

# Nora M. Traviss, PhD

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**Assistant Professor, Safety Studies, Keene State College, 229 Main St., Keene, NH 03435,  
603-358-2974, ntraviss@keene.edu**

## **EDUCATION**

BS Chemical Engineering (1990)      Pennsylvania State University      University Park, PA

MS Environmental Science (2000)      New Jersey Institute of Technology      Newark, NJ

PhD Environmental Studies (2008)      Antioch University New England      Keene, NH

Dissertation title: ***Integration of Analysis and Deliberation to Evaluate Biodiesel Occupational and Environmental Exposures***

This research combined a collaborative exposure assessment of B20 fuel (20% soy based biodiesel/80% petroleum diesel blend) at a rural recycling center with a policy intervention to deliberate the results of the analysis and potential policy outcomes. I applied the National Research Council's (1996) analytic-deliberative model to connect the collective exposure assessment with a Biodiesel Working Group, which catalyzed local decisions about the manufacture and use of biodiesel in Keene, NH. Researchers and undergraduate students from Keene State College and employees from the City of Keene quantitatively estimated diesel and biodiesel exposure profiles for fine particulate matter, elemental carbon, organic carbon and nitrogen dioxide. I also collected qualitative data to examine the genesis, evolution and outcomes of the Biodiesel Working Group. Connecting analysis with deliberation improved the scientific quality of the exposure assessment, increased dissemination of the research results in the local community, and catalyzed novel policy outcomes, including the development of a unique public/private partnership to manufacture biodiesel locally from waste grease. This case showed how integration of analysis and deliberation can result in innovative ways to move beyond regulatory and other barriers, making useful contributions to risk decision-making theory and practice.

**Thesis Advisor, Dr. Thomas Webler**

## **PROFESSIONAL EXPERIENCE**

2005 - present      Keene State College      Keene, NH

### **Assistant Professor (tenure track) – Safety Studies**

Developed and delivered novel and relevant environmental health and safety undergraduate curriculum for the Technology Design and Safety Department. Courses include: Environmental Regulations (300-level), Safety Awareness (100-level), Health Hazard Identification (300-level) and Exposure Assessment (Special topics). Design/delivery of new 4 credit required core course for Safety Studies major with focus on chemical, physical, and biological hazards (Health Hazard Identification). Applied innovative pedagogy to engage traditionally “science-phobic” students in understanding environmental science and chemistry and its impact on environmental

and occupational health policy. Mentored undergraduate researchers in biodiesel exposure assessment and biodiesel facility process safety design. Supervised student independent study scholarship opportunities. Co-sponsored EPA award winning interdisciplinary Safety/Architecture team at 2008 national student competition. Advised undergraduates in course selection, professional and career development. Performed scholarship and service activities in support of the department and broader Keene State College mission. Played a key role in the development of Monadnock Biodiesel Collaborative (MBC), a unique public/private partnership to make/research/use biodiesel from waste grease and conducted numerous public/community outreach presentations. Junior Researcher/PI for National Institute of Health grant via collaboration with Dartmouth College (see below). Co-investigator on multiple foundation grants/gifts in support of the MBC (see below).

2002-2005

Keene State College

Keene, NH

**Environmental Health and Safety Coordinator**

Technical staff position responsible for developing and managing environmental, health and safety (EHS) compliance programs at a 5000 student liberal arts college with over 1000 employees. Created and implemented new, college wide EHS procedures and conducted EHS training programs. Main contact for campus-wide EHS concerns and resolving issues ranging from accident investigation, hazardous waste compliance to indoor air quality concerns. Campus liaison with New Hampshire Department of Environmental Services, and City of Keene Fire Department and Planning Department.

1997 – 2001

Novartis Pharmaceutical Corporation

E. Hanover, NJ

**Senior Environmental Engineer**

Responsible for coordinating and implementing all RCRA/HSWA site investigation and spill prevention activities for 200 acre pharmaceutical manufacturing site. Supervised contractors and consultants, oversaw drilling and groundwater/soil sampling activities. Developed original environmental procedures and training programs. Conducted employee EHS training for DOT hazardous materials and RCRA hazardous waste. Coordinated removal of on site chemical UST's. Member of site emergency response team. Main liaison with Region 2 EPA and New Jersey Department of Environmental Protection.

1994 - 1997

Matheson Gas Products

E. Rutherford, NJ

**Compliance Manager**

Responsible for development and implementation of safety and environmental programs at all 13 Matheson toxic gas manufacturing facilities across the U.S. and Canada. Responsible for hiring and directing EHS staff for the Western and Midwestern region. Liaison for EPA and OSHA. Developed Risk Management Plans for applicable facilities, including facilitating HAZOP's and worst case scenario dispersion models for gases including arsine, phosphine and trichlorosilane. Developed and implemented Corporate Environmental and Safety Manual, including auditing facilities for compliance. Took lead in securing personnel and funds to clean up over 10,000 old, stockpiled cylinders at NJ facility.

1990 - 1994

Praxair, Inc.

Suffield, CT

**Plant Engineer**

Responsible for site project engineering for Fortune 500 industrial gas manufacturing company. Installed liquid nitrogen turbine to increase production yields, converted bulk tank system from oxygen to nitrogen service, applied statistical process control to improve production processes. Additionally responsible for plant EHS compliance.

**PUBLICATIONS**

Traviss, N. 2008. Integration of Analysis and Deliberation to Evaluate Biodiesel Occupational and Environmental Exposures. Dissertation. Antioch University New England.

