PREVENTING CHEMICAL TERRORISM: BUILDING A FOUNDATION OF SECURITY AT OUR NATION'S CHEMICAL FACILITIES

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Good afternoon Chairman Lungren, Ranking Member Clarke and members of the Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies. My name is George Hawkins and I am the General Manager of the District of Columbia Water and Sewer Authority – also known simply as DC Water. I'd like to thank you for inviting me to testify today on the circumstances surrounding the decision to have the Blue Plains Wastewater Treatment Facility voluntarily switch from using a chlorine in the treatment of wastewater to a potentially safer alternative.

INTRODUCTION

First, by way of background, DC Water purchases treated drinking water at wholesale from our federal partner, the Washington Aqueduct, which disinfects our drinking water supply and is a unit of the U.S. Army Corps of Engineers. We then deliver this water through our pumping stations and pipes to our retail customers in the District of Columbia – including this very building. We also operate the world's largest advanced wastewater treatment plant, at Blue Plains, for the benefit of our customers in the District and several suburban jurisdictions. We serve more than two million customers in the metropolitan Washington, D.C., area. The disinfection of wastewater provides critical public health protection. Disinfection destroys bacteria and viruses, helping to protect ecosystems and prevent waterborne disease. The most commonly used disinfectant for both drinking water and wastewater treatment is chlorine. Its effectiveness against a wide spectrum of disease causing organisms, its relatively low cost, and high reliability contribute to its popularity. Chlorine can be applied to water directly as a gas, or through the use of chlorinating chemicals. A number of alternative disinfectants, such as chlorine dioxide, chloramines, ozone, and ultraviolet radiation, are also used to varying degrees. Each disinfection technology has unique benefits, limitations, and costs. Individual water system operators must weigh these trade-offs and choose disinfection methods based on local water quality conditions, climate, physical limitation of plant location, cost, compliance with the Clean Water Act (CWA) and the needs and resources of the communities they serve. Based on this wide variety of factors, use of alternative chemicals may not be possible for all wastewater utilities.

My colleagues throughout the water sector are currently examining this issue very closely, not only to protect the populations they serve but also to protect their most critical asset-their workforce. In 2009, the National Association of Clean Water Agencies (NACWA) conducted an informal survey of its membership which shows that clean water agencies are using other treatment technologies when local factors enable them to do so. In fact, 66% of survey respondents indicated they no longer use gaseous chlorine in their disinfection process. Of the 33% that continue to utilize gaseous chlorine, 20% planned to switch to another disinfectant within a one to two year timeframe. Keeping in mind that NACWA members account for about 80% of the treated sewerage stream in the United States you can see utilities switching to other

treatments when possible. Given this information we do not believe a federal mandate is necessary, rather we believe that decisions regarding treatment technologies should reside within the local community.

BLUE PLAINS

The Blue Plains Wastewater Treatment Facility sits on the Potomac River in southwest Washington, D.C. Like most facilities before 9-11, Blue Plains used chlorine gas and other hazardous compounds in its treatment process. In fact, when the plane hit the Pentagon on 9-11, Blue Plains had six 90-ton railcars on site storing dangerous chemicals just four miles away from the Capitol. Three were filled with chlorine gas, one was filled with sulfur dioxide, and two railcars were being unloaded; each filled with chlorine gas and sulfur dioxide.

Not only were these chemicals a threat when in storage on the site, but they also created a hazard in transit as they were hauled by rail through downtown D.C. on their way to Blue Plains. To get a sense of the exposure they represented, consider that in January 2005, when a freight train pulling three tankers full of liquidized chlorine and one tanker of sodium hydroxide slammed into a parked train in Graniteville, South Carolina, it released 11,500 gallons of chlorine gas. Nine people died and at least 529 were injured. That was without any malicious intent and in a rural location.

Chlorine gas was infamous during trench warfare in World War I. It irritates the eyes, nose, and skin in small amounts, but in concentrated form, the yellowish green gas causes the lungs to fill with liquid, drowning the victims to death.

