

JENNIFER M. LOGUE

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Research Interests

Impact of emissions from energy production on human health and the environment; Multivariate analysis of alternative energy including environmental impacts, cost, availability, and public acceptability; Environmental model development and evaluation; Increasing efficiency and reducing harmful emission of electricity production; Combustion; Emissions from bio fuels and alternative energy

Education

Carnegie Mellon University, Pittsburgh, PA

- Ph.D. Mechanical Engineering January 2009
- Ph.D. Engineering and Public Policy January 2009
 - **Advisor:** Professor Allen L. Robinson, Ph.D.
 - **Dissertation:** “*Characterizing Air Toxics Exposure and Risk in Allegheny County and Evaluating EPA Modeling Tools for Policy Making*”
 - **Relevant Course Work:**
 - Global Atmospheric Chemistry
 - Probability and Estimation Methods for Eng. Systems
 - Graduate Fluid Mechanics
 - Graduate Thermodynamics
 - Advanced Heat Transfer
 - Applied Data Analysis
 - Introduction to the Theory and Practice of Policy Analysis
 - Quantitative Methods for Policy Analysis
 - Workshop for Applied Policy Analysis
 - Management and Engineering Economics
 - Numerical Methods for Mechanical Engineers
 - Ph.D. Microeconomics

University of Maryland, College Park, MD

- M.S. in Fire Protection Engineering, August 2003
 - **Advisor:** Associate Professor Andre Marshall, Ph.D.
 - **Thesis:** “*Characteristic of Low Strain Near Extinction Flames in μg and 1g* ”
 - **Relevant Course Work:**
 - Computational Fluid Dynamics
 - Advanced Risk Assessment
 - Mathematical Techniques of Reliability Engineering
 - Fire Induced Flows
 - Combustion
 - Fire Dynamics Lab
 - Physics of Turbulent Flows

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- B.S in Fire Protection Engineering May 2002
 - Graduated from the Gemstone Honors Program
 - Graduated from the University of Maryland Honors Program

Skills

Research Experience:

- Environmental lab and field work
- Combustion research
- Gas Chromatography/ Mass Spectrometry
- Specialized instrument fabrication
- Developing computational models
- Source apportionment
- Presenting results to technical and non-technical audiences
- Statistical analysis of data
- Framing complex problems

Course Work:

- Quantitative methods for policy analysis
- Cost benefit analysis / Multivariate analysis
- Integrating quantitative and qualitative aspects of problems to analyze unstructured policy problems

Experience

Carnegie Mellon University, Dept. of Engineering and Public Policy

Pittsburgh, PA

Postdoctoral Researcher

February 2009-Present

- Member of the Center for Atmospheric Particulate Studies (CAPS)
- Evaluating Environmental Protection Agency (EPA) modeling of gas phase and particulate air toxics
- Publishing technical reports of research findings

Carnegie Mellon University, Dept. of Mechanical Engineering, Department of Engineering and Public Policy

Pittsburgh, PA

January 2005-January 2009

Research assistant

- Member of the Center for Atmospheric Particulate Studies (CAPS)
- Established strategy for meeting research goals
- Developed automated inlet for GC-MS/FID for high time resolved measurement of gas phase toxics
- Developed algorithms to expedite analysis of chromatograms. High time resolved instrumentation yielded thousand of chromatograms per measurement intensive necessitating automation of the quantification process.
- Performed traditional and advanced health risk analysis of air pollution

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- Apportionment air toxics to sources and source classes to determine dominant contributors to health risks
- Communicated with the Allegheny County Health Department and community groups about risks and sources using both written reports and presentations
- Evaluated Environmental Protection Agency (EPA) modeling of gas phase and particulate air toxics

Combustion Science and Engineering

Research Intern

Catonsville, MD

August 2004-December 2004

- Micro-gravity flame detection for international space station
- Fuel combustion research to mitigate hazardous emissions

The Japanese Exchange and Teaching Programme (JET)

English teacher and cultural liaison

Osaka, Japan

August 2003-August 2004

- Developed individualized curriculum for Cultural Studies class in Mihara Junior High School
- Taught students English using creative teaching methods

National Institute of Standards and Technology (NIST)

Engineering Trainee

Gaithersburg, MD

August 2002-July 2003

- Conducted experiments to determine total flooding extinction concentration necessary to extinguish select fuels for different diluents in 1g and μ g as a function of strain rate
- Used thin filament pyrometry to take centerline temperature measurements of laminar flames
- Researched low strain flame extinction in microgravity

University of Maryland: Fire Protection Engineering

Graduate research assistant

College Park, MD

October 2001-July 2003

- Used infrared imagery to determine temperatures within flame
- Worked on the development of thin filament infra-red pyrometry technique
- Developed computational models for temperature processing

L'Ecole Des Mines De Saint Etienne

Student researcher

Saint Etienne, France

June 2001-August 2001

- Tested semiconductor response to smoldering fires of multiple fuels

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- Formulated detection algorithm for use of semiconductors in commercial smoke detectors
- Quantitatively compared detection times of semiconductors and photoelectric smoke detectors for smoldering fires
- Wrote technical documents outlining findings

