

CURRICULUM VITAE

Tim Barzyk

barzyk.timothy@epa.gov 919.541.1520

Education:

2006: Ph.D. Geophysical Sciences, The University of Chicago, Chicago, IL

2002: M.S. Environmental Science & Public Policy, Joint degree between The Irving B. Harris Graduate School of Public Policy Studies and The Department of the Geophysical Sciences, The University of Chicago, Chicago, IL

1998: B.S. Geology with Mathematics minor, Indiana State University, Terre Haute, IN

Chronology of Employment:

03/07-Present: Research Physical Scientist, EPA Office of Research and Development, National Exposure Research Laboratory, Computational Exposure Division, Research Triangle Park, NC

06/06-03/07: EPA Post-Doctoral Researcher, ORD/NERL Human Exposure and Atmospheric Sciences Division, Research Triangle Park, NC

08/02-12/06: Graduate Teaching Assistant, The University of Chicago, Department of Geophysical Sciences, including *Atmospheric Chemistry and Air Quality*, *Climate Dynamics of Earth and Other Planets*, *Global Warming: Understanding the Forecast*

06/04-07/04: Lab Demonstrator, Geophysical and Environmental Fluid Dynamics Summer School, University of Cambridge, UK

09/00-05/01: Environmental Policy Internship, Carlson Environmental, Chicago, IL

07/99-08/00: Groundwater Remediation Technician, Handex Consulting and Remediation, LaPorte, IN

Research Expertise:

- Community-based decision support
- Web-based air quality models and visualization systems
- Citizen science research design and communication
- Multi-criteria decision analysis for risk and risk-reduction prioritization
- Causes of dose-response variation between individuals and groups
- Leveraging human, financial, and technical resources for sustainable environmental health

Bibliography:

22. Isakov V, **Barzyk TM**, Smith ER, Arunachalam S, Naess B, Venkatram A (2016, in review). A Web-Based Modeling System for Near-Port Air Quality Assessments. Environmental Modelling and Software.
21. Tran L, Ridgley M, **Barzyk TM**, O'Neill R (2016, in review). Large Environmental Decision Making Analysis with BESTMAP (Bounding, Eliciting, and Sliding Technique for Multi-Criterion Analysis of Priorities). Decision Analysis.

20. Huang H, Tornero-Velez R, **Barzyk TM** (2016, in review). Associations between Socio-Demographic Characteristics and Chemical Concentrations that Contribute to Cumulative Exposures in the United States. *Journal of Exposure Science and Environmental Epidemiology*.
19. Huang H, **Barzyk TM** (2016). Connecting conventional and cumulative risk assessment methods to evaluate effects of environmental justice indicators on exposure and dose. *International Journal of Environmental Research and Public Health*, 14 (24).
18. Kaufman A, Williams R, **Barzyk TM**, Greenberg M, O'Shea M, et al. (2016, in press). Lessons Learned in a Community and Government Citizen Science Collaboration. *Environmental Justice*.
17. **Barzyk TM**, Williams R, Kaufman A, Greenberg M, O'Shea M, Sheridan P, Hoang A, Teitz A, Ash C, Mustafa M, Garvey S (2016). Citizen Science Air Monitoring in the Ironbound Community. EPA Report. EPA/600/R-16/049.
16. Technical Consultant, EPA Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (2016). https://www.epa.gov/sites/production/files/2016-06/documents/ejtg_5_6_16_v5.1.pdf, accessed July, 2016.
15. Arunachalam S, Brantley H, **Barzyk TM**, Hagler G, Isakov V, Kimbrough ES, Naess B, Rice N, Snyder MG, Talgo K (2015). Assessment of port-related air quality impacts: geographic analysis of population. *International Journal of Environmental Research and Public Health*, 58(4), 231-250.
14. **Barzyk TM**, Wilson S, Wilson A (2015). Community, State, and Federal Approaches to Cumulative Risk Assessment: Challenges and Opportunities for Integration. *International Journal of Environmental Research and Public Health*, 12(5), 4546-4571.
13. **Barzyk TM**, Isakov V, Arunachalam S, Venkatram A, Cook R, Naess B (2015). A Near-Road Modeling System for Community-Scale Assessments of Traffic-Related Air Pollution in the United States. *Environmental Modelling & Software*, 66, 46-56.
12. Hagler GSW, **Barzyk TM**, Kimbrough S, Isakov V, Gagliano P, Bergin MS, D'Onofrio D, Baldauf RW, Bailey CR (2013). Panama Canal Expansion Illustrates Need for Multimodal Near-Source Air Quality Assessment. *Environmental Science & Technology*, 47(18), 10102-10103.
11. Tian N, Xue J, **Barzyk TM** (2012). Evaluating Socioeconomic and Racial Differences in Traffic-Related Metrics in the United States using a GIS Approach. *Journal of Exposure Science and Environmental Epidemiology*, 23, 215-222.
10. **Barzyk TM**, Ciesielski A, Shores RC, Thoma ED, Seila RL, Isakov V, Baldauf RW (2012). Near-Road Multipollutant Profiles: Associations between Volatile Organic Compounds and a Tracer Gas Surrogate Near a Busy Highway. *Journal of the Air and Waste Management Association*, 62, 594-603.
9. Technical Consultant, Near-Road NO₂ Monitoring Technical Assistance Document to inform the National Ambient Air Quality Standards (2011). Report #: EPA-454/B-12-002.
8. **Barzyk TM**, White BM, Ciesielski A, Perlmutter L, Millard M, Harris F (2011). Application of Tools and Databases to Community-Level Assessments of Exposure, Health and the Environment with Case Study Examples. Report #: EPA/600/R-11/120.

