



### TEST REPORT

Project Title:	Chanson Miracle Device
Project No.:	092649
Sponsor:	Ronnie Ruiz, CEO Chanson Water USA 23341 Del Lago Dr. Laguna Hills, CA 92653
Date:	October 12, 2009
Investigator:	R.C. Cooper, Ph.D.

**Introduction:** Chanson Water USA contracted with BioVir Laboratories to perform a test to determine the potential sanitizing efficacy of the acidic water produced by the Chanson Miracle™ Alkaline Water Ionizer. A Miracle™ unit was delivered to BioVir and set up by Mr. Ruiz on October 5, 2009. The efficacy tests were run on October 6, 2009.

**Method.** The Chanson unit was operated as per the clients instructions. The source water was City of Benicia tap water and flowed to the unit at a rate of one liter per min. A 700 mL sample of the acidic water was collected for the disinfection tests and the pH, redox potential and free chlorine concentration measured. The latter measurement was made using the DPD method (HACH kit) and reported as mg/L free chlorine.

Two 250 mL portions of the acidic water were placed in sterile 500 mL Erlenmeyer flasks each equipped with a magnetic stirring bar for continuous mixing. The challenge bacteria were *Escherichia coli* ATCC 11229 and *Staphylococcus aureus* ATCC 6538 cultured as per the AOAC 991.47 protocol. These bacteria were added to their respective flasks to reach a final concentration of 10<sup>6</sup> to 10<sup>7</sup> colony forming units (Cfu) /mL. One mL samples of seeded acidic water were taken after 0.5, 1, 2, 5, and 10 min of exposure. Each of the samples was immediately added to a tube containing 10 mL of D/E neutralizing broth (DIFCO) and incubated at 35°C for 48 hours.

The initial concentration of each of the challenge bacteria added to the acidic water was determined by adding volumes of bacterial suspension, identical to that added to the test water, to respective flasks containing 250 mL of de-chlorinated Benicia tap water and measuring the resultant concentration (Cfu) of bacteria. The concentration of *E. coli* was determined by membrane filter and incubating on mFC agar. The concentration of *S.aureus* was also determined by membrane filtration incubating on trypticase soy agar. One mL samples of these seeded waters were added to tubes of D/E broth as the zero exposure time samples.

**Results:** The physical-chemical characteristics of the 700 mL sample of acidic water are shown in Table 1. The concentrations of *E. coli* and *S. aureus* added to the acidic water are shown in Table 2. The D/E broth results are shown in Table 3.

Table 1. Physical-Chemical Characteristics of Acidic Water	
Characteristic	Value
pH	2.7
Redox	965 mV
Free Chlorine	19 mg/L

Table 2. Concentration of Challenge Bacteria at Time Zero	
Bacterium	Titer - Cfu/mL
<i>E. coli</i>	$2.9 \times 10^7$
<i>S. aureus</i>	$1.5 \times 10^7$

Table 3. Growth (+) or No growth (-) In D/E Broth Within 48 hrs.						
.Bacterium	Exposure Time - Min.					
	0	0.5	1.0	2.0	5.0	10.0
<i>E.coli</i>	+	-	-	-	-	-
<i>S.aureus</i>	+	-	-	-	-	-

Based on this one sample of acidic water the challenge bacteria were reduced by greater than seven orders of magnitude.

**SAMPLE EVALUATION PERFORMANCE CRITERIA:** The precise rates of recovery of organisms from environmental samples cannot be determined. BioVir Laboratories has analyzed your sample(s) in accordance with the method described with each analyte above, however, due to inherent limitations of these methods organisms may avoid detection. For additional information regarding the limitations of the method(s) referred to above please call us at 1-800-GIARDIA.

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Signature / Date: 10.8.09