

# Jacqueline MacDonald Gibson

## Curriculum Vitae

📍 Department of Environmental Sciences and Engineering  
Gillings School of Global Public Health  
Michael Hooker Research Center, Room 0032  
University of North Carolina at Chapel Hill  
Chapel Hill, NC 27599-7431  
✉ jackie.macdonald@unc.edu  
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## EDUCATION

Ph.D., Engineering and Public Policy, 2007  
Ph.D., Civil and Environmental Engineering, 2007  
Carnegie Mellon University, Pittsburgh, Pa.  
  
M.S., Environmental Science in Civil Engineering, 1990  
University of Illinois at Urbana-Champaign, Urbana, Ill.  
  
B.A., Mathematics, *Magna Cum Laude*, 1986  
Bryn Mawr College, Bryn Mawr, Pa.

## PROFESSIONAL EXPERIENCE

### Employment

Associate Professor, 2014-present  
Assistant Professor, 2008-2013  
Visiting Professor, 2007  
Department of Environmental Sciences and Engineering  
Gillings School of Global Public Health, University of North Carolina at Chapel Hill  
  
Senior Engineer, 2003-2007  
Engineer, 1999-2003  
RAND Corporation, Washington, D.C., and Pittsburgh, Pa.  
  
Associate Director, 1997-1999  
Senior Staff Officer, 1994-1997  
Staff Officer, 1992-1994  
Research Associate, 1990-1992  
Water Science and Technology Board, National Research Council, Washington, D.C.  
  
Research Assistant, 1988-1990  
Environmental Engineering Department, University of Illinois, Urbana, Ill.

Publications Editor, 1987-1988

Software Publishers Association, Washington, D.C.

Exceptions and Appeals Analyst, 1986-1987

U.S. Department of Energy, Washington, D.C.

Editorial Assistant, 1982-1985 (summers)

*Old-House Journal*, Brooklyn, N.Y.

Intern Reporter, 1985

Washington Bureau, *National Catholic Reporter*, Washington, D.C.

Teaching Assistant, 1984-1985

Department of Mathematics, Bryn Mawr College, Bryn Mawr, Pa.

Student Assistant, 1982-1984

Office of Financial Aid, Bryn Mawr College, Bryn Mawr, Pa.

Intern Reporter, 1982

*The Daily Illini*, Champaign, Ill.

## **Professional Leadership**

- Society for Risk Analysis, Council Member (elected), 2017-present
- Science Advisory Board, NC Department of Environmental Quality (appointed), 2017-present
- Dose-Response Specialty Group, Society for Risk Analysis, Chair-Elect (elected), 2017-present
- Research Triangle Environmental Health Collaborative, Chair (appointed), 2018-present; Executive Committee (appointed), 2015-2018
- World Health Organization Regional Centre for Environmental Health Action, Amman, Jordan, External Consultation Committee (appointed), 2012
- National Research Council Committee on Inherently Safe Chemical Processes (appointed), 2011-2012
- North Carolina Health Impact Assessment Work Group, Chair (appointed), 2011-2012

## **HONORS**

### **Individual Honors**

- RTI University Scholar, 2017-2018
- IBM Junior Faculty Development Award, University of North Carolina, 2014
- Newton Underwood Award for Excellence in Teaching, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, 2013
- Mentored Research Scientist Development Award, Public Health Systems and Services Research, Robert Wood Johnson Foundation, 2012-2014
- Graduate Research Fellowship, National Science Foundation, 2003-2006
- Merit Bonus Award, RAND Corporation, 2003

- National Research Council Individual Staff Award for Distinguished Service, 1996
- National Research Council Group Recognition Award, 1995
- National Research Council Commission on Geosciences, Environment, and Resources Certificate of Appreciation for Outstanding Service, 1993, 1999
- University Fellowship, University of Illinois, 1988-1990
- Brundage Scholarship, University of Illinois, 1989
- Scott Math Prize, Bryn Mawr College, 1986
- Thesis honors, Bryn Mawr College, 1986
- Alumnae Regional Scholarship, Bryn Mawr College, 1982-1986

**Best Paper, Presentation and Report Awards**

- Best Paper Award, Association of Environmental Engineering and Science Professors Research and Education Conference, June 2017
- Paper of the Month, National Institute of Environmental Health Sciences, August 2016, <http://www.niehs.nih.gov/news/newsletter/2016/8/papers/dert/index.htm>
- Best Paper Award, Society for Risk Analysis, 2015
- Best Paper Award, Society for Risk Analysis, 2010
- Best Paper Award, American Water Works Association, Water Resources Division, 2000
- High-Quality Report Award, National Research Council Commission on Engineering and Technical Systems, 1992

**Student Honors**

Honors received by my primary advisees

<p><b>Allison Clonch</b> M.S.P.H./ M.C.R.P. student</p>	<p>Break the Cycle of Environmental Health Disparities Research Project Award, 2018 Emory University Pediatric Environmental Health Specialty Unit</p>
<p><b>Erica Wood</b> M.S.P.H. student</p>	<p>Student Travel Award, 2018 Society for Risk Analysis</p>
<p><b>Alexandra George</b> M.S.P.H. 2018</p>	<p>Environmental Sciences Bunker Award (outstanding engineering master’s student), 2018 Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill</p>
<p><b>Simran Khadka</b> B.S.P.H. 2018</p>	<p>Best Poster Award, 2018 Celebration of Undergraduate Research Symposium, University of North Carolina</p>
<p><b>Frank Stillo</b></p>	<p>Students Who Rocked Public Health in 2017, Journal of Public Health Management and Practice</p>

Ph.D. candidate, M.S.P.H. 2015	<p>NC Sea Grant and Water Resources Research Institute Graduate Fellow, 2017-2018</p> <p>Graduate Education Advancement Board Impact Award, 2017 University of North Carolina</p> <p>Break the Cycle of Environmental Health Disparities Research Project Award, 2017 Emory University Pediatric Environmental Health Specialty Unit</p> <p>Student Poster Competition, Third Place, 2017 NC Water Resources Research Institute 19<sup>th</sup> Annual Conference, NC State University</p>
<b>Ted Mansfield</b> Ph.D. 2016	<p>Data Science Fellowship, 2016-2017 U.S. Department of Transportation</p> <p>Best Paper Award, 2015 Society for Risk Analysis</p> <p>Dissertation Completion Fellowship, 2015-2016 The Graduate School, University of North Carolina at Chapel Hill</p>
<b>Brenda Benavides</b> M.S.E.E. 2016	<p>Bunker Award (outstanding engineering master's student), 2017 Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill</p>
<b>Chelsea Fizer</b> M.S.P.H. 2016	<p>Environmental Sciences Achievement Award (outstanding master's student), 2016 Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill</p>
<b>Ya-ru Li</b> Ph.D. 2014	<p>Dissertation Completion Fellowship, 2013-2014 The Graduate School, University of North Carolina at Chapel Hill</p>
<b>Hannah Leker</b> M.S.P.H. 2015	<p>Christine Mirzayan Science &amp; Technology Policy Graduate Fellowship Program, 2015-2016 National Academy of Sciences</p> <p>Environmental Sciences Achievement Award (outstanding master's student), 2015 Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill</p>
<b>Jill Johnston</b> Ph.D. 2013, M.S. 2010	<p>Graduate Research Fellowship, 2010-2013 National Science Foundation</p> <p>Student Poster Award (second place) and Student Travel Award, 2012 American Public Health Association Annual Meeting</p> <p>Best Student Presentation Award, 2012 National Environmental Monitoring Conference</p> <p>Delta Omega Academic Excellence Award, 2010 Gillings School of Global Public Health, University of North Carolina at Chapel Hill</p> <p>Environmental Sciences Achievement Award, 2010 Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill</p>

with  
**Nicholas  
DeFelice**

Ph.D. 2014,  
M.S.E.E.  
2010

**Mejs  
Hasan**

M.S. 2010

Innovators Grant Award, 2009  
Massachusetts Institute of Technology Deshpande Center

Outstanding Poster Award, 2009  
Spotlight on Student Research, University of North Carolina at Chapel Hill

## MEMBERSHIPS

- Association of Environmental Engineering and Science Professors
- Society for Risk Analysis
- Research Triangle Environmental Health Collaborative

## BIBLIOGRAPHY AND PRODUCTS OF SCHOLARSHIP

### Books and Chapters

Underline denotes student advisee or post-doctoral trainee. Asterisk denotes corresponding author.

#### Books

**MacDonald Gibson, J.**, A. Brammer, C. Davidson, T. Folley, F. Launay, and J. Thomsen, eds. 2013. *Environmental Burden of Disease Assessment: A Case Study in the United Arab Emirates*. Dordrecht, The Netherlands: Springer. ISBN 978-97-007-5924-4 (hard copy), 978-94-007-5925-1 (eBook). DOI 10.1007/978-94-007-5925.1. 521 pp. Available: <http://www.amazon.com/Environmental-Disease-Assessment-Science-Technology/dp/940075924X>.

#### Peer-Reviewed Book Chapters (8 total)

Stillo, F., and **J. MacDonald Gibson**. In press. Racial disparities in access to municipal water supplies in the American South. Chapter 7 in *Resilience and Health: A Potent Dynamic*, I. Leslie Rubin and Joav Merrick, eds. New York: Nova Science. 21 manuscript pages.

