WATER TREATMENT AND CONSERVATION

Growth in the world's population from seven billion people in 2011 to an estimated nine billion by 2050 will critically stress already limited water supplies. Water is essential to global wildlife and the environment and to residential, agricultural, and industrial activities. Agriculture in the U.S. uses about a third of all water withdrawn from surface or groundwater sources, although some parts of the country use up to 80 percent of the withdrawn water for that purpose. The remaining amount is used for residential and industrial purposes or remains in the environment to support natural ecosystems. In developed countries, water often undergoes some form of pre-treatment before residential or industrial use. While current water treatment technology can remove many organic pollutants, salts, and pathogens from water and wastewater, new treatment technologies and conservation measures will be needed to meet the growing demand for dwindling supplies of water caused by environmental contamination, drought, and ground-water removal at unsustainable rates.

Historically, the U.S. government provided robust support for fundamental and applied research on the development of municipal and industrial treatment technologies, but that is no longer the case. For example, the funding for developing advanced desalination technology has decreased from a peak of over $150 million (inflation adjusted) per year in the mid-1960s to less than $15 million per year today. This low level of support has led to an absence of innovative technologies critical to a future in which seawater may need to be desalinated and wastewater recycled for irrigation, industrial uses, and drinking water.

In the developing world, water treatment technologies tailored to local conditions and local energy supplies are needed to protect public health and foster economic development. Over 2.6 billion people lack access to adequate sanitation and over one billion lack access to safe drinking water. Investment in treatment technologies that are suited to the needs of developing countries should be a larger component of U.S. foreign aid and economic development policy.

To address these issues of water availability and wastewater treatment, the American Chemical Society recommends that the United States

1. Supports the development of new water-use guidelines, agricultural practices, technologies, voluntary standards, and public information initiatives that promote water recycling and other conservation measures to protect human health and the environment.
2. Increases public and private sector investments in technologies, management practices, and infrastructure that reduce water use and facilitate the reuse of wastewater that is currently discharged into the environment.
3. Supports protection of surface and groundwater resources from pollutants and furthers our understanding of the global water cycle.

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4. Increases public and private funding for the development of sustainable water treatment technologies that are less expensive and more robust than those currently available. The development of point-of-use or distributed treatment systems for developing countries and communities with low population densities should be given high priority in these efforts.
5. Supports changes in industrial processes, including chemical substitution and engineering controls that reduce the discharge of toxic substances into ground and surface waters flowing toward municipal/regional domestic water supplies.

References

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