The Ozone Paradox:

FROM AIR POLLUTANT TO MODERN DAY MEDICAL MIRACLE.

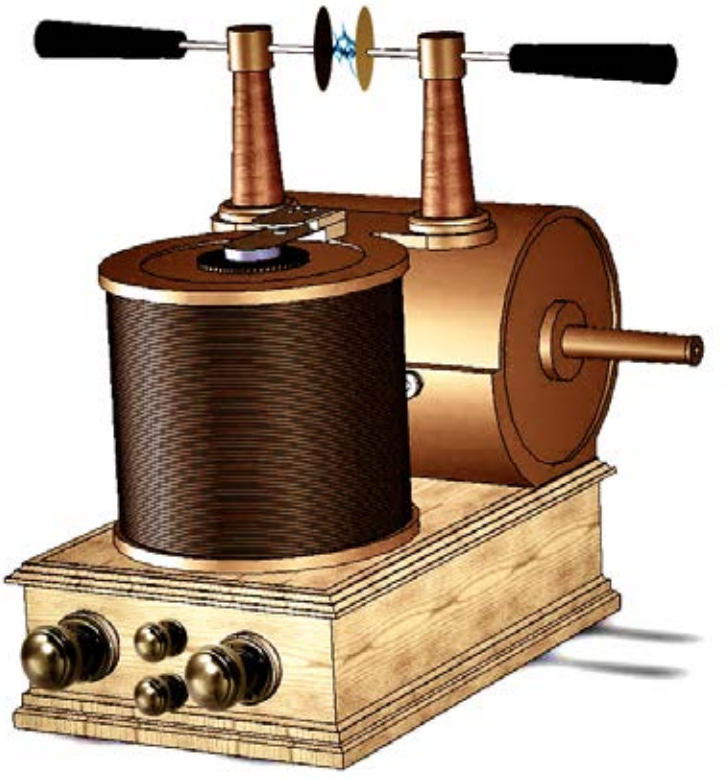
Magda Havas, B.Sc., Ph.D.,

When the editor of Tesla Magazine asked me to write a feature article about the history of ozone with an emphasis on Tesla's medical ozone machines, I assumed that it would be pretty straightforward. As a university professor and environmental scientist, I'm familiar with the earth's protective ozone layer, ozone as an air pollutant and the use of ozone to sterilize drinking water. I assumed gathering material about Tesla's patented ozone generators would provide me with additional historical material for my university classes and it seemed like a worthwhile venture.

Little did I know that I would open up Pandora's box and uncover a hidden world where one of Tesla's greatest medical inventions – **Tesla Patent 588177 Apparatus For Producing Ozone** – would dramatically alter my views on ozone and about those who regulate its use.

My greatest concern was figuring out a way to present this information to those who read *Tesla Magazine* and to the doctors and environmental scientists who should be reading it. How do I share this information that ozone has therapeutic effects with a community that is convinced *(just as I was)* that ozone is a toxic gas? Is this one of those paradigm shifts that Thomas Kuhn wrote about in his book, *The Structure of Scientific Revolutions?*

So, for this article I am going to present the information in first person outlining how I learned about the many faces of ozone and my personal discovery of Tesla's ozone generator.



The High Frequency Apparatus - Tesla's first ozone machine.

OZONE AS AN AIR POLLUTANT

When I was a student at the University of Toronto in the 1970s I took an *Applied Ecology* course and learned about the effects of chemical pollutants in the environment. I learned about photochemical smog, a form of air pollution that was common in Los Angeles and Mexico City and is now common in cities around the world.

Photochemical smog is a type of air pollution where the constituents are chemically transformed by light, which–in the case of ozone–is ultraviolet light that comes from the sun. Cars, with their internal combustion engines and gasoline exhaust, are one of the primary producers of photochemical smog. In the presence of sunlight, ozone and various forms of nitrogen oxides are produced along with poly-aromatic hydrocarbons. This mixture is toxic to plants and harmful to the respiratory system of animals, including humans.

Plants take up the ozone through their stomata (*small pores on the underside of leaves)* during the day when they are photosynthesizing *(converting sun light into chemical energy)*. The ozone destroys the chlorophyll that is essential for photosynthesis resulting in chlorosis *(yellowing of leaves)* and necrosis (*browning of leaves and death of cells)* at higher levels or prolonged periods of exposure. Consumers find these blemishes undesirable and, if the ozone exposure persists, crop yield can be reduced resulting in financial losses for the farmer.

High concentrations of ozone will also irritate the sensitive cells lining the lungs and is particularly harmful to those who already have respiratory problems like bronchitis, emphysema, asthma or lung cancer.

Autopsies of the lungs of teenagers who were non-smokers and had died in traffic accidents in Los Angeles, one of the more air polluted cities in the world, showed that their lungs were severely damaged and resembled lungs of elderly smokers.

So, I was taught that ozone is an air pollutant that is harmful to plants, animals and humans with lung problems. This is textbook science. This is what I eventually taught in my university classes.

Picture: Photochemical smog in Los Angeles

STRATOSPHERIC OZONE AND UV PROTECTION

When I became a graduate student, I learned that the ozone layer surrounding the earth was thinning. "Save the Ozone Layer" activists were gaining the attention of the media. Chlorofluorocarbons *(CFC)*, which were used as propellants in spray cans and as refrigerants in freezers, air conditioners and refrigerators, are chemically inert, are lighter than air, and float up to the stratosphere where they destroy the naturally occurring ozone layer.

This ozone layer protects life on earth by absorbing ultraviolet *(UV)* radiation. Solar UV radiation is essential for life and creates the needed vitamin D for our body but too much, can damage DNA and cause cancer.

Ozone in the stratosphere, miles above the earth's surface, is beneficial for life on earth and needs to be protected.

OZONE AND UV DISINFECTION OF DRINKING WATER AND AIR

My PhD deals with water quality and over the years I have learned and taught about the various ways drinking water can be purified. One of the most promising methods is ozonation of the water supply. Not only does ozone kill on contact a large variety of microbes but it also destroys potentially toxic chemicals found in drinking water. Today more than 2000 municipalities around the world–among them Los Angeles, Montreal, Paris, and Moscow–use ozone to disinfect their drinking water supply.

