

White Paper: An Effective Solution as Part of The Economic Recovery “Equation” While Containing the COVID-19 Pandemic Throughout the US

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BACKGROUND

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As of 7 July 2020, more than 11.5 million cases have been reported across 188 countries and territories, resulting in more than 535,000 deaths¹. Among those countries, US is the number one country to have more than 2.88 Million diagnosed cases, including almost 131,000 deaths to date².

Common symptoms include fever, cough, fatigue, shortness of breath, and loss of smell and taste. While most cases result in mild symptoms, some cases progress to acute respiratory distress syndrome (ARDS) possibly precipitated by cytokine storm, multi-organ failure, septic shock, and blood clots. The time from exposure to onset of symptoms is typically around five days but may range from two to fourteen days^{3,4}.

The virus is primarily spread between people during close contact, most often via small droplets produced by coughing, sneezing, and talking. The droplets usually fall to the ground or onto surfaces rather than travelling through air over long distances. However, research as of June 2020 has shown that speech-generated droplets may remain airborne for tens of minutes. A yet-to-be-published study conducted by scientists from the CDC, National Institutes of Health and other institutions suggests that the 2019 novel coronavirus can live for two to three days on plastic and stainless-steel surfaces.

VIRUS CONTAINMENT/ERADICATION MEASURES:

Given the way COVID-19 spreads, it is a good idea to keep one’s home clean during this time. If someone in one’s household is sick, it is especially important to disinfect high-touch surfaces. This includes doorknobs, handles, tables, countertops, keyboards, and light switches.

Recommended measures to prevent infection include frequent hand washing, maintaining physical distance from others (especially from those with symptoms), quarantine (especially for those with symptoms), covering coughs, and keeping unwashed hands away from the face. The use of cloth face coverings such as a scarf or a bandana have been recommended by health officials in public settings to minimize the risk of transmissions, with some authorities requiring their use. Health officials also stated

¹ Who.int

² Cdc.gov

³ "Symptoms of Novel Coronavirus (2019-nCoV)". U.S. Centers for Disease Control and Prevention (CDC). 10 February 2020. Retrieved 11 February 2020.

⁴ Velavan TP, Meyer CG (March 2020). "The COVID-19 epidemic". *Tropical Medicine & International Health*. 25 (3): 278–280

that medical-grade face masks, such as N95 masks, should only be used by healthcare workers, first responders, and those who directly care for infected individuals⁵.

While there are no vaccines nor specific antiviral treatments for COVID-19, management involves the treatment of symptoms, supportive care, isolation, and experimental measures. US CDC has also released instructions to the public for household disinfectant using EPA registered disinfectants⁶, which has become more important as the pandemic further intensifies during the re-open process. Though EPA registered disinfectants have been recommended as a household disinfectant agent⁶, Hypochlorous Acid (HOCl) is a more safe and effective topical-use antimicrobial disinfectant that is a very effective and useful ingredient to help contain the virus until vaccines become readily available.

HYPOCHLOROUS ACID (HOCL)

Overview

HOCl is an all-natural, organic, non-toxic, non-irritant, environmentally, and ecologically safe sanitizing and disinfecting solutions. It is produced from the electrochemical reaction of water, salt and electricity. The applications for this technology are wide open active ingredient and include any process requiring a sterilizing, disinfecting, cleaning, or water purification facility. These simple but revolutionary sanitization and disinfecting solutions not only provide a “green” solution to help protect the nation’s public health in food industries, hospitals, airlines, schools, restaurants, they are also in line with the American public’s concern over growing demand for the fast spreading infectious diseases everywhere.

At a quick glance, HOCl offers many advantages over traditional chemical technologies, including:

- safety
- superior disinfection performance
- removal of biofilm
- Regarding water purification:
 - a more stable, longer-lasting chlorine residual
 - enhanced micro flocculation (reduction in turbidity)
 - improved taste and odor
 - oxidation of iron, manganese, and hydrogen sulfide
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Technical

HOCl is the most effective active ingredient of chlorine. It is a pH neutral, super-oxidized water generated by electrolysis of a diluted NaCl solution passing through an electrolytic cell. This process creates large volumes of a gentle but extremely potent antimicrobial solution capable of rapid reduction of bacteria, viruses, spores, cysts, scale and biofilm. HOCl is stable and cost-effective to produce, much greener and safer than traditional chemical technologies, and can be used in multiple applications across a wide variety of industries and public places.

⁵ "Q&A on coronaviruses (COVID-19)". World Health Organization. 17 April 2020. Archived from the original on 14 May 2020. Retrieved 14 May 2020.

⁶ <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html>

HOCl is an oxidizing agent due to a mixture of free radicals, giving it an antimicrobial effect. Studies have shown that these products are highly biocidal and can substantially reduce pathogens such as Salmonella, E. coli, common fungi and viruses without the use of costly toxic chemicals. In addition, they offer the added benefits of being able to remove biofilm and scale from manufacturing equipment, thus, greatly minimizing a major contributor to contamination problems.⁷

Given HOCl's ability to destroy microorganisms, it does not face the same issues of microorganism resistance as many other sanitizers and disinfectants often do. Standard toxic chemicals can create strains of pathogens that become resistant over time because the cell can expel or neutralize the chemical before it can kill it, thereby significantly reducing the overall efficacy of those standard chemical cleaners and disinfectants.

Branded HOCl Products

AQUAOX DISINFECTANT 525, EPA Registration Number 93392-2⁸

AQUAOX DISINFECTANT 275, EPA Registration Number: 93392-1⁹

Aquaiox is the leading company in the industry manufacturing the instrument to efficiently produce the HOCl from small to large quantities in a timely manner. It has partnered with an antimicrobial wound care company that successfully developed and commercialized a topical-use antimicrobial solution for human and animal use with US FDA (cleared as a Class II medical device in 2014¹⁰). Aquaiox has the experience, the track record, and the technology (know-how) to produce HOCl products which have been proven safe and effective as a disinfectant on hard and soft surfaces. Therefore, it is strongly recommended that Aquaiox products be cleared for use to kill COVID-19 under the Emergency Use Authorization (EUA) by the US FDA so as to allow these products to be marketed immediately as part of the tools used for pandemic-control of COVID-19.

⁷ Aquaiox, LLC Position Paper 2007-2019, www.aquaiox.com

⁸ EPA Registration Letter, AQUAOX DISINFECTANT 525, EPA Registration Number 93392-2, May 11, 2021

⁹ EPA Registration Letter, AQUAOX DISINFECTANT 275, EPA Registration Number 93392-1, August 23, 2018

¹⁰ US FDA 510(k) Clearance, K133542