**MacDonald Gibson, J.** 2018. Environmental determinants of health. Pp. 451-467 in *Chronic Illness Care: Principles and Practice*, T. Daaleman and M. Helton, eds. New York: Springer Science and Business Media.

Swenberg, J., Y. Lai, R. Yu, V. Sharma, B. Moeller, H. Hartwell, **J. MacDonald Gibson**, and J. Nakamura. 2016. The role of endogenous versus exogenous DNA damage in risk assessment. Chapter 6 in *Thresholds of Genotoxic Carcinogens: From Mechanisms to Regulation*, T. Nohmi and S. Fukushima, eds. Amsterdam: Academic Press.

**MacDonald Gibson, J.** 2015. Burden of disease assessment. Chapter 57 in *Handbook of Water and Health*, J. Bartram, ed. London and New York: Routledge. <http://www.routledge.com/books/details/9781138910072/>

**MacDonald Gibson, J.**, and N. B. DeFelice. 2015. Managing chemical hazards. Chapter 25 in *Handbook of Water and Health*, J. Bartram, ed. London and New York: Routledge. <http://www.routledge.com/books/details/9781138910072/>

Rittmann, B. E., and **J. A. MacDonald**. 2000. National Research Council guidance on natural attenuation. Pp. 1-8 in *Natural Attenuation Considerations and Case Studies: Remediation of Chlorinated and Recalcitrant Compounds*, G. B. Wickramanayake, A. R. Gavaskar, and M. E. Kelley, eds. Columbus, Ohio: Battelle Press.

Brown, R. A., **J. A. MacDonald**, R. G. Luthy, and R. Allen-King. 1998. Technology innovation for sites contaminated with chlorinated solvents, pesticides, and polychlorinated biphenyls. Pp. 39-43 in *Designing and Applying Treatment Technologies: Remediation of Chlorinated and Recalcitrant Compounds*, G. B. Wickramanayake and R. E. Hinchee, eds. Columbus, Ohio: Battelle Press.

**MacDonald, J. A.**, and B. E. Rittmann. 1994. In situ bioremediation: when does it work? Pp. 209-219 in *Innovative Solutions for Contaminated Site Management*. Alexandria, Va.: Water Environment Federation.

## Peer-Reviewed Publications

Underline denotes student advisee or post-doctoral trainee. Asterisk denotes corresponding author in cases where not lead author; corresponding author for all lead-author publications.

### Journal Articles, Published or In Press (59 total)

Fizer, C. M., W. Bruine de Bruin, F. J. Stillo, and **J. MacDonald Gibson**. In press. Barriers to managing private wells and septic systems in underserved communities: mental models of homeowner decision making. *Journal of Environmental Health*. 16 manuscript pages.

Stillo, F., and **J. MacDonald Gibson**. In press. Racial disparities in access to municipal water supplies in the American South: Impacts on children's health. *International Public Health Journal*. 31 manuscript pages.

Hoponick Redmon, J., **J. MacDonald Gibson**, A. M. Aceituno, K. P. Woodward, and K. E. Levine. 2018. Invited commentary: Safeguarding children's health: time to enact a health-based standard and comprehensive testing, mitigation, and communication protocol for lead in drinking water. *North Carolina Medical Journal* 79(5):51-55.

Leker, H., and **J. MacDonald Gibson**. 2018. Relationship between race and community water and sewer service in North Carolina, USA. *PLoS ONE* 13(3):e0193225 (pp. 1-19). DOI: 10.1371/journal.pone.0193225.

Zabinski, J., K. J. Pieper, and **J. MacDonald Gibson**. 2018. A Bayesian belief network model assessing the risk to wastewater workers of contracting Ebola virus disease during an outbreak. *Risk Analysis*. 38(2):376-391. DOI: 10.1111/risa.12827.

**MacDonald Gibson, J.**, and K. J. Pieper. 2017. Strategies to improve private well water quality: A North Carolina perspective. *Environmental Health Perspectives* 125(7):07600.1-07600.9. DOI: 10.1289/EHP890.

DeFelice, N. B., H. G. Leker, and **J. MacDonald Gibson\***. 2017. Annual cancer risks from chemicals in North Carolina community water systems. *Human and Ecological Risk Assessment: An International Journal* 23(5):974-991. DOI: 10.1080/10807039.2017.1292842.

Koban, L., and **J. MacDonald Gibson**. 2017. Small-unit water purifiers for remote military outposts: a new application of multi-criteria decision analysis. *Journal of Multi-Criteria Decision Analysis*. DOI: 10.1002/mcda.1606.

- Stillo, F., and **J. MacDonald Gibson\***. 2017. Exposure to contaminated drinking water and health disparities in North Carolina. *American Journal of Public Health* 107(1):180-185. DOI: 10.2105/AJPH.2016.303482.
- Stone, E. R., W. Bruine de Bruin, A. M. Rogers, E. M. Boker, and **J. MacDonald Gibson**. 2017. Designing graphs to communicate risks: understanding how the choice of graphical format influences decision making. *Risk Analysis* 16(8):981-1004. DOI: 10.1111/risa.12660.
- DeFelice, N., J. Johnston, and **J. MacDonald Gibson\***. 2016. Reducing emergency department visits for acute gastrointestinal illnesses in North Carolina (USA) by extending community water service. *Environmental Health Perspectives* 54(10):1583-1591. DOI: 10.1289/EHP160.
- Zabinski, J. W., G. Garcia-Vargas, M. Rubio-Andrade, R. C. Fry, and **J. MacDonald Gibson\***. 2016. Advancing dose-response assessment methods for environmental regulatory impact analysis: a Bayesian belief network approach applied to inorganic arsenic. *Environmental Science & Technology Letters* 3(5):200-204.
- Mansfield, T., and **J. MacDonald Gibson**. 2016. Estimating active transportation behaviors to support health impact assessment in the United States. *Frontiers in Public Health* vol. 4, article 63. DOI: 10.3389/fpubh.216.00063.
- Johnston, J., and **J. MacDonald Gibson**. 2015. Indoor air contamination from hazardous waste sites: Improving the evidence base for decision-making. *International Journal of Environmental Research and Public Health* 12(12):15,040-15,057. DOI:10.3390/ijerph121214960.
- Naman, J., and **J. MacDonald Gibson**. 2015. Disparities in water and sewer services in North Carolina: An analysis of the decision-making process. *American Journal of Public Health* 105(10):e20-e26. DOI:10.2105/AJPH.2015.302731.
- DeFelice, N., J. Johnston, and **J. MacDonald Gibson\***. 2015. Acute gastrointestinal illness risks in North Carolina community water systems: A methodological comparison. *Environmental Science & Technology* 49 (16):10019–10027. DOI: 10.1021/acs.est.5b01898.
- MacDonald Gibson, J.**, D. Rodriguez, T. Dennerlein, J. Mead, T. Hasch, G. Meacci, and S. Levin. 2015. Predicting urban design effects on physical activity and public health: a case study. *Health and Place* 35(September):79-84. DOI: 10.1016/j.healthplace.2015.07.005.
- Mansfield, T., and **J. MacDonald Gibson**. 2015. Health impacts of increased physical activity from changes in transportation infrastructure: quantitative estimates for three communities. *BioMed Research International* article ID 812325. DOI: 10.1155/2015/812325.
- Mansfield, T., D. Rodriguez, and **J. MacDonald Gibson**. 2015. The effects of urban form on ambient air pollution and public health risk: A case study in Raleigh, North Carolina. *Risk Analysis* 35(5):901-918. DOI: 10.1111/risa.12317.
- Johnston, J., A. J. Kramer, and **J. MacDonald Gibson**. 2015. Community perspectives on the risk of indoor air pollution arising from contaminated groundwater. *New Solutions* 25(1):59-77.

Chart-asa, C., and **J. MacDonald Gibson\***. 2014. Health impact assessment of traffic-related air pollution at the urban project scale: influence of variability and uncertainty. *Science of the Total Environment*. DOI: 10.1016/j.scitotenv.2014.11.020.

Li, Y., and **J. MacDonald Gibson**. 2014. Health and air quality benefits of policies to reduce coal-fired power plant emissions: a case study in North Carolina. *Environmental Science & Technology* 48 (17):10019-10027. DOI: 10.1021/es501358a.

**MacDonald Gibson, J.**, N. DeFelice, D. Sebastian, and H. Leker. 2014. Racial disparities in access to community water supply service in Wake County, North Carolina. *Frontiers in Public Health Services and Systems Research* 3(3): article 6. DOI: 10.13023/FPHSSR.0303.06.

Johnston, J., Q. Sun, and **J. MacDonald Gibson**. 2014. Updating exposure models of indoor air pollution due to vapor intrusion: Bayesian calibration of the Johnson-Ettinger Model. *Environmental Science & Technology* 48(4):2130-2138. DOI: 10.1021/es4048413.

Johnston, C., M. N. Byappanahalli, **J. MacDonald Gibson**, J. A. Ufnar, R. L. Whitman, and J. R. Stewart. 2013. Probabilistic analysis showing that a combination of *Bacteroides* and *Methanobrevibacter* source tracking markers is effective for identifying waters contaminated by human fecal pollution. *Environmental Science & Technology* 47(23):13,621-13,628. DOI: 10.1021/es403753k.

Chart-Asa, C., K. Sexton, and **J. MacDonald Gibson\***. 2013. Traffic impacts on fine particulate matter air pollution at the urban project scale: a quantitative health impact assessment. *Journal of Environmental Protection* 4(12A):49-62. DOI: 10.4236/jep.2013.412A1006.