Traviss, Velazquez, N., Ingalls, J. and Treadwell, M. 2008. Biodiesel vs. Diesel: A pilot study examining exhaust exposures for employees at a rural municipal facility. Journal of Air and Waste Management. In review.

Treadwell, M. and Traviss, N. 2008. Biodiesel vs. Petroleum diesel: exposure profiles. Manuscript under development.

**SELECTED ORAL PRESENTATIONS/POSTERS**

*Integration of Analysis and Deliberation to Evaluate Biodiesel Occupational and Environmental Exposures*, poster presented at the 2008 Society of Risk Analysis Annual Meeting, Risk Analysis: the Science and the Art, Boston, MA, December 8, 2008.

*Evaluation of Biodiesel's Impact on Occupational and Environmental Exposures*, poster presented at the 27<sup>th</sup> Annual American Association of Aerosol Researchers, Orlando, FL, October 22, 2008.

*Biodiesel: Lessons Learned in Keene, NH*, workshop co-presented with Mr. Steve Russell, Fleet Services Manager, City of Keene, NH. Tri-State Transit Conference, North Conway, NH, October 29, 2008.

*Biodiesel in the Monadnock Region: An Overview of Keene State College research and production initiatives*, invited talk, Cheshire County Republicans meeting, November 22, 2008.

*Biodiesel and Petroleum Diesel: Exposure Profiles and Public Health Consequences*, invited speaker, Dartmouth College, April 2008.

*Biodiesel rising...but where is it going?*, invited lecturer, "Carbon Counts...You can too!" lecture series, Antioch University New England, February 22, 2008.

*Diesel vs. Biodiesel's Impact on Air Quality*, invited speaker to Board of Selectmen Advisory Committee, Contoocock Valley School District, Peterborough, NH. December 5, 2007.

*Risk and Language*, guest lecture for *Language and Nature* environmental studies graduate course, Antioch New England University. November 13, 2007.

*Diesel Impacts at Ski Areas and the Biodiesel Alternative*, co-presented with Dr. Melinda Treadwell, Granite State Clean Cities Green Slopes Series 2007, Loon Mountain, NH. July 24, 2007.

*Biodiesel and the Environment: An Innovative Collaboration linking Science and Policy*, co-presented with Dr. Melinda Treadwell, Granite State Clean Cities Coalition stakeholder meeting, New Hampshire Department of Environmental Services, Portsmouth, NH. March 30, 2007.

*Evaluation of Biodiesel on Occupational and Environmental Exposures*, selected oral presentation, EPA Science to Achieve Results Fellows Conference, Washington, D.C. September 24, 2006.

## **HONORS, AWARDS, GRANTS**

**Environmental Protection Agency STAR (Science to Achieve Results) Fellow 2005-2008, Fellowship # FP 916576**

**Title of Research:** *Does Use of Biodiesel as an Alternative to Petroleum Diesel Reduce Risk for Worker Health and the Environment? Evaluation of Diesel Versus Biodiesel Exhaust Exposures for Employees at a Rural Recycling Center*

This Fellowship supported dissertation work to evaluate the impact of biodiesel fuel on occupational and environmental exposures, directly comparing diesel use vs. biodiesel for levels of fine particulate matter, elemental carbon, organic carbon, and nitrogen dioxide. The dissertation also applied a novel risk decision-making model based on the National Research Council's ideas of analysis and deliberation. Results indicated that a 20% biodiesel blend can reduce fine particulate matter levels in the workplace and local area by up to 70% compared to petroleum diesel fuel. In addition, connecting analysis with deliberation improved the quality of the exposure assessment and catalyzed novel policy outcomes.

**National Institute of Health, 2008 to 2013, Grant # P20RR018787, \$750,000**

**Title of Research:** *Biodiesel vs. Petroleum Diesel: Exposure Profiles and Public Health Consequences*

Currently the Junior Investigator and Project Leader (June 2008 to June 2013), of a multi-PI, interdisciplinary collaborative grant with Dartmouth Medical School's Center of Biological Research Excellence (COBRE). Goals of the research are to evaluate the impacts of different raw materials and blend ratios of biodiesel/diesel blends, specifically characterizing fine particulate matter speciation, morphology and exposure, in order to help identify a "healthiest" biodiesel blend.

**Environmental Protection Agency #SU83352301 \$10,000 (December 2007 to April 2008)**

**Title of Research:** *Keene Community Partnership for a Closed Loop Biodiesel System.*

Principal Investigator, EPA P3 (People, Prosperity and Planet) National Expo/Student Design Competition for Sustainability, \$10,000 awarded to Keene State College to support student engagement and design of a safe and sustainable biodiesel production facility.

*Honorable Mention Award, April 2008, awarded by EPA to Keene State College Safety Studies and Architecture student team.*

**Heineman Foundation (December 2007 to December 2009), \$150,000**

**Jane's Trust Foundation (December 2007 to December 2009), \$300,000**

**Titles of work for both grants:** *Monadnock Biodiesel Collaborative: A "first in the nation" closed loop system to make, use and research biodiesel*

Co-investigator, Monadnock Biodiesel Collaborative project, supporting the design and educational outreach elements of a unique public/private partnership to construct a biodiesel facility producing fuel from regional sources of brown grease. Brown grease is currently illegally disposed of in drains or ineffectively disposed of at landfills – this project will connect local ecology and economy in a rural area by helping to eliminate improper disposal of waste grease in sewers and creating a sustainable source of quality fuel for transportation and heating use.

### **Professional Affiliations**

National Registry of Environmental Professionals, American Society of Safety Engineers, Society of Risk Analysis, American Association of Aerosol Researchers, Granite State Clean Cities