The main problem with ozone is that it has a short life and the water can be re-contaminated between the source and the end use. End use UV lights, which generate ozone, can also be used to disinfect drinking water and are particularly effective if dissolved solids in the water are minimal. However, most municipalities prefer chlorine to disinfect water because chlorine has a lasting effect. Another problem is that ozone is highly reactive and cannot come into contact with material that is readily oxidized including metal pipes and certain types of plastics. Rust is one example of iron oxidation and oxidation of plastics will eventually denature the plastic and, in the process, contaminate the water supply.

Chlorine also has some unpleasant side effects. It produces trihalomethanes that are generated in the presence of dissolved organic matter and trihalomethanes are carcinogenic.

Just as water can be disinfected with either ozone or UV radiation, air can be purified with UV light since both the UV and the ozone generated act as disinfectants. UV lights are designed for use in homes, factories, science labs and hospitals to kill the dangerous pathogens including bacteria, molds and viruses.

So ozonating water and air kills microbes and destroys potentially toxic chemicals making water potable and air pathogen-free. This is a good use of ozone's antimicrobial and oxidizing properties. This is textbook science and this is what I teach in school.

OZONE THERAPY

So far, all the examples of ozone *(except stratospheric ozone, which we don't come in direct contact with)* demonstrate that ozone is a strong oxidizing agent that kills microbes and, at high concentrations, is harmful to plants, animals and humans. So you can imagine how surprised I was to learn, after doing this research, that ozone can and is being used therapeutically!

Ozone has been vilified as an air pollutant but we now have evidence, according to two studies in the U.S., that ozone can have protective effects and that fine particulate matter may be much more harmful than gaseous ozone. In these studies ozone was found to slightly reduce the risk of death associated with cardiopulmonary disease (9), cardiovascular and ischemic (reduced blood supply) heart disease (10).

In another study with asthmatics, ozone administered systemically into the blood or via the rectum reduced inflammatory biomarkers and better modulated the immune system (11). Authors concluded that systemic ozone might play a therapeutic role in atopic (extrinsic) asthma.

We even have evidence from the prestigious journal Science that ozone inhibits the growth of human lung, breast and uterine cancer *in vitro* (12). Authors concluded that human cancer cells had difficulty protecting themselves against ozone and that ozone, alone or in combination with radiation and chemotherapy, may have therapeutic value for some cancers.

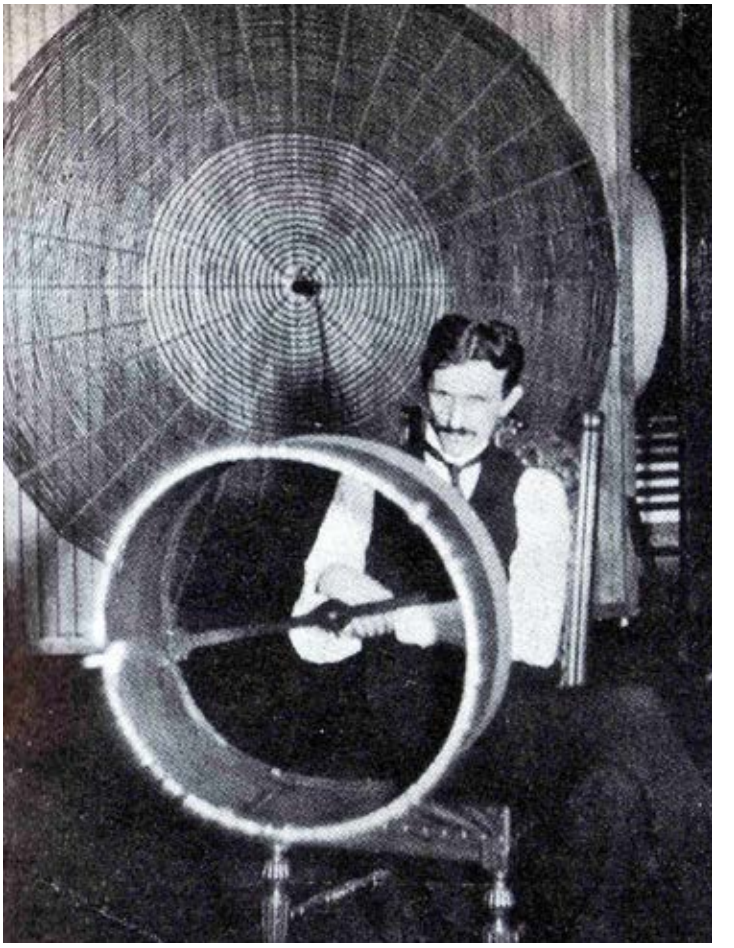
HISTORICAL USES OF OZONE THERAPY

For years I have been a fan of Nikola Tesla. Despite reading numerous books about this genius inventor, I didn't realize, until quite recently, that Tesla patented a device to produce ozone and opened the *Tesla Ozone Company*. Most documentaries about Tesla fail to mention his venture into medical inventions and leave a hole in his life story. Tesla avoided doctors and hospitals and lived to be 86 years of age when most people lived to be 60, so he was doing something right taking care of his health.

While experimenting with electricity, Tesla produced bolts of lightning using large Tesla coils. He noticed that the laboratory became filled with a strong smelling gas during these experiments. The UV light created by the bolt of electricity converted the oxygen in the air into ozone gas. Ozone consists of 3 atoms of oxygen held together like a ménage a tois. Ozone is produced naturally by lightning and the result is clean, fresh smelling, invigorating air.

Tesla also noticed that this ozone killed bacteria and mold in his working environment and he and his employees noticed an improvement in their physical and mental health. Tesla further experimented with these phenomena on himself and would literally charge his body with electricity. Reporters witnessed a blue corona discharge of sparks emanating from his body. Surprisingly, Tesla who spent a great deal of time sparking up his lab did not suffer from what we are currently teaching our students today–that breathing ANY amount of ozone is harmful. Tesla must have been breathing

"Ozone inhibits the growth of human lung, breast and uterine cancer in vitro."



Tesla Coils sparking in his lab creating ozone

tremendous amounts ozone on a regular basis during the course of his ozone therapy and work with high frequency devices.