DeFelice, N., and **J. MacDonald Gibson\***. 2013. Effect of domestic water use on air pollutant emissions in Abu Dhabi, United Arab Emirates. *International Journal of Energy and Environmental Engineering* 4:33-43. DOI: 10.1186/2251-6832-4-33.

Johnston, J. and **J. MacDonald Gibson**. 2013. Screening houses for vapor intrusion risks: a multiple regression analysis approach. *Environmental Science & Technology* 47(11):5595-5602. DOI: dx.doi.org/10.1021/es4003795.

Bruine de Bruin, W., E. Stone, **J. MacDonald Gibson**, P. Fischbeck, and M. Baradaran Shoraka. 2013. The effect of communication design and numeracy on responses to UXO risk. *Journal of Risk Research*. 16(8):9821-1004. DOI: 10.1080/13669877.2013.788055.

**MacDonald Gibson, J. A.**, A. Rowe, E. Stone, and W. Bruine de Bruin. 2013. Communicating quantitative information about unexploded ordnance risks to the public. *Environmental Science & Technology* 47(9):4004-4013. DOI: 10.1021/es305254j.

Johnston, J., and **J. MacDonald Gibson**. 2013. Quantifying spatiotemporal variability of tetrachloroethylene in indoor air due to vapor intrusion: a longitudinal, community-based approach. *Journal of Exposure Analysis and Environmental Epidemiology* 24:564-571. DOI: 10.1038/jes.2013.13.

**MacDonald Gibson, J.**, J. Thomsen, F. Launay, E. Harder, and N. DeFelice. 2013. Burden of disease attributable to environmental pollution in the United Arab Emirates. *PLoS ONE* 8(3): e57536. DOI:10.1371/journal.pone.0057536.



- Folley, T. J., L. A. Nylander-French, D. M. Joubert, and **J. MacDonald Gibson\***. 2012. Burden of disease attributable to selected occupational exposures in the United Arab Emirates. *American Journal of Industrial Medicine* 55:940-952.
- MacDonald Gibson, J.**, and Z. S. Farah. 2012. Environmental risks to public health in the United Arab Emirates: a quantitative assessment and strategic plan. *Environmental Health Perspectives* 120(5):681-686. DOI:10.1289/ehp.1104064.
- Yeatts, K. B., M. El-Sadig, H. I. Ali, F. Al-Maskari, A. Campbell, S. W. Ng, L. Reeves, R. L. Chan, C. A. Davidson, W. E. Funk, M. G. Boundy, D. Leith, B. Popkin, **J. MacDonald Gibson**, I. Rusyn, and A. F. Olshan. 2012. Conducting environmental health research in the Arabian Middle East: lessons and opportunities. *Environmental Health Perspectives* 120(5):632-636. DOI:10.1289/ehp.1104031.
- Yeatts, K. B., M. El-Sadig, D. Leith, W. Kalsbeek, F. Al-Maskari, D. Couper, W. E. Funk, T. Zoubeidi, R. L. Chan, C. B. Trent, C. A. Davidson, M. G. Boundy, M. M. Kassab, M. Y. Hasan, I. Rusyn, **J. MacDonald Gibson**, and A. F. Olshan. 2012. Indoor air pollutants and health in the United Arab Emirates (UAE). *Environmental Health Perspectives* 120(5):687-694. DOI:10.1289/ehp.1104090.
- Davidson, C., L. H. Krometis, and **J. MacDonald Gibson**. 2011. Foodborne exposure to pesticides and methylmercury in the United Arab Emirates. *Risk Analysis* 32(3):381-394. DOI: 10.1111/j.1539-6924.2011.01679.x.
- Johnston, J., and **J. MacDonald Gibson**. 2011. Probabilistic approach to estimating indoor air concentrations of chlorinated volatile organic compounds from contaminated groundwater: a case study in San Antonio, Texas. *Environmental Science & Technology* 45(3):1007-1013.
- Harder, E., and **J. MacDonald Gibson\***. 2011. The costs and benefits of large-scale solar photovoltaic power production in Abu Dhabi, United Arab Emirates. *Renewable Energy* 36(2):789-797. DOI: 10.1016/j.renene.2010.08.006.
- MacDonald Gibson, J.** 2011. A burden of disease approach to prioritizing environmental policy initiatives: a case study in the Middle East. *North Carolina Medical Journal* 72(2):136-140.
- MacDonald Gibson, J.**, L. Devlin, D. Brown, and M. Armes. 2011. Reducing North Carolina's health care costs through environmental disease prevention. *North Carolina Medical Journal* 72(2):119-124.
- Li, Y., **J. MacDonald Gibson\***, P. Jat, G. Puggioni, M. Hasan, J. West, W. Vizuete, K. Sexton, and M. Serre. 2010. Burden of disease attributed to anthropogenic air pollution in the United Arab Emirates: estimates based on observed air quality data. *Science of the Total Environment* 408(23):5784-5793. DOI: 10.1016/j.scitotenv.2010.08.017.
- Willis, H., **J. MacDonald Gibson**, A. Curtright, J. Hu, S. Olmstead, G. Cecchine, S. Geschwind, and M. Moore. 2010. Prioritizing environmental health risks in the UAE. *Risk Analysis* 30(12):1842-1856. DOI: 10.1111/j.1539-6924.2010.01463.x.
- MacDonald, J. A.**, M. J. Small, and M. G. Morgan. 2009. Quantifying the risks of unexploded ordnance at closed military bases. *Environmental Science & Technology* 43(2):259-265.

- MacDonald, J. A.**, and M. J. Small. 2009. Statistical analysis of metallic anomaly patterns at former Air Force bombing ranges. *Stochastic Environmental Research and Risk Assessment* 23(2):203-214.
- MacDonald, J. A.**, M. J. Small, and M. G. Morgan. 2008. Explosion probability of unexploded ordnance: expert beliefs. *Risk Analysis* 28(4):825-841.
- MacDonald, J. A.**, and M. J. Small. 2006. Assessing sites contaminated with unexploded ordnance: Statistical modeling of ordnance spatial distribution. *Environmental Science & Technology* 40(3):931-938.
- MacDonald, J. A.** 2001. Cleaning up unexploded ordnance. *Environmental Science & Technology* 35(17):372A-376A.
- Bekins, B., B. E. Rittmann, and **J. A. MacDonald**. 2001. Natural attenuation strategy for groundwater cleanup focuses on demonstrating cause and effect. *Eos, Transactions, American Geophysical Union* 82(5):53-58.
- MacDonald, J. A.** 2000. Evaluating natural attenuation for groundwater cleanup. *Environmental Science & Technology* 34(15):346A-353A.
- MacDonald, J. A.** 1999. Cleaning up the nuclear weapons complex. *Environmental Science & Technology* 33(15):314A-319A.
- Crook, J. C., **J. A. MacDonald\***, and R. R. Trussell. 1999. Potable reuse of reclaimed wastewater: new recommendations for quality assurance. *Journal of the American Water Works Association* 91(8):40-49.
- MacDonald, J. A.** 1997. Hard times for innovative cleanup technology. *Environmental Science & Technology* 31(12):560A-563A.
- MacDonald, J. A.**, A. K. Zander, and V. L. Snoeyink. 1997. Improving service to small communities. *Journal of the American Water Works Association* 89(1):58-64.
- MacDonald, J. A.** 1996. Freshwater science in need of a boost. *Environmental Science & Technology* 30(10):444A-446A.
- Rittmann, B. E., B. F. Smets, **J. A. MacDonald**, and D. A. Stahl. 1995. Plasmid transfer for enhancing degradation capabilities. *Environmental Health Perspectives* 103(5):113-115.  
Role: Research assistant.
- MacDonald, J. A.**, and M. C. Kavanaugh. 1994. Restoring contaminated groundwater: an achievable goal? *Environmental Science & Technology* 28(8):362A-368A.
- MacDonald, J. A.**, and B. E. Rittmann. 1993. Performance standards for in situ bioremediation. *Environmental Science & Technology* 27(1):1974-1979.
- MacDonald, J. A.**, B. F. Smets, and B. E. Rittmann. 1992. The effects of energy availability on the conjugative-transfer kinetics of plasmid RP4. *Water Research* 26(4):461-468.

**RAND  
Reports**  
(4 total)

**MacDonald, J. A.**, and C. M. Mendez. 2005. UXO Cleanup Costs: Implications of Alternative Clearance Protocols. MG-244-RC. Santa Monica, Calif.: RAND Corp. 82 pp.

**MacDonald, J. A.**, D. Knopman, N. Clancy, J. McEver, and H. Willis. 2004. Transferring Army BRAC Lands Containing Unexploded Ordnance: Lessons Learned and Future Options. MG-199-A. Santa Monica, Calif.: RAND Corp. 161 pp.

**MacDonald, J. A.**, D. K. Knopman, J. R. Lockwood, and G. Cecchine. 2003. Unexploded Ordnance: A Critical Review of Risk Assessment Methods. MR-1674-A. Santa Monica, Calif.: RAND Corp. 151 pp.

**MacDonald, J. A.**, J. R. Lockwood, J. McFee, T. Altshuler, T. Broach, L. Carin, R. Harmon, C. Rappaport, W. Scott, and W. Weaver. 2002. Alternatives for Landmine Detection. MR 1608.0-OSTP. Santa Monica, Calif.: RAND Corp. 336 pp.

