

Susan Mirlohi, PhD, REHS

Assistant Professor

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Education

PhD in Civil Engineering, Environmental & Water Resources Engineering

Virginia Tech - Blacksburg, VA.

Dissertation: Characterization of Metallic Flavor in Drinking Water: An Interdisciplinary Exploration through Sensory Science, Medicine, Health, and the Environment.

M.S. in Environmental Sciences & Engineering

Virginia Tech - Blacksburg, VA.

Thesis: Chemical Identification and Flavor Profile Analysis of Iodinated Phenols Produced from Disinfection of Spacecraft Drinking Water.

B.S. in Biology / Chemistry Minor

Radford University - Radford, VA.

Professional Roles / Positions Held

8/2018 - Present *Assistant Professor – Tenure-Track Faculty; Environmental and Occupational Health and Safety (EOHS). Department of Public Health; College of Health and Human Services; California State University, Fresno, CA.*

Registered Environmental Health Specialist; REHS #9141; Department of Public Health; State of California; December 2019.

8/2015 – 6/2017 *Assistant Professor of Instruction, Temple University - College of Public Health – Epidemiology/Biostatistics Department (Environmental Health); Philadelphia, PA.*

8/2014 – 6/2015 *Visiting Assistant Professor, Department of Environmental Engineering; Wilkes University – Wilkes-Barre, PA.*

9/2012 – 4/2014 *Senior Scientist / Public Health Laboratory Trainer & Training Coordinator, Commonwealth of Virginia-Division of Consolidated Laboratory Services (DCLS) - Richmond, VA.*

1/2004 – 6/2014 *Vice President and Laboratory Director / Co-founder, Safe Water, Incorporated – Virginia State-Certified Water Analysis and Research Company; Radford, VA.*

8/2007 – 5/2012 *Research Assistant, Virginia Tech, Civil and Environmental Engineering Department, Blacksburg, VA.*

8/1991 – 3/2007 *Director of Biological/Aquatic Toxicology Services and Manager of Treatability Services /Director of Biological/Aquatic Toxicology and Microbiological Services/ Senior Environmental Scientist - Olver Incorporated /CHA Inc. – ProChem Analytical Inc. / Olver Laboratories Incorporated - Environmental Consulting and Engineering Company*; Blacksburg, VA*

*(Note: *Employer name changes reflect company ownership transfers and changes. Listed titles reflect various roles/positions held during the period of 1991 - 2007).*

1/2009 – 5/2010 *Instructor, Virginia Tech, Civil and Environmental Engineering Department, Blacksburg, VA.*

8/2007 – 12/2008 *Teaching Assistant, Virginia Tech, Civil and Environmental Engineering Department, Blacksburg, VA.*

5/1995 – 12/1997 *Research Assistant, Virginia Tech, Civil and Environmental Engineering Department, Blacksburg, Virginia*

Professional Experiences and Accomplishments

Assistant Professor

8/2018 – Present

California State University, Fresno – Department of Public Health; College of Health and Human Services; Fresno, CA.

Tenure-Track faculty Environmental and Occupational Health and Safety (EOHS); perform teaching/scholarly, research, and service activities.

Currently Teaching:

- Upper undergraduate level: PH 161-Environment and Human Health
- Upper undergraduate level: PH 166T - Water Quality and Health
- Introductory undergraduate level: PH 92 - Public Health Statistics

Research and scholarly activities:

- Conducting educational research by implementing innovative teaching practices in the classroom, collected data, and presented teaching/learning outcomes at the national educational and research conference of the Association of Environmental Engineering and Science Professors (AEESP).
- Contributed to the Call for Stakeholders contribution on the California Water Resiliency portfolio; facilitated by the California Water Institute; Fresno, CA.

Assistant Professor of Instruction

8/2015 – 6/2017

Temple University - College of Public Health – Epidemiology/Biostatistics Department (Environmental Health); Philadelphia, PA.

Performed teaching and scholarly activities:

Courses Taught:

- *PhD/MS Level:* Global Environmental Health (Development and taught); *Advance Undergraduate Level:* Environmental Health; Research Methods; Professional Seminar in Public Health; Internship in Public Health.
- *Beginning Undergraduate Level:* Introduction to Public Health: The Way We Live, Work, and Play.

Courses Developed:

- PBHL 5013 - Global Environmental Health: Course development; innovative approach in teaching by incorporating project-based learning (scientific conference attendance and presentation) with course content delivery. Enhanced teaching of global environmental health topics by inviting professionals from Philadelphia's government and nonprofit entities, and/or Temple faculty from other disciplines.
- ENVH 2102 – Environmental Health: Developed a laboratory component for the course to enhance students' understanding of environmental health topics, such as air pollution, water quality, and occupational health using in-class or field laboratory experiments.
- EBPI 3102 - Research Methods: Applied innovative approaches in teaching by inclusion of hands-on in-class activities in delivery of research concepts and experimental design using behavioral and sensory measurement techniques.
- PBHL 3104 – Professional Seminar: Enhanced teaching of topics in cultural competency and health literacy by inviting distinguished experts from Temple University and business community.
- HRPR 1001 – Public Health: The Way we Live, Work, and Play: This course utilized a blended approach in teaching-learning to include both lecture and in-class group work utilizing a technology enhanced classroom, equipped with 9 internet connected computers with large display screens to accommodate a class size of 70 students, in addition to the instructor station.

