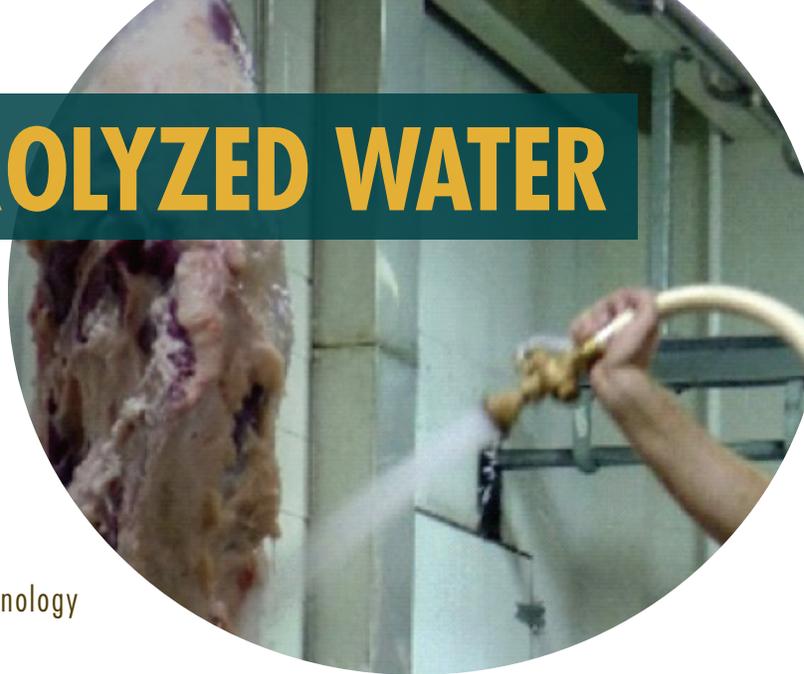


POWER OF ELECTROLYZED WATER

A new antimicrobial for the beef industry

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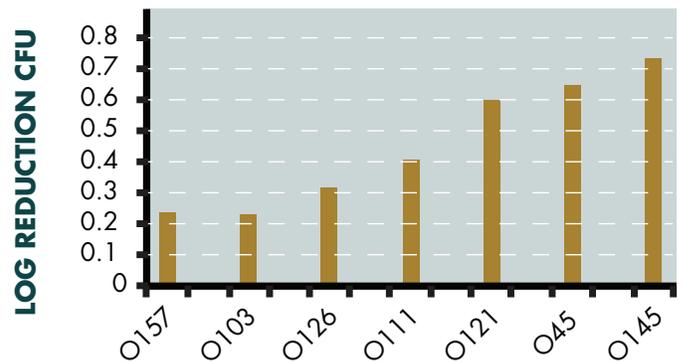


Electrolyzed Water (EO water) – A New Antimicrobial Intervention for the Beef Industry

Electrolyzed oxidizing (EO) water, especially neutral electrolyzed water, is an emerging environmentally friendly antimicrobial treatment. EO water is produced by a reaction of a dilute salt solution (<0.1% NaCl) in an electrolysis chamber containing an anode and a cathode separated by a diaphragm membrane. The anode side of the chamber produces water containing chlorine gas, hypochlorous acid (HClO), and hydrochloric acid (HCl). Therefore, this type of EO water is also known as **acidic EO water**. It has a pH < 2.7, oxidation reduction potential (ORP) > 1050 mV, and high free-chlorine concentrations. These properties make acidic EO water effective as an antimicrobial agent. On the other hand, **neutral EO water** is generated like acidic EO water, but part of the product formed at the cathode is then redirected into the anode chamber. This produces a neutral solution containing HClO as the main microbicidal compound. Because of its neutral pH, neutral EO water does not cause as much corrosion as acidic EO water.

Extensive research conducted at the University of Georgia has demonstrated that EO water is effective in inactivating a wide variety of pathogens from various foods and food contact surfaces. Controlled lab tests have shown that EO water is effective in reducing all of the top

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SHIGA TOXIN-PRODUCING *E. COLI*

Figure 1. EO Water vs. Top 7 STEC

7 shiga toxin-producing *Escherichia coli* (STEC) from beef trim (Figure 1). Lab studies also suggest that EO water treatment reduces *E. coli* O157:H7, and may even be more effective at reducing other non-O157 STEC.

EO water compares favorably with lactic acid in its effectiveness in reducing top 7 STEC from beef trim. Advantages of EO water include quick on-site production, ease of application, broad-spectrum bactericide, cost, and safety.

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