

INTRODUCTION:

Protecting your family against infection and disease is a major challenge for every household and everyone involved in healthcare and the food industry, so it is important to know that the products you choose will give the right result, without compromising the environment.

An emerging technology, 'Electrolysed Water' (EW) is being hailed as the next generation of disinfection and the first generation of 'Green' disinfection. All DEW products utilise EW technology, so they are entirely in keeping with the desire by industry and consumers alike, to find replacements for chlorination and heat treatment, they represent a green, clean alternative to harsh and toxic chemical disinfectants, known to damage the environment.

The ability of electrolysed water based disinfectants, to kill bacteria is well know and has been proven by many research establishments across the world, but what about viruses?

Viruses infect living organisms in order to reproduce, so they also infect bacteria as well as humans, animals and plants. All viruses contain the following two components: 1) a nucleic acid genome and 2) a protein capsid that covers the genome. Together this is called the nucleocapsid. In addition, many animal viruses contain a 3) lipid envelope. The entire intact virus is called the virion.

Electrolysed water has been shown to be an extremely effective disinfectant for killing viruses, but as with its ability to kill bacteria, the time taken to achieve a high level of viral kill does vary, depending upon the virus.

Additionally, the flexibility with which DEW disinfectants can be applied, means that the thoroughness with which a space can be disinfected has almost no equal. Apart from using a trigger spray, DEW disinfectant products can be fogged into the atmosphere, without the need to wear protective clothing or to evacuate the area, added to water for the washing of floors and applied via a cloth or tissue.

INDEPENDENT TESTS:

To substantiate the efficacy of our products, they have been evaluated by a number of independent laboratories located in various countries across the world and without exception, all have confirmed that kill times for almost all pathogens are extremely quick, so quick that no development of resistant strains has been recorded.

Overleaf there are extracts from a study carried out by The State University of New Jersey, in the United States examining the efficacy of Electrolysed Water (EW) against Human Norovirus. It quite clearly demonstrates that at concentrations of 250ppm Free Available Chlorine (FAC) the tested pathogens were substantially destroyed within 5 minutes.

DEW Disinfect Ready to Use Products are supplied at a concentration of 260ppm FAC, giving them ability to kill norovirus in 5 minutes.

Extracts from Efficacy of Neutral Electrolyzed Water for Inactivation of Human Norovirus

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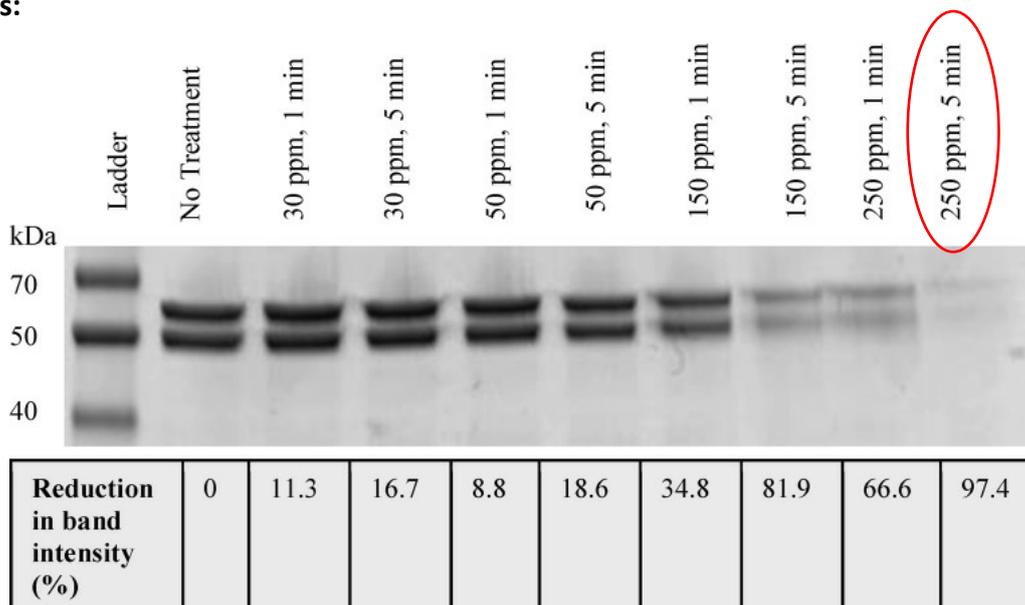
Abstract:

