Ozonated Water from the Enozo Sanitizing Spray Bottle

What do you get with the Enozo Technologies, Inc. Sanitizing Spray Bottle?
Safer healthier counters, sinks, and surfaces at a fraction of the cost of disinfectant cleaners.

Ozone has been used to sanitize various things for over 100 years, including drinking water and food commodities. Ozone has a safe use history when used properly. Ozone is a naturally-occurring gas found in low concentrations in air. Ozone is a close relative of oxygen. The clean smell you sense after a thunderstorm is ozone. If oxygen is the parent chemical, think of ozone as the ideal active helper, running around and cleaning everything up. Cleaning things up is what ozone is all about.

The safety of the ENOZO sanitizing spray bottle was assessed by a board-certified toxicologist through a scientific safety assessment. The assessment examined all routes of exposure for janitorial and professional housekeeping staffs, and for household consumers during use of ozonated water generated by the ENOZO spray bottle for sanitizing surfaces. Ozonated water dispensed from the ENOZO spray bottle onto a hard surface (such as a kitchen counter) was assumed to release ozone into the air of the room. Some of this ozone could potentially be inhaled. Individuals may also have skin (hand) contact with ozonated water during wiping treated surfaces. The amount of ozone contacted by the hands was considered in terms of its importance relative to inhalation exposure. Other exposures, such as ingestion of ozone transferred from treated food contact surfaces to food, were considered.

But, isn't ozone harmful as an air pollutant? Like any chemical, the effect of an exposure to ozone depends on the concentration of ozone involved, how often it occurs, and for how long. Levels of ozone in the air at or above 0.12 ppm (part-per-million)[1], when inhaled for short periods of time, can cause irritation and can result in temporary effects on lung function, such as small reductions in the amount of air a person can exhale in a specific amount of time. Repeated inhalation of ozone at concentrations greater than 0.08 ppm for over 8 hours per day can also affect lung function. As a result, the U.S. Environmental Protection Agency (USEPA) has established a National Ambient Air Quality Standard (NAAQS) for ozone of 0.12 ppm for one hour and 0.08 ppm for 8 hours. From scientific studies, airborne ozone levels below 0.08 ppm are not associated with symptoms in humans under normal activity conditions.

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[1] One part-per-million (ppm)is equivalent to 1 drop of water diluted in 13 gallons of water. One ppm would be analogous to one car in bumper-to-bumper traffic from Cleveland to San Francisco.

Is this the same as the ozone in the atmosphere we want to protect? While chemically identical, the ozone layer in the upper atmosphere of the Earth, also known as the stratosphere, is a different issue. The stratospheric ozone layer protects our planet from harmful ultraviolet (UV) light. The ozone layer is contained and humans are not exposed to it.

Is the ozone exposure that people will get from the ENOZO spray bottle hazardous? No. A safety assessment was conducted using a USEPA-approved indoor air quality computer model. The model considered the conditions of exposure, such as room size and room air exchange rate, and simulated the concentrations of ozone in air over time as a person uses ozonated water from the ENOZO spray bottle to sanitize surfaces. The estimated ozone concentrations in air were predicted to be far less than the NAAQS of 0.08 to 0.12 ppm for the range of possible values for volume of ozonated water used. Airborne levels of ozone resulting from use of the ENOZO spray bottle are much lower than this, and they are below any thresholds for adverse effects. The conclusion of the assessment is that individuals in the workplaces or at home are unlikely to be adversely affected by ozone from the spray bottle.

Would skin exposure to ozone from the ENOZO spray bottle occur? The safety assessment estimated exposures to ozone from contact of ozonated water with skin. This would include skin (hand) exposures to ozonated water during spraying and wiping of surfaces. The dose of ozone absorbed through the skin was calculated to be small, as low as 4 percent of the total exposure for consumers, and 5 to 14 percent of the total exposure for professional users. It is unlikely that intermittent limited skin contact with ozonated water from the ENOZO spray bottle would result in any significant effects on skin.

What about other exposure routes for ozonated water? If ozonated water were splashed into the eye of an individual during use of the ENOZO Activated Oxygen Sanitizing Spray Bottle, it is unlikely, that any significant effect would result because the ozone in the water is so dilute. However, to be absolutely safe, label instructions for the ENOZO spray bottle direct the user to rinse exposed eyes with plain water. Ozone may be ingested from treated food items or due to transfer to food from food contact surfaces sanitized with ozonated water, or from treatment of pacifiers, toys and other objects that may be mouthed by children. Ingested ozone would be neutralized by harmless reactions with unsaturated fats, amino acids, and proteins that occur naturally in food items and in the gut. While extensive toxicity data are lacking for ingestion of ozone, available data suggest that no significant effects would occur.

What is the overall conclusion of the safety assessment? Ozonated water produced by the ENOZO Activated Oxygen Sanitizing Spray Bottle is safe to use.

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