

The Application of Huwa-San Hydrogen Peroxide in Secondary Treatment for Drinking Water

Huwa-San Hydrogen Peroxide (HSP) is a new generation of hydrogen peroxide. It is an ecological alternative drinking water sanitizer that is suitable for secondary disinfection and, in combination with UV, as primary disinfection. Though much research and application is taking place in Europe around primary disinfection, this article will limit itself to secondary disinfection.

HSP is food grade peroxide that is NSF Standard 60 certified with allowed residual in drinking water. It is like other food grade peroxides, only in real world scenarios (tap water) it remains residual in the network and stable for much longer than other peroxides. This is due to a more effective stabilization methodology. Because of this it is able to protect the water supply from bacterial post- and cross-contamination more effectively than conventional treatment technologies. Unlike halogens, its only byproducts are water and oxygen avoiding the formation of undesirable and potentially harmful disinfection byproducts.

HSP is applied in a similar fashion to liquid chlorine, utilising an injection pump, paced with a flow meter. Generally, dosing HSP is less troublesome than liquid chlorine since the reaction at the

injection point causes no corrosion and subsequent injector obstructions. Choice of integration complexity is available depending on needs. Fully automated systems have been applied and successfully run for over five years. H_2O_2 measurement is possible through a digital hand-held monitor or fully automated monitoring.

Since 2006 it has been used in application for continuous dosing in drinking water in regulated and non-regulated sites in Europe. It has been effective in providing safe and sanitized drinking water in challenging applications such as large hospital campuses and airports where post- and cross-contamination, dead legs and persistent biofilm contamination made conventional treatments ineffective. (Wilson R., "The Dosing of Huwa-San DW TR50 to Hospital Water Systems," *Waterline*, July 2007)



by J.P. Shubat

In the Middle East and North Africa HSP has been effectively applied under the most strenuous circumstances due to climate and infrastructure challenges. In the UAE, fresh water supply is usually provided from desalination plants. Current technologies in water disinfection are not preferred due to some disadvantages, mainly due to high capital cost as well as maintenance and no residual to control bacterial post-contamination (i.e., UV and Ozone) or formation of byproducts (THMs), and effectiveness in controlling some types of pathogens.

A preliminary study was done (Spring 2007) on high bacterially contaminated well water in Saudi Arabia. Using 15 ppm of HSP as a disinfectant, excellent results were



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In Canada HSP was introduced into regulated sites at the beginning of 2011 as a secondary disinfectant.

achieved in eliminating all microbes (TPC, faecal coliform) within 20 minutes of contact time. A further municipal pilot study was conducted in the UAE in the summer of 2007 showing effectiveness of HSP as a residual, secondary disinfectant, meeting all the criteria that were established at the beginning of the pilot. Dosing of HSP at 10 ppm was able to disinfect the drinking water without bromated formation or THMs, keeping a residual between 1 and 5 ppm throughout the distribution network after four days at 25 Degrees Celsius and at 35 Degrees Celsius, providing ongoing protection against post- and cross-contamination. (Elas-saad F., “Evaluating Huwa-San In Disinfecting Drinking Water Network System”. DEWA)

In Canada HSP was introduced into regulated sites at the beginning of 2011 as a secondary disinfectant. HSP is now being applied both in 318/319 and 170 regulated sites. So far, the results have shown effectiveness in bacteriological control and also in the removal and control of biofilm in the distribution network. The MOE is closely monitoring progress as their current requirements include a request for regulatory relief for halogen secondary disinfection.

MOE approval is granted based on the NSF certification and the application data from European applications. Currently the regulations do not include halogen alternatives and as such a request for regulatory relief together with a commissioning plan has to be submitted to the MOE. It is expected, as more experience is gained through the application of HSP, that the regulations may allow for the inclusion of H₂O₂ type products. Current research at Queens University is also confirming efficacy

data that will be published in a peer-reviewed journal. This will further establish HSP as a highly effective ecological alternative disinfectant for drinking water. 💧

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