Prior to 9-11, personnel at Blue Plains were concerned over the hazardous nature of the disinfecting chemicals and the potential for accidental release. A Capital Project was introduced into the 10 year Capital Planning Cycle to replace chlorine and sulfur dioxide gases with safer liquid chemicals such as sodium hypochlorite (bleach) and sodium bisulfite. Liquid bleach is much safer than chlorine gas, being 6 percent stronger than household bleach and easy to contain if spilled. After 9-11, facility personnel at Blue Plains were concerned over the prospect of terrorism. We evaluated our situation and decided it would make more sense for our location in the nation's capital to fast track the switch over to liquid chemicals that are much safer. The solution was to switch to using sodium hypochlorite for the purpose of disinfection and to the use of liquid sodium bisulfite for de-chlorination of residual chlorine in the waters being discharged to the river. A Process Safety Management (PSM) Committee was formed, including safety, engineering, facilities and maintenance personnel to ensure that chlorination and dechlorination systems were safe as possible until they were finally decommissioned. We completed this conversion in two phases. In the first phase, a temporary liquid disinfection/dechlorination system was designed, installed, and made operational within 60 days of 9-11 allowing removal of the chemical

rail cars from site. We simultaneously fast tracked the Capital Project for the installation of the permanent liquid disinfection/dechlorination system.

COSTS

As discussed, we first built a temporary facility and purchased additional storage tanks for the liquid bleach and bisulfite, as well as pumps and piping to deliver the chemicals to the wastewater in the right dose and at the correct locations while we pursued construction of the more capital intensive permanent conversion. By October 2003, we had finished the permanent conversion to our plant. The process of converting the old plant was costly; it required adding more storage tanks, pumps, piping and instrumentation than had been needed before. We also had to build additional storage facilities for the liquid bleach and sodium bisulfate-used for dechlorination. The total cost was $16.4 million, including the installation of the temporary facilities.

Operating costs are also now higher as well. The driving factor is that liquid bleach is much more expensive than chlorine gas. The annual cost of purchasing chemicals has increased from approximately $800,000 annually for gas chlorine to over $2 million annual average for sodium hypochlorite.

In our case, the switch effectively removed the threat of harmful exposure for 1.7 million people living near the Blue Plains plant. There is no longer any risk to the public since the conversion. Second, the switch from chlorine gas also simplified the plant's operations in several ways. For example, because liquid bleach is much safer to handle, the switch has limited the amount of training that employees need and reduced accidents. Last, the threat of a terrorist attack has diminished. At one time we routinely stored five or six tankers on site. Had a catastrophic leak occurred, this could have caused many fatalities and injuries within a 10 mile radius.

REGULATION

Since the enactment of the Public Health Protection and Bioterrorism Preparedness and Response Act of 2002, the Environmental Protection Agency has regulated the physical security of the nation's drinking water systems through Section 1433 of the Safe Drinking Water Act (SDWA). Under this law, drinking water systems serving more than 3,300 people were required to prepare vulnerability assessments detailing risks related to possible terrorist attacks, and emergency response plans outlining procedures for responding for such an attack. EPA has reported that virtually all covered drinking water systems are in compliance with these requirements, and in 2006 Congress exempted the water sector from additional physical security regulation through the Department of Homeland Security's Chemical Facilities Anti-Terrorism Standards (CFATS).

Given the importance of coordinating drinking water security rules with the

public health requirements of SDWA, most drinking water systems believe that their exemption from CFATS is appropriate, and that EPA should continue oversight of any new or revised drinking water security program. Similarly, any federal security regulations imposed on the wastewater and water sector should come through a comparable EPA program rather than CFATS. A regulatory approach that were to divide drinking water and wastewater security among different federal agencies could lead to confusing and contradictory standards – especially for utilities that provide both drinking water and wastewater service to a community.

The Obama Administration has gone on record in support of ensuring water and wastewater systems are regulated by the Environmental Protection Agency and not the Department of Homeland Security, testifying in 2009, "EPA should be the lead agency for chemical security for both drinking water and wastewater systems." Chairman Lungren, members of the Subcommittee, this concludes my prepared remarks. Thank you again for the opportunity to testify, and I look forward to answering any questions you may have.