

MEETINGS

Defining Urban Geochemistry

International Association of GeoChemistry: Urban Geochemistry Working Group; Columbus, Ohio, 5–6 August 2014

From 1950 to 2014, the proportion of the world's population living in urban centers has increased from 30% to 54%, and the United Nations' *World Urbanization Prospects: The 2014 Revision* estimates this number will reach 66%, or 6.3 billion, by 2050. Nearly 90% of this growth is projected to occur in Africa and Asia, which today remain mostly rural.

Historically, the growth of urban centers led to positive economic, social, and cultural developments associated with higher levels of education, life expectancy, and income. However, unplanned and rapid expansion of cities in the developing world has often led to greater income inequality, more unsustainable consumption of natural resources, pollution, and other deleterious environmental impacts. Cities in rich countries will also face challenges as they deal with aging infrastructure and the legacy of toxic metals, organic contaminants, and "emerging" contaminants, just to name a few issues.

As urban environments expand, there is a greater need to better understand the sources, transport, transformations, human health impacts, and fate of chemicals in urban

environments and the footprint of those urban environments on the greater ecosystem.

How do we define urban geochemistry? What are the most important urban geochemical issues now and in the coming decades? These two basic questions were the impetus for the first meeting of the International Association of GeoChemistry's (IAGC) Urban Geochemistry Working Group. The meeting opened with participants summarizing their interests in urban geochemistry, followed by plenary presentations on quantifying anthropogenic and natural sources of CO₂ in urban areas, the transformation and fate of everyday chemicals in urban watersheds, and geochemistry and urban health.

Before the meeting, participants submitted questions related to current and future issues confronting the field of urban geochemistry. In breakout sessions, these questions were grouped into eight key issues to be addressed in urban geochemical research. They can be summarized as (1) how global biogeochemical cycles are altered in the urban setting; (2) how the evolution of infrastructure will affect geochemical processes; (3) how

urban systems should be measured to assess harmful changes; (4) how urban geochemists can affect policy decisions; (5) how the geochemistry of urban environments affects human and ecosystem health; (6) how episodic perturbations, such as natural disasters, affect the urban environment; (7) how a legacy of past disturbance affects the current geochemical system; and (8) how the geochemical "footprint" of urban areas can be defined. Teams of participants are now researching these topics, and the results will be combined into a joint manuscript and submitted to IAGC's official journal, *Applied Geochemistry*.

Participants were eager to capitalize on the momentum from this meeting, and it

was agreed that the next meeting should be in 2015. Urban geochemistry is an inherently interdisciplinary science, and we hope to bring together academics, industry representatives, policy advocates, human health professionals, engineers, and urban planners. For more information, visit <http://www.IAGC-Society.org/UG.html>.

—CHRISTOPHER B. GARDNER, School of Earth Sciences, The Ohio State University, Columbus; email: gardner.177@osu.edu; W. BERRY LYONS, School of Earth Sciences, The Ohio State University, Columbus; and DAVID T. LONG, Department of Geological Sciences, Michigan State University, East Lansing

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