

Water Quality Monitoring

By Nicole I. Bertram & Dan Kroll

Protecting Olympians in Beijing

GuardianBlue from Hach Homeland Security Technologies provides gold medal quality water security for 2008 Olympic games.



Beijing National Stadium, also known as the "Bird's Nest", next to the Olympic Village

While world records were being made and broken at the Beijing 2008 Olympics, strategically placed Hach GuardianBlue® Early Warning Systems (EWS) were quietly and carefully analyzing the drinking water to guard against contamination.

The World Stage

Everyone enjoyed watching the recent Olympics as the finest athletes of the world competed for gold, silver and bronze medals. China spent some \$6.5 billion on security for the games to protect the 10,000 athletes, 30,000 journalists, 80 heads of state and others gathering in and around the National Stadium (known as the "Bird's Nest"), the Olympic Village and surrounding hotels. The early warning system was included in the state-of-the-art security measures to quickly alert officials in the event contaminants were introduced into water supplies.

China's Beijing Health Ministry chose the Hach system several months before the games after reviewing recommendations on how to guard against intentional contamination of water supplies. One of the factors that played an important role in their evaluation was the concept of dual use. They were looking for a system that not only would provide an unprecedented level of security for the games, but that also would find use in day-to-day operations after the athletes and crowds had gone home. The fact that the Hach system utilizes a number of everyday water quality

parameters made more sensitive and robust by coupling them with advanced algorithms and event detection software made it the logical choice.

Rather than attempting to develop individual sensors to detect contaminants, the Hach approach is to utilize a sensor suite of commonly available off-the-shelf water quality monitors, which include pH, electrolytic conductivity, turbidity, chlorine residual and total organic carbon (TOC) linked together in an intelligent network. The logic behind this approach is that these are tried-and-true technologies extensively deployed in the water supply industry for a number of years and proven to be stable in such situations. Once every minute, the system measures and analyzes sensor data from five advanced water quality sensors and calculates a trigger signal, which indicates a deviation from the



GuardianBlue instruments installed in the Media Village at the Beijing Olympics

water quality baseline. If significant deviations occur, the trigger signal alerts security officials in real-time. This allows for detection of both security-related and operational events.

Continuous Monitoring

As such, GuardianBlue is proven to be one of the best options for continuous and accurate screening for water quality anomalies that might characterize an intentional or accidental contamination of the water supply. Hach technicians also were contracted to provide expertise in site selections and installation of the early warning systems.

The GuardianBlue EWS is the first and only early warning system for drinking water certified and designated by the U.S. Department of Homeland Security as an approved product for security.

No deviations were reported during the games. If there had been, the monitor would have not only notified security personnel immediately, it also would have instantly signaled automatic samplers to capture real-time water samples at designated monitoring locations. In the event of a contamination, the system uses the GuardianBlue Agent Library to classify the deviation. The library contains fingerprints for a wide variety of threat contaminants, ranging from VX and ricin to arsenic and herbicides.

Conclusion

The success of the summer Olympic games is a point of immense national pride for China, and deservedly so.

Unprecedented security measures were taken to deal with potential threats – one measure being the development of a highly strategic early warning system to alert officials of intentional contamination in the water supply.

By continuously monitoring drinking water at key locations at the games, the GuardianBlue EWS helped to provide a sense of confidence for security officials that water quality was being guarded effectively. **WWI**

Author's Note:

Nicole I. Bertram is a product manager for Hach Homeland Security Technologies, a unit of the Loveland, Colorado, USA-based Hach Company. Dan Kroll is chief scientist for the company. Contact: +1-800-604-3493, nbertram@hachhst.com or www.hachhst.com