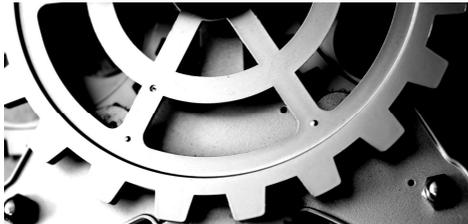
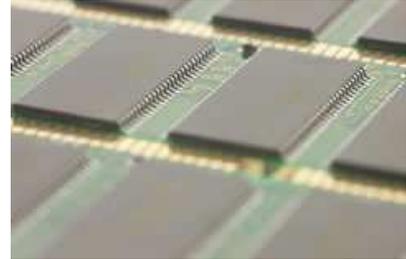


## Ultrapure Water - Chlorine Dioxide

**Ultrapure Water** - Ultrapure water is as its name suggests is water that is virtually free from impurities. Ultrapure water is used in a number of specialised processes; it is used to process pharmaceuticals, to rinse silicon microchips; and to feed high pressure-boilers and turbines in power plants and chemical processing installations.



Ultra-pure water delivered at the process level must have between 99.9% and 99.99% of typical fresh water impurities removed. In addition to other contaminants, process-piping systems must also be free of bacteria and biofilm. Chlorine dioxide (ClO<sub>2</sub>) helps control algae, planktonic and sessile bacteria; and biofilm in process piping and therefore makes an excellent choice for

use in applications where environmental performance, reliability and high performance are essential.

Source: Ecole Polytechnique de Montréal, NSERC Industrial Chair on Drinking Water, Civil Geological and Mining Engineering, CP 6079, Succ. Centre-ville, Montréal (Qué.), Canada H3C 3A7.

### Abstract:

The impact of disinfection efficacy in natural waters was evaluated by performing disinfection assays using four untreated surface waters of various qualities and ultra-pure buffered waters as a baseline condition for comparison. *Bacillus subtilis* spores were spiked in these waters and disinfection assays were conducted at 22 degrees C using either free chlorine or chlorine dioxide. Assays using indigenous aerobic spores were also completed. The inactivation kinetics in natural and ultra-pure buffered waters were not statistically different (at  $p = 0.05$ ) while using free chlorine, as long as disinfectant decay was taken into account. Filtering natural waters through a 0.45 microm did not improve the sporicidal efficacy of chlorine. For three out of the four waters tested, the efficacy of chlorine dioxide was greater in natural waters compared to that observed in ultra-pure buffered waters. Such results are consistent with previous observations using ultra-pure waters supplemented with NOM-extract from the Suwannee River.

### Technical support and advice

Globalex works closely with a diverse range of organisations; intelligently combining advanced treatment technologies with practical solutions to resolve complex issues. If you have a project you would like to discuss with us, or require technical support and assistance; or if you simply have a question about one of our chlorine dioxide technologies please contact one of our specialist advisors