Naval Research Laboratory: Fire Research Laboratory

Research Intern

Chesapeake Beach, MD

June 2000 – November 2000

- Developed setups for testing water spray cooling and water mist flame suppressions systems and chemical suppressants in mock naval compartments
- Monitored and analyzed room conditions in the testing compartments
- Suggested configurations for using chemical/water suppressant combinations for Halon replacement in naval vessels

Honors

- Masters Fellowship, University of Maryland, 2003
- Golden Key Honor Society Member, University of Maryland, 2002
- Gemstone Honors Program, University of Maryland Honors Program, 1998-2002
- Gemstone Honors Citation, 2002
- Sarah Bryan Scholarship Recipient, 2003
- Inducted into Salamander Honor Society (President Spring 2002, VP Fall 2001);

Journal Publications

Logue, J.M.; Small, M.J.; Stern, D.; Maranche, J.; Robinson, A.L.; *Air Toxic Concentrations, Health Risks and Mixture Interaction Potential in Pittsburgh Pennsylvania* (Submitted to *Journal of Air and Waste Management*)

Logue, J.M.; Lambe, A.; Huff-Hartz, K.E.; Donahue, N.M.; Robinson, A.L.; *Temporal and meteorological influences on air toxics concentrations in multiple exposure regimes* (submitted Atmospheric Environment)

Logue, J.M.; Lambe, A.; Donahue, N.M.; Robinson, A.L.; *Receptor Modeling of Air Toxics Concentrations and Risks in Allegheny County* (in preparation for submission)

Logue, J.M.; Donahue, N.M.; Robinson, A.L.; *Evaluating NATA: Comparison of predicted and measured air toxic concentrations, sources, and risks* (in preparation for submission)

Lambe, A.T.; Logue, J.M.; Kreisberg, N.M.; Hering, S.V.; Worton, D.R.; Goldstein, A.H., Donahue, N.M.; Robinson, A. L.; *Apportioning Black Carbon to Sources Using Highly Time Resolved Ambient Measurements of Organic Molecular Markers in Pittsburgh* (Submitted to Atmospheric Environment)

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Grieshop, A.; Logue, J.M.; Donahue, N.M.; and Robinson, A.L.; *Laboratory investigation of photochemical oxidation of organic aerosol from wood fires 1: measurement and simulation of organic aerosol evolution* (in press Atmospheric Chemistry and Physics)

Technical Reports

Final Technical Report: *Air Toxics in Allegheny County: Sources, Airborne Concentrations, and Human Exposure*. Submitted to the Allegheny County Health Department in accordance with agreement 36946. Allegheny County, PA, January 2009.

Logue, J. 2009 *Characterizing Air Toxics Exposure and Risk in Allegheny County and Evaluating EPA Modeling Tools for Policy Making*. Pennsylvania, USA: Carnegie Mellon University (Ph.D.-thesis)

Logue, J. 2003 *Characteristic of Low Strain Near Extinction Flames in μg and 1g*. Maryland, USA: University of Maryland at College Park (MS-thesis)

Hamins, A.; Bundy, M.; Oh, C. B.; Fuss, S. P.; Logue, J. *Structure and Extinction of Low Strain Rate Non-Premixed Flames by an Agent in Microgravity*; NISTIR 7445; 181 p. September 2007.

Conference Presentations

Logue, J. et al (2007) *Air Toxics in Allegheny County: Sources, Airborne Concentrations, and Human Exposure*. EPA Air Toxics Data Analysis Workshop. Westin O'Hare, Chicago, IL, 3 October 2007.

Logue, J. et al (2007) *Source Apportionment of Air Toxics Downwind of a Heavily Industrialized Area Using High Time Resolved Concentration Measurements*. Air and Waste Management Association 100th Annual Conference and Exhibition. Convention Center, Pittsburgh, PA, 26 June 2007.

Invited Talks

Logue, J. et al. *Air Toxics: Sources, Airborne Concentrations, and Human Exposure*. EPA Air Toxics Data Analysis Workshop. CINVESTAV, Mexico City, Mexico, 10 March 2008.

Logue, J. Azevedo, I.L. (2008) *Living in a World with Sea Level Rise*. Focus the Nation. Carnegie Mellon University, Pittsburgh Pa, 31 January 2008.

Logue, J. et al (2007) *Air Toxics in Allegheny County: Sources, Airborne Concentrations, and Human Exposure* (Community presentation). Neville Island Community Advisory Panel. Ashland Power Plant, Pittsburgh, PA, 24 September 2007.

Press

Study Shows High Level Of Toxins Around Area Schools: Data from USA Today Study Conflicts with CMU Study Data, *WXPI.com, December 9, 2008*

(<http://www.wpxi.com/money/18239027/detail.html?rss=burg&psp=news>)

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Hopey,D.; *Diesel exhaust at risky levels Downtown, study finds*, Thursday, November 06, 2008,
Pittsburgh Post-Gazette (<http://www.post-gazette.com/pg/08311/925796-113.stm>)