Research and scholarly activities:

- Developed and guided a research project for two undergraduate honor students, resulting in a research poster presentation at a University level research conference. Research topic focused on solid waste generation and recycling trends among college students, and identified obstacles to recycling.
- Guided and prepared students to create, present, and become the first and second place winners of research posters at the 9th Annual Global Water Alliance Conference in Philadelphia. Research topics focused on global water scarcity, hygiene, and sanitation issues.
- Successfully mentored and guided diverse group of advance undergraduate public health students through internship positions and projects within a wide and diverse selection of research, business, and non-profit organizations in the Philadelphia region. This included, guiding students through project development and writing of project goals and objectives, as well as measurement and monitoring of projects' accomplishments. Internship projects ranged from topics on nutrition, healthcare delivery, health literacy and risk communication, delivery of community healthcare services, such as eye examination, and women's health/cancer screening, immigrant community health, asthma clinic, infectious diseases, health education, etc.
- Conducted educational research by implementing innovative teaching practices in the classroom, collected data, and presented teaching outcomes at the College level, University/regional level, and national educational and research conference level.
- Achieved 'Good to Excellent' rating as the course instructor in students teaching evaluations.

Visiting Assistant Professor

8/2014 – 6/2015

Department of Environmental Engineering; Wilkes University – Wilkes-Barre, PA.

Performed teaching and scholarly activities.

Courses Taught:

- Advance Undergraduate Level: Global Climate Change; Hydrology Laboratory; Principles of Environmental Engineering & Science; Air Quality Laboratory

- Beginning Undergraduate Level: Planet Earth – The Global Environment - Laboratory

Courses developed/educational program administration:

- ENV 332-Air Quality Laboratory: Developed and taught new laboratory experiments for the course to include chemical exposure assessment modeling and odor analysis of air pollutants.
- Prepared and provided materials to support the university's engineering program in their effort to receive ABET (Accreditation Board for Engineering and Technology) re-accreditation. This included assessment of course objectives to ensure and measure success in meeting course objectives, and identify areas for improvement.

Research and scholarly activities:

- Supported efforts of many of the environmental engineering and earth and environmental senior research projects by providing feedback on research design, data analysis, presentation, and review of final research project reports. Research projects were funded by the University and/or industry partners. Some examples of research projects included: Innovative methods for removal of heavy metals from wastewater; energy audit and recommendation to reduce greenhouse gas emissions at University level; cost comparison of treatment options for treatment and storage of manure pile generated from a local sustainable farm, modeling of water quality in drinking water distribution systems through turbidity monitoring.
- Collaborated with colleagues in the environmental engineering and biology departments to develop a project proposal for undergraduate student research. The research topic proposed a collaboration with a chemical manufacturer to study ecological toxicity of a citrus-based hydraulic fracturing chemical. I served as the lead author on the proposal.
- Achieved 'Good to Excellent' rating as the course instructor in students teaching evaluations.

Senior Scientist- Training Coordinator

9/2012 – 4/2014

Commonwealth of Virginia-Division of Consolidated Laboratory Services (DCLS) - Richmond, VA.

Professional activities and accomplishments:

- Provided variety of training in laboratory skills, chemical and biological safety, and quality assurance practices; identified and presented educational programs for the Commonwealth of Virginia public health laboratory staff (environmental, agricultural, and clinical laboratories); coordinated and assisted with the sentinel laboratory training program, as administered through the Center for Diseases Control and Prevention (CDC);
- Developed, approved, and adopted for use a comprehensive training plan, in compliance with environmental and clinical laboratory regulations;
- Designed and conducted an innovative survey of training needs assessment;
- Participated as an invited presenter at a distance-learning summit for State wide agencies;
- Developed quality assurance/quality control plans and Standard Operating Procedures (SOP) for the Quality Assurance, Safety, and Training department;
- Developed and provided ethics and data integrity training for a staff of more than 200 scientists, administrators, and managers;
- Administered and led a transition to on-line Learning Management System (LMS);
- Received recognition of "**Extraordinary Contributor**" for 2013 annual performance evaluation review.

- Developed a training program for the public health laboratory staff; conducted research and developed a survey to assess training needs and created training programs to meet the identified needs; and measured/evaluated success of the executed training programs.
- Participated in an intra-agency learning summit, organized by the Virginia Department of Health, to present training needs assessment outcomes to other participating state agencies.
- Coordinated a training workshop for leadership and management skills development for the DCLS staff.
- Researched and initiated guidelines to start a formal training program for student interns (i.e., Epidemiology fellows).
- Organized and developed a day-long conference style educational session for DCLS staff as part of recognitions and activities for the annual “laboratory professional week”.

Vice President and Laboratory Director/Co-Founder

9/2004 – 6/2013

Safe Water, Incorporated, Radford, VA

- Co-founded and operated a Virginia State-certified drinking water laboratory for bacteriological testing.
- As Vice President and Laboratory Director, managed all aspects of the laboratory operations.
- Communicated with customers and regulatory agencies on issues of drinking water quality.
- Supported customers in addressing water quality problems.
- Managed all aspects of laboratory quality assurance, regulatory compliance, and certification processes.
- Provided statewide municipal and industrial customers with reagent-grade water suitability and drinking water analysis needs.
- Provided consultation services and supported the community need for residential water testing.
- Supported and helped local public school students’ project to promote importance of safe drinking water.
- Compiled and analyzed bacteriological water quality data collected from analysis of thousands of household water samples from customers throughout the new river valley region of southwest Virginia. The findings were reported to consumers to provide information on the degree and frequency of bacteriological contamination of well waters in the region.
- Investigated bacteriological water quality in a public drinking water distribution system for a local community (Giles County, VA) experiencing bacterial contamination and public health advisory for boil water alert.
- Researched and developed a method to improve and simplify enumeration procedures for quantification of bacterial contamination of drinking and surface water samples.
- Provided employee trainings at Safe Water Incorporated; training workshops/sessions included:
 - Ethics and Data Integrity for public health laboratory scientists and professionals
 - Chemical and biological safety in microbiological laboratory
 - Basic laboratory skills and measurement concepts
 - Temperature measurements and calibrations
 - Bacteriological water quality testing Methods
 - The Federal Safe Drinking Water Act and quality assurance procedures for microbiological laboratory certification.
 - Water suitability testing for the detection of inhibitory or stimulatory substances in highly purified, reagent-grade water.

