Acepsis®
An ounce of prevention …

NOVA SMART™

MILKING HYGIENE SYSTEM

MILK QUALITY MATTERS

IT PAYS DIVIDENDS!

Acepsis NOVA SMART
MILKING HYGIENE SYSTEM

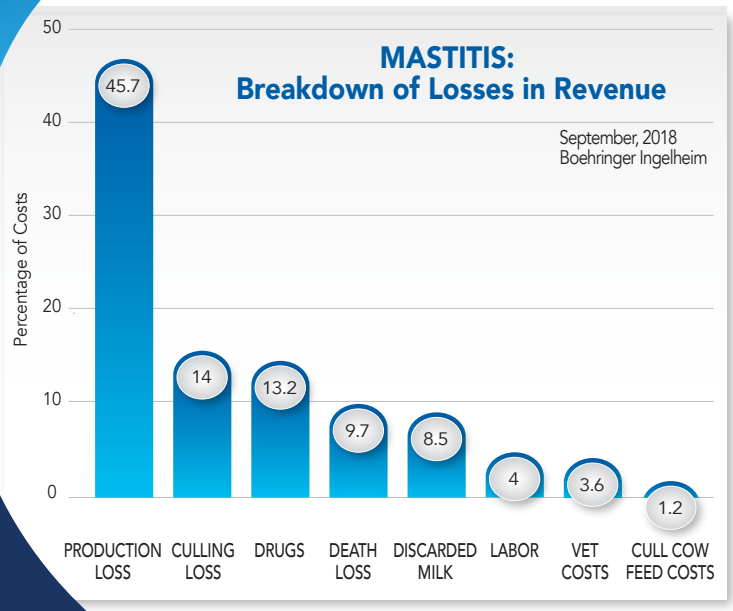
Improved Hygiene and Animal Wellness!

NOVA SMART
MILKING HYGIENE SYSTEM

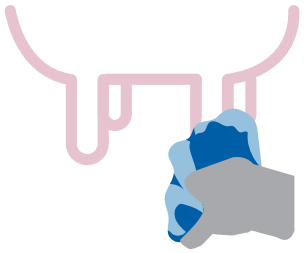
MASTITIS (THE PROBLEM)

The #1 herd health / milk quality problem, costing U.S. dairy producers more than

$2 billion annually!

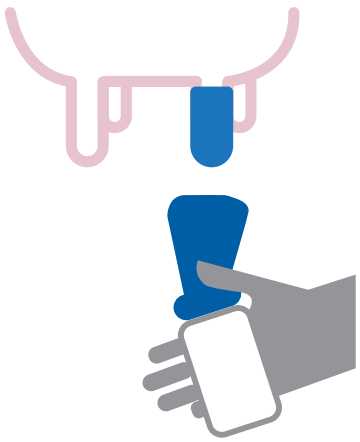


MASTITIS PREVENTION (Milking Hygiene the #1 Line of Defense):



Pre-Milking Hygiene Requirements:

- √ Use of a wide spectrum / quickest kill hygiene solution
- √ Effective against environmental pathogens
- √ Excellent teat skin cleaning capacity
- √ Safe on teat skin / teat ends and operators
- √ No skin conditioning requirements



Post Milking Hygiene Requirements:

