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DATE: June 24, 2010

TO: Mike Kirkland
Del Industries, Inc.
3580 Sueldo Street
San Luis Obispo, CA 93401
(805) 541-1601

FROM: Richard Danielson, Ph.D.
Laboratory Director/Vice President

A handwritten signature in blue ink, appearing to read "Richard E. Danielson".

SUBJECT: The Evaluation of the Del Industries, Inc. Del Shield, Ozone Generator, BioVir #101172 and 101369. *****AMENDED*****

SUMMARY. Del Industries, Inc., requested that BioVir Laboratories, Inc. (BioVir) test their portable ozone generator, Model 9-0838-XX to demonstrate efficacy against *Cryptosporidium parvum* oocysts. The effectiveness of the water disinfectant system was measured by culture of the organism in a cell line host. The goal of the challenge study was to describe the log reduction in infectivity of *C. parvum* oocysts relative to 5 exposure periods in two challenge studies.

Discussion. BioVir was requested to see if the Del Industries, Inc. Model 9-0838-XX was capable of killing *C. parvum*. One unit was delivered to BioVir on May 10, 2010. It was equipped with an air flow meter (Dwyer Instruments, Michigan City, IN) and power supply.

In this test format, one water type was used, a modified City of Benicia tap water.

Please refer to the attached protocol for the conditions and execution of the protocol. All challenges were conducted in a biological safety cabinet (Figures 1 and 2).

Description of Challenge Organism and Assay. The organism used in the challenges was *Cryptosporidium parvum* oocysts obtained from Bunch Grass Farms, Deary, Idaho. The *C. parvum* were shed on 5/13/2010. An excystation evaluation was performed on this lot (#11-10) and a 95.7% excystation rate was observed. The first challenge took place on 5/24/2010, the second on 6/14/2010.

Following a treatment challenge, the entire sample volume for the specific time period was collected and centrifuged to concentrate the oocysts. Total oocyst concentration was determined by haemocytometer counts. Serial dilutions were prepared and oocysts were added to tissue culture (HCT-8 cell line) well slides in a range of approximately 100 - 100,000 oocysts per well following the procedure of Silfko et al., (2000). Four wells per dilution were prepared. The assay was allowed to proceed for 2.5 days incubated at 37°C; the slides were fixed and stained using Sporo-Glo (Waterborne, Inc., New Orleans, LA, Lot# 20-3). All slides were covered with a glass slip and examined under epifluorescence microscopy under magnification of 200x -1000x.

In order for the client to determine the dose of ozone generated, the air flow rate, temperature and

relative humidity were recorded.

Results.

Water Quality of the Test Matrix:

Run #1

Temperature: 18.2°C
pH: 7.51
Chlorine: 0.01 mg/L
Turbidity: 0.2 NTU
TDS: 413 mg/L
TOC: 2.2 mg/L

Run #1 Environmental Air Quality:

Temperature: 22.9 - 23.4°C
Air Flow Rate: 4.0 SCFH
% Relative Humidity: 40 - 41%

Run#2

Temperature: 21.7 °C
pH: 7.35
Chlorine: ND (non-detect)
Turbidity: 0.1NTU
TDS: 461 mg/L
TOC: 2.57mg/L

Run #2 Environmental Air Quality:

Temperature: 22.4 - 22.5°C
Air Flow Rate: 5 SCFH
% Relative Humidity: 41 - 45%

The results for Run #1 are presented in Table 1. There was no difference observed in infectivity between any of the treated samples relative to the untreated sample regardless of exposure time (1 - 10 min) or oocyst dose. This challenge run was performed without stirring the suspension.

The results for Run #2 are presented in Table 2. This challenge run was performed with stirring the suspension. There was no infectivity observed after 60 minutes of exposure to treatment. This indicates that up to 10000 oocysts were inactivated during this process, or, greater than a 3-log reduction.

Please contact me if you have any questions regarding this information.

TABLE 1
SUMMARY OF RESULTS - 101172
Oocyst Infectivity Before and After Treatment
with Del Industries, Inc. Model 9-0838-XX

Sample No	Sample Condition	Dose Oocysts per Well	Positive FF*/ 4 wells
1	No Treatment	100000	4+
		10000	4+
		1000	4+
		100	4+
<hr/>			
2	1 min	100000	4+
		10000	4+
		1000	4+
		100	4+
<hr/>			
3	5 min	100000	4+
		10000	4+
		1000	4+
		100	4+
<hr/>			
4	10 min	10000	4+
		1000	4+
		100	4+
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* FF = fluorescent foci, positive infections