Research Fellow – “Water for Health” Program

8/2008 – 5/2012

Virginia Tech; Department of Civil and Environmental Engineering; Blacksburg, VA

Research fellowship for doctoral training in interdisciplinary graduate education program (IGEP) that studied public perception, risks, chemistry and health aspects of water under the theme of “Water for Health”. Research activities included:

- Conducting sensory threshold studies to assess age-associated variations in human perception of metallic off-flavors, namely iron and copper, from drinking water exposure.
- Studying salivary oxidative reactions and mechanisms of human perception of metallic flavor to explore diagnostic potentials and assessment tools for the study and treatment of taste and smell disorders in brain cancer patients.
- Conducting a small-scale, repeated measure (30-week) clinical study to assess impact of chemo and radiation cancer therapies on occurrence of taste and smell disorders among malignant glioma cancer patients. Used patients’ self-reported assessments and biochemical markers to measure impacts of cancer therapies on taste and smell functions.
- Utilizing in-vitro experiments to explore oxidative reactions of reduced iron and zerovalent iron nanoparticles in biological media composed of inorganics, lipids, and proteins to assess toxicity potentials and sensory qualities of flavor metals associated with oral exposure to humans.
- Studied beverage and water intake patterns in healthy human adults in order to assess potential influences of age, taste/flavor sensitivity, and beverage choices on drinking water consumption, and potential implications on health.
- Collaborated with a multidisciplinary research team from the fields of environmental engineering, food science and technology, human nutrition, foods, and exercise, and oncologist, and nurses, making important contribution to medical and public health disciplines.
- Peer-reviewed publications of research in reputable journals in environmental and clinical/medical disciplines, including 2 first authored and 1 co-authored manuscripts.
- Presented research findings at national levels: the American Chemical Society national conferences (Boston, 2010; Philadelphia, 2012); American Water Works Association (AWWA) national conference (Denver, 2013).
- Presented research findings at international levels: the International Water Association’s (IWA) specialty conference on off-flavors in the aquatic environments (Aberdeen, Scotland, 2011); and the Pangborn Sensory Science symposium (Toronto, Canada, 2011).
- Developed research projects and mentored students through their research project completion and publication production. Students were recruited under the National Science Foundation’s Research Experience for Undergraduates (REU) program.
- Coordinated research projects requiring complex data management and team presentation within multidisciplinary project teams at Virginia Tech and Wake-Forest University Medical Center.
- Assisted with development of research proposals for NSF, NIH R21 exploratory research grants.

Instructor / Teaching Fellow

1/2009 – 5/2010

Virginia Tech, Department of Civil and Environmental Engineering; Blacksburg, VA

- Taught graduate and undergraduate course in Environmental Engineering and graduate level course in Environmental Chemistry Laboratory.
- Achieved ‘*Good to Excellent*’ rating as the course instructor in students teaching evaluations.

- Made notable contributions to course content development and delivery, including development of new laboratory experiments for the course.

Research & Teaching Assistant

8/2007 – 12/2008

Virginia Tech, Department of Civil and Environmental Engineering; Blacksburg, VA

Research assistantship on a research project funded by CFAST, project title: “*Chronic Effects of Ammonia and Nitrite in Shrimp Cultured under Lower Salinity Conditions*”

- Performed research project and field sampling at an indoor aquaculture facility for shrimp (*Litopenaeus vannamei*) production, performed water quality analyses (nutrients and ions), and compiled and evaluated water quality data to monitor the effectiveness of the recirculating aquaculture system operated at the facility.
- Compiled, analyzed, interpreted, and summarized generated data for inclusion in progress report for the funding entity.
- Served as a teaching assistant for environmental engineering courses: undergraduate level course, introduction to environmental engineering; and graduate level course in environmental toxicology.

Research Assistant

8/1996 – 12/1997

Virginia Tech, Department of Civil and Environmental Engineering; Blacksburg, VA

Research assistantship on a research project funded by NASA, project title:” *Chemical Identification and Flavor Profile Analysis of Iodinated Phenols Produced from Disinfection of Spacecraft Drinking Water*”.

- Performed research to explore the sensory properties and formation reactions of iodine disinfection by-products associated with water re-use systems for potable usage, such as that of the international space station. Determined various reaction conditions associated with the formation of iodine disinfection byproducts using bench-scale tests and GC/MS and LC instrumentation.
- Peer-reviewed publication of research, as listed under the proceeding section.
- Presented research findings at national and international levels, as highlighted under the research section below.
- Contributed to the scientific literature on the study of disinfection by-products formation from recycled spacecraft water.

Director of Biological & Aquatic Toxicology Services and Manager of Treatability Services/ Director of Biological & Aquatic Toxicology and Microbiological Services/ Senior Environmental Scientist/ Environmental Scientist

8/1991 – 3/2007

Olver Inc., Olver Laboratories Inc., Prochem Analytical Inc. - Blacksburg, VA.*

*(*Name changes reflect company ownership transfers and changes).*

- Directed Aquatic Toxicology and water/wastewater Treatability Services from May 2004 to March 2007.
- Managed and directed Aquatic Toxicology and Microbiology laboratories and provided environmental testing services from August 1997 to May 2007.
- Performed aquatic toxicology testing, including NPDES monitoring program, Toxicity identification/reduction and evaluation studies.

