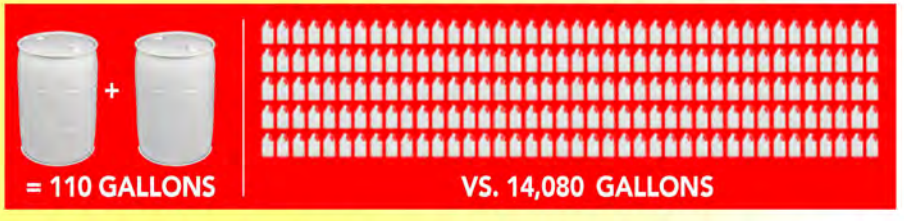
FUSION
MILKING HYGIENE SOLUTIONS

BECO
DAIRY AUTOMATION INC.

4. THE FUSION SYSTEM ECONOMIC AND ECOLOGICAL VALUES

- Improved pre- and post milking hygiene aid in reducing mastitis
- Lower input and operational costs
- Concentrated precursors dramatically lower the cost of packaging, production, shipping, and handling, allowing maximum flexibility and economy



A 55-gallon drum of FUSION Activator and a drum of FUSION Base can produce the same as non-concentrated brands, at industry-leading ORP Levels!

ECOLOGIC

- Less plastic required, reusable plastic containers
- Optimal sustainability!

√ LESS FREIGHT √ LESS PACKAGING √ LESS HANDLING

For more information visit www.becoknows.com or call 800-344-7166

INTRODUCING:

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ADVANTAGES

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ELIMINATING RESTRICTIONS

1. CHLORINE DIOXIDE BASED TEAT DIPS

We formulate with chlorine dioxide for these reasons:

- **No other technology** is better at the job of pre- and post-milking hygiene than **properly formulated** chlorine dioxide-based solutions.
- **No other technology** has a quicker, wider spectrum of **biocidal kill,** at lower concentrations, than chlorine dioxide.

FUSION'S quick, wide spectrum kill makes it perfect for lower concentration, pre-milking hygiene applications. The **FUSION** formulation has the ability to provide a low drip, post-milking formulation, with the optimal milking-to-milking prophylactic protection, **at the best economics.**

HOW? We minimize the water in the product we ship. The **FUSION** Precursors, together with the **FUSION BLEND** provide the best Prep and Post formulations at the **most favorable economics.** *Let us show you how!*

2. WE MAXIMIZE THE OXIDATION CAPACITY OF OUR FORMULATIONS

Chlorine dioxide formulations can be extremely strong oxidizers at relatively low concentrations. However, not all chlorine dioxide formulations are created the same.

Products made with diluted activators (sodium chlorite) and bases (activating acids) will typically produce lower oxidation capacity and have lower shelf life, some as low as 12 hours or less! Products made with the emollient packages included in the activator or base formulations will show dramatically lower oxidation capacities.

The patented Fusion Blend maximizes the oxidation capacity of the products produced along with the shelf life of the formulations produced.

The FUSION PRE and POST teat dips are produced to deliver the highest oxidation capacity at the safest level for both the udder and teat skin tissue, and for operator use.

3. WE CAN MEASURE THE DIFFERENCE

With so many products on the market, and so many suppliers, how can a dairy choose which is best?

With oxidizing solutions, we can measure the difference!

The oxidation capacity of an oxidizing solution can be measured and compared. That is done with an ORP (Oxidation Reduction Potential) meter. Oxidation Reduction Potential (ORP) is a measurement of a germicidal agent's effectiveness in reducing disease-causing pathogens.

ORP is measured in millivolts (mV) showing the ability of a solution to oxidize or reduce another substance. Both oxidation and reduction are chemical processes involving the transfer of electrons between molecules (gaining or losing an electron). So ORP measures the potential for such reactions to occur. Germicidal efficiency is the comparison of both the concentration and contact time of the germicide. Translated into the hygiene world, the higher the ORP reading, the more efficient the germicide.

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).

Measurement of Oxidizing Agent ORP Values In Pathogen Disinfection*

OXIDIZING AGENT	OXIDIZING AGENT ORP VALUE RANGE (mV)
CHLORINE DIOXIDE (ClO_2)	600 → 1000 MV
OZONE* (O_3)	700 → 1000 MV
IODOPHORS (I_2)	400 → 600 MV
HYDROGEN PEROXIDE	300 → 500 MV
SODIUM HYPOCHLORITE	250 → 500 MV

Table 1.

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.

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 (0157: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.

*Ozone is greatly influenced by the water quality and ozonation system.

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