

Gerardo Ruiz-Mercado, Chemical Engineer in EPA's National Risk Management Research Laboratory

Land and Materials Management Division

[Mailing Address](#)

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Areas of Expertise: Developing methods and tools for sustainability performance evaluation of chemical processes and supply chains, life cycle inventory and assessment, separation systems, bioenergy recovery, multicriteria decision-making, process design, modeling and optimization, and sustainable materials management. Currently leading and developing projects to create tools for including end-of-life stages of chemicals and occupational exposure when designing and evaluating chemical processes and supply chains. In addition, developing tools for techno-economic evaluation of nutrient-reducing technologies and logistics for waste management. Such tools would help to reduce energy/material consumption and environmental impacts and increase the profitability of chemical and energy systems. Co-inventor of EPA's GREENSCOPE tool for sustainability evaluation and design of chemical processes.

Select Publications:

Li, S.; Feliachi, Y.; Agbleze, S.; **Ruiz-Mercado**, G. J.; Smith, R.; Meyer D.; Gonzalez, M.; Lima, F.V., "A Process Systems Framework for Rapid Generation of Life Cycle Inventories for Pollution Control and Sustainability Evaluation." *Clean Technol Environ Policy*, 2018. 7, 1543-1561.

Sampat, A.; **Ruiz-Mercado**, G. J.; Zavala, V. M., "[Economic and Environmental Analysis for Advancing Sustainable Management of Livestock Waste](#)." *ACS Sustainable Chemistry and Engineering*, 2018, 6, 6018–6031.

Fuentes-Cortés, L. F.; Ma, Y.; Ponce-Ortega, S. M.; **Ruiz-Mercado** G. J.; Zavala, V. M., "[Valuation of water and emissions in energy systems](#)." *Applied Energy* 2018. 210:518-528

Ruiz-Mercado G. J.; Carvalho A.; Cabezas H., "[Using Green Chemistry and Engineering Principles to Design, Assess, and Retrofit Chemical Processes for Sustainability](#)." *ACS Sustainable Chemical Engineering* 2016. 4, 6208–6221.

Ruiz-Mercado G. J. and Cabezas H. (book editors), "[Sustainability in the Analysis, Synthesis and Design of Chemical Engineering Processes](#)", Elsevier Inc., Waltham, MA, 2016.

Dowling, A.; **Ruiz-Mercado**, G. J.; Zavala, V. M., "[A Framework for Multi-stakeholder Decision-Making and Conflict Resolution](#)." *Computers & Chemical Engineering* 2016. 90, 136-150.

View more research publications by [Gerardo Ruiz-Mercado](#).

Education:

- Ph.D., University of Puerto Rico, Mayagüez, PR; Chemical Engineering, 2008
- B.S., Universidad del Atlántico, Barranquilla, Colombia; Chemical Engineering, 2002

Professional Experience:Committees and Memberships

- Manager of the EPA Cincinnati and the ORD Hispanic Employment Programs
- American Institute of Chemical Engineers (AIChE) senior member
- American Chemical Society (ACS) member
- Program and session chair at the AIChE annual meetings: Environmental Division and the Sustainable Engineering Forum (SEF)
- International Advisor of the AIChE SEF Technical committee member on Circular Economy theme, International Symposium for Sustainable Systems and Technology, 2018
- Study committee member for PhD, MSc, and BS students at West Virginia University, University of Wisconsin, National University of Colombia, University of Cartagena - Colombia, and University of Atlántico - Colombia

Awards and Honors

- Qualified article reviewer with experience completing reviews for 20 leading peer-reviewed journals, covering ACS Sustainable Chemistry & Engineering, AIChE Journal, Environmental Science & Technology, Journal of Cleaner Production
- Accomplished keynote speaker, participating in an expansive list of professional meetings and presentations as a subject matter expert, such as the National Academies of Sciences, Engineering and Medicine's Roundtable on Science and Technology for Sustainability
- Best oral presentation in the Modeling & Simulation of Complex Systems (2016) and Design for Sustainable Processes Sessions (2012), AIChE Annual Meeting
- Guest editor of Special Issue: Sustainable Bioenergy Systems: Supply chains, Processes & Products. Clean Technologies and Environmental Policy journal, 2018
- U.S. EPA Scientific and Technological Achievement Award 2014 and 2015

[Science Matters: Safer, More Sustainable Chemicals](#)

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