

Raymond L. Smith, Chemical Engineer in EPA's National Risk Management Research Laboratory

Land and Materials Management Division

[Mailing Address](#)

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Area of Expertise:

- Process release estimation
- Green chemistry & engineering
- Industrial ecology
- Chemical process design
- Municipal solid waste; waste to energy
- Multi-objective decision making and optimization; genetic algorithms
- Sustainability metrics & indicators
- Life cycle assessment
- Predicting evaporation rates

Select Publications:

Vinit K. Mittal, Sidney C. Bailin, Michael A. Gonzalez, David E. Meyer, William M. Barrett, and Raymond L. **Smith**, "[Toward Automated Inventory Modeling in Life Cycle Assessment: Using a Semantic Data Model to Predict and Capture Real-World Chemical Production](#)," ACS Sustainable Chemistry & Engineering, 6, 1961-1976 (2018).

Raymond L. **Smith**, Gerardo J. Ruiz-Mercado, David E. Meyer, Michael A. Gonzalez, John P. Abraham, William M. Barrett, and Paul M. Randall, "[Coupling Computer-Aided Process Simulation and Estimations of Emissions and Land Use for Rapid Life Cycle Inventory Modeling](#)," ACS Sustainable Chemistry & Engineering, 5, 3786-3794 (2017).

Gerardo J. Ruiz-Mercado, Raymond L. **Smith**, Michael A. Gonzalez, and David E. Meyer, "A Conceptual Chemical Process for the Recycling of Ce, Eu, and Y from LED Flat Panel Displays," Resources, Conservation and Recycling, 126, 42-49 (2017).

Raymond L. **Smith**, "[Conceptual Chemical Process Design for Sustainability](#)," in [Sustainability in the Design, Synthesis and Analysis of Chemical Engineering Processes](#), G. Ruiz-Mercado and H. Cabezas, eds., Elsevier: Cambridge, MA (2016); pp.67-85.

Sarah Cashman, David E. Meyer, Wesley W. Ingwersen, Ashley Edelen, John P. Abraham, William Barrett, Michael A. Gonzalez, Paul Randall, Gerardo J. Ruiz-Mercado, Raymond L. **Smith**, "[Mining Available Data from the United States Environmental Protection Agency to Support Rapid Life Cycle Inventory Modeling of Chemical Manufacturing](#)," Environmental Science & Technology, 50(17), 9013-9025 (2016).

W.W. Ingwersen, M. Ceja, A.V. Weisbrod, H. Cabezas, B. Demeke, T. Eason, R.L. **Smith**, D. Sengupta, E. Zanolli, M. Gausman, S.-J. Lee, X. Ma, B. Weber, M. Alvarez, J.C. Bare, J.

Abraham, G.J. Ruiz-Mercado, M.A. Gonzalez, "[Evaluating Consumer Product Life Cycle Sustainability with Integrated Metrics: A Paper Towel Case Study](#)," Industrial & Engineering Chemistry Research, 55, 3433-3441 (2016).

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Education:

- Ph.D. University of Massachusetts, Amherst, MA; Chemical Engineering, 1998
- B.S. Pennsylvania State University, University Park, PA; Chemical Engineering, 1989

Professional Experience:

Workgroups and Project Leads

- Task Lead, Rapid Estimation of Life Cycle Inventory Team under Life Cycle Human Exposure Modeling Project
- Lead, Sustainable Supply Chain Design, Manufacturing and Operations Sub-Team
- Lead, Biofuel Supply Chain Design Program and Team
- Co-inventor and developer of GREENSCOPE process sustainability methodology and tool

Committee and Board Memberships

- Editorial Board, Environmental Progress & Sustainable Energy
- Chair for 7th International Congress on Sustainability Science and Engineering (ICOSSE), 2018
- AIChE, Research and New Technology Committee Chair 2018
- AIChE, Sustainability Engineering Forum Chair 2016-2017, V. Chair 2014-2015, Membership
- AIChE, Environmental Division Chair 2011, Environmental Division Vice Chair
- AIChE, Board Member for Young Professionals Advisory Board
- AIChE, Ohio Valley Section, Chair 2002-03, Program Chair 2001-02, Treasurer 2000-01

Awards and Honors

- EPA Scientific & Technological Achievement Award, Level III, 2014, 2015
- Team Achievement Award, Simulation & Design Team, US EPA, STD, 1999
- AIChE, Central New England Section, Secretary 1995-1997

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[Science in Action Fact Sheet – GREENSOPE: Sustainable Process Modeling](#)