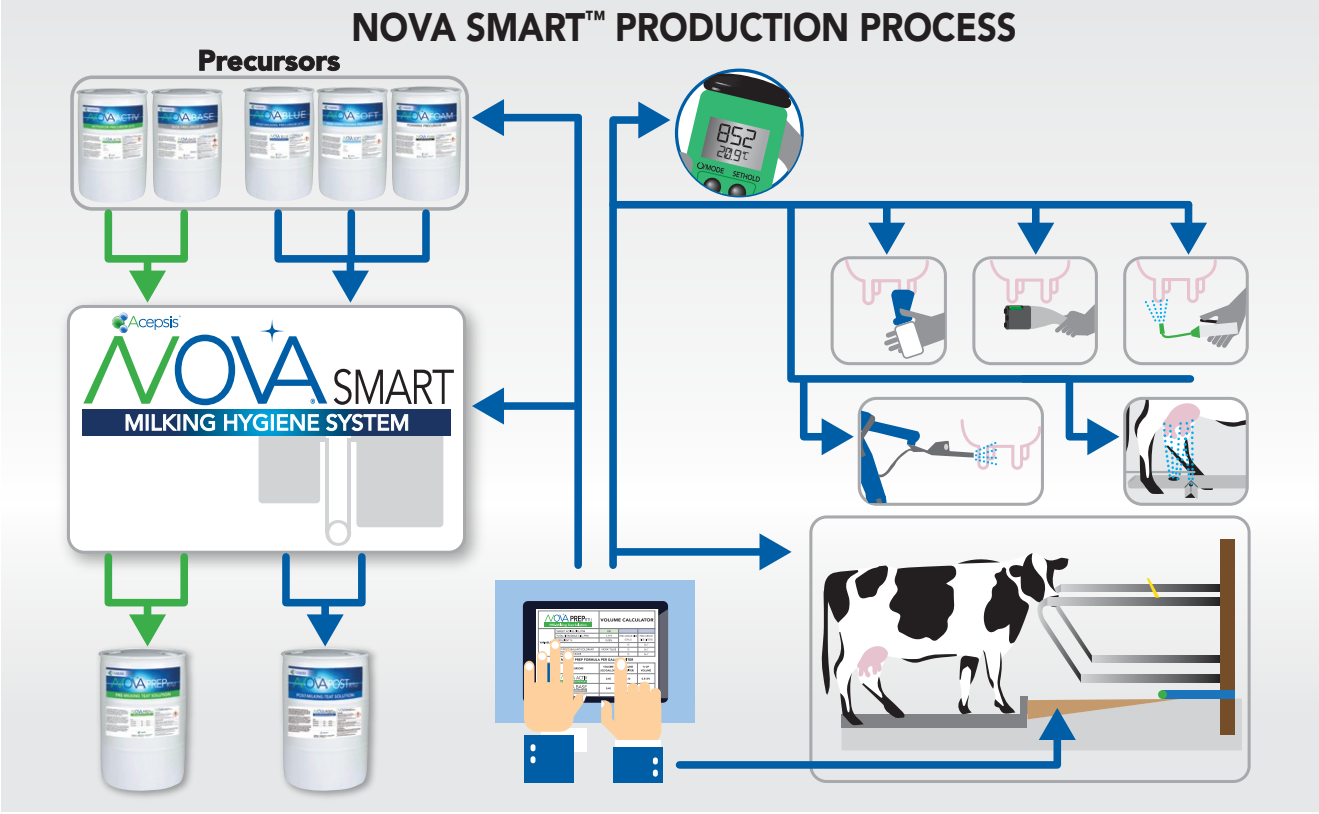
- √ High, measurable disinfectant capacity
- √ Effective against contagious mastitis pathogens
- √ Assists in closing teat ends after milking. Provides sealing characteristics and protection
- √ Excellent skin conditioning characteristics
- √ "Milking to milking" prophylactic protection

MASTITIS: Our Answer: Our Technology

INTRODUCING THE NOVA SMART™ MILKING HYGIENE TECHNOLOGY

The Acepsis® NOVA SMART™ Milking Hygiene System provides a breakthrough technology combination of concentrated Precursor formulas, combined with a patented production system.

The NOVA SMART™ System puts a dairy farm, and its Milk Quality Team, in complete control. The on-farm mixing system provides complete transparency of formulation and usage rates. You can also track exactly how much product you're using – from day to day, or even shift to shift.



Acepsis NOVA SMART
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5 ADVANTAGES

1. ONLY CHLORINE DIOXIDE-BASED TEAT DIPS

We Only Make Chlorine Dioxide-based Teat Dips. Other manufacturers may make chlorine dioxide dips, but they also may make chlorhexidine, hydrogen peroxide, lactic acid and 20 types of iodine teat dips.

