

# The Chlorine Dioxide Controversy

By Stephanie Seneff, PhD

Chlorine dioxide (CD) is a strong oxidizing agent that has found many applications in wastewater treatment and food disinfection. It is popular among campers as a way to disinfect water taken from a lake or stream prior to using it as drinking water. In recent years, it has become a popular treatment choice among alternative medicine specialists for various diseases and conditions, despite the fact that the mainstream medical establishment has come down very hard against it. To say that it is controversial would be an understatement.

A gas at room temperature, chlorine dioxide is highly soluble in water. It is made by mixing 28 percent sodium chlorite solution with an acid such as citric acid or hydrochloric acid. With its very simple molecular structure (one chlorine atom and two oxygen atoms), CD spontaneously breaks down into hypochlorite and superoxide. These two molecules are very commonly produced by living cells, particularly by immune cells in response to an infection.

Jim Humble, originally trained as an aerospace engineer, is the person most responsible for bringing to light the many special benefits of CD. While using CD as a water-treatment solution during a gold mining expedition in South America, he made a serendipitous discovery. He observed that CD quickly restored health to victims of malaria, evidence of CD's apparent ability to strengthen the immune cell response to infection. Intrigued by this success story, he became completely committed to sharing his discovery with the world, and to exploring CD's benefits in treating other diseases. This became for him a lifetime obsession.

On the first page of one of his books on CD, Jim Humble "humbly" claims that CD is recommended as a treatment for a wide range of diseases. These include "cancer, diabetes, hepatitis A, B and C, Lyme disease, MRSA, multiple sclerosis, Parkinson's, Alzheimer's, HIV/AIDS, malaria, autism, infections of all kinds, arthritis, acid reflux, kidney or liver disease, aches and pains, allergies, urinary tract infections, digestive problems, high blood pressure, obesity, parasites, tumors and cysts, depression, sinus problems, eye disease, ear infections, dengue fever, skin problems, dental issues, problems with prostate (high PSA), erectile dysfunction, and many others."<sup>1</sup>

Many of these diseases have been linked to glyphosate exposure, either because their rate is rising alarmingly in lockstep with the rise in glyphosate usage or because glycine dysfunction in particular proteins could cause the diseases. Glyphosate is the active ingredient in the herbicide Roundup, which conventional agriculture uses liberally on crops to control weeds and as a desiccant; as a result, it is a widespread contaminant in our food supply. I have written extensively on the idea that glyphosate, acting as a glycine analogue, might be getting inserted into proteins during protein synthesis by mistake in place of the coding amino acid glycine.<sup>2,3</sup> If this is true, it would explain the stunning correlations that are found between glyphosate usage on core crops and the rise in prevalence of many of these debilitating diseases.<sup>4</sup>

#### CHLORINE DIOXIDE TREATS AUTISM

Kerri Rivera is the mother of an autistic

child. Like many other parents of autistic children, she was desperate to find a way to improve her child's autistic symptoms. She spent over a million dollars trying to find a treatment that would work to heal her son. She was sufficiently impressed with the improvements she witnessed following CD treatment that she decided to become actively involved in promoting the idea that it might be useful for autism.

Kerri has developed a protocol to treat autism that includes various nutritional supplements (such as chondroitin sulfate and vitamin D) and a modified ketogenic diet that eliminates gluten and casein. Although the protocol can also include a number of other components—anti-parasitic medications, humic and fulvic acid, black seed oil, digestive enzymes, binders, thyroid supplements, ionic foot baths and hyperbaric oxygen—she believes that an essential aspect is the idea of frequent tiny doses of CD throughout the day.<sup>5</sup>

Kerri uses a questionnaire called the Autism Treatment Evaluation Checklist (ATEC) as a metric of progress.<sup>6</sup> A high score means more severe autism, and a score under ten indicates that the child is not autistic. She has helped thousands of children. Over six hundred children have had their autism completely reversed through Kerri's protocol (meaning they achieved a score of under ten); she maintains that chlorine dioxide is the key to this success. Kerri refers to CD as an "inexpensive, broad spectrum, gentle anti-pathogenic." I am not aware of any other practitioners who have been able to achieve such dramatic results in treating autism. Some of Kerri's patients have parents who refuse to use chlorine dioxide due to the controversy surrounding it; none of those children have had their autism successfully reversed. Predictably, the mainstream media have tried hard to discredit her work, and Amazon even removed her book, *Healing the Symptoms Known as Autism*.<sup>7</sup>

My hunch is that CD is a miracle worker in part due to its ability to break down glyphosate nonenzymatically. If small doses are taken throughout the day, the hope is that natural mechanisms in place to detoxify hypochlorite (into which CD breaks down) can keep pace with exposure levels, such that it never causes sufficient harm to lead to permanent damage.

