### Stray Voltage Does Not Cause Mastitis !!!



A DAIRY COW SUBJECTED TO STRAY VOLTAGE

#### Holstein World

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A new alternative electro therapeutic for dairy cows with mastitis using low frequency electrical impulses to reduce swelling and inflammation.



DairyCell: an Alternative Biologic Therapy



INDIANHEAD STORMY-ET (EX-93) 3-08 2X 305d 31,250 4.0 1249 3.1 989 Dam: EX-94, 2nd Dam 3E-96 Blackrose Owner: Cowtown Holsteins, Derby Line, VT

DairyCell, a new alternative electro therapeutic treatment for dairy cows with mastitis. This device was developed to treat udder problems such as mastitis, edema and fibrosis. With small low frequency electrical impulses swelling and inflammation will be reduced. During treatments blood circulation will be increased, thereby contributing to a natural recovering process.



www.dairycellworld.com

Mastitis is responsible for big financial losses in the dairy industry and can reduce a farmers income drastically. By using DairyCell, other more costly and time consuming methods, can be avoided and milk loss be reduced. The therapy is simple and fast, 8 minutes treatment time, after the milking, twice a day. After testing for elevated somatic cell count, attach clamps to affected quarter of udder and teats and start with treatment.

A Treatment Method, simple and fast, with a small portable and compact device!

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#### Bacteria Cause Mastitis !!!



It is believed that cows are 10X more sensitive to shock than humans

www.stray\_voltage.com

#### Pre-disposes cows to mastitis by:

• increasing the chance of **liner slip** during milking which can inoculate the teat end with bacteria that colonize the teat end and cause mastitis

• **liner slip** can cause milk droplet projectiles that actually penetrate the teat canal and carry bacteria into the mammary gland and causing mastitis



### **Liner Slip**

Air leakage



Claw turbulence

TEAT END bombardment

# Stray Voltage – Mastitis as a result of liner slip seeding teat end with bacteria



Stray Voltage – Somatic cells (white blood cells or leukocytes) enter udder to fight infection and increase the **somatic cell count** in milk.



## Stray Voltage – Bacterial toxins released by the udder bacteria enter the blood stream making the cow ill.



#### Pre-disposes cows to mastitis by:

- stressing the immune system to produce cortisol thus decreasing the cow's ability to fight infections
- **blocking oxytocin** with epinephrine released when the cow is shocked resulting in poor milk letdown and incomplete milkout
- changing the **cow's behavior** making it difficult to get cows into the milking parlor and harder to machine milk

Cortisol release from stress reduces immune response

Cortisol



#### May reduce milk yield by:

- **Shocking** the cow from shorts in electric water troughs and reducing water intake, thus less milk is produced
- Causing poor milk letdown and poor milkout
- Increasing the chance that a cow will get **mastitis**
- Mastitis lowers milk yield

#### May reduce reproductive performance:

- Cows with mastitis have lower conception rates
- Cortisol may affect reproductive hormones
- Feed and water intake impact reproduction

## Short in electric water troughs

• Electric vs frost free troughs



#### May reduce milk income by:

- Reducing pounds of **milk harvested** from the cows
- Increasing the milk somatic cell count thus reducing premiums for high quality milk

#### 2004 Kentucky cell counts by test day 5 breakdown

	Herd test days <sup>1</sup>	Cows <sup>2</sup> per herd	Average daily milk yield	Average SCC	Herd test days <sup>3</sup> with SCC greater than			
State	(no.)	(no.)	(lbs)	(cells/ml, 1000's)	750,000 cells/ml (%)	600,000 cells/ml (%)	500,000 cells/ml (%)	400,000 cells/ml (%)
Kentucky	1,867	49	62.5	383	9.7	17.7	28.1	42

#### Milk loss from elevated somatic cell counts

		Milk Loss Cow	Milk Loss Heifer
SCC	SCS	lbs/cow/day	lbs/cow/day
25000	1	0	0
50000	2	0	0
100000	3	1.5	0.75
200000	4	3	1.5
400000	5	4.5	2.25
800000	6	6	3
1600000	7	7.5	3.75
3200000	8	9	4.5
>6400000	9	>10.5	5.25

Some case histories:

You make the diagnosis and how would you correct the problem?

#### Some case histories:

- Herd JD cows quit drinking water from electric fountain\*
  - •Owner in rubber boots felt no shock
  - •Veterinarian in rubber boots felt no shock.....but when he took boots off could feel a shock
  - Volt meter showed current flow to water bowl due to a faulty ground wire

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Correction

• rewired trough

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Correction

• Power company monitored and found the same and installed a RONK blocker

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  - •Pulled barn breaker still 14 volts

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  - •Veterinarian checked entry doors and
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  - •Pulled barn breaker still 14 volts
  - •Pulled silo breaker voltage went to 0
  - Silo unloader motor had a short

Correction – repaired silo motor



Figure 3. A conventional silo with a formed central chute leading to a conveyor at the bottom

#### Some case histories:

 Herd WD – end of power company grid with old wiring and poor connections both primary (power company) and secondary (farm side)

• Cows jumped when new motor startups as milk tank compressors, silo unloader, tank agitator

Cows jumped during thunderstorms when there was lightning

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Correction - transient voltage

 Reworking both the primary and secondary grounding corrected the problem

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• Unbalanced load on the electrical system

Correction

 Installed gas heater and removed electric heaters, balanced the load on the electrical system

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• Herd **WK** – cows jumped when their udders were touched by workers

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- Herd WK cows jumped when their udders were touched by workers
- Voltage difference between pit floor and cow platform
- Workers touching cows **completed a circuit**

#### Correction

• Rewired pit floor electrical equipment and put rubber mats in for workers to stand on

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• No Voltage problems - Strep ag infection

• Highly contagious mastitis, spread at milking from poor parlor hygiene, easily controlled with post milking teat dip, dry cow therapy and culling non responsive treatments

#### Suspect stray voltage when:

- Cows are **reluctant** to enter the milking parlor
- Cows are **restless** when being milked
- Cows kick milking cluster off several times during milking
- Clinical mastitis increases even though there are no changes in management or weather
- Cows jump during lightning storm

#### What if you suspect you have a problem:

• Contact a veterinarian or extension specialist with expertise in **mastitis control** 

- Request a power evaluation from your power company and an independent electrician
- Make sure the power testing includes a **500 ohm resistor**



Volt meter with 500 ohm resistor

#### 500 ohm resistor



#### Questions