We *only* 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.

NOVA™ Prep's quickest, wide spectrum kill makes it perfect for lower concentration, pre-milking hygiene applications. The **NOVA™ Post** formulation has the ability to provide a gentle, 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 **NOVA™** Precursors, together with the **NOVA SMART™ System** provide the best Prep and Post formulations at the **most favorable economics.** NOVA SMART Prep and Post can be applied through **all** application devices today. *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 (activating acids) and bases (sodium chlorite) will typically produce lower oxidation capacity and have lower shelf life, some as low as 4 hours or less! Products made with the emollient packages included in the activator or base formulations will show dramatically lower oxidation capacities.

The patented NOVA SMART™ System maximizes the oxidation capacity of the products produced along with the shelf life of the formulations produced. In addition, one NOVA SMART Milking Hygiene system can blend different pre- and post-dip formulations.

The NOVA™ PREP and NOVA™ POST teat dips are produced to deliver formulations at a higher oxidation capacity, improving performance at safe concentrations for udder, teat skin, and operator safety.

Remote monitoring of the mixing system is available. Text message alerts show for:

- Overproduction (perhaps there's a leak in the distribution system)
- Underproduction (perhaps the night shift didn't dip cows)
- Manufactring fault codes (perhaps one of the precursor drums is empty)

Premium precursors create premium Ready-to-Use product! It's the most efficacious chlorine dioxide teat dip with the longest RTU shelf life in the market.

3. YOU 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 speed 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 quicker the kill time. This is extremely important in high-pressure milking parlors, where pre-milking time is minimized.

Table 1 provides the oxidizing (disinfecting) range of the most popular sanitizing agents in the industry. The higher the Oxidation Reduction Potential (ORP), the quicker 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) (All Brands)
CHLORINE DIOXIDE (CLO_2)	450 → 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.

(Chlorine dioxide ranges dependent on formulation makeup.)

*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

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5 ADVANTAGES

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+
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.

4. THE NOVA SMART™ SYSTEM ECONOMIC AND ECOLOGIC VALUES

ECONOMY

- Improved pre- and post milking hygiene aid in reducing mastitis
- Lower input and operational costs
- Concentrated premium precursors dramatically lower the cost of packaging, production, shipping, and handling, allowing maximum flexibility and economy
- Product footprint on dairy greatly reduced, freeing up floor space in utility room
- Easy-to-use customizable formulations are scientifically administered to a dairy's specific needs or current environment

ECOLOGY

- Less plastic / packaging required, reusable plastic containers
- Optimal sustainability!
- Less shipping cost / reduces trucks on the road, which is better for environment

A 55-gallon drum of NOVA™ Activ and a 55-gallon drum of NOVA™ Base (110 gallons in total) can produce the same amount as 14,080 gallons of ready-to-use competitive products! The most concentrated products allowable over the road.

√ LESS FREIGHT √ LESS PACKAGING √ LESS HANDLING

5. THE ACEPSIS® MILK QUALITY MANAGEMENT (MQM) TEAM

MILK QUALITY MATTERS!

The NOVA SMART™ System puts the individual dairy needs first, and in total control. The system focuses on:

- Improved pre- and post milking hygiene
- Lower input and operational costs
- Improved mastitis management

Your experts work with our experts:

1. Your dairy milk quality team
    - You and your herd manager
    - Your veterinarian
    - Your milk quality advisor (extension agent)
2. Our Milk Quality Team

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SUMMING IT ALL UP

No matter how the hygiene products are applied, no matter how concentrated they need to be, no matter what the weather conditions are, no matter which bedding is being used, the **NOVA SMART™ Milking Hygiene System** creates specific dairy farm applications, and gives each dairy's milk quality team the flexibility to change formulations as their requirements change.