7. Zartarian V, Schultz B, **Barzyk TM**, Smuts M, Hammond D, Medina-Vera M, Geller AM (2011). The EPA's Community-Focused Exposure and Risk Screening Tool (C-FERST) and Its Potential Use for Environmental Justice Efforts. *American Journal of Public Health*, 101(S1), S286-S294.
6. Hammond D, Conlon K, **Barzyk TM**, Chahine T, Zartarian V, Schultz B (2011). Assessment and Application of National Environmental Databases and Mapping Tools at the Local Level to Two Community Case Studies. *Risk Analysis*, 31 (3), 475-487.
5. **Barzyk TM**, White BM, Millard M, Martin M, Perlmutter LD, Harris F, Nguyen P, Walts A, Geller A (2011). Linking Socio-Economic Status (SES), Adverse Health Outcome, and Environmental Pollution Information to Develop a Set of Environmental Justice Indicators with Three Case Study Applications. *Environmental Justice*, 4(3) 171-177.
4. **Barzyk TM**, Conlon KC, Chahine T, Hammond D, Zartarian V, Schultz BD (2010). Tools Available to Communities for Conducting Cumulative Exposure and Risk Assessments. *Journal of Exposure Science and Environmental Epidemiology*, 20(4), 371-384.
3. **Barzyk TM**, George BJ, Vette AF, Williams RW, Croghan CW, Stevens CD (2009). Development of a Distance-to-Roadway Proximity Metric to Compare Near-Road Pollutant Levels to a Central Site Monitor. *Atmospheric Environment*, 43 (4), 787-797.
2. Baxter LK, **Barzyk TM**, Vette AF, Croghan C, Williams RW (2008). Contributions of Diesel Truck Emissions to Indoor Elemental Carbon Concentrations in Homes in Proximity to Ambassador Bridge. *Atmospheric Environment*, 42 (40), 9080-9086.
1. **Barzyk TM** and Frederick JE (2008). A Semi-Empirical Microscale Model of the Surface Energy Balance and its Application to Two Urban Rooftops. *Journal of Applied Meteorology and Climatology* 47, 819-834.

Peer-Reviewed Online Tools

- Principal Investigator, Community-Line Source (C-LINE) Near-Road Modeling System. Information and registration at <https://www.cmascenter.org/c-tools/>, accessed July, 2016.
- Contributor, Community-Focused Exposure and Risk Screening Tool (C-FERST). Information at <https://www.epa.gov/healthresearch/community-focused-exposure-and-risk-screening-tool-c-ferst>, accessed July, 2016.
- Contributor, Air Sensor Toolbox for Citizen Scientists, Online information and guidance. Website: <https://www.epa.gov/air-research/air-sensor-toolbox-citizen-scientists>, Fact Sheet: <https://www.epa.gov/sites/production/files/2015-02/documents/citizen-science-fact-sheet.pdf>, accessed July, 2016.

Professional Societies:

- International Society of Exposure Science (ISES)
- Society for Risk Analysis (SRA)
- Sigma Xi, The Scientific Research Society

Honors:

2016: EPA Region 2 Annual Award for Outstanding Scientific Support, for “providing vital and unanticipated data management/interpretation support to The Ironbound community” and

“adding the Port of NY/NJ to his soon-to-be-released C-PORT model...a powerful tool for R2’s communities....”