**National  
Research  
Council  
Reports**  
(10 total)

Authoring  
committee or  
staff member

National Research Council. 2012. The Use and Storage of Methyl Isocyanate (MIC) at Bayer CropScience. Washington, D.C.: National Academies Press. 206 pp.

———. 2000. Natural Attenuation for Groundwater Remediation. Washington, D.C.: National Academies Press. 292 pp.

———. 1999. Setting Priorities for Drinking Water Contaminants. Washington, D.C.: National Academies Press. 128 pp.

———. 1999. Groundwater and Soil Cleanup: Improving Management of Persistent Contaminants. Washington, D.C.: National Academies Press. 304 pp.

———. 1998. Issues in Potable Reuse: The Viability of Augmenting Drinking Water Supplies with Reclaimed Water. Washington, D.C.: National Academies Press. 280 pp.

———. 1997. Innovations in Ground Water and Soil Cleanup: From Concept to Commercialization. Washington, D.C.: National Academies Press. 310 pp.

———. 1997. Safe Water from Every Tap: Improving Water Service to Small Communities. Washington, D.C.: National Academies Press. 230 pp.

———. 1996. Freshwater Ecosystems: Revitalizing Educational Programs in Limnology. Washington, D.C.: National Academies Press. 384 pp.

———. 1994. Alternatives for Ground Water Cleanup. Washington, D.C.: National Academies Press. 336 pp.

———. 1993. In Situ Bioremediation: When Does It Work? Washington, D.C.: National Academies Press. 224 pp.

## Products of Engaged Scholarship

**Op-Eds**

**MacDonald Gibson, J.**, and B. Ross. 2016. Op-ed: Ensuring safe drinking water from every tap in NC. *News and Observer*, June 21.

**MacDonald, J.** 2003. Op-ed: Unexploded munitions in U.S. *United Press International*, April 28. <http://www.rand.org/blog/2003/04/unexploded-munitions-in-us.html>.

**Reports**

International,  
national,  
state, and  
local  
organizations

North Carolina Department of Environmental Quality and North Carolina Department of Health and Human Services Secretaries' Science Advisory Board. 2018. Review of the North Carolina Drinking Water Provisional Health Goal for GenX. 23 pp. Role: Contributing author. <https://files.nc.gov/ncdeq/GenX/SAB/SAB-GenX-Report-DRAFT-082018.pdf>.

Research Triangle Environmental Health Collaborative. 2016. 2015 Environmental Health Summit: Safe Water from Every Tap—Representing Expert Discussions/ Recommendations. Research Triangle Park, N.C.: Research Triangle Environmental Health Collaborator. 21 pp. Role: Executive committee, planning committee, senior author. [http://environmentalhealthcollaborative.org/images/RTEHC\\_2015\\_Summit\\_Recommendations-FINAL.pdf](http://environmentalhealthcollaborative.org/images/RTEHC_2015_Summit_Recommendations-FINAL.pdf).

North Carolina Health Impact Assessment Work Group. 2012. Reducing Healthcare Costs in North Carolina through Health Impact Assessment. Submitted to Dr. Jeff Engel, N.C. Director of Public Health. 34 pp. Role: Work group chair (appointed by Dr. Engel), report author.

Research Triangle Environmental Health Collaborative. 2011. 2010 Environmental Health Summit: America's Healthcare Policy through the Lens of Environmental Health—Representing a Compilation of Opinions. Research Triangle Park, N.C.: Research Triangle Environmental Health Collaborator. 13 pp. Role: Executive committee, planning committee, lead author. [http://environmentalhealthcollaborative.org/images/2010\\_ehcs Summit\\_report\\_web.pdf](http://environmentalhealthcollaborative.org/images/2010_ehcs Summit_report_web.pdf).

Environment Agency–Abu Dhabi (EAD). 2010. National Strategy and Action Plan for Environmental Health, United Arab Emirates, 2010. Abu Dhabi: EAD. 110 pp. Role: Principal investigator, lead author. <http://www.healthdata.org/acting-data/ united-arab-emirates-raises-standard-controlling-pollutants-through-collaboration>.

**MacDonald, J. A.** 2000. Survival Guide for Study Directors. The National Academies, Washington, D.C. 56 pp.

———. 1995. Spreading the Word: A Guide for Disseminating the Work of the National Academies. Washington, D.C.: National Academies Press. 27 pp.

**Invited Talks**

Seminars,  
keynote  
addresses,  
and briefings  
to policy-  
makers

**MacDonald Gibson, J.** 2018. Invited seminar: Racial disparities in access to municipal water and sewer service in NC: history and health impacts. Department of Civil and Environmental Engineering, Duke University. October 24.

———. 2018. Invited plenary speaker: Machine learning in dose-response assessment: translating science to decisions. 2018 Summit of the Research Triangle Environmental Health Collaborative: Artificial Intelligence in Environmental Health Science and Decision Making, October 18-19, Durham, N.C.

———. 2018. Invited speaker, data science seminar: Machine-learned Bayesian networks to untangle environmental influences on public health. RTI Data Science Lunch and Learn, October 9.

———. 2018. Invited panel speaker: The future of women and girls in STEM. Maria Mitchel Association Women in Science Symposium, Babson College, October 5-6.

———. Invited webinar: Machine learning and dose-response: translating science to decisions. Society for Risk Analysis, Dose-Response Specialty Group, March 6.

- . 2018. Invited seminar: Disparities in access to municipal water service in NC: Impacts on drinking water quality and health. NC Public Health Leaders Conference, Jan. 18-19, Raleigh, N.C.
- . 2017. Invited seminar: Racial disparities in access to municipal water service: Water quality, health impacts, and costs. Delivered at NC State University (October 13), Clemson University (November 3), and Wayne State University (November 30).
- . 2017. Invited plenary presentation: Water service disparities in North Carolina—Public Health Implications. Council of State and Territorial Epidemiologists Annual Conference: Cultivating and Environment for Better Health, June 4-8, Boise, Id.
- . 2017. Invited plenary presentation: Environmental risks to public health: Bridging across disciplines. The Bridge Collaborative Full Collaborative Meeting, Duke University, Jan. 30-31, Durham, N.C.
- . 2017. Invited presentation: Preventing lead exposure from unregulated private wells in North Carolina. North Carolina Legislators' Visit, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Jan. 30, Chapel Hill, N.C.
- . 2015. Invited keynote presentation: Private wells in North Carolina: water quality, health effects, and at-risk communities. 2015 Annual Summit of the Research Triangle Environmental Health Collaborative, Oct. 26-27, Durham, N.C.
- . 2015. Invited seminar/webinar: Health impact assessment of proposed land use change along Blue Ridge Road, Raleigh, N.C. U.S. Environmental Protection Agency Sustainable and Health Communities Seminar Series. March 10, Raleigh, N.C.
- . 2014. Invited presentation: Health impact assessments and the built environment. GreenNC 2014: Symposium for North Carolina's Sustainability Professionals. Dec. 4, Raleigh, N.C.
- . 2014. Invited seminar: Water and sewer service disparities in North Carolina. NC State University, Department of Civil and Environmental Engineering, Nov. 7, Raleigh.
- . 2014. Invited seminar: Water and sewer service disparities in North Carolina. Virginia Tech, Department of Biological Systems Engineering, Oct. 7, Blacksburg, Va.
- . 2014. Invited plenary presentation: Environmental risks to public health in the United Arab Emirates: a comprehensive view. International Water Association Leading Edge Conference on Water and Wastewater Technologies, May 26-29, Abu Dhabi.
- . 2011. Invited seminar: Prioritizing environmental pollution risks to public health: a case study in the United Arab Emirates. Department of Geography and Environmental Engineering, Johns Hopkins University, Sept. 6, Baltimore, Md.
- . 2010. Invited seminar: An environmental health assessment and strategic plan for North Carolina. The Health and Wellness Trust, Feb. 10, Raleigh, N.C.
- . 2010. Invited briefing: Reducing the environmental burden of disease in the United Arab Emirates and in North Carolina. N.C. Department of Environment and Natural Resources and N.C. Department of Health and Human Services, Jan. 25, Raleigh, N.C.

