

Ozonated Liquids in Dental & Medical Practice – A Review

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Introduction.

This series of cross referenced papers examines the role of ozonated water in health care, in particular, Dental & Medical Health Care. The use of ozone in Medicine and Dentistry spans over 100 years and dates back to the 1900's.

Ozone, chemical formulae O_3 has a long history of usage in public health, and had been used for purification of water due to its efficiency and lack of side effects from the late 1890's. It has been used in the medical profession since the late 19th Century to treat infections and aid wound healing. From 1912, the London Underground tunnel system air conditioning system was ozone treated to freshen the air and reduce cross infection. In the 1920's Dr Edwin Parr, a Swiss dentist started to use O_3 as part of his disinfection system.

The use of O_3 mushroomed in the 1930's in medical care. Ozone was used extensively to treat infections, battle wounds and in routine treatment of cancer up to the 1950's. However, despite a plethora of text books, usage and clinics throughout Europe and the United States from the 1930's through to the 1950's, the use of ozone in medicine and dental care has now virtually disappeared. The cheap production of chlorine (developed as part of a chemical warfare research project in the First World War) was found to be more economical for water sterilisation, and in medicine, the development of antimicrobials and antivirals pushed the research into ozone to the doldrums.

From the 1950's the pharmaceutical industry began to flood the market with the wide variety of anti-microbials and complex anti-viral and cancer drugs we know today. This 'advance' saw the use of ozone decline to such an extent that in some countries, the use of ozone was considered to be unethical and some medical practitioners were threatened with the loss of their licenses unless they stopped its use, despite research from the Scripps Institute showing the human immune system generated ozone.

Despite the publication of research into the treatment of water pollution with ozone in the 1960's in the United Kingdom, the successful treatment of HIV in the 1970's & 1980's in the United States of America, and reports of the treatment of general medical conditions with ozone from Cuba and Russia, main-stream medicine has regarded ozone treatment as 'alternative' and 'dangerous'.

The renaissance of the use of ozone has been a slow, painful and gradual process. Researchers and teachers in the 'modern' western cultures still face potential censorship and loss of academic status & funding. Whereas their counter parts in Cuba, Russia and Germany have unrestricted access to a product that is naturally produced, both in the exterior environment by lightening strikes for example.

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Ozone Units Available to make Ozonated Water.

The WSU3, Water Sanitisation Unit by Lime Technologies Holdings Limited, is designed to make the production of ozonated water easy and predictable. The unit is very simple to setup: it is provided with length of silicone tubing, and custom-made bubbler stone, and full instructions. The LT-WSU3 has two settings – 10-minutes or infinity. These two settings provide either the ozonation of a loft tank, or for the 10-minute setting, a 5-gallon / 10 Litre tank of water. The LT-WSU3 is designed to either be used in the dental or medical surgery, or be sold on to a patient to make ozonated water at-home.

There are many papers that suggest the frequent usage of ozonated water will improve oral hygiene, health and has many other uses, from sterilization of tooth brushes, dentures to surface sterilization such as wounds and suture lines, and disinfection of work surfaces.



Fig 1. The LT-WSU3 Unit from Lime Technologies Holdings Ltd

The LT-WSU3 is supplied with a 110-240 V AC power adaptor that supplies 12V DC to the unit. Fuse protection and an internal one-way valve add protection to the unit against water ingress by siphoning. The LT-WSU3 unit is distributed through their network of agents and distributors. It costs 280 Euros.

Ambient air is compressed and taken through a drier unit that typically gives a year's working time in humid conditions. From the drier unit, air is taken through a 1gm ozone generator built to Lime Technologies specifications. Operation is very simple, and power can be from the included mains power supply, or as optional extras, a car 12V DC connection or a solar array for use in remote areas.

The ability to use this unit away from mains supply makes the LT-WSU3 unit the unit of choice to prevent water born infections in remote areas and when camping. The auto-sensing power supply allows the owner to make pure sterile water when on holiday in any location where water quality is questionable.

An alternative system is the TherOzone Unit, manufactured in the USA. This is based on the Soda Stream principle, where ozone is injected under pressure into a 1 litre bottle. At over 3900.00 US \$ it represents a sizable investment. This is similar to a design by O3 based in South Africa. Ozone injection systems in a closed system such as these have a short ozone-water contact time.

References:

Lime Technologies Holding Limited, [http:// www.limetechnologies.net](http://www.limetechnologies.net)
TherOzone USA Inc