Press release

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World Water Day 2011: High-tech drinking water analysis provides better quality of life

Ultraviolet technologies from Heraeus help analyze and purify drinking water – Clean water is a human right

"Water for Cities: Responding to the Urban Challenge" is the theme of this year's World Water Day, which the United Nations (UN) holds annually on March 22. The fact that drinking water is an increasingly scarce resource makes it all the more important to analyze available fresh water and purify it effectively. The UN estimates that more than 800 million people around the world have no access to safe drinking water. Contaminated water kills more people worldwide than AIDS, malaria, and measles combined. Access to clean water has been declared a human right with its inclusion in the Universal Declaration of Human Rights. Heraeus' intelligent product solutions and ultraviolet technologies help enable sustainable and environmentally friendly analysis and disinfection of drinking water, benefitting even such megacities as New York.

Pinpoint accuracy for sensitive water analyses

Drinking water must meet stringent requirements in terms of chemical content and microbiological composition. It must be free of microorganisms and chemical substances that can cause disease. Environmental monitoring ensures that the content of the water is properly monitored and meets safety regulations. The analysis uses deuterium lamps from Heraeus as light sources in high pressure liquid chromatography (HPLC) for water and soil analysis to identify and precisely define the quantity of pesticides and other organic compounds in river water and drinking water.

"Deuterium lamps provide the light source for these highly sensitive analyses and help render undesirable impurities visible even in trace amounts. They emit a continuous spectrum of light ranging from UV wavelengths to the visible spectral range. This makes them the ideal light source for high-precision absorption measurements in laboratory analysis," stated Dr. Bruno Uebbing, Head of the Optics and Analytics division in the specialty light sources business group at Heraeus. Water can be analyzed quickly at any location. Many portable spectrometers use special, little, low-wattage, long-lasting deuterium lamps (Heraeus FiberLight) as their light source.

Disinfecting water sustainably – even in New York City

Treating drinking water with high-energy ultraviolet radiation is an established, environmentally friendly method of disinfecting water. "In comparison to chlorination, water treatment processes with innovative UV technology are chemical-free and can help sustainably ensure the quality of the drinking water," explained Dr. Sven Schalk, Head of the UV Process Technology division in the specialty light sources business group at Heraeus. The new water treatment plant that will soon supply New York City with drinking water has already been equipped with several thousand special UV lamps from Heraeus, thereby securing clean water for the city's more than 9 million inhabitants.

Water treatment is facing new challenges stemming from the increasing environmental pollution caused by medications, hormones, pesticides, and herbicides in ground and surface water. A combination of UV radiation and strong oxidizing agents like ozone respectively hydrogen peroxide or both has proven effective in rendering these complex molecules harmless. Heraeus has developed the ultraviolet emitters for the job. "It is growing increasingly important to find new methods to disinfect scarce and precious drinking water," according to Sven Schalk. But UV radiation isn't enough to treat water polluted with pharmaceuticals. The method of choice is called "advanced oxidation." "Unlike water disinfection, this process uses UV radiation in the range below 250 nanometers. The high-energy light breaks down substances in the water that are not easily biodegradable or not biodegradable at all, decomposes chemical compounds, and renders them ineffective," says Sven Schalk.

More information on special light sources for analysing and treatment of water at: www.heraeus-noblelight.com.

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Images for press release:

High-performance UV amalgam lamps from Heraeus for drinking water treatment. (Photo: Heraeus)

Heraeus produces deuterium lamps for water analysis. (Photo: Heraeus)