



HILTON DIMINICK ORTHODONTICS

Procedures HD is performing to keep you, your family, and our staff safe during this unprecedented COVID-19 Epidemic:

- **We limit the number of persons in our reception areas and practice social distance seating**
- **We wipe down all contact surfaces multiple times per day**
- **All dental instruments are heat sterilized, and disposable used whenever possible**
- **Masks are properly worn by our staff and doctors and Protective Face shields as necessary**
- **We request all persons entering the office wear a mask, as well as traversing the office**
- **We have employed the use of the newest and best office fogger for whole office sanitation: Zero Hazard Dental**

Who and What Is Zero Hazard Dental?

The Zero Hazard name has two distinct but related meanings. Our product is extremely effective at eliminating bacteria, viruses, and germs. In addition to creating a safe environment around you, you will also be using a product that is completely safe and easy to use. No hazmat suits needed here, not even gloves, hence the name Zero Hazard.

Zero Hazard Dental was formed out of a desire to maintain safe and clean dental offices. Progressive Dental Concepts (PDC) is a Dental Support Organization that supports the business and clinical procedures and interests of dental practices. After using the Zero Hazard solution safely and effectively in their operatories and facilities, the principals of Progressive Dental Concepts decided to invest in the solution and share the success with other dental facilities.

In fact, the feedback has been so overwhelmingly positive, PDC decided to make Zero Hazard Dental available for distribution in any industry! We provide a low-labor, cost effective method to produce safe living and working spaces for all the people you care about.

Zero Hazard Dental provides numerous products of various sizes and concentrations, as well as several delivery methods. We tailor the approach to your needs. Small spaces, big spaces, spaces that need cleaned frequently and fast- we have a solution for all.

Visit us at our webpage at www.zerohazarddental.com or call us at 1-717-761-4653.
Zero Hazard will leave you with zero hazards to your health and safety!



What is the Zero Hazard Solution?

Technical Bulletin #1

Zero Hazard Manufacturing produces, in their EPA and FDA approved manufacturing facility, a product whose primary active ingredient is Hypochlorous Acid.

Interestingly, Hypochlorous Acid is nature’s oldest disinfectant. It is the way the human body defends itself against infection in the bloodstream and in tissues. Neutrophils (white blood cells) produce Hypochlorous Acid that then attacks invading pathogens.

Hypochlorous Acid is an organically produced chemical with disinfectant properties. As early as World War One artificially made Hypochlorous Acid was used as a disinfectant and antiseptic. The methods to produce Hypochlorous Acid, however, were not robust causing varying concentrations and inherent chemical instability. In spite of its excellent sanitizing and disinfecting properties, its use was limited until more exact and more efficient methods of manufacturing were developed. It wasn’t until the 1980’s when new methods of manufacturing involving electrolysis resulted in more widespread use. It is now used in many different industries from hospitals and operating rooms to daycare centers and farms.

Hypochlorous Acid is extremely safe. In fact, it is eye-friendly, skin friendly, inhalable and ingestible. Unlike bleach it does not damage clothing or furniture. Handling Hypochlorous Acid requires no facemask, eye protection, gloves, or PPE’s. Hypochlorous Acid is not caustic or corrosive, it evaporates rapidly without leaving residue when using fogging applications. Hypochlorous Acid can be used on cell phones, computer screens, tablets, and keyboards. It is already used in clinical applications for a variety of situations as shown in the chart below.

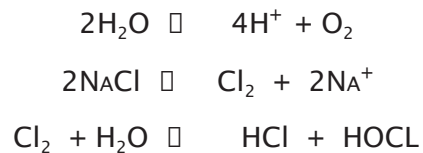
Clinical Uses of Hypochlorous Acid

@ 20PPM	Eye rinse
@ 60PPM	No rinse sanitizers for food
@ 100PPM	Wound cleaners
@ 100PPM	General purpose sanitizer
@ >200PPM	Disinfectant
@ >200PPM	Cold ULV fogging
@ >200PPM	Electrostatic fogging



Hypochlorous acid, also known as electrolyzed water (EW) or electro-chemically activated water (ECW) is produced from common food salt and RO water (reverse osmosis). Once the starting materials are inside the reactor, a tightly controlled electrical current is induced into the chamber causing several simultaneous chemical reactions to take place. The primary product produced is the active ingredient Hypochlorous (HOCL) Acid. The concentration of the resulting solutions is determined by the amount of starting material and the amount and strength of the current induced.

The primary reaction that takes place to produce the hypochlorous acid are show below



Hypochlorous Acid is most effective at slightly acidic PH range of 5.5 to 6.5.

At an elevated PH of about 8, Hypochlorous Acid dissociates into hydrogen and hypochlorite ions.



As the hypochlorite ion wants to pair up with the free Na⁺ to form bleach, which is not nearly as effective on pathogens or safe to humans. Thus, PH control is very important to maintain during the reaction.



How to dispense Hypochlorous Acid?

Technical Bulletin #3



How you want to dispense Hypochlorous Acid greatly depends on your application.