In September 1896, the electrical genius patented his first medical ozone generator, and in 1910 with $400,000 in financing, he formed the *Tesla Ozone Company* to create a wide variety of devices including a portable ozone generator that could be used in doctors' clinics and hospitals. The ozone was created from the sparks formed by high frequency currents that were produced by his patented Tesla coil designs.

His patent explains the process.

The conductors of such secondary circuit are connected to two insulated conducting-plates and when the apparatus is in operation a discharge in the form of streams will be maintained between such plates. If air be forced between the plates during this discharge, the effectiveness of the apparatus is increased and ozone is generated in large quantities.

So, Tesla is now using a motor to blow air over these conducting plates of sparks so that entire rooms can be filled with ozone.

Tesla then went on to recommended disinfecting entire hospital wards with ozone; directly breathing pure ozone through a vaporizer and he even manufactured and sold ozonated olive oil to doctors to promote healing.

These high frequency medical devices became incredibly successful and soon the world of high frequency electrotherapy, also known as ozone therapy, was in full force.

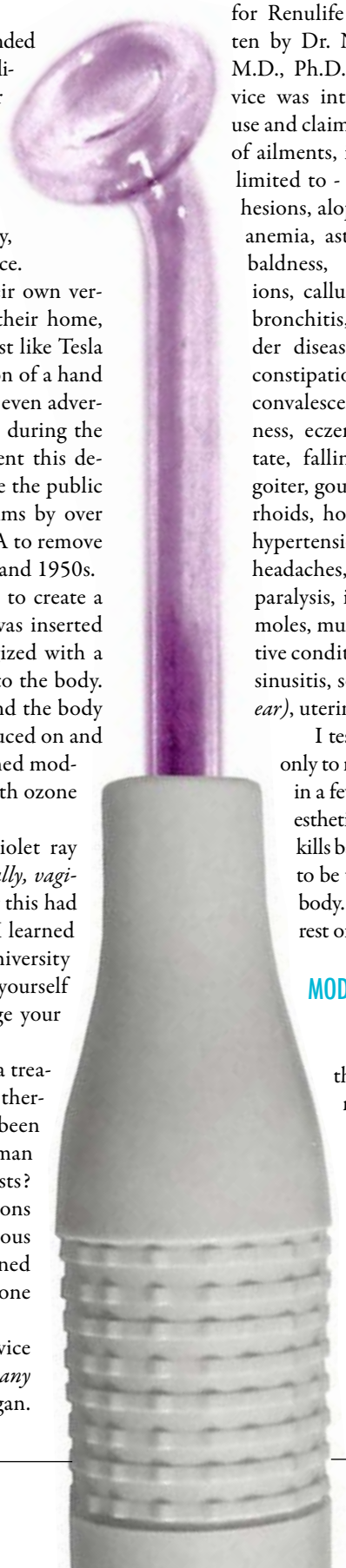
Eventually the public wanted their own version of Tesla's high frequency devices in their home, something that they could use every day just like Tesla did in his laboratory. This led to the creation of a hand held device called the *violet ray tube*. It was even advertised for home use in the Sears Catalogue during the 1920s and 30s. Tesla decided not to patent this device, which allowed manufactures to service the public demand. Unsubstantiated advertising claims by over zealous sales staff eventually forced the FDA to remove these devices from the market in the 1940s and 1950s.

Instead of using two metal plates to create a spark, a glass rod filled with noble gases was inserted into a hand held Tesla coil that was energized with a high frequency current and then touched to the body. The spark jumped between the glass rod and the body and during this process ozone gas was produced on and under the skin. Some manufacturers designed models for doctors that included a mask to breath ozone gas directly.

The more I learned about the violet ray tube and how it was used *(on the skin, rectally, vaginally)* the more alarmed I became thinking this had to be a quack device. Ozone is harmful! I learned that 40 years ago and I teach it in my university courses. You wouldn't deliberately expose yourself to a toxic gas unless you wanted to damage your lungs or other body parts.

My research eventually led me to a treasure trove of information about how ozone therapy was still in use to this day. Why has it been administered for decades by skilled German physicians and promoted by credible scientists? Why were so many peer-reviewed publications documenting the beneficial effects of various forms of ozone therapy? Soon my alarm turned to curiosity. I wanted to understand how ozone could be therapeutic.

So, I purchased a violet ray device manufactured by the *Renulife Electric Company* that was originally based in Detroit Michigan.



Hand Held Violet Ray Wand

Along with the device came the original "Physician's Directions for Renulife Treatments," written by Dr. Noble E. Eberhart, M.D., Ph.D., D.C.L. This device was intended for medical use and claimed to treat a variety of ailments, including - but not limited to - abscesses, acne, adhesions, alopecia *(falling hair)*, anemia, asthma, anal fissures, baldness, blackheads, bunions, calluses or corns, boils, bronchitis, birth-marks, bladder disease, chapped hands, constipation, conjunctivitis, convalescence, dandruff, deafness, eczema, enlarged prostate, falling hair, frost bite, goiter, gout, gray hair, hemorrhoids, hoarseness, hay fever, hypertension, hypotension, headaches, heart disease, hemorrhoids, hives, insomnia, itching, infantile paralysis, influenza, indigestion, laryngitis, lumbago, lupus, menopause, moles, mumps, paralysis, poison ivy, post fracture conditions, post operative conditions, psoriasis, rectal diseases, rheumatism, ring worm, shingles, sinusitis, sore feet, sore throat, sprains, tonsillitis, tinnitus *(ringing in the ear)*, uterine diseases, and warts.

Cheryl St. James demonstrates the Violet Ray

I tested the violet ray on my arthritic knee and the pain did go away only to return a few hours later. My friend used it on a skin tag and it fell off in a few hours. Today, modern versions of the violet ray tube are used by estheticians for facials and are particularly effective for acne since ozone kills bacteria. It's interesting to note that legally, these devices are licensed to be used only on the face and cannot be used on any other part of the body. I don't understand why it is safe for use on the face but not on the rest of the body!