For either Pre- or Post milking products, we can calculate your individual requirements and economics.

NOVA PREP RTU — PRE-Milking Teat Solution — VOLUME CALCULATOR

VARIABLES				
	FARM NAME:	DAIRYLAND ONE		
	NUMBER OF COWS MILKING	2,400	SESSIONS / DAY	3.0
	USING NOVA PREP SOLUTION (Y / N)	Y		
	APPLICATION METHOD	SCRUBBER		
	TARGET ACTIVE ClO2 PPM	138		
	ESTIMATED APPLICATION AMOUNT (ML)	40	PRECURSOR SIZE (GALS)	PRECURSOR SIZE (LITERS)
	EMOLLIENT %	0.00%		
	PRECURSOR A/B PACKAGE SIZE		55	207.9
	EMOLLIENT PACKAGE	NO EMOLLIENT	275	1039.5
	COLORANT	NO COLOR	15	56.7
	FOAM / NO FOAM APPLICATIONS	NO FOAM	55	207.9

NOVA PREP FORMULA PER RTU GALLON / LITER

PRECURSORS	VOLUME (OZ/GALLON)	VOLUME (ML/LITER)	% OF VOLUME
NOVA ACTIV — ACTIVATOR PRECURSOR (A1)	0.32	2.50	0.250%
NOVA BASE — BASE PRECURSOR (B)	0.32	2.50	0.250%
NOVA SOFT — SKIN CONDITIONING PRECURSOR (S)	0.00	0.00	0.000%
NOVA ULTRA — BLUE COLORANT (C)	0.00	0.00	0.000%
NOVA FOAM — FOAMING PRECURSOR (F)	0.00	0.00	0.000%
WATER	127.36	995.00	99.500%
TOTAL	128.00	1,000.00	100.0%

NOVA POST RTU — POST-Milking Teat Solution — VOLUME CALCULATOR

VARIABLES				
	FARM NAME	DAIRYLAND ONE		
	NUMBER OF COWS MILKING	2,400	SESSIONS / DAY	3.0
	USING NOVA PREP SOLUTION (Y / N)	Y		
	APPLICATION METHOD	ROBOT SPRAY		
	TARGET ACTIVE ClO2 PPM	193		
	ESTIMATED APPLICATION AMOUNT (ML)	40	PRECURSOR SIZE (GALS)	PRECURSOR SIZE (LITERS)
	EMOLLIENT %	4.00%		
	PRECURSOR A/B PACKAGE SIZE		55	207.9
	EMOLLIENT PACKAGE	NOVA SOFT	275	1039.5
	COLORANT	COLOR-MED	15	56.7
	FOAM / NO FOAM APPLICATIONS	NO FOAM	55	207.9

NOVA POST FORMULA PER RTU GALLON / LITER

PRECURSORS	VOLUME (OZ/GALLON)	VOLUME (ML/LITER)	% OF VOLUME
NOVA ACTIV — ACTIVATOR PRECURSOR (A1)	0.45	3.50	0.35%
NOVA BASE — BASE PRECURSOR (B)	0.45	3.50	0.35%
NOVA SOFT — SKIN CONDITIONING PRECURSOR (S)	5.12	40.00	4.000%
NOVA ULTRA — BLUE COLORANT (C)	0.50	3.91	0.391%
NOVA FOAM — FOAMING PRECURSOR (F)	0.00	0.00	0.000%
WATER	121.48	949.09	94.909%
TOTAL	128.00	1,000.00	100.000%

Learn how the **NOVA SMART™ Milking Hygiene System** can fit into your dairy operation

https://acepsis.com/nova-smart/brochure

Get in Touch

For more information, call Acepsis® or your local representative:

(608) 203-5535

Visit us at www.acepsis.com
info@acepsis.com.

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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.

National Mastitis Council Premier Member

ACEPSIS®, LLC | 713 North Main Street | Lodi, WI 53555
(608) 203-5535 | info@acepsis.com | www.acepsis.com

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