- . 2010. Invited seminar: Seeing the forest through the trees: how UNC prioritized environmental health risks in the United Arab Emirates. Department of Environmental Sciences and Engineering, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Jan. 20, Chapel Hill, N.C.
- . 2010. Invited briefing: An environmental health assessment and strategic plan for North Carolina. N.C. Public Health Partnership, Jan. 14, Research Triangle Park, N.C.
- . 2009. Invited briefing: UAE national strategy and action plan for environmental health. Presented to N.C. state representative Verla Insko and N.C. state senator William Purcell, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Oct. 28, Chapel Hill, N.C.
- . 2009. Invited briefing: UAE national strategy and action plan for environmental health. Presented to His Excellency Mohammed Ahmed Al Bowardi, Secretary General, Abu Dhabi Executive Council, Oct. 2, Abu Dhabi Executive Council, Abu Dhabi.
- . 2009. Invited briefing: UAE national strategy and action plan for environmental health. Presented to Steering Committee, UAE Environmental Health Strategy Project, Oct. 1, Abu Dhabi.
- . 2009. Invited seminar: Developing quantitative risk assessment methods to inform environmental decisions. Monthly researchers' lunch with the dean, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, July 8, Chapel Hill, N.C.
- MacDonald, J. A.** 2009. Invited seminar: Applying EPP tools to the development of an environmental strategy for a nation: the United Arab Emirates. Carnegie Mellon University Department of Engineering and Public Policy, May, Pittsburgh, Pa.
- . 2009. Invited seminar: Developing a national environmental strategy for the United Arab Emirates. Duke Environmental Alliance, Duke University, April, Durham, N.C.
- . 2009. Invited seminar: Developing a national strategy and action plan for environmental health in the United Arab Emirates. East Chapel Hill High School Advanced Placement environmental science class, Chapel Hill, N.C.
- . 2009. Invited keynote address: developing a national strategy and action plan for environmental health in the United Arab Emirates. International Conference on Environmental Health, March, Abu Dhabi.
- . 2009. Invited briefing: Development of a strategic plan for environmental health using UNC's United Arab Emirates model. N.C. Institute of Medicine, Task Force on Prevention, January, Cary, N.C.
- . 2007. Invited briefing: Statistical models for UXO pattern recognition. Advisory Board of the Strategic Environmental Research and Development Program, November, Arlington, Va.
- . 2007. Invited seminar: Patterns of metallic anomalies at sites contaminated with unexploded military ordnance: analysis techniques and policy implications, University of North Carolina at Chapel Hill, September, Chapel Hill, N.C.
- . 2007. Invited seminar: Assessing risks of land contaminated with unexploded ordnance, Arizona State University, March 27, Tempe, Ariz.

- . 2005. Inviting briefing: Explosion risks and costs of unexploded ordnance at closed military bases. U.S. House of Representatives Caucus on Unexploded Ordnance, Oct. 25, Washington, D.C.
- . 2005. Invited briefing: RAND research on unexploded ordnance: key findings and recommendations. U.S. House of Representatives Caucus on Unexploded Ordnance, Sept. 27, Washington, D.C.
- . 2002. Invited briefing: Removing war's lethal legacy: technological solutions to the global landmine problem. RAND Corp. Board of Trustees, November, Arlington, Va.
- . 2001. Invited briefing. UXO risk assessment methods: critical review. Defense Science Board Task Force on Unexploded Ordnance, Arlington, Va.
- . 2000. Invited briefing: Natural attenuation for groundwater remediation. Site Technology Coordination Group, U.S. Department of Energy Savannah River Operations, July 31, Savannah River Site, Aiken, S.C.
- . 2000. Invited seminar: When is natural attenuation the right choice? EPA Groundwater Forum Semi-Annual Meeting, April 25-28, Washington, D.C.
- . 1998. Invited seminar: Markets for permeable reactive barriers and other innovative remediation technologies: National Research Council's Findings. Remediation Technologies Development Forum Permeable Reactive Barriers Action Team Meeting, Nov. 17, Oak Ridge, Tenn.
- . 1998. Invited seminar: Innovations in ground water and soil cleanup: removing market barriers to new technologies. Biotechnology Research Institute, National Research Council Canada, March 27, Montreal.
- . 1998. Invited briefing: National Research Council's Water Science and Technology Board: communicating technical advice to decisionmakers. Environmental Protection Agency Science Advisory Board Environmental Engineering Committee, July 23, Washington, D.C.
- . 1997. Invited briefing: Innovations in ground water and soil cleanup: from concept to commercialization, an overview of the NRC report and discussion of specific recommendations. Federal Remediation Technologies Roundtable Cost and Performance Work Group, Nov. 19, Rosslyn, Va.
- . 1997. Invited seminar: Status of innovative remediation technologies. Remediation Technologies Development Forum Meeting, Oct. 15-17, Evanston, Ill.
- . 1997. Invited seminar: Constraints on ground water protection and cleanup. Resource Conservation and Recovery Act: How to Improve the Clean-up Process, organized by the Progressive Foundation, July 25, Washington, D. C.
- . 1996. Invited briefing: National Research Council report on small systems. National Drinking Water Advisory Council, Nov. 14, Washington, D.C.
- . 1996. Invited seminar: Safe water from every tap: improving water service to small communities." American Association for the Advancement of Science Fellows Seminar, Sept. 17, Washington, D.C.

## Digital and Other Novel Forms of Scholarship

### Online Training Modules

Environmental Risk Assessment (Part 1: Assessing Risks of Chemicals in the Environment): 45-minute training module for public health professionals. The North Carolina Institute for Public Health. Available at

[https://nciph.sph.unc.edu/tws/HEP\\_ERAS1r/certificate.php](https://nciph.sph.unc.edu/tws/HEP_ERAS1r/certificate.php)

Environmental Risk Assessment (Part 2: Assessing Risks of Microbes in the Environment): 40-minute training module for public health professionals. The North Carolina Institute for Public Health. Available at

[https://nciph.sph.unc.edu/tws/HEP\\_ERAS2r/certificate.php](https://nciph.sph.unc.edu/tws/HEP_ERAS2r/certificate.php).

## Refereed Other Products of Scholarship

Underline denotes student advisee or post-doctoral trainee.

### Oral Presentations

**MacDonald Gibson, J.** 2018. Methicillin-resistant *Staphylococcus aureus* in children living with Industrial Hog Operation Workers. Sixth Annual BayesiaLab Conference, November 1-2, Chicago, Ill.

———. 2018. Risk communication to promote private well testing: an evidence-based approach. NC Water Resources Research Institute Annual Conference, March 14-15, Raleigh, N.C.

**MacDonald Gibson, J.**, and J. Zabinski. 2017. Dose-response assessment of arsenic in drinking water: A Bayesian network model of diabetes risks. Society for Risk Analysis Annual Meeting: Advancing Analysis, December 10-14, Arlington, Va.

Stillo, F., and **J. MacDonald Gibson, J.** 2017. Racial disparities in access to municipal water supplies in the American South: Impacts on lead exposure and children's health. Society for Risk Analysis Annual Meeting: Advancing Analysis, December 10-14, Arlington, Va.

Fizer, C. M., **J. MacDonald Gibson**, and W. Bruine de Bruin. 2017. Barriers to private well and septic management in under-served communities: An analysis of homeowner decision making. Society for Risk Analysis Annual Meeting: Advancing Analysis, December 10-14, Arlington, Va.

**MacDonald Gibson, J.**, and A. N. George. 2017. Antibiotic-resistant *Staphylococcus aureus* transmission from hog farms to humans: Bayesian network risk assessment models. Society for Risk Analysis Annual Meeting: Advancing Analysis, December 10-14, Arlington, Va.

Stillo, F., and **J. MacDonald Gibson, J.** 2017. Racial disparities in access to municipal water supplies in the American South: Impacts on children's health. Water and Health 2017, October 16-20, Chapel Hill, N.C.

Zabinski, J., K. J. Pieper, and **J. MacDonald Gibson**. 2017. A Bayesian belief network model assessing the risk to wastewater workers of contracting Ebola virus disease during an outbreak. N.C. Water Resources Research Institute 19<sup>th</sup> Annual Meeting, March 15-16, N.C. State University, Raleigh.

George, A. N., C. H. Weng, and **J. MacDonald Gibson**. 2017. A systematic review of the spread of livestock-associated resistant *Staphylococcus aureus* from hog operations. N.C.



Water Resources Research Institute 19<sup>th</sup> Annual Meeting, March 15-16, N.C. State University, Raleigh.

Stillo, F., and **J. MacDonald Gibson**. 2017. Racial disparities in access to municipal water supplies in the American South: Impacts on children's health. N.C. Water Resources Research Institute 19<sup>th</sup> Annual Meeting, March 15-16, N.C. State University, Raleigh.

Mansfield, T., and **J. MacDonald Gibson**. 2017. Novel dynamic microsimulation model to explore competing transportation health risks. Transportation Research Board Annual Meeting, Jan. 8-12, Washington, D.C.

**MacDonald Gibson, J.**, and F. Stillo. 2016. Racial disparities in access to community water service in North Carolina: public health risks and costs of interventions. Society for Risk Analysis Annual Meeting 2016: Advancing Analysis, Dec. 12-14, San Diego, Calif. <http://birenheide.com/sra/2016AM/program/singlesession.php3?sessid=T3-D&order=4#4>.

Zabinski, J., and **J. MacDonald Gibson**. 2016. Advancing dose-response models to incorporate genetic and epigenetic data: use of Bayesian belief networks. Society for Risk Analysis Annual Meeting 2016: Advancing Analysis, Dec. 12-14, San Diego, Calif. <http://birenheide.com/sra/2016AM/program/singlesession.php3?sessid=W3-G&order=4#4>.

Mansfield, T., and **J. MacDonald Gibson**. 2016. Health impacts of transportation and the built environment: A quantitative risk assessment. Society for Risk Analysis Annual Meeting 2016: Advancing Analysis, Dec. 12-14, San Diego, Calif. <http://birenheide.com/sra/2016AM/program/singlesession.php3?sessid=P&order=69#69>.

———. 2016. Untangling competing transportation health risks at the neighborhood scale: Premature mortality associated with mobile-source air pollution and physical inactivity across Raleigh, N.C. International Conference on Health & Transport, June 13-15, San Jose, Calif.

———. 2016. Estimating transportation physical activity using routinely collected data: Evidence from the 2009 National Household Travel Survey. Transportation Research Board 95th Annual Meeting, Jan. 10-14, Washington, D.C.