When using to sanitize or deodorize small areas or objects, spraying directly on the material being cleaned is the simplest and easiest way. A simple spray bottle is perfect. Several good examples would be (1) spraying directly onto your hands, as hypochlorous acid is a great hand sanitizer, (2) spraying directly onto commonly touched objects such as doorknobs, cell phones, etc. (3) spraying shoes for odor removal (4) spraying your work or around your desk. It is always best to let air dry, but it can also be wiped off with a microfiber cloth after 1 - 2 minutes.

Zero hazard offers sizes starting as small as 4 oz. however, the most convenient size bottle for small areas is the 16oz bottle.

When speed and labor cost is an issue, for smaller areas a handheld ULV sprayer works very well. You simply fill the reservoir and turn the unit on and direct it toward the areas you are looking to clean. A very fine mist will coat all areas and will air dry in minutes making the area ready for use again.

Zero hazard offers several models of ULV sprayers - both battery-charged electrostatic and corded ULV. Battery-charged units are substantially more expensive (2-3 times). Note, for high risk areas we recommend an electrostatic sprayer to ensure complete and uniform coverage.

For large spaces or areas that need to be repetitively cleaned, to reduce both chemical cost and labor cost, we recommend our patent pending integrated systems that are customized designed to fit your specific application. These systems use electrostatic spray nozzles that ensure better coverage. They only require the system to either be manually switched on and off or can be programed for preset times and durations. Contact Zero hazard for a quote today.

Technical Bulletin #4

Besides the obvious safety benefits of Hypochlorous Acid, there are many other considerations and benefits that are best shown in the following table comparing this solution vs. a common bleach solution. Use the table below entitled “Comparison between Electro-Chemically Activated (ECA) and Sodium Hypochlorite (bleach)” to evaluate this comparison:

Comparison between ECA and Sodium Hypochlorite

	ECA	Sodium Hypochlorite (Bleach)
Disinfection	300x more effective than Hypochlorite. More rapid disinfection. Broader inactivation range. Oxidants generated on-site - fresh solutions with constant potency.	At high pH, OCl ⁻ dominates, which causes a decrease in disinfection efficiency. Requires higher concentrations. Requires longer contact times. Not effective against <i>Cryptosporidium</i> and <i>Giardia</i> .
Residual and stability	More stable – Solution shelf life up to 9 months under optimal conditions. Residual effect without affecting taste and odour. Less disinfectant required to maintain residual. No need for Ammonia. Low levels of THM formation. Doesn't produce chlorites/chlorates.	Formation of THM's and other DBP's as well as chlorites and chlorates. The stability of sodium hypochlorite solution depends on the hypochlorite concentration, the storage temperature, the length of storage (time), the impurities of the solution and exposure to light. Sodium hypochlorite solutions degrade over time. Sodium hypochlorite solution is typically not diluted prior to mixing to reduce scaling problems.
Safety	Uses only salt, water and electricity. Reduction in liability exposure. Avoids special equipment and training for worker safety. Reduced equipment corrosion problems. Avoids fire hazards from chlorine concentrates.	Sodium hypochlorite solution is a corrosive liquid with an approximate pH of 12. Therefore, typical precautions for handling corrosive materials such as avoiding contact with metals, including stainless steel, should be used. Chlorates may be formed, avoid by limiting storage time, high temp and reduce light exposure. Spill containment must be provided for. Safety equipment and training is essential.
Generation	Oxidants generated on-site - fresh solutions with constant potency. No hazardous materials to transport or store.	Sodium hypochlorite is produced when chlorine gas is dissolved in a sodium hydroxide solution. Alkaline solution produced with lower biocidal effect. Dilute sodium hypochlorite solutions can be generated electrochemically on-site from salt brine solution.
Cost Considerations	Higher capital cost is offset by lower lifecycle cost when compare to other chemicals.	Least expensive when bought in containers, But can be expensive when on-site generators are used. Typically, sodium and calcium hypochlorite are more expensive than chlorine gas.
Simplicity & Reliability	Fully automated unit requires minimal training and maintenance - periodically add salt and check system. Safety gear is unnecessary. Reactor is easily replaced and only requires replacement once/year.	Easiest and least expensive disinfection method. No maintenance required. Easier to use, are safer, and need less equipment compared to chlorine gas.
Taste & Odour	Excellent taste - does not react with ammonia and phenols to produce compounds that normally impart chemical taste and odours. Removes H ₂ S to improve water quality.	Finished water could have taste and odour problems, depending on the water quality and dosage.

Multiple Uses	Can be used for a wider range of disinfection purposes than Cl ₂ . Can be used for heavy metal removal - iron and manganese. Used for H ₂ s removal. Improve filter runs. Improves turbidity - enhancing prefilter flocculation.	Oxidises iron, Manganese and sulphides.
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Due to the safety, efficacy, and other various characteristics of Hypochlorous Acid listed above, Zero Hazard Manufacturing recommends and produces a safe and effective Hypochlorous Acid solution.