Human norovirus (NoV) is the leading cause of acute gastroenteritis worldwide. Persistence on surfaces and resistance to many conventional disinfectants contribute to widespread transmission of norovirus. We examined the efficacy of Neutral Electrolyzed Water (NEW; pH 7) for inactivation of human NoV GII.4 Sydney in suspension (ASTM method 1052-11) and on stainless steel surfaces (ASTM method 1053-11) with and without an additional soil load.

The persistence of norovirus on contaminated environmental surfaces exacerbates its spread, as does its resistance to many conventional disinfectants. The purpose of this research was to evaluate the antinoroviral efficacy of Neutral Electrolyzed Water (NEW), a novel chlorine-based disinfectant that can be used at reduced concentrations, making it more environmentally friendly and less corrosive than bleach.

Hand hygiene and environmental sanitation practices, the latter of which utilize surface disinfectants and sanitizers, are employed to prevent and control the spread of human NoV in many different settings, for instance in health care and long-term care facilities, schools, and cruise ships. The current U.S. CDC recommendation for disinfecting solid surfaces presumably contaminated with human NoV is sodium hypochlorite (household bleach) at 1,000 to 5,000 ppm free chlorine, depending upon the circumstances of the contamination event. Although bleach at these concentrations has been shown to reduce levels of human NoV by >4 log₁₀ reverse transcriptase quantitative PCR (RT-qPCR) units in suspension assays, perpetual implementation of this recommendation may not be practical due to the corrosive nature of chlorine (at >500 ppm) and potential health hazards.

Results:



Results (cont.):

In suspension using no additional soil load, **NEW at 250 ppm FAC was effective against the epidemic human NoV GII.4 Sydney strain, producing a 4.8-log₁₀ reduction in RNA copy number.** Park et al. (15) previously showed high efficacy for this product, using a GII.4 strain in a 1% fecal suspension as inoculum and endpoint titration RT-qPCR for quantification of product efficacy.

In conclusion, the technology used in this study allows large-scale production of a stable, more environmentally friendly disinfectant capable of inactivating norovirus by destruction of viral capsid. Neutral electrolyzed water at 250 ppm FAC shows promise as an alternative antinoroviral surface disinfectant when used for 15 to 30 min under relatively clean conditions.

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REGULATORY COMPLIANCE:

In order to comply with the registration requirement of the European Biocide Regulation EU 528/2012 and to be listed under Article 95 of that regulation, for Product Types 1 to 5, Disinfection Products MUST have been tested and shown to be in compliance with the following:

- **EN 901** - A European standard for substances used in the disinfection of water fit for human consumption.
- **EN 1276** - Chemical Disinfectants Bactericidal Activity Testing.
- **EN 1499** - Chemical disinfectants and antiseptics: Hygienic hand wash.
- **EN 1500** - Chemical disinfectants and antiseptics: Hygienic hand rub.
- **EN 1650** - Quantitative suspension test for the evaluation of fungicidal or yeasticidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic and institutional areas.
- **EN 13623** - Quantitative suspension test for the evaluation of bactericidal activity against Legionella.
- **EN 13697** - Quantitative Surface Test for the Evaluation of Bactericidal or Fungicidal Activity.
- **EN 14476** - Chemical Disinfectants and Antiseptics – Quantitative Suspension Test for the Evaluation of Virucidal Activity in the Medical Area.

All DEW Disinfection products have successfully been tested to these EN testing protocols.