- Provided technical consultation to clients on environmental microbiology, water chemistry, environmental testing and monitoring services.
- Conducted field studies, including site-specific water quality criteria development and water-effect-ratio studies for research and/or regulatory compliance with the national pollutant discharge elimination systems.
- Conducted applied environmental science and engineering projects, including the design, management, and performance of water and wastewater treatability studies.
- Conducted benthic biomonitoring studies in streams and rivers, including field sampling; laboratory analysis; aquatic insects' identification; and data analysis/bioassessment of habitat and water qualities.
- Developed and managed the laboratory budget, staff management, hiring, and performance evaluations.
- Served as primary contact for client and provided customer support on technical and administrative issues.
- Performed regulatory compliance and monitoring, quality assurance, and quality control functions.
- Created apprehensive technical/scientific reports and project proposals, written specifically for large clients such as DuPont, Merck, Georgia Pacific, Beers Brewing, and Perdue corporations.
- Handled tasks such as project management, communication with municipal / industrial clients and regulatory agencies, and participation in business development and marketing activities for environmental consulting services.
- Successfully managed, maintained, and increased a customer base of approximately 50 –100 facilities consisting of private, industrial, governmental organizations.
- Created opportunities for, and successfully managed numerous special, research-oriented projects in aquatic toxicology and environmental engineering applications.
- Performed and managed bench-scale research studies for drinking water and wastewater treatment applications to ensure water and wastewater treatability and compliance with the federal Clean Water and Safe Drinking Water regulations.
- Presented research/project studies at regional/State level conferences.
- Served on specialty committees in professional, scientific organizations (e.g., laboratory practices committee- AWWA) and contributed to development of instructional manual for water and wastewater chlorination practices.
- Promoted industry/academia collaboration by hosting tours to engage local University students with hands-on activities, including aquatic toxicity test performance and statistical analysis and interpretation of toxicological data.
- Provided employee training; training workshops/sessions included:
 - Ethics and Data Integrity for Laboratory Scientists;
 - Chemical and Biological Safety in Wet Chemistry, Aquatic Toxicology, and Microbiological Laboratories;
 - Basic laboratory skills and measurement concepts;
 - Measuring instruments and calibrations;
 - Wet Chemistry and Bacteriological water quality testing Methods;

- The Federal Safe Drinking Water Act and Quality assurance procedures for aquatic toxicology and microbiological laboratory certification;
 - The Clean Water Act, the National Pollutant Discharge Elimination System (NPDES), and regulatory monitoring requirements for whole effluent toxicity and stream water quality;
 - Statistical analysis, data interpretation, and reporting of short-term and long-term aquatic toxicity data;
 - Laboratory management and supervision.
- Served as an invited guest lecturer/subject matter, professional expert in aquatic toxicology; a graduate level, in-classroom, televised course (“Environmental Toxicology”), 2.5-hour presentation, on aquatic toxicology and biomonitoring broadcasted to multiple campuses at Virginia Tech.

Laboratory Assistant

8/1987 – 5/1990

Radford University – Biology department; Radford, Virginia

- Served as a laboratory assistant for general biology and microbiology teaching laboratories
- Earned recognition of excellence as a work-study employee.

Peer-reviewed Publications

1. **Mirlohi, S.**, Dietrich, AM, Duncan, SE, Lesser, G., Harmon, H., and Case, D.; (2014) “Analysis of Salivary Fluid and Chemosensory Functions in Patients Treated for Malignant Brain Tumors.” *Clinical Oral Investigations*. March 2014. DOI 10.1007/s00784-014-1211-8. Open Access link: <http://link.springer.com/article/10.1007/s00784-014-1211-8>
2. Leyrer, CM, Chan, MD, Peiffer, AM, Horne, E., Harmon, M., Carter, AF, Hinson, WH, **Mirlohi, S.**, Duncan, SE, Dietrich, AM, and Lesser, GJ (2014). Taste and smell disturbances after brain irradiation: A dose–volume histogram analysis of a prospective observational study. *Practical Radiation Oncology* - March 2014 (Vol. 4, Issue 2, Pages 130-135, DOI: 10.1016/j.prro.2013.06.003.
3. **Mirlohi, S.**; Dietrich, AM; Duncan, SE; (2011). “Age-Associated Variation in Sensory Perception of Iron in Drinking Water and the Potential for Overexposure in the Human Population”. *Environmental Science & Technology*; 45(15): 6575-6583; doi: 10. 10.1021/es200633p.
4. Dietrich, AM; **Mirlohi, S.**; DaCosta, WF; Dodd, JP; Sauer, R; Homan, M; Schultz, J; (1999). “Flavor Profile Analysis and GC/MS Detection of Phenolic Iodinated Disinfection By-Products in Drinking Water for the USA Space Program”; *Water Science and Technology*; 40 (6): 45-51.

Conference Presentations

1. **Mirlohi, S.** (2019). “A Hand-on Approach to Teaching Solid Waste Management to Environmental Public Health Students”. Poster presentation; 18th Annual Research and Education Conference for the National Association of Environmental Engineering and Science Professors (AEESP), May 13-15, 2019 at Tempe, AZ.
2. **Mirlohi, S.** (2017). “Pictures Speak a Thousand Words in an Undergraduate Environmental Public Health Classroom”. Poster presentation; 17th Annual Research and Education Conference for the National Association of Environmental Engineering and Science Professors (AEESP), June 20-22, 2017 at Ann Arbor, MI.
3. **Mirlohi, S.** (2017). “Inspiring Learning, Honoring Earth Day 2016: Pictures Speak a Thousand Words in an Undergraduate Environmental Health Classroom”. Poster presentation; 15th Annual Faculty Conference on Teaching Excellence; Center for the Advancement of Teaching, Temple University, Philadelphia, PA, January 10, 2017.

