



By Benjamin H. Grumbles

water security & political chemistry

Chemical security at water and wastewater facilities sparks debate

America's water and wastewater systems are safer in the post-9/11 (and post-Katrina) era, but not safe enough. Water-related facilities and the men and women who operate them have benefited from the early waves of money and effort, but we have a lot more to do to reduce the wide range of risks from terrorists, vandals and other intentionally bad actors, as well as natural emergencies.

In an effort to "close the gap" in chemical security at water and wastewater facilities, Congress should not let important bipartisan, bicameral efforts get wrapped around the politically charged axle of "inherently safer technology" (IST). Just as importantly, utilities should not let up in the race to imbed security features into every aspect of water treatment, storage and delivery, including safer and smarter disinfection methods.

Progress

Nationally and locally, water security has taken root. The 2002 Bioterrorism Act, Presidential Directives and other public and private efforts are making a difference, and that is a good thing for communities, consumers and employees.

Large- and medium-sized water facilities have done the initial vulnerability assessments and emergency response plans, added new tools and training, hardened perimeters, monitored lines, tested for contaminants and strengthened safeguards against internal and external threats. Small facilities have taken steps as well.

Trade associations and national agencies have underscored the need for utilities of all sizes to ask the hard questions and take steps against hostile outside attacks as well as inside jobs. Water and wastewater groups have analyzed safer alternatives, promoted leadership and institutionalized security like never before, even in the midst of economic hardship and competing priorities.

Clash Over Chlorine

Some aspects of water and chemical security, however, spark debate. As I testified in July before the U.S. Senate Environment and Public Works Committee: "Everyone can support the basic goal of IST, but how do you implement it and who decides? How do you avoid a top-down, one-size-fits-all approach?"

Environmental and public safety advocates are absolutely right to press for safer disinfection. Paul Orum, a chemical and water expert and member of the Blue-Green Chemical Security Coalition, testified that hundreds of facilities have voluntarily changed practices, substituted chemicals and urged Congress and the U.S. Environmental Protection Agency (EPA) to do more to accelerate the move away from railcar and truck shipments of gaseous chlorine.

I agree, in part. Defending the status quo is unacceptable, particularly in a post-9/11 world. The days of large railcar deliveries and poorly protected bulk storage of gaseous chlorine are numbered. Unfortunately, the range of cost-effective and environmentally protective alternatives is more limited than some will admit.

Every water, public health and community leader needs to assess the risks and weigh the trade-offs.

Technology & Choice

National water utility associations such as the American Water Works Assn. have concerns about mandating IST reviews and taking chlorine gas or other disinfection methods off the table: "The method of disinfection should be a local decision." I agree.


The slogan made famous by western governors in the late 1990s—"National Standards, Neighborhood Solutions"—fits today as well. Water chemistry and political accountability differ among watersheds. Climate, community preferences, life-cycle costs and other factors vary, so legislators should resist the temptation to either dictate technologies across the board or tell EPA to second-guess local and state decisions as to whether the chemical involved is chlorine, ammonia or some other potentially toxic substance.

Facts from Phoenix

One of the best arguments for caution comes from an Arizona experience. In 2003, Phoenix Water Services Department conducted a thorough study of disinfection alternatives. Prior to the study, Phoenix used gaseous chlorine and stored it on site in 17-ton railcars at some of its largest plants.

The study identified operational issues with alternative disinfection methods. For example, onsite generation of bulk hypochlorite has the potential to introduce contaminants such as bromate and perchlorate. Hypochlorite products also can degrade quickly in desert heat, making disinfection residuals hard to control and consistently meet drinking water requirements. Because of these and other factors, the city chose to continue to use chlorine gas but replaced the railcars with 1-ton containers and committed to installing double containment at all facilities to minimize chemical exposure.

Inherently Optimistic?

Water treatment technologies and chemical safety methods continue to improve. Recent versions of congressional bills and administration policies seem to be improving, including some degree of flexibility and emphasis on locally based decision-making. So, here is to "inherently smarter technologies" that reduce risk without reducing effectiveness, and to federal policymakers who recognize anything dubbed "inherently" may be hazardous for legislating, with unintended, even explosive, consequences if not done carefully. Cheers! 

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