivity and Uncertainty Analysis of Selected Species to Parameters in the RADM2 Mechanism," 87th Annual Meeting of the Air & Waste Manage. Assoc., Cincinnati, OH, June 1994.
- Milford, J.B., Yang, Y-J, Stockwell, W.R., "Uncertainties in Chemical Mechanisms for Urban and Regional Scale Oxidant Modeling," Proceedings of the International Conference on Regional Photochemical Measurement and Modeling Studies, Air & Waste Manage. Assoc., San Diego, CA, November 1993.
- Stockwell, W.R., Milford, J.B., Gao, D., Yang, Y-J., "An Analysis of the Sensitivity of Trace Species Concentrations to Peroxyacetyl Nitrate and Acetyl Peroxy - Peroxy Radical Chemistry," Proceedings of the International Conference on Regional Photochemical Measurement and Modeling Studies, Air & Waste Manage. Assoc., San Diego, CA, November 1993.
- Gao, D., Milford, J.B., "Application of Sensitivity and Uncertainty Analysis to the RADM2 Mechanism," 86th Annual Meeting of the Air & Waste Manage. Assoc., Denver, CO, June 1993.
- Stockwell, W.R., Milford, J.B., Gao, D., Yang, Y-J., "An Analysis of the Uncertainties in Atmospheric Chemical Mechanisms," 86th Annual Meeting of the Air & Waste Manage. Assoc., Denver, CO, June 1993.
- Lin, C., Milford, J.B., "Chemical Mass Balance Receptor Modeling for Volatile Organic Compounds," 86th Annual Meeting of the Air & Waste Manage. Assoc., Denver, CO, June 1993.
- Das, M., Milford, J.B., "Reactivity of Volatile Organic Compound Emissions from Consumer and Commercial Products," International Conference on Tropospheric Ozone: Nonattainment and Design Value Issues, Air & Waste Manage. Assoc., Boston, MA, October 1992.
- Milford, J.B., Gao, D., Odman, M.T., Russell, A.G., Possiel, N.C., Scheffe, R.D., Pierce, T.E., Schere, K.L., "Air Quality Responses to NO<sub>x</sub> Reductions: Analysis of ROMNET Results," paper no. 92-89.02, 85th Annual Meeting of the Air & Waste Manage. Assoc., Kansas City, MO, June 1992.
- Milford, J.B., "Sensitivity Analysis of Chemical Mechanisms for Use in Photochemical Models," in *Tropospheric Ozone and the Environment II*, R.L. Berglund, ed., proceedings of the conference held November 4-7, 1991, Air & Waste Manage. Assoc., Pittsburgh, PA, 1992.
- Milford, J.B., "Environmental Trade-offs of Controlling NO<sub>x</sub> Emissions, Symposium on The Role and Importance of Nitrogen Oxides Emissions Controls in Ozone Attainment Strategies for North America, Boston, MA, 1990.
- Milford, J.B., commentary on "Impacts on Urban Ozone and Other Air Toxics," in *Methanol as an Alternative Fuel Choice: An Assessment*, W.L. Kohl, ed., proceedings of the conference held December 4-5, 1989, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University, Washington, DC, 1990.
- Harris, J.N., Russell, A.G., Milford, J.B., "Air Quality Implications of Methanol Fuel Utilization," SAE Technical Paper Series no. 881198, SAE, Warrendale, PA, August, 1988.
- Friedman, R.M., Milford, J.B., Rapoport, R.D., Szabo, N.B., "Legislative Responses to Ozone Nonattainment," paper no. 88-67.5, 81st Annual Meeting of the Air Pollution Control Association, Pittsburgh, PA, June 1988.

#### *Technical Reports*

Jacob, D.J., Holloway, T., Duncan, B.N., Milford, J., Knight, D., Dolwick, P., Moore, T. "The