4. **Mirlohi, S.** (2016). "Inspiring Learning, Honoring Earth Day 2016: Pictures Speak a Thousand Words in an Undergraduate Environmental Health Classroom". Poster presentation; 2nd Annual Teaching Symposium; College of Public Health, Temple University, Philadelphia, PA, October 19, 2016.
5. Mathen, R. **Mirlohi, S.** (2016). "Hand Hygiene Intervention: A simple measure of reducing the global burden of foodborne illness". 9th Annual Global Water Alliance Conference, Temple University, Philadelphia, PA, April 2016.
6. Rosen M., **Mirlohi, S.** (2016). "Wastewater Reuse is now a Global Imperative". 9th Annual Global Water Alliance Conference, Temple University, Philadelphia, PA, April 2016.
7. El-Hajmoussa, M., **Mirlohi, S.** (2016). "Is Reliance on Hydraulic Fracturing for Energy Consumption in Conflict with the United Nations' Sustainable Development Goals?" 9th Annual Global Water Alliance Conference, Temple University, Philadelphia, PA, April 2016.
8. Papaj, A., **Mirlohi, S.** (2016). "Menstruation and Water, Sanitation, and Hygiene (WASH) in Developing Countries: A Literature Review". 9th Annual Global Water Alliance Conference, Temple University, Philadelphia, PA, April 2016.
9. Mohr, J., **Mirlohi, S.** (2016). "HIV/AIDS and water accessibility in Sub-Saharan Africa: a critical relationship". 9th Annual Global Water Alliance Conference, Temple University, Philadelphia, PA, April 2016.
10. A. E. Sain, **S. Mirlohi**, S. E. Duncan, and A. M. Dietrich (2015). "The Human Monitoring Element: Is Current Aesthetic Guidance for Iron and Manganese Adequate for Consumer Acceptance?" Poster presentation at the 9th International Water Association Symposium IWA Symposium on Lake and Reservoir Management 2015; Mountain Lake, Pembroke, Virginia, USA; August 4 - 7, 2015.
11. **Mirlohi, S.** (2014). "Water for Health and Everyday Living". Wilkes University Second Annual Passport to Science Event, Department of Environmental Engineering & Earth Sciences, Wilkes University, Wilkes-Barre, PA, October 25, 2014.
12. **Mirlohi, S.**, Murphy, S., York, T. (2013). "Going to the Source: An Assessment of Workforce Training Needs in a Public Health Laboratory". Oral presentation, at the second Annual Interagency Distance Learning Summit – Commonwealth of Virginia Department of Health; Richmond, Virginia; November 21, 2013.
13. **Mirlohi, S.**, Dietrich, A., Davy, B., Duncan, SE, Lesser, G. (2013). "Water for Health: Water as a Beverage Choice and the Impact of Metallic Flavor Detection And Age". Oral presentation, at the American Water Works Association (AWWA) ACE13 in Denver, Colorado, June 9 – 13. Presentation at University Forum II on June 11, 2013, at 10 AM.
14. Dietrich, A., **Mirlohi, S.**, Phetxumphou K. (2012). "Lipid Oxidation for Measuring Bioreactivity of Iron Nanomaterials" ACS National Conference, Philadelphia, PA; August 23, 2012, Oral Presentation.
15. **Mirlohi, S.**, Dietrich, A., Davy, B., Duncan, SE (2011). "Water Consumption in Healthy Adults: Implications of Age, Flavor Preference, and Beverage Choices". Presented at the first Interdisciplinary Research Symposium at Virginia Tech; Blacksburg, VA, November 4, 2011. The poster was awarded 2nd place among 42 graduate and undergraduate level presenters.
16. **Mirlohi, S.**, Dietrich A., Duncan, S. (2011). "Human Variation in Sensory Detection of Metallic Flavor in Drinking Water and its Relationship to Olfactory Functions". Presented at the Pangborn Symposium (on Sensory Science); Toronto, Canada; September 4-8, 2011, poster presentation.
17. **Mirlohi, S.**, Dietrich, A., Duncan S. (2011). "Age Associated Variation in Sensory Detection of Iron in Drinking Water and Its Relationship to Olfactory Functions. Presented at the 9th International Water Association Symposium on Off-Flavors in the Aquatic Environment; Aberdeen, Scotland, Aug. 14 –20, 2011, oral presentation.

18. **Mirlohi, S.**, Dietrich, A., Duncan S., Davy, B. (2011). “Genetic variation for taste: are you a super taster, medium taster, or non-taster?” Presented at the 9th International Water Association Symposium on Off-Flavors in the Aquatic Environment; Aberdeen, Scotland, Aug. 14 –20, 2011, oral poster.
19. **Mirlohi, S.**, Dietrich, A., Duncan S. Lesser, G. Case, D, Harmon, M. (2011). “Impact of Cancer Therapy on Chemosensory Functions in Patients with Malignant Brain Tumor and its Relationship to Salivary Constituents”. Presented at the first annual Cancer Research Symposium at Virginia Tech; Blacksburg, VA; April 29, 2011, poster presentation.
20. **Mirlohi, S.**, Dietrich, A., Duncan S. (2011). “Human Variation in Sensory Detection of Metallic Flavor in Drinking Water and its Relationship to Olfactory Functions.” Presented at the 27th Annual Graduate Research Symposium, Virginia Tech; Blacksburg, VA; March 23, 2011, poster presentation.
21. **Mirlohi, S.**, Dietrich, A., Duncan S. (2010). “Metallic Flavor Perception and the Effects of Cancer Therapies”. Presented at the ACC Interdisciplinary Forum for Discovery in Life Sciences; Virginia Tech, Blacksburg, VA, October, oral presentation.
22. **Mirlohi, S.**, Dietrich, A., Duncan S. (2010). “Metallic Flavor Perception and the Effects of Cancer Therapies”. ACS National Conference, Boston, MA; August 2010, oral Presentation.
23. **Mirlohi, S.**, Dietrich, A., Duncan S. (2009). “Metallic Flavor Perception by Drinking Water Consumers”. Presented at the VAWEF and VAWWA – Water JAM Conference; Richmond, VA, September 2009, poster presentation.

Other Technical/Scientific Reports and Publications

- Business plan development for Safe Water Incorporated.
- Marketing plan development for Olver Incorporated.
- Development of regulatory compliant training protocols, quality assurance documents, and standard operating procedures (technical documents of 25 to 100 pages) for operational processes and laboratory experiments used for bacteriological analysis of water samples to comply with state and federal regulations.
- Contributing author to an AWWA’s operators’ manual on water chlorination practices; section on microbiological examination of water.
- Issued numerous publications from professional work in private industry (1991 – 2007): Prepared, reviewed, and approved an average number of 50 technical reports a year (50 – 100 pages/each on average) on scientific experiments and special studies for customer projects ranging from routine monitoring of environmental samples for biological and chemical toxicity assessment to research projects aimed at solving water quality issues associated with production of safe drinking water and clean non-potable water for large and small municipal and industrial entities within the United States.

