

The Quick Facts Guide => Why Would I Use Ozone in My Office?

This guide was written to provide you, the busy professional, with the important information you need to know now about using Ozone / Oxygen Therapy in your office. Don't make a snap judgment or decision. You owe it to yourself to read these few pages.

Frequently Asked Questions Dental Ozone Protocols Basic Scientific Ozone Facts

Frequently Asked Questions:

Why would I use Ozone in my office?

Ozone: A single, natural, non-toxic agent with a documented (proven) ability to eliminate pathogens in the oral cavity without toxic side effects, without leaving any toxic residue, and with no possibility of resistance. The implications for dentistry are mindboggling.

How does ozone produce therapeutic effects in the Dental Office?

Ozone is a powerful oxidant. Bacteria, Viruses, Fungi and parasites have little or no antioxidant enzymes in their cell membranes. Without this protection ozone oxidizes (burns a hole through) the cell membrane causing it to rupture, resulting in cell death. Healthy cells are not harmed by therapeutic levels of ozone as they have antioxidant enzymes in their cell membranes and can protect themselves. Water treatment research in Europe has demonstrated that **just one molecule of ozone** has the oxidizing power of **more than 3000 molecules of chlorine** (but without the toxicity to healthy cells). This same research also showed that the ozone killed pathogenic organisms 3500 times faster than chlorine with no toxic side effects and no toxic byproducts.

In addition to the destruction of pathogens, Medical ozone studies have demonstrated additional benefits such as:

1. Improved wound healing
2. Improving the immune system response
3. Increased oxygen delivery to hypoxic tissues, etc.

Velio Bocci, MD, in his book, "**Ozone, A New Medical Drug**" states, *"..it is clear that, among complementary approaches, ozone therapy has emerged as the one that is well explainable with classical biochemical, physiological, and pharmacological knowledge."*

Are Dentists using ozone in their practices now?

Yes, as reported in the April edition of "**Dental Product Shopper**", ozone has revolutionized the dental practices of hundreds of Dentists. When ozone is used in Dental procedures it treats the cause of the problem NOT JUST the symptom. This produces a proactive approach to treatment rather than solely engaging in the routine procedure of damage control.

How are other Dentists using ozone for dental treatment? (See also Page 3...)

1. Patient Treatment: In patient care, ozone is utilized in two forms:

- (1) Highly Ozonated Water
- (2) Pure (contaminant free) Ozone / Oxygen Gas

Using these two agents in combination allows the Dentist to treat all oral infections using only oxygen and water! Regardless of the location or the type of infection ozone is able to treat almost any situation.

The ozonated water is the perfect irrigation solution for periodontics and endodontics. For operative dentistry, periodontics and endodontics, ozone gas is used to reach and penetrate areas such as: carious dentin, dentinal tubules, accessory canals and periodontal pockets where no other antibiotic or disinfectant can reach. This is possible because the infection/inflammation is positively charged (acidic) and ozone is negatively charged (basic). Therefore, the chemistry of the infection and/or inflammation attracts the ozone to the area.

2. Prevention and Protection: Routine use of ozonated water as a pretreatment patient rinse to disinfect their oral cavity. Fill the unit water supply bottles and the Ultrasonic/Piezo reservoirs with ozonated water. This protects you and your staff from aerosol contaminants produced by high speed instruments and water spray from the three way syringe. The unit water lines will also be free of all biofilms when the ozonated water is used in the reservoirs. Ozone performs this disinfection and sterilization and leaves only oxygen and water as byproducts.

Is ozone toxic?

All substances known to mankind are toxic at certain dosages. Therefore the key with any agent used in your clinical practice is to use the agent at the proper dosage. Ozone is a strong Oxidant, and due to this fact good ozone hygiene is required. Correctly scavenging the excess ozone gas and preventing it from escaping into the office environment is necessary, and fortunately easily accomplished. Since the membranes of the eyes and lungs are very weakly protected by antioxidant enzymes, it is particularly important to protect these tissues from exposure to excessive levels of ozone (again, easily accomplished). These are the only tissues that require protection from the dosage levels that are used in Dental ozone protocols.

Are there any published studies on Dental ozone?

Yes, there are hundreds of published research studies that use ozone in dental procedures. In the book, **“OZONE, The Revolution in Dentistry”**, edited by Dr. Edward Lynch and published by Quintessence Publishing Company Limited, there are **132 studies** applying ozone treatment to different dental challenges (page 78, Table 1). There are hundreds of published articles on the medical uses of ozone. A research article from Scripps Institute, in LaJolla, CA, published in November, 2002, in the journal, **“Science”**, reported that ozone was produced in the plasma cells to kill invading pathogens. This ozone production is a naturally occurring process in our immune systems.

When was ozone first used in dental procedures?

In the 1930's, ozone was used in Germany for dental procedures by Dr. E.A. Fisch.

How do I learn to use ozone in my dental practice?