- NASA ASP Air Quality Applied Science Team (AQAST): A Retrospective,” prepared for the NASA Applied Sciences Program, February 2016.
- Helmig, D., Hannigan, M., Milford, J., Gordon, J. “Air Quality Monitoring Study to Assess Exposure to Volatile Organic Compounds and Develop Cost-Efficient Monitoring Techniques,” final report to Boulder County Commissioners, May 2015.
- Hannigan, M., Peel, J., Milford, J., Miller, S., Navidi, W., “Health Effects and Characterization of Urban and Rural Coarse Particulate Matter in Northeastern Colorado,” final report to U.S. Environmental Protection Agency, EPA Agreement No. R833744, September 2013.
- Gordon, J., Middleton, K., Ortega, J., Piedrahita, R., Milford, J.B., Hannigan, M., “Development and Evaluation of a Personal Exposure Monitor for H<sub>2</sub>S and Hydrocarbons,” final report to Environmental Defense Fund, September 2012.
- Jorgenson, J., Detlor, J., Brinkman, G., Milford, J.B., “Emissions Changes from Electric Vehicle Use in Colorado,” final report to Project FEVER, November 7, 2012.
- Lyman, R., Diaz-Rivera, K., Hannigan, M., Milford, J.B., “Follow-up Evaluation of Crankcase Filters and Diesel Oxidation Catalysts for Reducing Children’s Exposure Inside School Buses,” final report to Better Pueblo, December 31, 2010.
- Eisele, A., Hannigan, M., Milford, J.B., Helmig, D., Milmoie, P. “Understanding Air Toxics and Carbonyl Pollutant Sources in Boulder County, Colorado,” report to U.S. Environmental Protection Agency, Region 8, December 2008.
- Trenbath, K., Hannigan, M., Milford, J.B. “Evaluation of Crankcase Filters and Diesel Oxidation Catalysts for Reducing Children’s Exposure in School Buses,” final report to Better Pueblo, Concerned Environmental and Community Parties and Xcel Energy, June 1, 2008.
- Milford, J., Guenther, A., Wiedinmyer, C., Helmig, D., “Atmospheric Aerosols from Biogenic Hydrocarbon Oxidation,” final report to the U.S. Environmental Protection Agency under Grant No. RD 83107901-0, December 2007.
- Martien, P., Harley, R., Milford, J., Hakami, A., Russell, A., "Development of Reactivity Scales via 3-D Grid Modeling of California Ozone Episodes," final report to the California Air Resources Board under Contract No. 98-309, May 2002.
- Wang, L., Milford, J.B., Carter, W.P.L., "Uncertainty in Reactivity Estimates for N-Butyl Acetate and 2-Butoxy Ethanol," final report to the California Air Resources Board under Contract No. 95-331, December 1999.
- Wang, L., Milford, J.B., Carter, W.P.L., "Reactivity Estimates for Aromatic Compounds," final report to the California Air Resources Board under Contract No. 95-331, December 1999.
- Daily, J.W., Mahalingam, S., Milford, J.B., Khunatorn, Y., Clark, T.L., Coen, J., Radke, L., "Visible and IR Imaging and UV-Visible Spectral Analysis of the Frostfire Controlled Burn Near Fairbanks, Alaska, July 1999," Center for Combustion and Environmental Research Report, University of Colorado at Boulder, August 1999.
- Bergin, M.S., Russell, A.G., Yang, Y-J, Milford, J.B., Kirchner, F., Stockwell, W.R., “Effects of Uncertainty in SAPRC90 Rate Constants and Product Yields on Reactivity Adjustment Factors for Alternative Fuel Vehicle Emissions,” final report to the National Renewable Energy Laboratory of the U.S. Department of Energy under Contract No. 13013-1, May 1996.

- Gao, D., Milford, J.B., Stockwell, W.R., "Analysis of Uncertainties in the RADM2 Gas-Phase Chemical Mechanism," Electric Power Research Institute, Report No. EPRI TR-106433, Project No. RP3189-06, University of Colorado, April 1996.
- Milford, J.B., Armando, C., "Receptor Modeling of Non-Methane Organic Compounds from the 1992 Atlanta Intensive of the Southern Oxidants Study," final report to North Carolina State University under Contract No. 91-0074-03, University of Colorado, January 1996.
- Poppe, D., Andersson-Skold, Y., Baart, A., Builtjes, P.J.H., Das, M., Fiedler, F., Hov, O., Kirchner, F., Kuhn, M., Makar, P.A., Milford, J.B., Roemer, M.G.M., Ruhnke, R., Simpson, D., Stockwell, W.R., Strand, A., Vogel, B., Vogel, H., "Intercomparison of the Gas-Phase Chemistry of Several Chemistry and Transport Models," final report of the Chemical Mechanism Working Group (CMWG) within EUROTRAC, Fraunhofer Institute (IFU), Garmisch-Partenkirchen, Germany, January 1996.
- Yang, Y-J, Das, M., Milford, J.B., Bergin, M.S., Russell, A.G., Stockwell, W.R., "Quantification of Organic Compound Reactivities and Effects of Uncertainties in Rate Parameters," Auto/Oil Air Quality Improvement Research Program, August 1994.
- Stockwell, W.R., Yang, Y-J, Milford, J.B., "A Compilation of Estimated Uncertainty Factors for Rate Constants in W.P.L. Carter's Detailed Mechanism," Auto/Oil Air Quality Improvement Research Program, October 1993.
- Lin, C., Milford, J.B., "Chemical Mass Balance Receptor Modeling for Volatile Organic Compounds," final report to the University of Michigan under UCAR Subcontract No. S9135, University of Connecticut, June 1993.
- Milford, J.B., Gao, D., Zafirakou, A., "Relationships between Precursor Levels and Responses to Emissions Reductions in Regional Oxidant Modeling Results," final report for Cooperative Agreement No. CR818572-01-0 with the U.S. Environmental Protection Agency, University of Connecticut, September 1992.
- Gao, D., Milford, J.B., Odman, M.T., Russell, A.G., "NO<sub>x</sub> Control and the Corresponding Ozone Reductions: Analysis of the ROMNET Results," report to the Office of Air Quality Planning and Standards of the U.S. Environmental Protection Agency, University of Connecticut and Carnegie Mellon University, September 1991.
- Milford, J.B., Nikolaidis, V.S., Das, M., "After the Wrecking Ball: How Land Disposal and Burning of Demolition Wood Affect the Environment," report to the General Assembly of the State of Connecticut, Environmental Research Institute, University of Connecticut, February 1991.
- Russell, A.G., Harris, J.N., Milford, J.B., St. Pierre, D., "Quantitative Estimate of the Air Quality Impacts of Methanol Fuel Use," report to the California Air Resources Board and the South Coast Air Quality Management District, Carnegie Mellon University, Pittsburgh, PA, March 1989.