lotus® PRO

Liquefied Ozone For 100% Chemical-Free Commercial Cleaning

Information Memorandum December 2010

lotus® PRO AT A GLANCE

The lotus PRO Cleaning System is a chemical-free commercial cleaning system. The lotus® PRO produces liquefied ozone using tap water and 120v electrical power, on-the-spot and on demand. The lotus® PRO Trigger Spray Unit requires 2 minutes to produce 600 ml of liquefied ozone. The lotus PRO High Capacity Unit produces 4 liters (2.5 gallons) of liquefied ozone in one minute.

Also known as aqueous ozone, ozonated water or super-oxygenated water, this liquefied ozone works two ways before reverting back to oxygen and water:[1]

a) as a surface sanitizer and cleaner for the first 15 to 45 minutes.
b) as a chemical-free cleaner for the following 45 to 120 minutes.

In general terms, a cleaner is considered effective if it removes 85%[2] or more of soil on hard surfaces like ceramic, steel, glass, chrome and plastics. The standard for approval as an EPA compliant sanitizer is more rigorous.

According to regulatory protocol, a sanitizer must kill 99.9%[3] of test bacteria on a hard surface within 5 minutes.

On a food contact surface like a cutting board, it has to kill 99.999%[4] of the test bacteria within 30 seconds. Sanitizers are considered to be wide spectrum eliminators of bacteria, viruses, mold, mildew and fungi.

HOW lotus® PRO WORKS

Inside each lotus PRO device electrical energy is used to create ozone gas from the air we breathe. This ozone is water soluble and is infused into tap water, creating liquefied ozone. A powerful natural cleaner and sanitizer, liquefied ozone quickly eliminates soil and pathogens safely, without chemicals, vapors or residues. Liquefied ozone is much safer than gaseous ozone. The latter is considered to be harmful in sufficient amounts, whereas liquefied ozone is the safest cleaner ever tested by TURI *(See Appedix B)* scoring a perfect 50 out of 50 in comprehensive safety screening.

CURRENT OZONE USERS & COMMON APPLICATIONS

The purity and sanitizing power of ozone along with approval by regulatory bodies like the EPA, FDA and USDA have made for widespread large-scale use; in food processing, water and beverage bottling, drinking water purification, produce and pharmaceutical sanitizing. Leading consumer products companies including Del Monte, Safeway, Crystal Springs Coca-Cola, Kimberly-Clark, P & G and Sunny Delight and many others[5] have been using ozone to clean, sanitize and disinfect without residues - for decades.

HOW LIQUEFIED OZONE CLEANS & SANITIZES NATURALLY

Inside lotus® PRO unit, oxygen from the air is safely turned into ozone then infused into tap water, creating Liquefied Ozone.

Liquefied Ozone's extra oxygen atom is fatally attracted to pathogens & contaminants.

Harmless to people but deadly to bacteria, viruses and contaminants, the extra oxygen atom actively detaches and attacks them.

The ozone turns back into oxygen. Only pure oxygen and water remain after heavy duty cleaning and sanitizing has taken place.

Over 2,000 North American municipalities use ozone for their drinking water purification needs. The US Army uses it for portable water sanitization and the Olympics use ozone in their competition pools.

Commercial cleaning and janitorial applications are newer territory. Locations like schools, hotels, quick service restaurants, hospitals; public washrooms, waiting areas and kitchens are still being cleaned using chemicals. Unfortunately, many of the chemical cleaners used may be hazardous and potentially dangerous to users and occupants. Green cleaners are more expensive, don't work well as sanitizers and have a large carbon footprint because like chemical cleaners, they consume resources for packaging, transportation, storage, handling and recycling or disposal.

REGULATORY APPROVAL FRAMEWORK lotus PRO and the liquefied ozone it makes are subject to close regulation by a number of government agencies including the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the US Department of Agriculture (USDA) and Department of Labor Occupational Health and Safety Administration (OHSA) as follows:

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EPA: The lotus PRO device itself, the liquefied ozone it manufactures and the performance claims are subject to separate and distinct treatment by the EPA:

***lotus PRO Unit**:* The device itself does not require registration but it must be manufactured in an EPA registered establishment. Production in an unregistered establishment is a violation of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA – 1947). Lotus PRO's EPA registered establishment number is 82126- CHN-001. The lotus PRO device also adheres to strict EPA regulations with regard to labeling, production, record keeping, packaging and import/export requirements.

lotus PRO Liquefied Ozone: With the exception of ozone, FIFRA mandates that any substance intended to prevent, destroy, repel, or mitigate any pest, must be registered before sale or distribution. To obtain an EPA product registration number, a manufacturer must submit specific data regarding it's safety and the effectiveness. Because it is chemical-free, liquefied ozone is unique in the opinion of the EPA. Unlike chemical, biochemical and microbial pesticide substances, the EPA does not require a product registration number for liquefied ozone.

***Liquefied Ozone Performance Classification**:* The liquefied ozone made on demand by lotus PRO is classified by the EPA with regards to how it be may effectively used, e.g. as a general cleaner versus a hard surface sanitizer. lotus PRO's liquefied ozone is classified a food surface sanitizer because an EPA approved lab followed strict protocol and showed a 99.999% reduction of test bacteria in 60 seconds or less.

FDA: In 1997 the FDA approved the use of ozone as an indirect food additive through use as antimicrobial agent with indirect contact with foods.[7] In 2002 the FDA approved ozone for use on food contact areas and directly on food with its Generally Regarded As Safe (GRAS) designation. GRAS substances are those that are intentionally added to food which are reviewed and recognized by qualified experts, as having been adequately shown to be safe under the conditions of its intended use.