MODERN MEDICAL OZONE GOES MAINSTREAM

To learn more about the current state of modern ozone therapy I attended a meeting of the American Academy of Ozonotherapy *(AAO)* in Dallas Texas in 2015. This meeting was organized by Frank Shallenger, M.D., H.M.D., who wrote *Bursting with Energy*, a book I highly recommend.

Before I present what I learned at that meeting, it's important to review why ozone is considered toxic for those who don't recall their high school chemistry and for those who didn't take chemistry.

DID YOU KNOW

Edgar Cayce, 1943.

Edgar Cayce, the worlds most famous psychic was also known as the Healing Prophet because of the medical remedies he spoke about while in a trance. Cayce recommended the ozone producing Violet Ray in over 900 readings for a wide variety of problems that required a stimulation to the nervous and circulatory systems. Cayce, in several readings encouraged people to inhale the distinct odor of ozone, stating that it would be beneficial.

One fifty-seven-year-old man with poor circulation and suffering from a cold was told: ***"We would add a very little of the electrical forces for the body, though, in the present. To do this will prevent the central nervous system batteries from running down. This should be used in the form of the violet ray—hand machine, bulb applicator...this not more than half to three-quarters of a minute just before retiring. It'll pick the body up!"*** (2528-4)

Medicines and drugs were noted in this excerpt: ***"Do not take medicinal properties while these [vibrations] are being applied, see? Either the osteopathic forces or the electrical treatments! Take no drugs."*** (4843-1) Alcohol is also to be avoided. ***"Do not use in the system during the treatments...with the violet ray—for these are detrimental, and would burn tissue, with this in system."*** (5525-1)

Several aspects of the violet ray noted in the readings include its strengthening effect on the body, enlivening the nervous system, ***"cleansing the blood stream itself"*** (2193-1), and consequently bringing the body into better balance. This balance was noted in a comment inserted in one reading: after regular use of the violet ray, Mrs. [2790]'s ***"glandular swelling was reduced and [a] goiter did not develop."*** (2790-5)

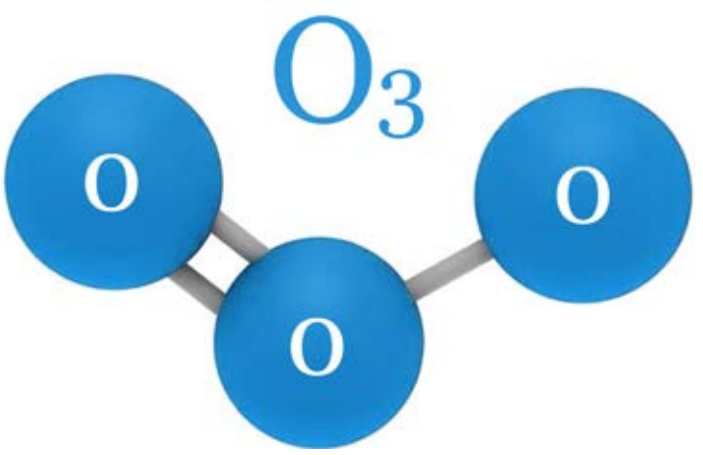
In another reading Cayce seemed to equate electricity with the life force itself: ***"Then...have a stimuli of the very low form of electrical forces, or added life as it were."*** (1678-1) These comments, almost inserted as an afterthought, have profound meaning, inviting further contemplation.

A final comment, referring to use of the violet ray, could well apply to any treatment: ***"Do not make the application in a way, however, that it is just something to be gotten through with, or rid of, but do it with the intent and the expectation that it is to be a helpful experience for the body; and it will!"*** (2415-2)

*The entity should keep close to all of those things that have to do with outdoor activities, for it is the best way to keep yourself young--to stay close to nature, close to those activities in every form of exercise that breathes in the deep **ozone** and the beauty of nature. For you may breathe it into thine own soul, as you would a sunset or a morning sun rising. And see that sometimes--it's as pretty as the sunset!*

- Edgar Cayce reading 3374-1

Doctors version of the Violet Ray included an Ozone Mask.



HOW DOES OZONE DESTROY CELLS AND PATHOGENS?

Ozone falls into a class of chemicals referred to as free radicals–atoms with unpaired electrons–that are produced naturally during biochemical reactions. A subset of free radicals is called reactive oxygen species (ROS) and ozone falls into this category. These chemicals are highly reactive and can alter the chemistry of molecules and organisms they come in contact with. Some are toxic to all living cells, while others are toxic to only the most vulnerable cells. Oxidative stress leads to degeneration at the cellular level and is what we do as we age, indeed aging is a form of cellular degeneration.

Environmental pollutants in air and water, pesticides, an inflammatory diet, inadequate nutrition, inadequate sleep, prescription medication, cigarettes, alcohol, ionizing and non-ionizing radiation also produce free radicals. Stress can increase our free radical load and can lead to serious degenerative conditions including cancer and cardiovascular disease.

Healthy cells can deal with this stress since they produce enzymes (glutathione peroxidase, super-oxide dismutase, catalase, and reductase) that protect them from oxidative stress, and there is much we can do to keep our cells healthy. But staying healthy, in an urban environment, is difficult when you consider that we drink chlorinated and fluoridated water; we eat processed genetically modified food–grown in nutrient-poor and pesticide-enriched soils; we breathe polluted air; and we are exposed to microwave radiation virtually everywhere. No wonder chronic illness is on the rise!

While healthy cells can deal with stress, the same is not true for bacteria and viruses. These organisms lack anti-oxidant enzymes in their cell membranes and are unable to protect themselves when they are exposed to ozone.

Ideally we want to minimize free radical damage within our body by promoting the production of anti-oxidants and, surprisingly, this is what ozone does if present at low enough levels to not irritate cells. So paradoxically ozone is both an oxidant *(as I learned in chemistry)* and an antioxidant (*as I learned recently).* So ozone can be both friend and foe.

HOW DOES OZONE PROMOTE HEALING?

The most succinct summary of how ozone works comes from "Ozone Therapy in Veterinary Practice" written by Margo Roman, DVM, CVA, COT, CPT From IVC Issue: V3I4. Here is what she has to say:

1. Decreasing inflammation. When you have inflammation, swelling, bruising, infection, cancer and trauma to the tissue, there are higher amounts of carbon dioxide within the tissue. This increase of carbon dioxide contributes to inflammation and pain. Increasing the amount of oxygen delivered to the tissue in the form of reactive ozone decreases inflammation, pain and swelling, and helps increase healing.