TABLE 2
SUMMARY OF RESULTS - 101369
Oocyst Infectivity Before and After Treatment
with Del Industries, Inc. Model 9-0838-XX

Sample No	Sample Condition	Dose per Well	Positive FF*/ 4 wells
1	No Treatment	10000	4+
		1000	4+
		100	4+
<hr/>			
2	10 min	10000	4+
		1000	4+
		100	4+
<hr/>			
3	30 min	10000	4+
		1000	4+
		100	4+
<hr/>			
4	60 min	10000	4 (-)
		1000	4 (-)
		100	4 (-)
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Figure 1- Run 1
Del Industries Model 9-0838-XX

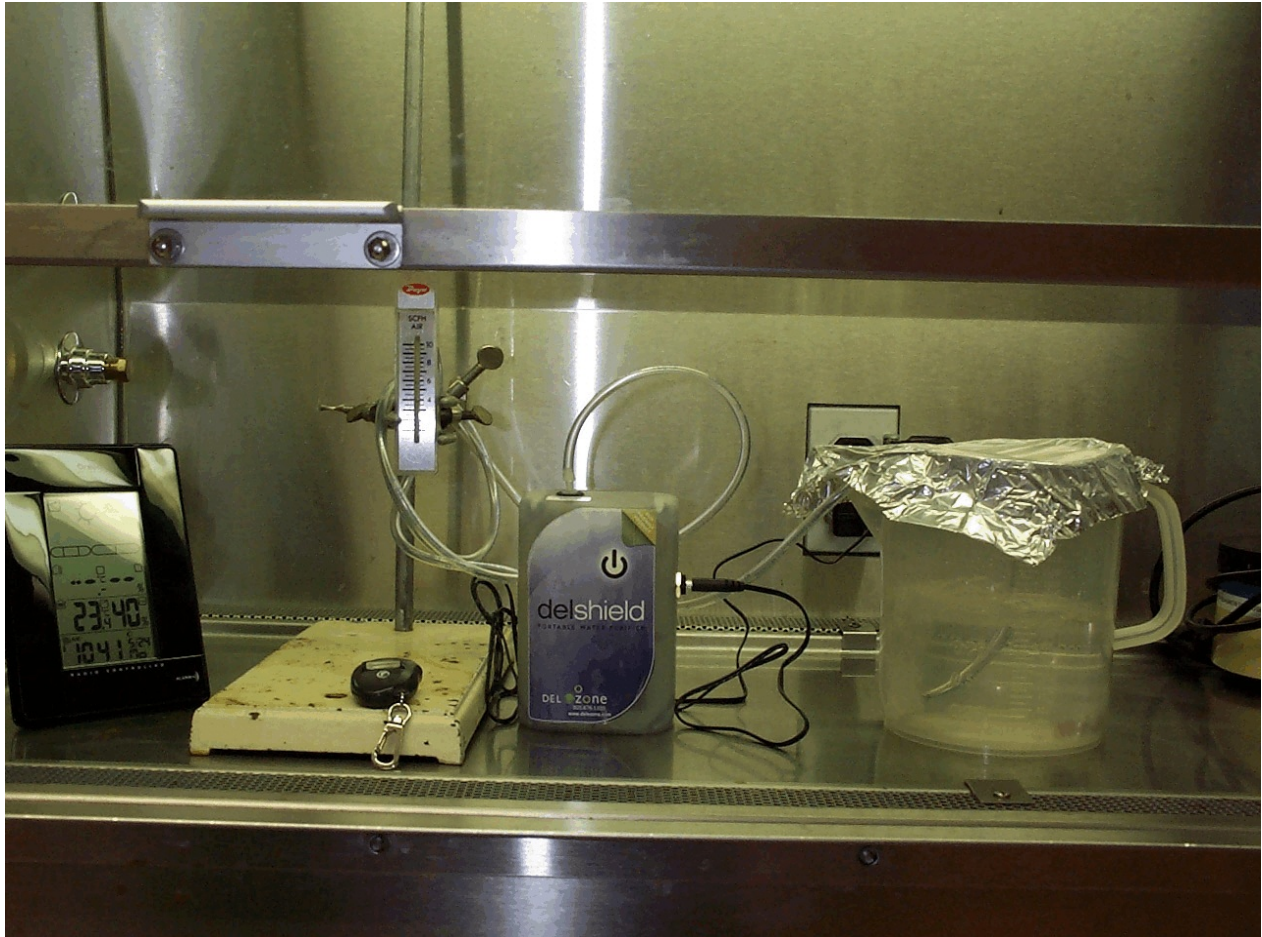


Figure 2- Run 2
Del Industries Model 9-0838-XX