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#### OZONE AND CHLORINE DIOXIDE: POSSIBLE MECHANISMS

Paracelsus presciently wrote in the 1500s: “The body possesses the high art of wrecking but also restoring health. . . . Poison is in everything, and no thing is without poison. The dosage makes it either a poison or a remedy.” This is an apt remark regarding chlorine dioxide therapy and also ozone therapy. Alternative medicine specialists find ozone therapy to be useful in treating infected wounds as well as a number of difficult diseases, such as circulatory disorders, geriatric conditions, macular degeneration, viral diseases, rheumatism and arthritis, cancer, severe acute respiratory syndrome (SARS) and AIDS.<sup>8</sup> Ozone has been used in medicine for at least one hundred fifty years, but—probably because like chlorine dioxide it is inexpensive and not patentable—the medical establishment likes to play up the risks and play down the benefits.

Both ozone and chlorine dioxide are oxidizing agents, and, as such can cause oxidative damage. However, both are also powerful antimicrobial agents and perhaps more importantly, both are able to break down glyphosate nonenzymatically.<sup>9,10</sup> Both are commonly used in water treatment plants as disinfectants. This is very fortunate from the standpoint of glyphosate contamination; I suspect that we would have had a much bigger problem with glyphosate exposure through the water supply if this was not the case. Chlorine dioxide can be purchased without prescription to be used for purifying lake water or river water for safe drinking while camping in the wilderness.

Glyphosate was likely an important contributor to the catastrophic failure of the water supply in Flint, Michigan, where dangerously high levels of lead were found in the drinking water.<sup>11</sup> This occurred during a period when the water supply was temporarily diverted to a river source, and the river ran through agricultural areas where glyphosate was routinely used on GMO crops. A water treatment plant that had been in disrepair was hastily brought back into action before it had been properly refurbished. I suspect this meant that significant levels of glyphosate remained in the water. Notably, glyphosate was first patented as a pipe clean-

ing chemical due to its ability to strip metals from pipes. Although this has not been properly researched and therefore remains speculative, I believe it is possible that there were high levels of glyphosate in the water that ran through the lead pipes supplying water to Flint, and this caused much more of the lead to be stripped off of the pipes into the water.

The medical establishment maintains that chlorine dioxide—a simple, inexpensive, non-patentable molecule—is a dangerous substance that should never be used in medicine. However, this is a gross exaggeration. Oxygen is highly reactive as well, but that does not mean that we advise people not to breathe.

#### CHLORINE vs CHLORINE DIOXIDE

Chlorine is superior to chlorine dioxide in breaking down glyphosate, but chlorine is definitely too toxic to take medicinally. Chlorine also reacts with organic matter to produce highly toxic chlorinated products, whereas chlorine dioxide does not. In fact, chlorine dioxide has very different chemical properties than pure chlorine. CD preferentially oxidizes sulfur in sulfur-containing molecules.<sup>12</sup> This could be highly beneficial in overcoming deficiencies in sulfite oxidase, due either to genetic defects or toxic chemical exposures such as glyphosate.

Hypochlorite (one of CD’s breakdown products) reacts with the sulfur-containing amino acid taurine to produce taurine chloramine. Taurine is generally considered to be inert, but taurine chloramine is capable of getting oxidized to sulfate, particularly with the help of gut microbes. Thus, it is possible that CD enhances the bioavailability of sulfate to the body through this mechanism. I have written several papers arguing that sulfate deficiency is a common problem associated with many diseases, most notably with autism. I have proposed that taurine, which is stored in large quantities in the brain, heart and liver, may be serving as a buffer for supplying sulfate, mediated by hypochlorite, when sulfate levels drop too low.<sup>13</sup>

Both hypochlorite and superoxide (another CD breakdown product) are common oxidizing agents naturally produced by immune cells in their fight against pathogens. Thus CD enables the immune cells to be more effective in fighting

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