The American College of Integrative Medicine and Dentistry (ACIMD) offers “Ozone in Dentistry” courses that are AGD approved for Dental Continuing Education. The AGD subject code for Ozone Therapy is #162. The ACIMD website is www.ozonefordentistry.com Phone 201- 820-3829 or 201-587-0222

Specific Dental Applications – Brief Descriptions

- I. Hygiene Appointments----Protect Patients and Staff
 - a. Patient uses ozonated water as a pretreatment rinse
 - b. Ozonated water is used in the unit water supply bottles
 - c. Ozonated water is used in the Ultrasonic unit water reservoirs
 - d. Ozone gas is used before placing sealants

- II. Operative Dentistry Appointments----Protect Patient, Doctor and Staff
 - a. Patient uses ozonated water as a pretreatment rinse
 - b. Ozonated water is used in the unit water supply bottles
 - c. Ozone GAS is applied to cavity preparations and crown preparations to sterilize the prepared tooth by oxidizing the remaining pathogens and organic materials in the enamel, remaining caries, and dentinal tubules. This produces a pathogen free oxidized surface that enhances bonding strength and decreases or eliminates post-operative sensitivity.

- III. Periodontal Appointments----Protect Patient, Doctor and Staff
 - a. Patient uses ozonated water as a pretreatment rinse
 - b. Ozonated water is used in the unit water supply bottles
 - c. Ozonated water is used in the Ultrasonic water reservoir
 - d. Ozonated water is used to irrigate periodontal pockets
 - e. Ozone GAS is used to insufflate (blow gas into) the periodontal pockets
 - f. Ozone Custom Trays are used for total saturation (microbaric therapy) of all periodontal tissues AND carious lesions, precarious areas, occlusal grooves, interproximal areas and margins of existing restorations. This can prevent caries and aid in recalcification of areas that have minimally invasive caries

- IV. Endodontic Appointments----Protect Patient, Doctor and Staff
 - a. Patient uses ozonated water as a pretreatment rinse
 - b. Ozonated water is used in the unit water supply bottles
 - c. Irrigate canals with ozonated water to debride the canals and remove biofilm
 - d. Insufflate canals with ozone GAS to eliminate pathogens and oxidize organic materials in the dentinal tubules, accessory canals and lateral canals

Basic Scientific Facts about Ozone and Dental Ozone Therapy

- Ozone (O₃) is an allotrope of Oxygen (O₂). An allotrope is a variant of a substance consisting of only one type of atom. It has a NEW molecular configuration and NEW PHYSICAL PROPERTIES. Example: carbon can exist in multiple forms such as: a soft graphite and/or a hard diamond.
- Ozone is created by an energetic reaction that results in an oxygen molecule (O₂) being split into singlet oxygen (O¹). A singlet oxygen then combines with a diatomic oxygen (O₂) forming ozone (O₃). This energetic process is a result of energy produced by: sunlight, lightning, ultraviolet light and corona discharge tubes.
- Ozone is an oxidant and is also referred to as an oxidizer. An oxidizer is a substance that accepts an electron from another substance and is then reduced. It acts as an electron acceptor. It also adds an oxygen atom to the compound being oxidized. In vivo it produces hydroperoxides, lipoperoxides, etc.
- Healthy cells have antioxidant enzymes in their cell membranes, such as: superoxide dismutase, catalase, glutathione peroxidase, etc. There are also antioxidants such as: vitamin C, vitamin E, etc. present in the extracellular matrix fluids, plasma, etc. These antioxidants protect the healthy cells from being oxidized (burned up) by ozone.
- Pathogens such as: Bacteria, Viruses, Fungi, and Parasites have little or no antioxidant enzymes in their cell membranes. This makes them vulnerable to oxidants. An oxidant

(ozone, chlorine, etc.) will destroy the cell membrane of the pathogen resulting in a disinfecting or sterilizing effect. Ozone leaves NO TOXIC BYPRODUCTS like chlorine compounds (trihalomethanes, etc.) leave in vivo or ex vivo. The final breakdown products of O₃ are water and oxygen.

- Biofilms are a complex aggregation of structurally and genetically diverse microorganisms growing on a solid surface. Biofilms are found in dental plaque, carious lesions, periodontitis, dental waterlines, etc. The cover story in **“THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION,” Vol 140, No 8 978-986 is “Periodontitis: An Archetypical Biofilm Disease”** It states that “Periodontitis is a classic example of biofilm-mediated diseases.” The article concluded that, “Periodontitis, like other biofilm infections, is refractory to antibiotic agents and host defenses because the causative microbes live in complex communities that persist despite challenges that range from targeted antibiotic agents to phagocytosis.” The clinical implications concluded that “The regular delivery of nontargeted antibiofilm agents may be an effective strategy for treating biofilms, especially **if these agents include oxidative agents that dissolve the biofilm matrix.**” ***Opinion: This means that ozone could be used in all dental procedures, as it has been proven to eliminate biofilms.**