Spotlight on air quality issues and related health and environmental challenges around the world.

Cover image: Smog over China, October, 2010. During this week-long episode, Chinese authorities declared air quality “poor” to “hazardous” around Beijing and 11 eastern provinces. Grayish areas in the middle are smoke and fog (smog) across a wide region; whitish areas are clouds. Satellite sensors suggest particle pollution from fires, industrial emissions, and vehicles were likely contributors.

Photo credit: NASA Earth Observatory.
This issue of *EM* focuses on programs to improve air pollution in cities and regions around the world. The issue was conceived and coordinated by Rob Pinder and Sara Terry of the U.S. Environmental Protection Agency’s (EPA) Office of Air Quality Planning and Standards (also my alma mater). EPA’s air office has long participated in international activities, including binational agreements with Mexico and Canada, multilateral efforts on long-range transport, as well as technical and policy support to a variety of nations. Terry’s introduction to the issue highlights the importance of the disparate air pollution trends in the United States and other developed nations (substantial declines) and low and middle income countries (generally increasing). Recent estimates from the Health Effects Institute (https://www.stateofglobalair.org/sites/default/files/SoGA2017_report.pdf) find outdoor air pollution is responsible for 4.4 million premature deaths per year (2015 data); household air pollution from solid fuels accounted for an additional 2.8 million deaths. The articles that follow outline a variety of areas where EPA is cooperating with international organizations to improve air quality. EPA staff have assembled a team of in-house experts, as well as an impressive list of collaborators from organizations around the world for this task.

EPA’s Paul Almodovar and Kimber Scavo provide an overview of the history and accomplishments of EPA and U.S. Department of State participation in the Long-Range Transboundary Air Pollution Convention. The program began with a focus on acid rain, but expanded to multiple pollutants, including ozone, fine particles, and persistent toxics.

Phil Dickerson (EPA) and Caroline D’Angelo (State Department) describe a targeted effort to place real-time PM$_{2.5}$ monitors in U.S. embassies in cities with substantial air pollution, and report results using the Air Quality Index. These efforts have provided both U.S. citizens, as well as residents in the host country, with data and guidance that help raise awareness of the level of health risk on a daily basis.

Amanda Curry Brown and Neal Fann of EPA and coauthors from the Stockholm Environment Institute (SEI) outline the development and use of two analytical tools that help support air quality policy decisions around the world: BenMap, which estimates of health and economic benefits of reducing air pollution, and SEI’s LEAP-IBC, which models air quality changes associated with potential mitigation strategies.

Ray Minjares of the International Council on Clean Transportation discusses development and implementation of “soot free” buses. Diesel transportation is a significant contributor to particle pollution in urban areas.

The last three articles discuss specific air and waste programs in Asia and Africa. EPA’s Scott Voorhees consolidates submissions from Clean Air Asia, ICLEI-Local Governments for Sustainability, and the Clean Air Alliance of China that outline air quality management programs in Vietnam, South Korea, and China. Emmanuel Appoh, Deputy Director for Environmental Quality of Ghana’s EPA and Sara Terry provide a brief overview of air pollution issues for all of Africa, followed by a focus on the first EPA Megacity Partnership with Ghana to improve air quality. Alice Kaudia, head of the Kenya Ministry of Environment and Natural Resources and Erika Rosenthal of Earthjustice summarize how Kenya is attacking a major waste crisis through cooperative efforts to develop and implement integrated management through policy and legislation. While focused on waste, the authors note these programs will produce air quality and climate benefits.

Air quality in major urban areas and regions around the world presents significant health and environmental challenges that are clearly linked to climate, energy, and the economy. These articles provide a useful look at the kinds of activities that can help. *em*

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