2. Activating the immune system. Ozone therapy has also been shown to activate the immune system by stimulating cytokine production. Cytokines are "messenger cells", such as interferons and interleukins, which "set off a cascade reaction of positive changes throughout the immune system." Ozone also promotes the production of glutathione peroxidase, catalase, reductase and super-oxide dismutase, the enzymes forming the cell wall coating; thereby enhancing cellular immunity.

3. Inactivating bacteria, viruses, fungi, yeast and protozoa. Healthy cells are surrounded by an enzyme coating, which ozone does not penetrate, but bacteria and viruses have no such coatings. Ozone therapy disrupts the integrity of the bacterial cell envelope through oxidation of the phospholipids and lipoproteins (peroxidation). In viruses, this peroxidation disrupts the reproductive cycle and damages the viral capsid. In fungi, ozone inhibits cell growth. Consider chronic otitis, which often has multiple organisms as primary or secondary invaders; this explains the efficacy of ozone treatment.

By the end of the AAO meeting I felt I had a much better grasp of the healing effects of ozone therapy. Here is what I learned at the meeting and after doing my research.

- Veterinarians, dentists and medical doctors around the world use ozone *(or some form of bio-oxidative therapy)* for both prevention and to treat a host of diseases. Ozone therapy is used as successful therapeutic modality in 19 countries *(Brazil, Britain, Bulgaria, Cuba, Czech Republic, Italy, France, Germany, Hungary, Israel, Japan, Mexico, Poland, Romania, Russia, Singapore, Yugoslavia)*, four Canadian provinces, and 14 U.S. states *(Alaska, California, Colorado, Georgia, Florida, Minnesota, Nevada, New Mexico, New York, North Carolina, Texas, Ohio, Oklahoma, Washington) (1).*

- Ozone is anti-bacterial, anti-fungal, anti-viral and anti-parasitic. It kills microbes on contact, in part, by destroying their cell membrane. It is not possible for these microorganisms to adapt to ozone and thus become resistant. Ozone is much more powerful and faster working than chlorine as a disinfectant and doesn't produce any harmful byproducts. In this way ozone *(and other forms of oxidation therapy*

including hydrogen peroxide) can be used externally as a disinfectant and internally as an "antibiotic" to supplement or replace pharmaceutical antibiotics. Indeed, ozone can be used against antibiotic resistant superbugs like MRSA (Methicillin-resistant *Staphylococcus aureus*).

• Our immune system produces ozone to kill bacteria. Once a foreign invader is detected and the endogenous ozone (*produced by the body)* is released, our cells are stimulated to produce anti-oxidant enzymes that then neutralize the ozone and other free radicals. The same happens with ozone therapy *(exogenous ozone)*. The body's immune system is activated. So even though ozone is a ROS it stimulates the body to destroy ROS and thus acts like an oxidizing agent. Follow-up treatment with exogenous *(external to the body)* antioxidants *(vitamin C and E, minerals like selenium and zinc, and other supplements)* is recommended to support ozone therapy.

• Some ozone is converted into oxygen but most is converted into ozonides (molecules containing various number of oxygen atoms) in the blood and other body cavities *(vagina, rectum, ears, sinuses)* and improves blood flow and oxygen uptake throughout the body. The most effective method for system-wide distribution seems to be injection into the blood, followed by rectal insufflation. Other forms include drinking ozonated water, having an ozone steam bath/sauna, vaginal, aural and nasal insufflation, and taking or applying ozone in the form of ozonated oil.

• In 1929, Dr. Otto Warburg of the Kaiser Institute in Berlin declared that cancer was caused due to a lack of oxygen in the cells. Indeed, lack of cellular oxygen can cause all sorts of degenerative illnesses. Providing oxygen to a cancerous growth that prefers an anaerobic *(without oxygen)* environment can help fight the cancer by directly damaging cancer cells and by activating the body's immune system. It can work in combination with surgery and both chemo and radiation therapy.

• There was some debate at the AAO meeting about whether ozone can be considered a medicine. According to Dr. Lamberto Re (3), ozone is not a medicine. Rather it is a conditioning agent that activates a signaling system that, in turn, helps the body to heal on its own.

• Combining ozone therapy with pulsed electromagnetic frequency therapy *(PEMF)* works synergistically by increasing circulation; reducing inflammation; increasing dissolved oxygen levels in red blood cells; increasing vasodilation *(widening of blood vessels)*; reducing red blood cell aggregation; and thus making the blood a more effective and efficient distributer of oxygen to all cells in the body.

• In dentistry, ozone is used to kill pathogens, restore proper oxygen metabolism, produce a friendly ecological environment, stimulate circulation, and stimulate the immune and antioxidant system (4). Ozone contributes to rapid healing and replacement of lost enamel and dentin. Various ozone generators are used in dental practical in North America.

• Gaseous ozone can be injected directly into joints to accelerate joint repair; it can be injected into blood as direct intravenous *(DIV)* and through a process by which blood is withdrawn, ozonated, and then returned to the body by intravenous drip. This later process is called major autohemotherapy *(MAH)*. Medical grade oxygen is essential for this type of ozone therapy to prevent harmful nitrogen oxide byproducts that are produced when air is used to generate ozone. Gaseous ozone can be taken internally as a rectal, vaginal or aural insufflation; it can be applied topical if contained within a bag; and it can also be directly inhaled if bubbled through oil to reduce irritation of the lungs

• Ozonated water can be taken internally in the form of drinking water if the water is consumed within 10 to 20 minutes as the ozone will be converted into oxygen and the rest will dissipate into the air. Rectal and vaginal applications are effective and ozonated saunas are available although no research has been done. Ozone baths may be least effective due to the rapid dissipation of ozone in warm water. Kaqun water, a water that has oxygen clusters consisting of multiple oxygen atoms shows promise for baths and is used in health spas in Hungary and Italy.

