Justin E. Babendreier, Environmental Engineer, in EPA's National Exposure Research Laboratory

Systems Exposure Division
Mailing Address

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Area of Expertise: Multimedia Model Development and Application, Integrated Environmental Modeling Technologies Development, Model Evaluation and Decision Analysis Research Program Lead

- Over 28 years of experience in regulatory compliance, human health and ecological-based exposure and risk assessments, multimedia modeling, and systems analysis.
- Expert in toxic materials management and associated exposure and risk assessment.
- Primary focuses on cumulative impact, multi-stressor, multimedia modeling systems development - integrating source, F/T, food webs, exposure, risk, and decision analysis.
- Modeling expert in areas of uncertainty analysis (UA), sensitivity analysis (SA), and parameter estimation (PE) methods for multimedia environmental modeling systems.
- Lead developer of EPA's iemTechnologies software including OpenTERRAworks, SuperMUSE, and the RIMM Tool System (Risk Informed Materials Management),
- Lead developer of HE^{2}RMES Modeling System (Human and Ecological Exposure and Risk in Multimedia Environmental Systems, including D4EM-4-HER2MES tools in RIMM.
- Collaborative work on FRAMES and D4EM (Data for Environmental Models) since 2000.
- Professional expertise in industrial process analysis and hazardous waste management.
- 10 years of direct field experience in conducting watershed and hazardous waste management site characterization, exposure and risk assessments.
- Involved in 50 publications across peer-reviewed journals, conference papers and government reports, including an additional 32 invited lectures and symposia.

Select Publications:

Whelan G., Kim K., Pelton M.A., Castleton K.J., Laniak G.F.,Wolfe K., Parmar R., Babendreier J., Galvin M.. 2014. *Design of a Component-based Integrated Environmental Modeling Framework.* Environmental Modelling & Software, Vol. 55 pp:1-24.

Johnston JM, McGarvey DJ, Barber MC, Laniak G, Babendreier J, Parmar R, Wolfe K, Kraemer SR, Cyterski M, Knightes C, Rashleigh B, Suarez L, Ambrose R. 2011. *An integrated modeling framework for performing environmental assessments: Application to ecosystem services in the Albemarle-Pamlico basins (NC and VA, USA).* Eco. Modeling 222(14) pp:2471-2484.

Matott, L.S., Babendreier, J.E., Purucker, S.T. 2009. *Evaluating Uncertainty in Integrated Environmental Models: A Review of Concepts and Tools.* Water Resources Research, 45, W06421, DOI:10.1029/2008WR007301.

Babendreier, J.B. 2008. *Risk Reduction from Minimization of Persistent, Bioaccumulative, and Toxic Waste Materials within the U.S. Industrial Solid Waste Management System*. Proc. 1st International Conference on Hazardous Waste Management, pp: 1-8.

Banta, E. R., Hill, M.C., Poeter,E., Doherty, J. E. , Babendreier, J. E. 2008. *Building Model Analysis Applications with the Joint Universal Parameter Identification and Evaluation of Reliability (JUPITER) API*. Computers & Geosciences. Elsevier Science Ltd, New York, NY, 34(4):310-319.

View more research publications by [Justin Babendreier](#).

Education:

- Ph.D. Civil Engineering, Virginia Polytechnic Institute & State University, 2000
- M.S. Electrical Engineering, Virginia Polytechnic Institute & State University, 1987
- B.S. Mathematics & Natural Sciences, St. Mary's College of Southern Maryland, 1984

Professional Experience:

- Research Environmental Engineer, USEPA/ORD/NERL, Athens, GA 2001–Present.
- Environmental Engineer, Post-Doctoral Assoc., USEPA/ORD/NERL Athens, GA 2000–2001
- Technical Advisor, Senior Project Manager, Environmental Services Division, Draper Aden Associates, Planners and Consulting Engineers, Blacksburg, VA 1995–1998
- Project Manager, Environmental Services Division, Draper Aden Associates, Planners and Consulting Engineers, Blacksburg, VA 1991–1994
- Project Engineer, Technical Services Division, Olver Inc., Consulting Engineers and
- Environmental Laboratories, Blacksburg, VA 1990–1991
- Registered Professional Engineer (Environmental Engineering), Virginia (# 0402 033596)

Honors and Awards:

- USEPA, NERL, Teamwork Award - NERL Modeling Workgroup, 2010
- USEPA, ORD, Science Communications Award, 2008
- USEPA, STAA Award, Level III, 2007
- USEPA, NERL, Goal 3 Award 2006
- USEPA, ORD, Bronze Medal Award, 3MRA System Development Team, 2005
- USEPA, Honor Award, Non-Supervisory Award, 2004
- USEPA, Office of Solid Waste, Scientific & Technical Accomplishment Award, 2004
- USEPA, Office of Solid Waste, Team Excellence Award, 2004