- 2015: Rating of Outstanding on EPA Performance Appraisal and Recognition System (PARS) for FY 2015 contributions to science results, collaboration and teamwork, communication and publications, and resource management
- 2012: “Thank You” letter for “contributions supporting the development of the Draft Technical Guidance for Assessing Environmental Justice in Regulatory Analysis” from Associate Administrator of the Office of Policy; Associate Assistant Administrator of the Office of Environmental Justice; and Principal Deputy Assistant Administrator, Office of Research and Development
- 2012: “Thank You” letter for “contributions to the successful development of the Near-Road NO₂ Monitoring Technical Assistance Document and execution of the Near-Road NO₂ Pilot Study” from Director of the Office of Air Quality Planning and Standards
- 2012: Science and Technological Achievement Award (STAA), Honorable Mention, for “Development of Analytical Methods and Metrics that Characterize Uncertainty between Near-Road and Ambient Measurements”
- 2012: Science and Technological Achievement Award (STAA), Honorable Mention, for “Developing and Implementing a Research Program and Decision Support Tool for Community-Based Environmental Assessments”
- 2011: Environmental Justice Award, for “incorporating ORD science into community-based tools for environmental justice”
- 2011: Exceptional/Outstanding ORD Technological Assistance to the Regions or Program Offices Award for “outstanding technical and consultative support to Region 5 that addressed community stakeholder needs, Regional objectives, and ORD research initiatives”

Committee and Consultant Appointments, Professional Society Elected Appointments, Adjunct Faculty Appointments, Advisory and Editorial Appointments:

- 2016: Planning team, 9th Annual Summit for Community engaged research and citizen science: Advancing environmental public health to meet the needs of our communities, Research Triangle Environmental Health Collaborative
- 2015-2016: Contributor, Exposure Science in the 21st Century, Community Engagement and Citizen Science Subgroup, including National Institute for Environmental Health Sciences (NIEHS) and the Agency for Toxic Substances and Disease Registry (ATSDR)
- 2009-2016: Mentor to >10 graduate research fellows and post-docs
- 2007-2016: Reviewer for multiple peer-reviewed journals, including *Journal of Air & Waste Management Association*, *Atmospheric Environment*, *Environmental Justice*, and *International Journal of Environmental Research and Public Health*
- 2010-2014: Chair, Vulnerability and Environmental Justice Sub-Panel, EPA Cumulative Risk Assessment Technical Panel, of the EPA Risk Assessment Forum
- 2011: Co-chair and Session Moderator, EPA Workshop on Integrating Chemical and Non-chemical Stressors for Development of Cumulative Risk Assessment Guidelines

2009: Session Chair, Community-Based Cumulative Risk Assessments, EPA Workshop:
Aligning EPA Research & Needs to Advance the Science and Practice of Cumulative Risk
Assessment

Invited Lectures and Seminars:

- 07/16: “Community-Based Air Quality Modeling and Decision-Making,” for the Exposure
Science in the 21st Century Inter-Agency Workgroup
- 05/16: “Local Scale Air Quality Modeling at Ports,” remote webinar for the European
Commission on Air Quality Modeling
- 05/16: “Sustainable Port Communities and the C-PORT Modeling System,” for Region 4
National Environmental Policy Act (NEPA) Implementation Team, South Carolina State
Port Authority, and SC Department of Environmental Quality
- 03/16: “Expansion of U.S. Ports and Development of the Community Port-related Modeling
System (C-PORT),” for Army Corps of Engineers, Water Resources Division
- 11/15: “Citizen Science in the Ironbound,” at the Ironbound Community Corporation local
resident meeting, Newark, NJ
- 07/15: “Community-based Tools and Resources,” at the EPA Community Air Monitoring
Training: A Glimpse into EPA’s Air Sensor Toolbox, RTP, NC
- 07/13: “Community Cumulative Assessment Tool: Research, Development, and Applications,”
at the National Institute of Environmental Health Sciences, Partnerships for
Environmental and Public Health Annual Meeting, RTP, NC
- 10/12: “Integration of Cumulative Risk and Environmental Justice Assessments: Methods and a
Case Study Example,” at the Society for Risk Analysis Annual Meeting, Cumulative
Risk Assessment Symposium, San Francisco, CA
- 08/11: “Integrating Cumulative Risk and Environmental Justice Assessments to Guide Decision-
Making, Promote Stakeholder Involvement and Assess Cumulative Impacts,” at the
United States Society for Ecological Economics, Biennial Meeting, East Lansing, MI
- 09/10: “CARE Roadmap + C-FERST = Useful Information,” at the Community Action for a
Renewed Environment (CARE) Project Officer Training, Boston, MA
- 07/10: “EPA Community-Focused Exposure and Risk Screening Tool: C-FERST,” at the
National Institute for Environmental Health Sciences, Partnerships for Environmental
and Public Health Annual Meeting, RTP, NC
- 09/09: “Publicly Available Assessment Tools,” a Public Webinar sponsored by the EPA Risk
Assessment Forum
- 05/09: “Community-Based Cumulative Risk Assessment,” at the Aligning EPA Research &
Needs to Advance the Science and Practice of Cumulative Risk Assessment, A
Scientist-to-Scientist Workshop, Chair of Community-Based Session, Chicago, IL