• Ozonated oil can be used topically for ulcers, warts, herpes, cuts and abrasions, surgical sites, healing wounds, skin infections, pressure ulcers, nail infections, burns, and tissue cellulitis.

• Unlike prescription drugs, ozone therapy has no side effects. According to a 1978 FDA report, 1.5 million people were hospitalized due to pharmaceutical side effects and 140,000 deaths were attributed to prescription drug usage. A 1980 Report on Ozone Therapy by the German Medical Society documented 5.6 million ozone treatments with 40 reported cases of side effects *(less than 1 in 100,000)* and 4 reported deaths *(less than 1 in a million)*.

• This year ozone therapy *(injections and drinking ozonated water)* has been successfully used to treat a few cases of Ebola virus in Sierra Leone (5). More research is needed to confirm this use of ozone.

• Ozone therapy has been used in veterinary medicine for more than 100 years. As with humans, ozone is potent and safe as an anti-cancer, anti-viral, anti-bacterial and anti-fungal agent. It is administered intravenously to large animals and rectally to small animals. It can be dissolved in an IV fluid or used topically as an ozonated ointment or in bags filled with ozone gas and applied to different body parts. Ozonated water or a weak solution of hydrogen peroxide can be injected into an udder with mastitis and applied to open sores. Ozone can also increase fertility of cattle as a postpartum intrauterine ozone flush. There is a website dedicated to vets at o3vets.com.

• In Germany, Eastern Europe, and Russia, it is common to find low dose ozone being used to purify the air in hospitals, factories, airports, slaughterhouses and other places where poor quality air is common. Sensors are placed throughout the facilities to monitor the amount of ozone that is entering the rooms making the ozonated air safe for humans to breath.

THE SUPPRESSION OF OZONE

Some of this information is NOT new. It has been available for decades so why are doctors not taught about this in medical schools?

According to papers presented at the Sixth World Ozone Conference held in Washington D.C. in 1982, ozone is effective ...

- at removing bacteria and viruses from blood;
- in decontaminating blood products infected with hepatitis, HIV, and syphilis;
- in treating peripheral vascular disease; cardiovascular and cerebrovascular disease, arteriosclerosis, and hypercholesteremia;
- at restoring circulation and relieving angina pain and improving brain function;
- at eliminating cancerous tumors, lymphomas and leukemia;
- for treating all forms of rheumatoid and arthritis collagen disease;
- in treating allergies;
- at improving neurological diseases including senility, multiple sclerosis and Parkinson's disease;
- externally for treating burns, acne, leg ulcers, open cuts and wounds, eczema, fungal and other skin disorders;
- using rectal insufflation for proctitis, colitis, prostatis and fissures;
- using vaginal insufflation for yeast infections like candidiosis and for vaginitis;
- using bladder insufflation for cystitis, bladder fistuals and cancer;
- in treating AIDS, herpes, hepatitis, mononucleosis and cirrhosis of the liver.

The icing on the cake is that ozone therapy is virtually painless, is cost-effective for both physicians and their patients, and has no harmful side effects.

WAYS OF ADMINISTRATING OZONE

The ozone can be applied as a gas, dissolved in liquid or dispersed in oil. For systemic application it can be injected into the blood *(vein or artery)* with and without additional light *(UV)* treatment; it can be applied as rectal insufflation or taken orally as ozonated water. Blood injections include both major and minor autohemotherapy *(AHT)* and direct intravenous (DIV), although this is the most contentious application.

For localized or topical treatment ozone can be applied in an ozonated sauna, as an ozone gas *(bagging part of the body, injection into joints)*; as an ozone wash; or as ozonated oil. Olive oil is often used but good results can be obtained with linseed, evening primrose, sunflower and avocado oil according to Dr. Julian Holmes (7). Coconut oil can also be used but it has fewer sites that ozone can interact with and hence forms a lower percentage of ozonides than the other oils.

As part of my research I went to a health clinic that specializes in ozone therapy and had the following treatments: I drank ozonated water, had a 15-minute ozone steam sauna combined with vaginal insufflation, followed by a 20 minute PEMF treatment, and

HOCATT Ozone Sauna with PEMF

then 5-minutes of aural insufflation, I experienced a 50% reduction in my arthritic knee pain that lasted for three days post treatment; my sense of smell improved; and my lung capacity seems to have increased as I am able to take deeper breaths.

Two men that accompanied me had the same treatment *(minus the vaginal insufflation)*. One had a Herxheimer reaction after the sauna and was nauseous and the other - who has problems with addiction to pain medication, cigarettes and alcohol - noticed that his pain disappeared, he had more energy, his brain fog lifted, his depression subsided, he temporary lost his craving for cigarettes and pain medication, and that he did not respond with a "buzz" to alcohol no matter how much he drank one day post treatment. While this is anecdotal information it may be worth testing the effectiveness of ozone therapy as a complementary therapy for different forms of addiction.

THE 64 MILLION DOLLAR QUESTION...
Why is Ozone Therapy not used more extensively in North America?

In order to understand why ozone therapy is used in Europe and virtually unheard of in North America, we need to review the twists and turns in our recent medical history.

In the early 1900s the practice of medicine was similar in Europe and North America. Doctors used holistic techniques to treat their patients that included a variety of remedies such as herbs, homeopathy, essential oils, diet, purges, colonics, saunas, physical manipulations, electromagnetic frequencies, sanatoriums with their sun and mineral baths, light and colour therapy as well as drugs and surgery. Three separate–but related–events

AGING
Prevents degenerate diseases
Prevents premature aging

ATHLETICS
Accelerates athletic healing
Boosts energy
Builds muscle
Eliminates lactic acid
Speeds athletic recovery

CARDIOVASCULAR
Acts as blood booster
Decomposes plague
Improves circulation
Improves heart function
Oxygenates hemoglobin
Prevents cardiac arrhythmias
Prevents gangrene
Prevents irregular heartbeat
Prevents peripheral vascular disease
Prevents sudden heart attack
Protects against stroke
Purifies blood
Relieves angina

DIGESTION/ELIMINATION
Improves digestion
Neutralizes stomach acid
Prevents gastro intestinal disorders
Prevents constipation