Zabinski, J., K. Pieper, and **J. MacDonald Gibson**. 2015. Risks to U.S. wastewater workers during Ebola outbreaks: a Bayesian belief network model. Society for Risk Analysis 2015 Annual Meeting, Dec. 6-10, Arlington, Va. Proceedings available at <http://www.sra.org/sites/default/files/pdf/events/Abstracts%202015.pdf>.

Mansfield, T., and **J. A. MacDonald Gibson**. 2015. Health impacts of transportation and the built environment: Application of a novel dynamic modeling approach in Raleigh, North Carolina. 143rd American Public Health Association Annual Meeting and Exposition, Oct. 31–Nov. 4, Chicago. Proceedings available at <https://apha.confex.com/apha/143am/webprogram/start.html?ga=1.247791047.1778746772.1446737695>.

Zabinski, J., K. Pieper and **J. MacDonald Gibson**. 2015. Protecting wastewater and sewer workers from Ebola and other emerging pathogens. Water and Health Conference 2015: Where Science Meets Policy, Oct. 26-30, Chapel Hill, N.C. Proceedings available at <http://waterinstitute.unc.edu/waterandhealth2015/>.

Li, Y., and **J. MacDonald Gibson**. 2015. Assessing the health burden of fine particulate air pollution from multiple sources. American Waste Management Association's 108<sup>th</sup> Annual

Conference: Connecting the Dots—Environmental Quality to Climate, June 22-25, Raleigh, N.C. Proceedings available at <http://ace2015.awma.org/wp-content/uploads/2015/05/01-7294-2015-ACE-Final-Program.pdf>.

**MacDonald Gibson J. A.**, J. Johnston, and **N. DeFelice**. 2014. Water and sewer service disparities in North Carolina: public health risks. Society for Risk Analysis 2014 Annual Meeting, Dec. 8, Denver, Colo. Proceedings available at <http://www.sra.org/sites/default/files/pdf/events/SRA2014Abstracts.pdf>.

**MacDonald Gibson, J. A.** 2014. Water and sewer service disparities in North Carolina. 2014 Water and Health Conference: Where Science Meets Policy, Oct. 13. Proceedings available at <http://whconference.unc.edu>.

**DeFelice N.**, J. Johnston, and **J. A. MacDonald Gibson**. 2014. Reducing risks of acute gastrointestinal illnesses due to microbial contaminants in North Carolina drinking water by expanding community water systems. PEPH Annual Meeting: Communication Research in Environmental Health Sciences—Environmental Health Literacy, Sept. 22, Research Triangle Park, N.C. Available at [http://www.niehs.nih.gov/about/visiting/events/pastmtg/2014/peph/poster\\_abstracts.pdf](http://www.niehs.nih.gov/about/visiting/events/pastmtg/2014/peph/poster_abstracts.pdf).

**MacDonald Gibson, J. A.** 2014. Disparities in access to water and sewer services in North Carolina: background and preliminary results. North Carolina Public Health Association 2014 Fall Educational Conference, Sept. 8, Wilmington, N.C.

**DeFelice, N.**, J. Johnston, and **J. MacDonald Gibson**. 2014. Burden of acute gastrointestinal illness attributable to North Carolina community water systems. American Water Works Association Annual Conference and Exhibition, June 8-12, Boston.

**MacDonald Gibson, J. A.** 2014. Racial disparities in access to public water and sewer service in North Carolina. 2014 Keeneland Conference: Building the Evidence Base for Public Health Practice and Policy, April 8, Lexington, Ky.

**MacDonald Gibson, J. A.**, **N. DeFelice**, and **H. Leker**. 2014. Disparities in the burden of disease attributable to drinking water pollution in North Carolina. Environmental Health Disparities and Environmental Justice Meeting, July 30, Research Triangle Park, N.C. Available at [http://www.niehs.nih.gov/about/visiting/events/pastmtg/assets/docs\\_n\\_z/poster\\_abstracts.pdf](http://www.niehs.nih.gov/about/visiting/events/pastmtg/assets/docs_n_z/poster_abstracts.pdf).

**MacDonald Gibson, J.**, **T. Dennerlein**, and D. Rodriguez. 2013. Predicting the effects of urban design on public health: a case study in Raleigh, North Carolina. Society for Risk Analysis Annual Meeting, Dec. 8-11, Baltimore, Md.

**Mansfield, T.**, and **J. MacDonald Gibson**. 2013. Using quantitative methods to improve health impact assessment for transportation projects: Application of the DYNAMO-HIA model in three North Carolina communities. National Health Impact Assessment Meeting, Sept. 23-26, Washington, D.C.

———. 2013. The effects of urban form on PM2.5 concentration and public health: a case study in Raleigh, North Carolina. 2013 Association of Environmental Engineering and Science Professors 50<sup>th</sup> Anniversary Conference, July 14-16, Golden, Colo.

**MacDonald Gibson, J.** 2013. Environmental policy through the lens of public health: a public health-environment agency partnership in the United Arab Emirates. 2013 PHSSR Keeneland Conference, April 8-11, Lexington, Ky.

———. 2012. Health impact assessment or risk assessment: What's the difference? Society for Risk Analysis Annual Meeting 2012, Dec. 9-12, San Francisco.

Johnston, J., and **J. MacDonald Gibson**. 2012. Community exposure to tetrachloroethylene (PCE) in indoor air due to vapor intrusion. American Public Health Association Annual Meeting, Oct. 27-31, San Francisco.

Dennerlein, T., and **J. MacDonald Gibson**. 2012. Blue Ridge Road Corridor health impact assessment. 2012 North Carolina Planning Conference, Sept. 26, Wilmington, N.C.

**MacDonald Gibson, J.** 2012. Environmental risk analysis: strategic planning in the UAE. The Biosafety and Biosecurity International Conference, Sept. 13-15, Amman, Jordan.

Johnston, J., and **J. MacDonald Gibson**. 2012. Spatio-temporal variability of tetrachloroethylene in indoor air due to vapor intrusion. 22nd Annual International Conference on Soil, Water, Energy, and Air, March 19-22, San Diego, Calif.

———. 2011. Probabilistic approach to estimating indoor air concentrations of chlorinated volatile organic compounds from contaminated groundwater: a case study in San Antonio, Texas. International Symposium on Bioremediation and Sustainable Environmental Technologies, June 27-30, Reno, Nev.

———. 2010. Probabilistic approach to estimating indoor air concentrations of chlorinated volatile organic compounds from contaminated groundwater: a case study in San Antonio, Texas. Partners in Environmental Technology Technical Symposium and Workshop, Dec 1-2, Washington, D.C.

**MacDonald, J. A.** 2009. Applying tools of risk analysis to the development of a national environmental strategy for the United Arab Emirates. Risk Analysis: The Evolution of a Science, 2009 Annual Meeting, Society for Risk Analysis, Baltimore, Md.

———. 2007. New model for quantitative risk assessment at UXO sites. UXO/Countermining Forum, August, Orlando, Fla.

———. 2007. Expert prediction of UXO explosion probability. UXO/Countermining Forum, August, Orlando, Fla.

———. 2007. Statistical models for UXO pattern recognition. UXO/Countermining Forum, August, Orlando, Fla.

———. 2006. Assessing risks of land contaminated with unexploded ordnance. Society for Risk Analysis Annual Conference, December, Baltimore, Md.

———. 2003. How much risk is too much? Assessing risks of unexploded ordnance. Annual Meeting of the Society for Risk Analysis, December, Baltimore, Md.

**MacDonald, J. A.**, J. R. Lockwood, and J. McFee. 2003. Research plan for a multi-sensor landmine detector. Pp. 625-632 in Proceedings, International Conference on Requirements and Technologies for the Detection, Removal and Neutralization of Landmines and UXO, Sept. 15-18, 2003, Brussels, Belgium. Piscataway, N.J.: IEEE.

**MacDonald, J. A.** 2002. UXO and explosives contamination at domestic military installations: overview of the problem and issues of concern. Annual Meeting of the Society for Environmental Toxicology and Chemistry, Nov. 16-20, Salt Lake City, Utah.

- MacDonald, J. A.**, D. K. Knopman, J. R. Lockwood, and G. Cecchine. 2002. Improving methods for UXO risk assessment. In Proceedings, UXO/Countermining Forum, Sept. 3-6, 2002, Orlando, Fla. Washington, D.C.: Department of Defense Explosives Safety Board.
- MacDonald, J. A.** 2000. When is natural attenuation the right choice? Tenth Annual West Coast Conference on Contaminated Soils and Groundwater, Association for the Environmental Health of Soils, March 20-23, San Diego, Calif.
- . 1999. Natural attenuation for groundwater remediation: key questions raised in the National Research Council study. Remediation of Subsurface Contaminants: The Meaning and Measures of Success, National Ground Water Association 1999 Theis Conference, Nov. 12-15, Amelia Island, Fla.
- . 1999. Keynote address: deploying subsurface barrier technologies—examining the market. IBC Subsurface Barrier Technologies Conference, Feb. 1, Scottsdale, Ariz.
- MacDonald, J. A.**, and D. M. Syrrist. 1997. Technology transfer for site remediation—National Research Council report. Technology Transfer Conference VI, EPA Hazardous Substances Research Centers, Oct. 5-7, Mt. Hood, Ore.
- MacDonald, J. A.**, D. M. Syrrist, R. L. Luthy, A. Rappaport, P. S. C. Rao, R. A. Brown, and J. Kingscott. 1997. Expanding market potential for innovative remediation technologies. Workshop, IBC Second Annual Conference on Innovative Remediation Technologies, July 21-23, Boston.
- MacDonald, J. A.**, and V. L. Snoeyink. 1997. Safe water from every tap: recommendations from the National Research Council. American Water Works Association Annual Conference and Exhibition, June 15-19, Atlanta.
- Snoeyink, V. L., and **J. A. MacDonald**. 1996. Recommendations of the National Research Council's Committee on Small Water Supply Systems. New Directions for the Drinking Water Program: Association of State Drinking Water Administrators Eleventh Annual Conference, Oct. 14-17, La Jolla, Calif.