Invited Talks/Lectures

- “Teach-In” event for student organization, “*Defend our Future*” at Temple University. Lecture topic: “*Water Quality Issues in Philadelphia and Human Factors*”, Philadelphia, PA, April 2017.
- Invited talk: Presentation to the board members of the National Water Research Institute (NWRI). Title: “Water for Health: Connecting the Consumers, Environment, and Public Health”. Fountain Valley, CA. December 2016.
- Guest lectured for a graduate level, in-classroom and televised course on environmental toxicology broadcasted to multiple campuses. Lecture consisted of a 2.5-hour presentation, on aquatic toxicology and biomonitoring

techniques using fish and invertebrates: “Environmental Toxicology”, *Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA, April 2004; April 2005; April 2006; and April 2007.*

Undergraduate Students Mentorship and Advising

Lindy Thornton	Advisor and mentor for the undergraduate honors program project at Temple University. Project topic: “ <i>Solid Waste Generation and Recycling Trends among College Students</i> ”. Temple University College of Public Health, Fall 2016.
Gabrielle Stefy	
Marwa El-Hajmoussa	Mentored and advised the student for research work and research poster presentation for the 9 th Annual Global Water Alliance Conference; Temple University, Spring 2016.
Alexandra Gerling	Advisor and mentor for the NSF REU undergraduate research program. Project topic: “ <i>Sensory Perception of Metals in Drinking Water and the Role of Saliva in Metallic Flavor Production</i> ”. (Co-advised by Dr. Andrea Dietrich, Virginia Tech, Civil and Environmental Engineering). Summer 2011
Arianne Trani	Advisor and mentor for the NSF REU undergraduate research program. Project topic: “ <i>Determination of age-associated variations in flavor threshold of iron and copper from drinking water</i> ”. (Co-advised by Dr. Andrea Dietrich, Virginia Tech, Civil and Environmental Engineering). Summer 2010.
Shannon Flynn	Advisor and mentor for the NSF REU undergraduate research program. Project topic: “ <i>Assessing variability of sensory perception and thiobarbituric acid reactive substances (TBARS) in human saliva from exposure to flavor-producing metals in drinking water</i> ”. (Co-advised by Dr. Andrea Dietrich, Virginia Tech, Civil and Environmental Engineering). Summer 2009.

Graduate Students Mentorship and Advising

YiChi Chiu	Mentor and supervised the student as my teaching assistant (TA) for the course: EPBI 3102: Research Methods in Public Health. Fall 2016, Temple University.
Kasra M. Emami	Mentor and supervised the student as my teaching assistant (TA) for the courses: HRPR 1001: Introduction to Public Health; Fall 2016 and Spring 2017; EPBI 3102: Research Methods in Public Health, Spring 2017, Temple University.
Reeba Mathen Johnathan Mohr Arianna Papaj Mike Rosen	Mentored and advised the students for research work and research poster presentations for the 9 th Annual Global Water Alliance Conference; Temple University, Spring 2016.

Service Activities

- Currently serving on the Water Advisory Committee for the California State University Fresno (since Fall 2018).
- Currently serving on the IRB (Institutional Review Board) Committee for the Department of Public Health at Fresno State University (Since Spring 2019).
- Nominated to serve on the United States Environmental Protection Agency’s (USEPA) Science Advisory Board (SAB), Ecological Processes and Effects Committee.
- Invited conference session moderator for the 17th annual (2017) AEESP education and research conference.

- Non-Tenure Track faculty selection committee member, Temple University, Spring 2016.
- Invited peer reviewer for the *Journal of Environmental and Occupational Health*.
- Invited peer reviewer for the *Journal of Water Supply: Research and Technology – AQUA - IWA Publishing*.
- Invited peer reviewer for the *Journal of Water - MDPI Publishing*.
- Invited peer reviewer for the *Journal of American Water Works Association (AWWA)*.
- Invited abstract reviewer for the Virginia AWWA annual conference.
- Interview panel/selection committee member for senior scientist selection and hiring at the State agency; Commonwealth of Virginia, Division of General Services, DCLS, June 2013.
- Invited, expert panelist to judge sensory quality (taste/odor) of water as part of a water taste testing event at the 2013 AWWA national conference in Denver, CO.
- Wilkes University (spring 2015): Developed and delivered a half-day session on water quality and health as part of a community engagement event (“Passport to science”), in order to educate youth and parents on the science and health aspects of water treatment and quality.
- Virginia Tech (summer 2011): Developed a workshop session on water quality, and taste and odor properties for public school students participating in an on-campus, community outreach event.
- Contributing author to an AWWA’s operators’ manual on water chlorination practices; section on microbiological examination of water.
- Community Focus group member for TMDL (Total Maximum Daily Load) development for a local water stream, New River Valley region, VA.
- Support group member for the mental health association support for the mentally ill and caretakers, Radford, VA.
- Mentor; Big Brother/Big Sister Organization; New River Valley Chapter; Blacksburg, Virginia.
- Volunteer service to non-profit community organization, Toastmasters International (1992 – 2014): For a period of 22 years (1992-2014), I served in variety of leadership and educational roles (area governor, president, vice president of education and etc.), while serving the local and regional chapters of the Toastmasters International (TI) organization. The TI organization works to develop and enhance members’ public speaking, communication, and leadership skills. Members included students from local universities, professionals, and citizens of the community.
- Hospital volunteer; Carillion New River Valley Medical Center; Radford, Virginia.
- Hospital volunteer; Saint Albans Mental Health facility; Radford, Virginia.