ENERGY
Boosts vitality
Cell energizer
Combats chronic fatigue syndrome
Increases cellular vitality
Overcomes weakness
Speeds healing
Speeds recovery

IMMUNE SYSTEM
Cleans mucus
Destroys harmful microorganisms
Enhances immune system
Fights bronchial problems
Fights flu
Fights herpes
Fights infection
Fights parasitic infection
Immune enhancer
Kills bacteria
Kills bad colon bacteria
Kills Candida
Kills parasites
Kills viruses
Kills worms
Prevents and treats Ebola Virus
Prevents colds
Prevents/eradicates allergies
Prevents Lyme Disease
Strengthens immune system

METABOLISM
Balances acid/alkaline
Breaks up cholesterol
Burns fat
Burns off excess sugar
Help supplements work better
Ignites carbohydrates
Improves amino acid utilization
Improves mineral absorption
Improves vitamin uptake
Speeds up faulty metabolism

NEUROLOGICAL
Calms nerves
Clears brain fog
Combats depression
Corrects dizziness
Corrects memory loss
Enhances mood
Heightens alertness
Improves brain function
Improves mental quickness
Improves mental stability
Neutralizes chronic hostility
Prevents Alzheimer's
Prevents Multiple Sclerosis
Prevents nerve related diseases
Prevents shingles

ORGANS/TISSUES
Cleanses liver
Detoxifies the lymph system
Fights emphysema
Oxygenates pancreas
Oxygenates spleen
Prevents asthma
Prevents fever blister
Purifies liver
Purifies skin

PAIN
Fights fibromyalgia
Prevents angina pain
Prevents cluster headaches
Relieves muscle aches

STRESS
Decreases stress
Releases tension

TOXINS
Clears out dirty fluids
Detoxifies every cell in the body
Disburses heavy metal toxicity
Neutralizes environmental toxins
Oxidizes morbific material
Oxidizes poisons
Prevents tumors
Stops cancer cells

VETERINARY
Treat animals

Bartiss (6) listed 100 benefits of ozone that are provided here.

redirected medical training in North America and resulted in the banning of many non-pharmaceutical therapies. These three events were the 1910 Flexner Report (2) and its impact on medical training in Canada and the United States; the discovery of miracle drugs like insulin and penicillin (1930s) which replaced alternative therapies in North America and complemented those same therapies in Europe; and the growth of the pharmaceutical industry with strong ties to the Food and Drug Administration (FDA) and to the American Medical Association (AMA).

These events significantly altered the face of medicine in North America. Some physicians became wedded to their prescription pad and were disciplined if they failed to prescribe their quota of drugs based on patient load. Today medical students receive at best one or two classes related to nutrition, environmental health, and preventative health care, and no classes related to alternative therapies such as ozone.

According to Pressman (1), "In 1933, the American Medical Association, headed up by Morris Fishbein, set out to eliminate all medical treatments that were competitive to drug therapy. The suppression of ozone therapy in the US began then, and continues to this day, except in ten US states, where doctors are protected by state laws."

The FDA began seizing generators in the 1940s. The FDA still considers ozone to be "a toxic gas with no known medical uses" and the fact that ozone has been used to effectively treat millions of patients is Europe is considered anecdotal rather than scientific. Funding for proper scientific studies is unavailable since ozone is a natural molecule and cannot be patented, so it is not a revenue generator of any importance. Indeed it competes favorably with prescription drugs and, as such, is viewed as a threat to big Pharma.

"Funding for proper scientific studies is unavailable since ozone is a natural molecule and cannot be patented, so it is not a revenue generator of any importance. Indeed it competes favorably with prescription drugs and, as such, is viewed as a threat to big Pharma."

In contrast, European doctors accepted pharmaceutical interventions as a mistress *(rather than a wife)* to be applied when warranted but not as the only remedy in their medical arsenal. As a result, European doctors are able to practice alternative and complementary forms of medicine while their North American colleagues are discouraged in the use of these therapies, which are considered, at best, non-scientific and, at worst, quackery.

Most European countries have a social healthcare system and ozone is cost effective.

THE FUTURE OF OZONE THERAPY

Treating Antibiotic Resistant Bacteria

Ozone therapy seems to be making a come back and it could not have happened at a better time. Our misuse of antibiotics in animal husbandry and over prescribing it for humans has produced a growing number of antibiotic resistance bacteria that are now threatening our health and the health of livestock. Ozone can be used to treat these bacteria and, in some cases, has been shown to be more effective than antibiotics *(mastitis in dairy cows)*. Superbugs are found in hospitals and further complicate health care of those most vulnerable. Tesla's concept to fumigate hospitals with ozone is a good idea and is common practice in Russia and several other countries. Ozonation of municipal water supplies can also be expanded and providing ozonated water to livestock, may replace the use of low-level antibiotics that got us in this mess in the first place. Treating outbreaks like avian flu with ozone should also be considered. Simple ozone units for the home are now also readily available and this may replace the need for that first cup of morning caffeine.

TREATING PAIN

One of the most startling things that ozone does is to alleviate pain. A few strokes of the violet ray and my knee pain was gone. Many doctors at the American Academy of Ozonotherapy Therapy meeting were there to learn about how to inject ozone or prolozone directly into joints such as knees, hip and even the spine. The healing powers of ozone in these conditions seem to be immediate for people who suffer from chronic pain and may help those addicted to pain killers like OxyContin.

TREATING OUTBREAKS OF VIRAL INFECTIONS AND PARASITES

Periodic viral outbreaks, like AIDS, SARS and more recently Ebola have the global medical community on full alert. Isolating individuals who are contagious is becoming increasing difficult with a highly mobile global population. Using ozone therapy seems to be promising in this area and may ultimately be used instead of less effective vaccines.

We have a growing population suffering from Lyme disease produced by the spirochete, *Borrelia burgdorferi*. Doctors believe that the infection is no longer restricted to direct contact with a tick and that it may be spread by contact with bodily fluids from an infected person. This chronic debilitating disease is difficult to treat. One protocol for Lyme treatment includes IV ozone, ozone sauna, IV silver, Kaqun water, herbals and pulsed electromagnetic fields (8). For this and the illness mentioned above, ozone has already been successful and thus provides hope for the future.