## Non-refereed Papers/Articles

- MacDonald, J. A.**, and P. S. Rao. 1998. Cleanup technologies: strengthening the soil and groundwater markets. *Water Environment & Technology* 10(1):44-49.
- . 1997. Shift needed to allow market for innovative technologies. *Soil & Groundwater Cleanup* Aug/Sept:19-25.
- MacDonald, J. A.** 1997. When doors are closed at the NRC. *Science* 277.
- MacDonald, J. A.**, and M. C. Kavanaugh. 1995. Superfund: the cleanup standard debate. *Water Environment & Technology*.
- MacDonald, J. A.** 1994. Germ warfare: Are the microbial marvels of in-place bioremediation just another marketing scam, or an untapped cure-all for industrial cleanup in the 21st century? *Garbage: The Practical Journal for the Environment* Fall:52-57.
- . 1994. In situ bioremediation. *Industrial Wastewater* Nov/Dec:32-38.

Rittmann, B. E., and **J. A. MacDonald**. 1993. Improving the image of bioremediation. *Water Quality International* 1993(4):27-29.

**MacDonald, J. A.** 1991. Home water purifiers: how to make a rational purchase. *Garbage: The Practical Journal for the Environment* March/April:31-35.

———. 1990. Mining recyclables from our garbage. *Garbage: The Practical Journal for the Environment* Sept/Oct:16-18.

———. 1990. Bioengineering clean water. *Illinois Technograph* 105(3):8-10.

———. 1985. Urbana renewal. *The Old-House Journal* XIII(5):137-140.

## TEACHING ACTIVITIES

### Courses Taught for Past Three Years

Term	Course ID	Title	Credit Hours	Role, % of Course	Students Enrolled
<b>Fall 2018</b>	ENVR 500	Environmental Processes, Exposure, and Risk Assessment	3	Lead Instructor, 50%	13
	ENEC 395	Independent Study	3	Instructor, 100%	1
<b>Spring 2018</b>	ENVR 470	Environmental Risk Assessment	3	Instructor, 100%	8
	ENVR 684	Water-Health Research II	1	Co-Instructor, 33%	11
	ENVR 695	Undergraduate Research	3, 1	Instructor, 100%	2
	ENVR 593	Undergraduate Practicum in EHS	3	Instructor, 100%	1
<b>Spring 2017</b>	ENVR 470	Environmental Risk Assessment	3	Instructor, 100%	11
	ENVR 684	Water-Health Research II	1	Co-Instructor, 33%	7
	ENVR 692H	Undergraduate Honors Thesis	3	Instructor, 100%	1
<b>Fall 2016</b>	ENVR 570	Environmental Decision Analysis	3	Instructor, 100%	8
	ENVR 890-004	Risk Assessment in the 21 <sup>st</sup> Century	1	Instructor, 50%	4
	ENVR 691H	Undergraduate Honors Research	3	Instructor, 100%	1
<b>Spring 2016</b>	ENVR 470	Environmental Risk Assessment	3	Instructor, 100%	10
	ENVR 684	Water-Health Research II	1	Co-Instructor, 33%	12
	ENVR 695	Undergraduate Research	3	Instructor, 100%	3
<b>Fall 2015</b>	ENVR 890-004	Risk Assessment in the 21 <sup>st</sup> Century	1	Instructor, 50%	6
<b>Spring 2015</b>	ENVR 470	Environmental Risk Assessment	3	Instructor, 100%	12
	ENVR 684	Water-Health Research II	1	Co-Instructor, 33%	12
	ENEC 694H	ENEC Undergraduate Honors Project	3	Instructor, 100%	1
<b>Fall 2014</b>	ENVR 570	Environmental Decision Analysis	3	Instructor, 100%	16
	ENVR 683	Water-Health Research I	2	Co-Instructor, 33%	10
	ENEC 693H	ENEC Undergraduate Honors Research	3	Instructor, 100%	1

## Names of Graduate Students Supervised

### Current Students

Primary advisor (4 Ph.D., 6 master's, 1 B.S.P.H.)

Zahra Al Hamdani (Ph.D), 2013–present  
 Frank Stillo (Ph.D. candidate), 2015–present  
 Allison Clonch (M.S.P.H.), 2016–present  
 Walker Grimshaw (M.S.P.H.), 2017–present  
 Kennedy Holt (Ph.D.), 2017–present  
 Abishek Komandur (M.S.P.H.), 2017–present  
 Erica Wood (M.S.P.H.), 2017–present  
 Sydney Lockhart (M.S.), 2018–present  
 Sarah Colley (M.S.P.H.), 2018–present  
 Riley Mulhern (Ph.D.), 2018–present  
 William Reid Brown (B.S.P.H.), 2018–present

### Graduated Students, Ph.D.

Primary advisor (6)

Joseph Zabinski (Ph.D.), 2017  
 Advancing Environmental Human Health Risk Assessment through Bayesian Network Analysis  
 Current employment: McKinsey & Company, Senior Solution Analyst

Theodore Mansfield (Ph.D.), 2016  
 Health Impacts of Transportation and the Built Environment: A Quantitative Risk Assessment  
 Current employment: U.S. Department of Transportation, Data Science Fellow

Ya-ru Li (Ph.D.), 2014  
 Assessing Exposure to and Risks of Fine Particulate Air Pollution from Multiple Sources  
 Current employment: Environmental Science Technology Corp. (Taipei, Taiwan), Senior Engineer

Nicholas DeFelice (Ph.D.), 2014  
 Drinking Water Risks to Health 40 Years After Passage of the Safe Drinking Water Act: A County-by-County Analysis in North Carolina  
 Current employment: Columbia University Mailman School of Public Health, Post-doctoral Research Scientist

Chidsanuphong Chart-Asa (Ph.D.), 2013  
 Quantifying Impacts of Traffic-Related Fine Particulate Air Pollution at the Urban Project Scale  
 Current employment: Mae Fah Luang University Institute for the Study of Natural Resources and Environmental Management (Chiang Rai, Thailand), Lecturer

Jill Johnston (Ph.D.), 2013  
 Assessing Exposure to Chlorinated Solvents from the Subsurface to Indoor Air Exposure Pathway  
 Current employment: University of Southern California Keck School of Medicine, Assistant Professor of Preventive Medicine

**Graduated Students, Master's**

Primary advisor (24)

- Allie George (M.S.P.H.), 2018  
Antibiotic Resistant *Staphylococcus aureus* Dispersion from Hog Operations: A Systematic Review and Meta-Analysis
- Peter Kane (M.S.P.H.), 2018  
Communicating to Encourage Private Well Testing: A Systematic Literature Review
- Brenda Benavides (M.S.E.E.), 2016  
Potable Water Alternatives for Extraterritorial Jurisdiction Community in Wake County, North Carolina
- Chelsea Fizer (M.S.P.H.), 2016  
Barriers to Private Well and Septic System Management: An Analysis of Homeowner Decision-making
- Chien-hsiu Weng (M.S.), 2016  
Antibiotic Resistant *Staphylococcus Aureus* Dissemination from Hog Farms: A Systematic Review
- Yuyun Liang (M.S.E.E.), 2015  
Improving Drinking Water Quality in a Wake County, North Carolina, Neighborhood
- Yang Du (M.S.E.E.), 2015  
Cost Analysis of Water Service Lines Extension in Wake County, North Carolina
- Hannah Leker (M.S.P.H.), 2015  
Relationship Between Race and Community Water and Sewer Service in North Carolina
- Julian Oliver (M.S.), 2015  
Predictors of *E. coli* Contamination at Rural Water Points in Kenya, Malawi, Mozambique, Uganda, and Zambia
- Heather Dew (M.S.E.E.), 2015  
Cost-Benefit Analysis of Options for Improving Drinking Water Quality in an Extraterritorial Jurisdiction Census Block of Raleigh, North Carolina
- Frank Stillo (M.S.P.H.), 2015  
Community Water Systems versus Private Wells: A Comparison of Water Quality on the Fringes of Municipalities
- Julia Naman (M.S.P.H.), 2014  
Disparities in Water and Sewer Services in North Carolina: An Analysis of the Decision-Making Process
- Daniel Rosenbaum (M.S.P.H.), 2014  
Distance Traveled by Municipal Solid Waste: An Analysis of Demographic and Socio-economic Effects
- Koban, Lauren (M.S.), 2014  
Small-Unit Water Purifiers in U.S. Army Special Operations: A Multi-Attribute Evaluation

