

Joshuah K. Stolaroff

Environmental Scientist, Lawrence Livermore National Laboratory

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Education

Ph.D. – Engineering & Public Policy, and, Civil & Environmental Engineering, Carnegie Mellon University, 2006.
M.S. – Civil & Environmental Engineering, Carnegie Mellon University, 2003.
B.S. – Environmental Engineering Science. University of California, Berkeley, 2002 (with honors).

Research and Employment

02/10-present: Environmental Scientist, E Program, Global Security, Lawrence Livermore National Laboratory. Carbon capture technology, CO₂ emissions monitoring and verification, and arctic methane emissions and mitigation.

09/07–08/09: American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow, Center for Program Analysis, Office of Solid Waste and Emergency Response, US EPA. Climate impacts of land management and materials management.

09/06–08/07: Post-doctoral Fellow, Climate Decision-Making Center, Carnegie Mellon University. Strategies for evaluating future energy technologies; advanced technology for carbon dioxide capture from ambient air.

09/03–08/06: Doctoral research. Thesis: "Capturing CO₂ from ambient air: a feasibility assessment."

08/02–12/03: Masters research: Assessing the use of industrial waste streams (steel slag and concrete waste) to sequester carbon dioxide.

05/01–12/01: Researcher, Energy and Resources Group, University of California, Berkeley. Air quality and greenhouse gas impact of distributed energy generation.

Publications

Stolaroff, Joshuah K. "Chapter 2: Requirements." In: The Greenhouse Gas Information System. Lawrence Livermore, Sandia, and Los Alamos National Laboratories and the NASA Jet Propulsion Laboratory. (In review).

Stolaroff, Joshuah K. "Products and packaging and U.S. GHG Emissions." Product Policy Institute. August, 2009.

EPA. "Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices." U.S. Environmental Protection Agency. September, 2009.

Stolaroff, J. K., Weber, C. L., and Matthews, H. S. "Design Issues in a Mandatory Greenhouse Gas Emissions Registry for the United States." Energy Policy. June, 2009.

Stolaroff, J. K., Keith, D. W., and Lowry, G. V. "A contactor for CO₂ capture from atmospheric air: cost and energy requirements." Environmental Science and Technology 42 (8): 2728-2735, 2008.

Stolaroff, J. K., Keith, D. W., and Lowry, G. V. "A pilotscale prototype contactor for CO₂ capture from ambient air: cost and energy requirements." Proceedings of the 8th Greenhouse Gas Control Technologies Conference. Trondheim, Norway. June, 2006.

Keith, D. W., Ha-Duong, M., and Stolaroff, J. K. "Climate strategy with CO₂ capture from the air." *Climatic Change*. 74: 17–45, 2006.

Stolaroff, J. K., Lowry, G. V., Keith, D. W. "Using CaO and MgO-rich industrial waste streams for carbon sequestration." *Energy Conversion and Management*. 46: 687–699, 2005.

Projects at LLNL

- Principle Investigator for a technology assessment of methane mitigation options; research pathways to prepare for potential rapid release of methane from the arctic.
- Carbon capture: novel catalysts for CO₂ capture from power plants; encapsulated solvents for CO₂ capture from power plants; system design and performance requirements; mass transfer modeling and analysis.
- Greenhouse gas emissions measurement: monitoring, reporting and verification of international climate commitments; performance requirements of a monitoring system

Projects as a AAAS Fellow

- Technical lead and coauthor of the EPA report "Opportunities to Reduce Greenhouse Gases through Materials and Land Management Practices".
- Technical lead for marginal abatement curve analysis of greenhouse gas reductions through curbside recycling and waste prevention.
- Represented the Office of Solid Waste and Emergency Response (OSWER) on the EPA workgroup for the Mandatory Greenhouse Gas Reporting Rule.

Honors

- EPA's Office of Solid Waste "Friend of OSW" award for "outstanding, merit-worthy contributions in the area of climate change," 2008.
- Herbert L. Toor Award for best qualifying research paper, 2005.
- National Science Foundation Honorable Mention, 2002.

Presentations

- "Biomimetic Catalysts for Carbon Capture with Optimized System Placement ." 2010 NETL CO₂ Capture Technology Meeting. Pittsburgh, PA. September 13-17, 2010
- "Greenhouse gas emissions and materials and land management." Northeast Forum on Climate and Waste Connections (webinar series). U.S. EPA Regions 1 and 2. June, 4th, 2009.
- "Materials Management and Greenhouse Gas Emissions." California Resources Recovery Association Annual Conference. Burlingame, CA, August, 2008.
- "CO₂ capture from ambient air: Cost and energy requirements of an example system." 5th Annual Meeting of the Technology, Management, and Policy Graduate Consortium. Lisbon, Portugal. June, 2006.
- "Experimental measurement of energy requirements for capturing CO₂ from ambient air in a pilot-scale system" (poster). 8th International Conference on Greenhouse Gas Control Technologies. Trondheim, Norway. June, 2006.
- "A pilot-scale prototype CO₂ scrubber for the atmosphere." American Geophysical Union Fall Meeting. San Francisco, CA. December, 2004.
- "CO₂ extraction from ambient air using alkali-metal hydroxide solutions: Niche markets to industrial scale implementation" (poster). 227th Spring National Meeting of the American Chemical Society. Anaheim, CA. March, 2004.
- "Using CaO- and MgO-rich industrial waste streams for carbon sequestration." American Geophysical Union Fall Meeting. San Francisco, CA. December, 2003.
- "Carbon dioxide extraction from ambient air using alkali-metal hydroxide solutions derived from concrete waste and steel slag." 35th Central Regional Meeting of the American Chemical Society. Pittsburgh, PA. Oct 21, 2003.