Grants Received (internal, competitive):

- 2016: EPA Regional Sustainability and Environmental Sciences (RESES) Research Program in
Region 7. Kansas City Transportation and Local Scale Air Quality Study (KC-TRAQS):
Comparing Citizen Science and PM Data.
- 2016: RESES with Regions 4, 6. Community Participatory Port Resilience Assessment.

- 2015: RESES with Region 10. Making a Visible Difference (MVD) in N/NE Portland: Engaging Communities, Using Citizen Science to Assess and Address Children’s Environmental Health from Transit and Air Pollution.
- 2014: EPA Region 2 Regional Applied Research Effort (RARE). Citizen Science in the Ironbound Community of New Jersey.
- 2013: RESES with Multiple Regions. Development of Community-Based Cumulative Assessments for EPA Regions 2, 3, 4, and 5.
- 2012: EPA Region 4 RARE. Near-Port Air Quality Model Development and Application to Inform the National Environmental Policy Act (NEPA).

Book Chapters, Conferences, Proceedings, Monographs:

3. Isakov V, **Barzyk TM**, Arunachalam S, Snyder M, Venkatram A (2016). A Community-Scale Modeling System to Assess Port-Related Air Quality Impacts. *Air Pollution Modeling and its Application XXIV*, 385-390.
2. Arunachalam S, **Barzyk TM**, Isakov V, Venkatram A, Snyder M, Rice NA, Naess B, Talgo K (2014). C-port: A Community-Scale Near-Source Air Quality System to Assess Port-Related Air Quality Impacts. *HARMO 2014 - 16th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Proceedings*, 493-497.
1. Barzyk TM (2010). Tools to Assess Community-Based Cumulative Risk and Exposures. *McGraw-Hill Yearbook of Science and Technology*. McGraw-Hill Inc., New York.

Abstracts:

6. Kaufman A, Williams R, **Barzyk TM**, Hoang A, Sheridan P (2014). The Air Sensor Citizen Science Toolbox: A Collaboration in Community Air Quality Monitoring and Mapping. *Association for the Advancement of Artificial Intelligence, Proceedings of the Second AAAI Conference on Human Computation and Crowdsourcing*, p.18.
5. Rich D, Kamat L, Ohman-Strickland P, Ozkaynak H, Lunden M, **Barzyk TM**, Burke J, Baxter L, Hodas N, Turpin B (2011). Application of Refined Exposure Surrogates in Ambient PM_{2.5} Epidemiology Studies: Accounting for Temporal/Spatial Variations in Particulate Matter Infiltration. *Epidemiology*, 22(1), S31.
4. Baxter L, **Barzyk TM**, Burke J, Turpin B, Rich D, Lunden M, Hodas N, Ozkaynak H (2011). Comparison of Exposures Estimated Using Ambient PM_{2.5} Concentrations With Those Estimated by the Stochastic Human Exposure and Dose Simulation Model for Two New Jersey Cohorts. *Epidemiology*, 22(1), S31.
3. Neas LM, Vette A, Williams R, Gallagher J, Mukerjee S, Hudgens E, Johnson M, **Barzyk TM**, Baxter L, Williams A (2008). Near-Roadway Studies in a Northern, Industrial U.S. Metropolitan Area: Exposures and Health Outcomes. *Epidemiology*, 19(6), S52.
2. Hammond D, **Barzyk TM**, Conlon K, Zartarian V, Schultz B (2008). Application of GIS Mapping Tools to Prioritize Community Air Pollution Issues. *Epidemiology*, 19(6), S173.
1. Barzyk TM, Conlon KC, Chahine T, Zartarian V, Schultz B, Hammond D (2008). Summary of EPA Programs and Exposure Tools Relevant to Community-Based Cumulative Risk and Exposure Assessments. *Epidemiology*, 19(6), S187.