- Taylor Dennerlein (M.S.E.E./M.C.R.P.), 2013  
Predicting Effects of Urban Design on Public Health: A Case Study in Raleigh, North Carolina
- Chieh-han Lee (M.S.E.E.), 2012  
Effects of Outdoor Land Use on Indoor Air Quality: A 600-Household Study in the United Arab Emirates
- Lisa Singleton-Baldrey (M.S.), 2012  
The Impacts of Health Impact Assessment: A Review of 54 Health Impact Assessments
- Theodore Mansfield (M.S.E.E.), 2012  
The Built Environment, Spatial Variation in Fine Particulate Matter, and Attributable Mortality: A Scenario-Based Land-Use Regression Approach
- Aimee Rowe (M.S.P.H.), 2011  
Communicating Quantitative Risk Information About Unexploded Ordnance
- Leslie Chinery (M.S.), 2010  
Modeling Transportation in Abu Dhabi: A 25-Year Projection of Emissions Under Alternative Scenarios of the Passenger Vehicle Fleet
- Nicholas DeFelice (M.S.E.E.), 2010  
How Water Subsidies Affect Air Quality in Abu Dhabi, United Arab Emirates
- Elizabeth Harder (M.S.), 2010  
The Costs and Benefits of Large-Scale Solar Photovoltaic Power Production in Abu Dhabi, United Arab Emirates
- Mejs Hasan (M.S.), 2010  
Mapping Environmental Diseases in the United Arab Emirates Using Bayesian Maximum Entropy and the Waller Model
- Jill Johnston (M.S.), 2010  
Probabilistic Approach to Residential Vapor Intrusion Exposure Screening for Chlorinated Volatile Organic Compounds: A Case Study in San Antonio, Texas

## Undergraduate Honors Projects

**Graduated Students**  
Honors thesis advisor  
(2)

- Abishek Komandur (B.S.P.H.), 2017  
The Association between Water Lead Levels and Blood Lead Levels: A Systematic Review
- David Gorelick (B.S., B.A.), 2015  
Racial Disparities in Municipal Water and Sewer Access in Western North Carolina



**CONTRACTS AND GRANTS****Totals since 2006**

\$22.7 million total (\$15.5 million as principal investigator, \$7.3 million as co-principal or co-investigator)

<b>Active</b>	Principal Investigator, “Collaborative Research: CRISP 2.0 Type 2: Water and Health Infrastructure Resilience and Learning (WHIRL)” National Science Foundation August 16, 2018 – August 15, 2022	\$319,999
	Co-Investigator, “PFAST Testing Network” North Carolina Policy Collaboratory August 1, 2018 – December 1, 2019	\$5,013,000
	Principal Investigator, “Building Water Infrastructure to Improve Childhood Outcomes: Interventions to Decrease Childhood Lead Exposure from Private Wells” U.S. Environmental Protection Agency, Science to Achieve Results Program January 1, 2018 – December 31, 2020	\$800,000
	Principal Investigator, “Lead and Emerging Contaminants in Private Wells in North Carolina – Risks and Solutions” North Carolina Policy Collaboratory March 16, 2018 – September 30, 2020	\$300,000
	Principal Investigator, “Risk Communication to Private Well Owners” North Carolina Department of Health and Human Services March 1, 2018 – September 29, 2018	\$34,317
	Investigator, “A Research Roadmap for Transportation and Public Health” U.S. Department of Transportation September 26, 2017 – March 19, 2019	\$250,000 (total)
	Principal Investigator, “Development of a Centralized Research Management Response to Waterborne Emerging Contaminants in North Carolina” North Carolina Policy Collaboratory May 15, 2018 – December 31, 2018	\$80,000
	Principal Investigator, “Lead, Hexavalent Chromium, and Other Toxic Metals in North Carolina Private Drinking Water Wells: Exposure, Health Effects, and Solutions” Research Triangle Institute, University Scholars Program July 10, 2017 – December 31, 2018	\$115,148
	Principal Investigator, “Improving Stewardship of Private Groundwater Wells” North Carolina Policy Collaboratory August 31, 2018 – December 31, 2018	\$75,000

	Co-Principal Investigator, “The Impact of Intensive Livestock Production on the Disease Ecology of Antibiotic Resistant Staphylococcus” National Science Foundation Sept. 16, 2013 – Aug. 31, 2019	\$1,858,000 (total)
<b>Completed</b>	Principal Investigator, “Racial Disparities in Access to Clean Water in North Carolina: Communicating Health Risk to Private Well Owners” North Carolina Water Resources Research Institute July 15, 2017 – July 31, 2018	\$10,000
	Principal Investigator, “Managing Health Risks to Wastewater Workers from Ebola and Other Emerging Pathogens: Science and Solutions” National Science Foundation March 1, 2016 – June 30, 2018	\$49,981
	Principal Investigator, “On-Line Decision Support Tools for Managing Emerging Pathogen Risks in Wastewater” Water Environment Research Foundation March 1, 2015 – May 31, 2016	\$121,289
	Principal Investigator, “Racial Disparities in Water Supply Services in North Carolina: Public Health Risks of a Lingering Legacy of Segregation” IBM Junior Faculty Development Award Jan. 1, 2014 – Dec. 31, 2015	\$7,500
	Principal Investigator, “Racial Disparities in Access to Public Water and Sewer Service in North Carolina: An Analysis of Public Health Impacts and Policy Solutions” Robert Wood Johnson Foundation Dec. 1, 2012 – Nov. 30, 2014	\$100,000
	Principal Investigator, “Health Impact Assessment, Blue Ridge Road Corridor” BlueCross BlueShield of North Carolina Foundation Nov. 1, 2011 – Oct. 31, 2014	\$150,000
	Principal Investigator, “Improving Risk Models for Indoor Air Pollution at Hazardous Waste Sites” University Research Council May 1, 2012 – April 30, 2014	\$5,000
	Co-Investigator, “Comprehensive Bicycle and Pedestrian Master Plan: Health Component” Alta Greenways/North Carolina Department of Transportation July 1, 2012 – Oct. 31, 2013	\$74,000 (total)
	Principal Investigator, “Decreasing Exposure to Chlorinated Volatile Organic Compounds in Indoor Air” Passport Foundation May 1, 2011 – April 30, 2012	\$46,600

Principal Investigator, “National Strategy for Environment and Health for the United Arab Emirates” Environment Agency–Abu Dhabi June 1, 2008 – May 31, 2011	\$12,894,075
Principal Investigator, “Graphical versus Numerical Presentation of Quantitative Environmental Risk Information About Unexploded Ordnance” National Science Foundation Sept. 1, 2009 – Aug. 31, 2012	\$339,374
Principal Investigator, “Risks of Civilian Exposure to Unexploded Ordnance at Military Training Ranges” University Research Council University of North Carolina at Chapel Hill May 1, 2008 – April 30, 2011	\$4,989
Co-Investigator, “Statistical methods for UXO Pattern Recognition” Strategic Environmental Research and Development Program Jan. 3, 2006 – May 11, 2007	\$96,686 (total)
Completed more than a dozen grant- and contract-funded projects while on staff at the U.S. National Research Council and the RAND Corporation.	

## SERVICE

### Department

- Awards Committee, 2011-present
- Admissions Committee, 2013-2014

### School and University

- MPH Core Curriculum Development Committee, May-September 2017
- Faculty Advisory Committee, UNC Institute for the Environment, October 2010-present
- Peer reviewer, Gillings Innovation Lab awards, 2010
- Climate Change Committee, contributing to report *The University of North Carolina at Chapel Hill Climate Change Committee Report 2009*, submitted to North Carolina General Assembly, 2009

### State of North Carolina

- Executive Committee, Research Triangle Environmental Health Collaborative, 2016-present
- Planning Committee, 2015 Environmental Health Summit, “Safe Water from Every Tap,” Research Triangle Environmental Health Collaborative
- Chair (appointed by N.C. Director of Public Health), Health Impact Assessment Work Group, 2011-2012
- Planning Committee, 2010 Environmental Health Summit, “America’s Healthcare Policy Through the Lens of Environmental Health,” Research Triangle Environmental Health Collaborative

## Professional Service

*Professional Societies (see also "Professional Leadership," above)*

- Society for Risk Analysis Conferences and Workshops Committee, 2017-present
- Society for Risk Analysis Membership Committee, 2015-present

*Grant Reviewer*

- NIH Social Sciences and Population Studies Study Section Review Panel, 2018
- Research Foundation of Flanders Strategic Basic Research Funding Programme, 2018
- USDA NIFA AFRI Water for Food Production Systems Challenge Area Competitive Grants Program, 2018
- EPA Science to Achieve Results Graduate Fellowship Program, 2015
- Department of Defense Strategic Environmental Research and Development Program, 2015
- NIH/NIEHS Special Emphasis Panel Scientific Review Group, 2013
- NIH/NIEHS Conference Grant Awards, March 2010
- Department of Defense Strategic Environmental Research and Development Program, April 2009

*Program Reviewer*

- Environmental Protection Agency C-FERST and T-FERST web-based decision support tools, 2014

*Conference Abstract Reviewer*

- "Water and Health: Where Science Meets Policy," June 2010, June 2011

*Journal Peer Reviewer*

- *Environmental Science & Technology*
- *Risk Analysis*
- *PLOS ONE*
- *Science of the Total Environment*
- *Air and Waste Management Association*
- *International Journal of Sustainable Transportation*
- *Journal of Environmental Protection*
- *International Journal of Environmental Research and Public Health*
- *Water Resources Research*
- *The Journal of Information Fusion*