Awards, Recognitions, and Accomplishments

- Provost Merit Salary Award recipient in recognition of notable scholarly contributions to the college of public health, Temple University, Spring 2017.
- Technology Fellowship Award for Faculty to incorporate technology into teaching practice. Temple University; Spring 2016 semester.

- Mentored students' awards: Reeba Mathen - **First place winner** of research poster and Mike Rosen, M.D. – **Second place winner** of research poster; 9th Annual Global Water Alliance Conference at Temple University, April 2016.
- Recipient of "**Extraordinary Contributor**" recognition as a senior scientist and public health training coordinator at the Virginia State Public Health Laboratory; Richmond, VA; October 2013.
- **Second place** research poster award Interdisciplinary Research Symposium at Virginia Tech; Blacksburg, VA; Nov. 2012.
- Interdisciplinary Graduate Education Program (IGEP) Doctoral Fellowship in "Water for Health". Virginia Tech; 2010-2011.
- Certificate of completion for a semester-long graduate level course on Contemporary Pedagogy (GRAD 5114: Pedagogical Practices in Contemporary Context, Spring 2010).
- Virginia Tech Department of Civil & Environmental Engineering; Via Teaching Fellowship: Fall 2008, Spring 2009 and 2010.
- Accomplished successful completion of Master of Science degree in environmental science and engineering at Virginia Tech, including conducting research, while also working as a full-time environmental professional (45-50 hours/week; environmental scientist, Olver Inc.).
- Accomplished successful completion of doctoral degree in civil-environmental engineering at Virginia Tech, including conducting research, while also helping to operate and serve as the vice president and laboratory director as a co-founder of Safe Water Inc.
- Certificate of Appreciation for Hard Work and Dedication, Olver Inc., Oct. 1992.
- Academic Excellence in Biology, Radford University, Radford, Virginia, 1989.
- Toastmaster International (TI) - Toastmaster of the Year in recognition of "dedicated and distinguished service"; 2002.
- Toastmaster International (TI) - **First Place** Winner, local level (Area level) public speaking competition. 1995.

Professional Affiliations

- Association of Environmental Engineering and Science Professors (AEESP); (Jan 2015 – Present);
- American Water Works Association (January 2003-January 2016);
- National Environmental Health Association (NEHA); (July 2013 – July 2014);
- American Chemical Society (May 2010 – 2011);
- Water Environment Federation (1996-1997), (April 2003-2010);
- Toastmasters International-Public Speaking, Communication, and Leadership Program (1992-2014).

Certifications and Trainings

- Workshop on Small Water Systems Operations; RTCR and Emergency Response Planning; September 2019; Fresno, CA.
- Certified Pool Operator (CPO # 643539); Certified Professional Food Manager (Certificate No. 2055456)
- Workshop on environmental sustainability education at the 18th Annual Research and Education Conference for the National Association of Environmental Engineering and Science Professors (AEESP), May 13-15, 2019 at Phoenix, AZ.

- Certificate of Completion; Symposium on Arsenic Contamination of Drinking Water; California Water Institute; California State University; Fresno, CA; October 2018.
- Workshop on environmental sustainability education at the 17th Annual Research and Education Conference for the National Association of Environmental Engineering and Science Professors (AEESP), June 20-22, 2017 at Ann Arbor, MI.
- Workshop on educational research and funding prospect at the 7th Annual Research and Education Conference for the National Association of Environmental Engineering and Science Professors (AEESP), June 20-22, 2017 at Ann Arbor, MI.
- Workshop on classroom teaching innovations and management aspects at 15th Annual Faculty Conference on Teaching Excellence; Center for the Advancement of Teaching, Temple University, Philadelphia, PA, January 10, 2017.
- Trained and certified to conduct human subjects testing following the Institutional Review Board (IRB) protocols.
- Completed short course on design and operation of recirculating aquaculture systems by Drs. Timmons (Cornell University) and Ebling. Blacksburg, VA; July 2008.
- On-line classroom courses and seminars from Association of Public Health Laboratories (APHL), National Environmental Health Association (NEHA), the Center for Disease Control (CDC), and the American Water Works Association (AWWA) in areas such as Epidemiology and Outbreak Investigations, Bioterrorism Response/ Emergency Preparedness, and Environmental Public Health Tracking.
- ISO/IEC 17025: Assessment of Laboratory Competence and Internal Auditing.
- Workshop Wastewater Microscopy: 8 hours of training in microscopic examination of sludge, including staining, identification, and trouble-shooting techniques.

Selected Proposals/Contracts Awarded

During the period of 1997 – 2007, I maintained and grew a customer bases of approximately 50 - 60 facilities from municipalities and/or industries within the Commonwealth of Virginia and surrounding states. Below is a representative selection of my contract awards (2000 – 2008):

- **Project:** Rapid Bioassessment of a Receiving Body of Water to Identify Stream Impairment. Magnox-Pulaski, Inc., Pulaski, VA; \$10,000.
- **Project:** Aquatic Toxicity Evaluation of Sodium Sulfate to the Freshwater Invertebrate, *Ceriodaphnia dubia*. Magnox-Pulaski, Inc., Pulaski, VA; \$10,000.
- **Project:** Aquatic Toxicity Evaluation of Lithium-Based Drug to the Freshwater Invertebrate, *Ceriodaphnia dubia*. Merck and Company, Inc., Elkton, VA; \$5,000.
- **Project:** Aquatic Toxicity Evaluation of an Insecticide-based Chemical to the Freshwater Invertebrate, *Ceriodaphnia dubia*. Merck and Company, Inc., Elkton, VA; \$8,000.
- **Project:** Rapid Bioassessment of a Receiving Body of Water to Identify Stream Impairment. Merck and Company, Inc., Pulaski, VA; \$20,000.
- **Project:** Toxicity Evaluation of Landfill Leachate. Tetra Tech, Inc., \$5,000.

