

Chlorine Dioxide (ClO <sub>2</sub> )	vs.	Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> )
● Extremely high oxidation and germicidal efficacy values. Wide spectrum / quick kill		● Moderate oxidation and disinfection values
● Superior hygiene for animal, facility and water applications		● Limited use for individual application
● Rapid killing action across spectrum of organisms (seconds)		● Low to moderate killing actions (minutes to not effective)
● Excellent biocidal values across a broad spectrum of disease-causing organisms		● Limited biocidal values and efficacies
● Effective in low concentrations and is extremely soluble in water		● Breaks apart and disassociates itself (hydrolyzes) when added to water
● Effective in wide solution pH range		● pH range specific. Highly acidic
● New, high efficiency, easy to implement water injection system. Superior ROI <sup>1</sup>		● Low efficiency water dosing systems
● EPA approved technology for water disinfection systems		● Not approved by EPA as a stand-alone water disinfection technology
● Environmentally friendly. Unlike sodium hypochlorite (NaClO) does not produce ecotoxic byproducts such as TMH, HAA or chloro-phenols		● Environmentally friendly. 100% biodegradable. Hydrolyzes into oxygen and H <sub>2</sub> O when added to water

<sup>1</sup>Acepsis™ is proud to provide the new AquaSoar™ Activation System that delivers the highest yields and efficiency in the activation and dosing of the AquaSoar™ product. Higher yields, higher efficiency, quantifiable results, increased ROI.

● = Superior

● = Moderate

● = Inferior / Lacking

## PRODUCT COMPARISON SHEET

Table 1.

Measurement of Oxidizing Agent ORP Values In Pathogen Disinfection**	
OXIDIZING AGENT	OXIDIZING AGENT ORP VALUE RANGE (mV)
CHLORINE DIOXIDE (ClO <sub>2</sub> )	600 → 1000 MV
OZONE* (O <sub>2</sub> )	700 → 1000 MV
IODOPHORS (I <sub>2</sub> )	400 → 600 MV
HYDROGEN PEROXIDE	300 → 500 MV
SODIUM HYPOCHLORITE	250 → 500 MV
ISOPROPYL ALCOHOL	100 → 300 MV




Table 1 provides the oxidizing (disinfecting) range of the most popular sanitizing agents in the industry. The higher the Oxidation Reduction Potential (ORP), the higher the disinfecting ability. This is measured in millivolts (mV).

Table 2.

ORP Values In Pathogen Disinfection***				
PATHOGEN SURVIVAL IN SECONDS (S) OR HOURS (H) AT ORP LEVELS (MV)				
Pathogens	<500 ORP (mV)	500 - 600	600 - 700	700+
CORONAVIRUS	> 300 S	< 60 S	< 10 S	< 1 S
E. COLI (O157:H7)	> 300 S	< 60 S	< 10 S	< 1 S
SALMONELLA SPP.	> 300 S	> 300 S	< 20 S	< 1 S
LISTERIA MONOCYTOGENES	> 300 S	> 300 S	< 30 S	< 1 S
THERMO-TOLERANT COLIFORM	> 48 H	> 48 H	< 30 S	< 1 S

Table 2 shows the relative survival rate of different pathogens and the role that oxidation power has in the disinfection process, using the ORP (mV) value to measure the rates. Based on the numbers from Table 1, chlorine dioxide is a clear winner over hydrogen peroxide.

\*Oxidation Reduction Potential (ORP) for Disinfection Monitoring, Control and Documentation; University of California, Trevor Suslow, Department of Vegetable Crops, University of California - Davis

Table 3.

### AquaSoar™ vs. Hydrogen Peroxide Water Treatment ORP (mV) Values

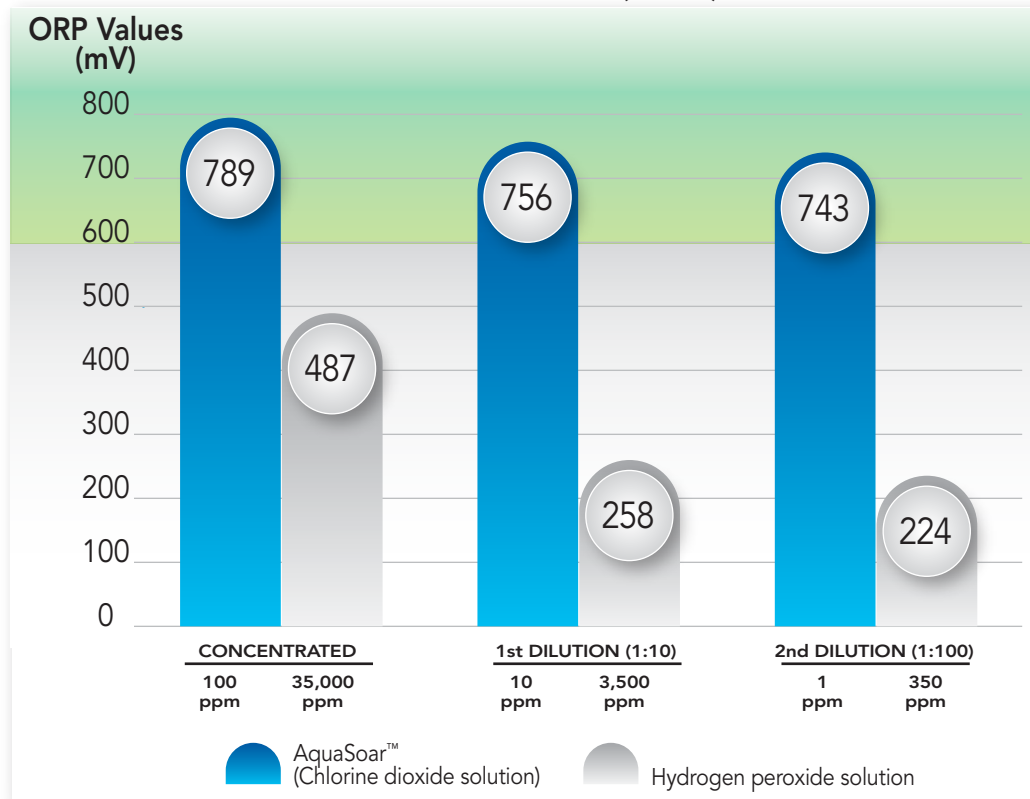


Table 3 demonstrates the ORP values of each chemical technology / formulation when added to water. AquaSoar™ retains its high ORP values even when diluted to low concentration levels. Hydrogen peroxide breaks apart (hydrolyzes) immediately when added to water, eliminating its ORP / disinfection value.

ACEPSIS™, LLC is an animal health based company that is focused on the development of state-of-the-art animal hygiene technologies. Our Company's mission is to apply innovative animal hygiene technologies into the agricultural and veterinary market sectors.