IMPROVING HEALTH CARE

Our health care system cannot survive with an increase in chronic illness, an aging population, and with children who have mental health and developmental problems like ADD, ADHD and autism. An inexpensive way to treat patients and to keep people healthy is desperately needed and ozone may be one of the answers to this looming health crisis.

Ozone properly produced at low concentrations–is safe, effective, and inexpensive. It can be administered in clinics and used in

the privacy of one's home. It can be used for preventive health care of people and animals (pets and livestock) and has been shown to be effective for a large number of illnesses, and it can be used in both developed and developing countries reducing medical costs markedly.

Once I understood the paradox of the ozone molecule, namely that it can be an oxidant and an anti-oxidant, and once I better understood the chemical reactions of ozone in contact with living cells it became perfectly clear why this gas, originally considered toxic, could be highly effective and safe, even when injected into the blood stream.

CONCLUSIONS

While ozone is a toxic gas that kills microbes, damages plants, and irritates lung tissue; at proper concentrations it has the ability to promote the immune system, to energize the body with oxygen, to support cardiovascular and cardio-cerebral health, kill on contact bacteria, viruses, fungi, and parasites with virtually no side effects. Ozone therapy is cost-effective and can be applied internally and externally in clinics under medical supervision or in the privacy of one's home. Both medical and veterinary doctors have used ozone therapy for a variety of ailments for over 100 years and a growing number of dentists have recognized the advantages of ozone therapy in their dental practices. Currently 19 countries use ozone therapy, as do several provinces and states in Canada and the U.S.

Those who understand the harmful effects of reactive oxygen species, like ozone, but not the beneficial effects have an incomplete understanding of this remarkable molecule, just as I had before I began research for this article. Incomplete information provided by traditional educational institutions about ozone makes the media and the public frightened of using it as a therapy.

Once the FDA and Health Canada lift bans on ozone therapy it will considerably reduce health care costs and the reliance on prescription drugs. Indeed that is one reason ozone therapy is labeled as quackery and banned in some countries. Those who are unwilling to lift this ban have an incomplete understanding of the dual and somewhat paradoxical nature of ozone chemistry *(just as I did)*. They are also blind to the evidence of the effectiveness of ozone therapy and may have a vested interest in keeping Big Pharma big.

Ozone may be making a global revival but a word of caution. Since new therapies (and in this case returning therapies) require the approval of government and licensing agencies, it might be worth reminding your doctor of his or her rights according to the Helsinki Declaration.

KNOW YOUR RIGHTS

Canada and the United States are signatories to the World Health Organization's Declaration of Helsinki, which states:

"In the treatment of the sick person, the physician must be free to use a new diagnostic or therapeutic measure if, in his or her judgment, it offers hope of saving life, re-establishing health or alleviating suffering."

Any college or board of physicians or equivalent medical-licensing board that investigates or harasses a physician for using ozone therapy is in violation of the Helsinki Declaration.

Tesla's invention of alternating current has made our lives much easier and his ozone generator–if allowed to be used by the powers that be–may make our lives much healthier as well. For now it's up to you–the consumer–to take health care into you own hands. Do your research–as I did–and, if you are intrigued about the benefi-

Ozone treatment in water

cial effects of ozone, find a health care provider who is knowledgeable and experienced in this field.

Or better yet–show this copy of Tesla Magazine to your doctor. Remember, doctors were not taught about ozone therapy in medical school and they are likely to be resistant to this information because, like me, they were taught that ozone is toxic. I certainly had my reservations until I began to understand the ozone paradox.

Mahatma Gandhi, in his autobiography, described an interview with a reporter. Gandhi said,

"This is my opinion today. Tomorrow I may learn something new and may change my mind."

Our health care system is broken and needs help. However, to make true progress in any field requires curiosity, courage, and critical thinking by open-minded individuals who are prepared to unbiasly evaluate credible studies that question what they may already know. As uncomfortable as this may be, it is the characteristic of a courageous scholar, an influential teacher, and a great leader ... someone like Nikola Tesla.

Magda Havas, B.Sc., Ph.D.,
Environmental & Resource Studies,
Trent University, Peterborough, ON, K9J 7B8, CANADA
drmagdahavas@gmail.com, www.magdahavas.com

Resources and References:

(1) Pressman, S. 2010 The Story of Ozone, Sixth Edition, Plasmafire International, 74 pages.

(2) Flexner, A. 1910. Medical Education in the United States and Canada. A Report to the Carnegie Foundation for the Advancement of Teaching by Abraham Flexner with an Introduction by Henry S. Pritchett, President of the Foundation. Merrymount Press, Boston. Bulletin Number 4, 364 pages.

The following were presented at the AAO Meeting, Dallas Texas, February 19-23, 2015, http://www.oxygenhealingtherapies.com/American_Academy_Ozonotherapy_Conference.htm

(3) Lamberto Re, L. Clinical approaches following international protocols of ozone administration.

(4) Weiser, M. Ozone and Periodontal Disease. Why Consider Ozone Use?

(5) Robins H.F. and R.J. Rowan. Ozone and Oxidation Therapies–For Ebola and a comparison of the Robins Method of DIV to the Rowen Method of MAH.

(6) Bartiss, M.J. Introduction to Ozone Therapy: 101.

(7) Holmes, J. Update on Infection, Wound, Cosmetic & Health Applications of Ozone; New Research, Products & Protocols.

(8) Minkoff, D.I. Lyme Disease 2015.

(9) Jerrett, M, RT Burnett, R Ma, et al. 2005. Spatial analysis of air pollution and mortality in Los Angeles. Epidemiology 16(6):727-736.

(10) Jerrett, M, RT Burnett, CA Pope, et al. 2009. Long-term ozone exposure and mortality. N Engl J Med 360:1085-1095.

(11) Rosales, FAH, JLC Fernandez, JT Figueras, et al. 2005. Ozone therapy effects on biomarkers and lung function in asthma. Archives of Medical Research: 36:549-554.

(12) Sweet, F, M-S Kao, S-CD Lee, WL Hagar and WE Sweet. 1980. Ozone selectively inhibits growth of human cancer cells. Science 209: 931-933.