- **Project:** Enhanced coagulation and simulated distribution system disinfection by-products evaluation study to identify optimal conditions for the reduction of chlorine disinfection by-products (DBP) precursors and their subsequent formation in a potable water distribution system. City of Martinsville, VA; \$8,000.
- **Project:** Aquatic Toxicity Evaluation of Wastewater Discharge from Ammunition Production Facility. Radford Army Ammunition Plant Army, VA; \$5,000.
- **Project:** Water Quality Chemical Analysis and Evaluation on Stored Drinking Water to Determine Impact of Storage Conditions on Water Quality; American University of Beirut; \$5,000.
- **Project:** Aquatic Toxicity Evaluation of Storm Water Discharge from Metal Roofing. DuPont facility, Waynesboro, VA; \$5,000.
- **Project:** Rapid Bioassessment of a Receiving Body of Water to Identify Stream Impairment. Subcontracted work from a consulting firm, study site: Gaston, NC; \$10,000.
- **Project:** Aquatic Toxicity Evaluation of Wastewater Effluent from poultry product facility, Perdue Farms, DE; \$2,500.
- **Project:** Aquatic Toxicity Evaluation of Wastewater Effluent from poultry product facility, Perdue Farms, VA; \$8,000.
- **Project:** Aquatic Toxicity Evaluation of Wastewater Effluent from beer production facility, Coors Brewing, VA; \$10,000.
- **Project:** Aquatic Toxicity Evaluation of Wastewater Effluent from Wastewater facility, DuPont Spruance facility, VA; \$5,000.
- **Project Title:** Chronic Effects of Ammonia and Nitrite in Shrimp Cultured under Lower Salinity Conditions. Commercial fish and shellfish technologies – Virginia Tech (CFAST) Proposal; Civil and Environmental Engineering Department, Virginia Tech. Investigators: Gregory Boardman, David Kuhn and Susan Mirlohi; \$29,870

Grants/Contracts Attempted

- **Project:** “Ecological Toxicity Assessment of ECO-FRAC™ citrus-based Hydraulic Fracturing Product”. Submitted as a proposal for industry-funded undergraduate research project. Amount, NTE: \$50,000. Investigators: Susan Mirlohi, Ph.D., Kenneth M. Klemow, Ph.D., Marleen A. Troy, Ph.D., P.E., and Brain E. Whitman, Ph.D. ; Wilkes University, Wilkes-Barre, PA. January 2015.
- **Project:** “Promoting Water as a Healthy Beverage Choice and Valued Natural Resource through Science, Ethics, and Engineering Education”. Submitted as Letter of Intent/Pre-proposal to the USDA-NIFA Agriculture and Food Research Initiative (AFRI) Competitive Postdoctoral Grant, \$100,000. Approved; not proceeded. November 2013. PI: Susan Mirlohi, Ph.D.
- **Project:** “Alteration of Metallic Flavor Detection and Odor Thresholds Associated with Aging”. R21 NIDCD Research Grants for Translating Basic Research into Clinical Tools for Human Health. As a doctoral candidate, contributed significantly to drafting the proposal for subsequent submission by the PI (Dr. Andrea Dietrich, Civil and Environmental Engineering, Virginia Tech. February, 2011.

Technical Skills

- Human subject testing using sensory techniques for taste/ flavor threshold determination and assessment of sensory attributes in beverage and/or food samples for research or consumer applications.
- Colorimetric/Spectrophotometric analysis and metals analysis by atomic absorption.
- Sample preparation techniques and use of particle analyzer (Zetasizer) for characterization of zerovalent iron nanoparticles.
- Use of SPME fibers, GC/MS, and IC techniques for water and/or headspace analysis.
- Liquid chromatography and GC/MS analysis techniques to identify disinfection by-products (DBPs) associated with the reaction of phenol with iodine.
- Use of Flavor Profile Analysis (FPA) to characterize odors and determine odor threshold numbers as a drinking water quality monitoring tool.
- UV visible (UV VIS) spectroscopy, organic carbon analysis, ion chromatography; titration.
- Probes for pH and dissolved oxygen levels, HACH® kits for colorimetric analysis chlorine (free and combined), iodine, phosphorus, alkalinity, and ammonia levels.
- Aquatic toxicity assessment techniques using acute and chronic bioassays on fresh and saltwater species
- ELISA assay for analysis of oxidative stress biomarkers.
- Microbiological analysis techniques for drinking water, recreational water, wastewater, and solid waste analysis.
- Aerobic and anaerobic microbial toxicity and/or treatability evaluation testing using biochemical methane potential and nitrification inhibition testing.
- Data Collection, Presentation, and Analysis Tools; PowerPoint, Word, Excel, SAS JMP; Toxstat, and Toxcalc.

Selected Project Experiences

- Research, startup, and successful operation of a fluidized bed anaerobic reactor employing the ANAMMOX process.
- Development and execution of bench and pilot testing plans to evaluate the use of enhanced coagulation and/or alternative disinfection strategies to control the formation of disinfection by-products in drinking water.
- Development and execution of bench testing plans (jars and columns) to remove uranium and arsenic from groundwater by coagulation/filtration processes.
- Development and execution of bench testing plans to remove refractory organic nitrogen from wastewater.
- Development and execution of bench testing plans to decolorize dyes in industrial wastewater and to monitor for hexavalent chromium contamination from different dye formulations.
- Bench-scale study to evaluate the effectiveness and feasibility of carbon treatment for removal of chemical oxygen demand from an industrial wastewater treatment facility.
- Enhanced coagulation and disinfection by-products evaluation study to identify optimal conditions for the reduction of DBP precursors and their subsequent formation in a potable water distribution system.
- Instream impact studies and benthic macroinvertebrate (i.e., aquatic insects) sample collection, identification, and data evaluation to determine environmental impacts upstream and downstream of effluent discharges from municipal and industrial wastewater treatment facilities.
- Product toxicity evaluation studies for specific polymers used in wastewater treatment processes; lithium used in drug manufacturing; and insecticide used in pest management practices.