USDA: The Organic Foods Production Act (OFPA) authorizes the establishment of the National List of allowed and prohibited substances. The National List identifies liquefied ozone as a substance that is allowed for use in organic crop and livestock production.[8]

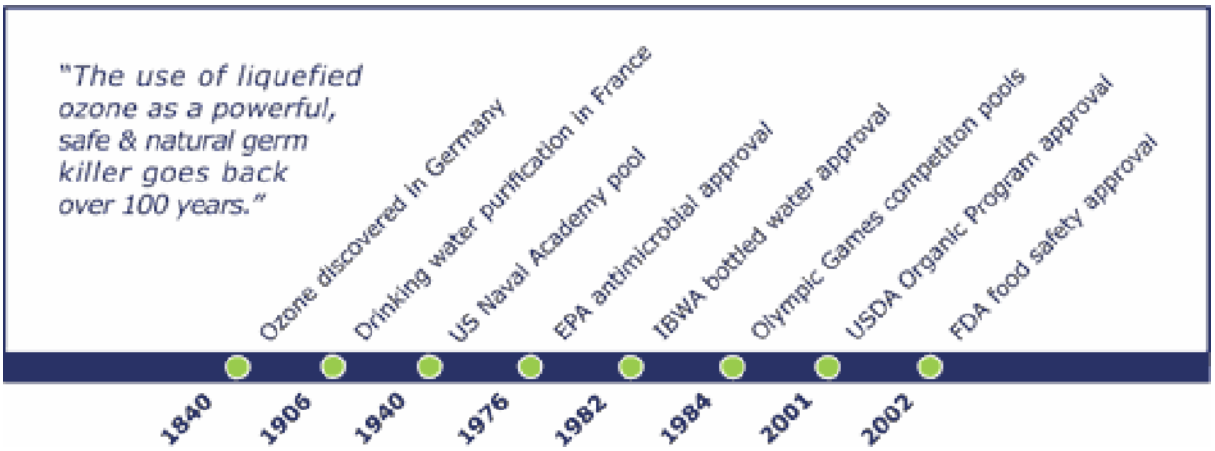
OHSA: Regulations address the toxicity of gaseous ozone and acknowledge the safety of liquefied ozone. Strict limits are set for exposure to gaseous ozone while no limits are set for exposure to liquefied ozone even with high concentrations. Liquefied ozone is considered to pose no health or safety threats;[9] requires no safety training, certification or reporting; and requires no protective gear or compliance for safe use. Additionally, the liquefied ozone produced by lotus PRO carries a zero health hazard, reactivity and fire hazard NFPA ratings.

CLEANING, SANITIZING & SAFETY

As a chemical-free cleaner the lotus PRO system has been tested and recognized as effective by third parties, exceeding the Green Seal Environmental Standard (GS-37) for performance as an Industrial Cleaner. In tightly controlled testing by the Toxics Use Reduction Institute (TURI), the liquefied ozone produced by lotus PRO was more effective than a leading quat chemical cleaner, as well as a green cleaner at removing soil from bathroom surfaces such as glass and chrome. It was also proven as an effective cleaner on ceramic, steel, plastic and fiberglass surfaces.

The liquefied ozone produced by lotus PRO is a broad range anti-microbial agent that works faster and more effectively against pathogens than chlorine bleach, without fumes and toxic residues like dioxins and tri-chloramines. Because of its toxin-free sanitizing action, liquefied ozone is considered safe as a direct and indirect food additive by the US Food and Drug Administration (FDA) and United States Department of Agriculture (USDA) under its Organic Program. This naturally occurring substance is one of the strongest oxidizing agents known, second only to fluorine in its speed and effectiveness.[10]

Because it is chemical, vapor and residue-free, liquefied ozone is considered as extremely safe for people and planet. In the same study that established its effectiveness as a cleaner, liquefied ozone scored a perfect 50 out of 50 TURI safety score, with zero levels for VOC emissions, zero global warming potential, zero ozone depletion potential and zero scores in all National Fire Prevention Association (NFPA) and Hazardous Material Identification System (HMIS) categories. In over 100 years of commercial use, there has not been a single reported death resulting from ozone exposure.



lotus® PRO in Food Service Areas The lotus® PRO is particularly effective in cleaning and sanitizing food contact surfaces. Unlike chemical sanitizers (which must be used off hours and with protective gear) liquefied ozone can be used to clean and sanitize in the close presence of food without concerns of chemical contamination. Since liquefied ozone reverts to oxygen and water, food preparation surfaces do not require post-application rinsing to eliminate potentially harmful residues, nor do they require careful handling and preparation of chemical cleaning concentrates.

Lotus PRO ANTI-MICROBIAL EFFICACY

A recent article published in the Association for Professionals in Infection Control and Epidemiology found that ozone gas was able to inactivate more than 99.9% of most bacteria including Acinetobacter baumanii, Clostridium difficile ("C.difficile) and methicillin-resistant Staphylococcus aureus ("MRSA") in both laboratory and field conditions.

The study concluded that ozone gas is a valuable decontamination tool for the removal of bacteria in many institutions and communal settings including hospitals and other health care institutions. Ozone in the liquid phase is significantly faster contact sanitizer than ozone gas, requiring much lower concentrations and shorter dwell times. For example 20.00ppm of ozone in air takes 20 minutes to sanitize a common pathogen. By contrast, 0.25ppm concentration of liquefied ozone requires only 96 seconds achieving the same kill rate.