

ACS Global Water Initiative: The Grand Challenge Of Water

BASSAM Z. SHAKHASHIRI, 2012 ACS PRESIDENT; DAVID L. SEDLAK; AND JERALD L. SCHNOOR

THE WORLD IS FACING a water crisis. In the developed world, increasing demands for water—for cities, for industry, for agriculture, and for the extraction of fossil fuels—are straining an already burdened system. In the developing world, nearly 1 billion people lack access to safe drinking water and sanitation because of the absence of distribution systems for clean water.

Throughout history, water has been considered a plentiful resource, available for the taking. In the developed world, society constructed the infrastructure necessary to direct water to where it was needed, and once the water had been used, it was returned to the environment as waste. The availability of inexpensive water and the inattention to waste disposal fostered rapid development of agriculture, industries, and cities throughout the world. However, this situation cannot persist; we are reaching the limits of our water supply.

In the developing world, the same type of infrastructure that has been built in developed countries would help alleviate disease and extend life expectancies for impoverished people. However, it would also lock them into the same predicament as the developed countries, requiring future investments in systems that even rich countries are struggling to maintain.

What is needed throughout the world is a new generation of sustainable water systems. We must deploy new technologies to provide for recycling of municipal and industrial wastewater and adopt more stringent standards for waterborne pollutants. This is the Grand Challenge of Water: the creation of new, sustainable water systems for the developed and developing world. Meeting this challenge requires the efforts of chemists, collaborating with engineers and other

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scientists and influencing decisionmakers.

We propose launching an **ACS Global Water Initiative** because we believe that the American Chemical Society can and should play a larger role in meeting the Grand Challenge of Water. The initiative can prepare our members for the challenges and opportunities that will accompany the coming revolution in water management.

ACS ALREADY PROVIDES leadership to the research community through journals

such as *Environmental Science & Technology* and the recently launched e-journal *ACS Sustainable Chemistry & Engineering*. But beyond its role in communicating research, ACS should expand its efforts to educate the public and decisionmakers on topics related to water, especially those that are pertinent to chemistry.

Such as ACS's recent effort on the Climate Science Toolkit (www.acs.org/climatescience) is helping the society's members to address the grand challenge of climate change, a similar effort on water could raise awareness and build support among people and organizations that will invest in our water future. ACS can and must help educate citizens and government of-

officials that our "unlimited" water resource is threatened. It is vulnerable to the forces that cause increasingly frequent floods and droughts, to deleterious runoff from cities and farms, and to depletion through over-pumping and contamination of aquifers. Updated infrastructure, novel treatment systems, and water reuse are all needed. In addition to advocating for technologies that make water use more efficient and less pollutive, ACS could lead member discussions about how chemicals used in commerce impact water resources. We must reexamine the use of chemicals that are not amenable to treatment or that produce toxic by-products during treatment. We live in a water-stressed world in which runoff from city streets and farm fields causes severe problems in coastal ecosystems as well as freshwater lakes and rivers. ACS and its members can help the chemical enterprise find creative ways of making water systems more sustainable and affordable.

The ACS mission to "advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people" empowers the society and its members to meet the Grand Challenge of Water. We have a responsibility to join with other organizations and agencies to prepare for a better water future.

For without water, there is no future.

Bassam Z. Shakhshiri is a professor of chemistry, University of Wisconsin, Madison; David L. Sedlak is a professor of civil and environmental engineering, University of California, Berkeley; Jerald L. Schnoor is a professor of civil and environmental engineering, University of Iowa, and editor-in-chief of Environmental Science & Technology. We welcome your comments at bassam@chem.wisc.edu.



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