

# Safety Letter

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Ozonator, Inc.

\*BerryBreeze, LLC, formerly known as Ozonator, Inc.

I am pleased to provide the following data and analysis regarding ozone levels produced in the confined space of a household refrigerator during continuous operation. I realize the importance of consumer safety of this device, which I understand is being considered for marketing by Costco. Previously as an employee of several major food companies involved in new product development, I have been responsible for refereeing consumer safety issues for numerous new food products under evaluation for the consumer market and I understand fully the importance of such assurance of consumer product safety.

For the past 18 years I have worked exclusively as an independent scientist, conducting research on many types of products for a variety of clients including the Federal Government, major corporations involved in processing, and equipment companies developing and marketing new ozone devices. I am not an Ozone device designer or vendor. My role when asked has been to seek a fair and accurate appraisal of product performance under realistic test conditions.

As an Independent Scientist, I have conducted several tests on the Ozonator product to evaluate its performance, ability to meet the Ozonator performance claims, and collected air sample data related to the use of this device in a home refrigerator. Our laboratory has experience with a wide variety of industrial and home-use Ozone devices, over a period of time since 2001. I personally have been deeply involved in the technical and regulatory aspects of ozone use in food processing, beginning in 1996 under contract for the Electric Power Research Institute, subsequently Chair of an Expert Panel Review on Ozone, published in 1997, and preparation of a Food Additive Petition for use of Ozone in gaseous and aqueous forms in food processing, filed August 2000 and approved June 26, 2001 (Federal Register Vol. 66 No. 123 Thursday, June 16, 2001 pp 33829-33830). I have a keen professional interest in the proper, safe, and effective use of ozone. My paper "Use of Ozone for Food Processing" published in Food Technology Vol. 51 No. 6; June 1997 pp. 72-75 summarized the findings of the EPRI Expert Panel regarding the safe and effective use of ozone.

In the initial stages of our testing and evaluation of the Ozonator we set up experiments to measure ozone output and concentration levels of the current model in a chemically clean, glass laboratory bell jar. We used a calibrated ECO Sensor inside the bell jar to measure accumulated concentration levels of ozone every ten minutes during the initial 90-minutes of the Ozonator operation. In this test no organic material other than the sensor and the Ozonator was in the enclosure, leaving the space practically devoid of Ozone demand. Thus all ozone produced was accumulated in the air space of the bell jar. At no time did the ozone concentration levels exceed 0.05 ppm. It is important to recognize that the air volume content of the bell jar we used is significantly less (at least ten times less) than that of a typical household refrigerator. Therefore, it is reasonable to conclude that ozone concentration levels in a refrigerator during peak operating periods of the Ozonator will not exceed 0.05 ppm. The commercial Ozonator does not operate continuously as in this test, but rather operates intermittently for only a few minutes each hour to preserve battery life and thus also provides an additional assurance against any possibility of excess ozone production.

I have operated a current model Ozonator in a household refrigerator for the past three years, interrupted only briefly for a few minutes for battery changes. In our testing, I placed a newly calibrated ECO Sensor inside the refrigerator, left it for 10 minutes to assure an accurate reading after the device had cooled to refrigerator temperature, opened the door and immediately recorded the digital readout which showed 0.00 PPM ozone. This ECO Sensor will detect levels of Ozone from 10-PPM down to 0.01 PPM. The reading of 0.00-PPM indicated the Ozone level inside the refrigerator was less than 0.01-PPM Ozone. The digital readout requires 30 seconds to respond, so that a digital reading taken within 10 seconds of opening the door reflected the true Ozone level inside the closed refrigerator.

A biological safety test was conducted inside a closed refrigerator. An ozone sensitive microorganism was placed on agar plates which were left open to allow contact with Ozone in the refrigerator air space. See the experimental setup in the following photo, showing open Petri dishes containing the inoculated microorganism on selective agar plates:

The agar plates were exposed overnight, then closed and incubated normally. Prolific growth of the inoculums confirmed the Ozone level in the refrigerator did not significantly impede the growth of this sensitive microorganism on selective agar plates.

In a similar biological test of air inside the refrigerator, 1.5-liter air samples were collected without and with the Ozonator operating. Operation of the Ozonator did not

significantly reduce the population of airborne aerobic bacteria. The Aerobic Plate Count (APC) for no ozone averaged 291.5 CFU (STDEV+33.2) and with Ozone averaged 291 (STDEV = 26.9). These data clearly show the air inside the refrigerator was not toxic to a specialized culture of sensitive bacteria or to the airborne mixed microbial flora inside the refrigerator.

To summarize, in a wide range of tests conducted with the Ozonator, we have found no potentially toxic levels of ozone produced in a household refrigerator; and that the Ozonator in constant operation at its highest output does not exceed 0.05 ppm in a closed refrigerator.

Sincerely

Dee M. Graham, Ph. D.R and D Enterprises