*FFor additional information, ask for a copy of the latest BNL Water Quality Consumer Confidence Report or to see the most recent, complete analysis of drinking-water samples from any the following:*

- *Ed Murphy, Plant Engineering Division Manager, Ext. 3466, etmurphy@bnl.gov*
- *William Chaloupka, Plant Engineering Division Assistant Manager for Operations & Environment, Ext. 7136, chaloupka@bnl.gov*
- *Bob Lee, Environment & Waste Management Services Division Deputy Manager, Ext. 3148, blee@bnl.gov*
- *Suffolk County Department of Health Services, (631) 853-2251*

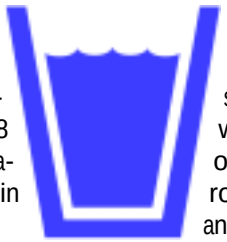
*Viewed from its base, BNL's one-million-gallon water storage tower is the larger of the Lab's two water towers. Built in 1985, this tank is 126 feet above the ground, and its bowl is 75.5 feet in diameter.*

# FAQ II: Answers to Frequently Asked Questions

## Q: *Is BNL's drinking water safe from attack by terrorists?*

A: Drinking water comes from two sources: surface water, such as lakes, rivers, and reservoirs, or groundwater, which is found in water-bearing rock formations called aquifers below the earth's surface and which must be pumped out of wells.

Groundwater is less vulnerable to attack than surface water. Groundwater is also the source of BNL's drinking water.



Approximately 47 percent of the U.S. population uses surface water as its source water for drinking. For instance, New York City's population of 8 million people obtains its drinking water from 19 surface-water reservoirs in upstate New York.

Meanwhile, another 53 percent of Americans uses groundwater as its drinking-water source.

As one of the 168,000 federally registered public drinking-water systems, the Lab draws its source water from the ground through six wells on site that are dedicated to providing drinking water.

Because the six drinking-water wells and water treatment facility are on BNL's site and are secured when not staffed, it would be difficult for terrorists to get on site, and locate and break into one of the components of the drinking-water supply, treatment and distribution system.

Along with the people and other facilities and resources on site, BNL's drinking-water wells, Water Treatment Facility, and distribution system are protected by the officers of the Safeguards & Security Division who patrol the site.

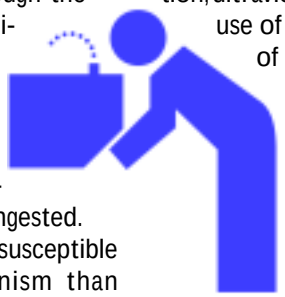
In addition, the licensed and trained staff of the Water Treatment Facility who are responsible for the production of BNL's drinking water make their daily rounds, inspecting, maintaining, repairing, and upgrading the drinking-water system's components.

BNL's drinking water is also tested regularly for biological and chemical agents by H2M Laboratories, Inc., of Melville, and for radionuclides by the BNL analytical services laboratory, both of which are certified by the New York State Department of Health Services.

The results of all analysis of BNL drinking water is reported to the Suffolk County Department of Health Services, which conducts its own annual tests of all county water systems.

## Q: *Why is chlorine added to the Lab's drinking water?*

A: Though it is necessary for life and the ecosystem of this planet, water can not only dissolve naturally occurring minerals, but, as water travels over the surface of land or through the ground, it can also pick up living microorganisms.



Waterborne bacteria, viruses, protozoa, and other parasites can cause serious and life-threatening diseases, such as dysentery, cholera and typhoid fever, in human beings when ingested.

Surface water tends to be more susceptible to contamination by microorganism than groundwater, which is the source of both the Lab's and Long Island's drinking water. Regardless, water can pick up biological contaminants at various places in a water supply system.

That is why all public water suppliers, such as BNL, are required to ensure that their drinking water meets or exceeds state standards for contaminants including bacteria.

Since these microorganisms cannot be eliminated by filtration, several other disinfectant methods have been developed, including ionization, ultraviolet irradiation, reverse osmosis, the use of ozone, and chlorination — the use of chlorine.

Beginning at the turn of the 20th century, the introduction of water disinfection — particularly chlorination — is credited with the widespread elimination of many diseases and, as a result, the saving of lives. Thus, the disinfection of water is considered to be one of the most important advances of the 20th century.

Soluble in water, chlorine may be added to the water as either a gas or a liquid. At BNL, liquid sodium hypochlorite is used.

Chlorine works by a process called oxidation, whereby it literally removes electrons from bacteria, killing them in the process.

October 2002