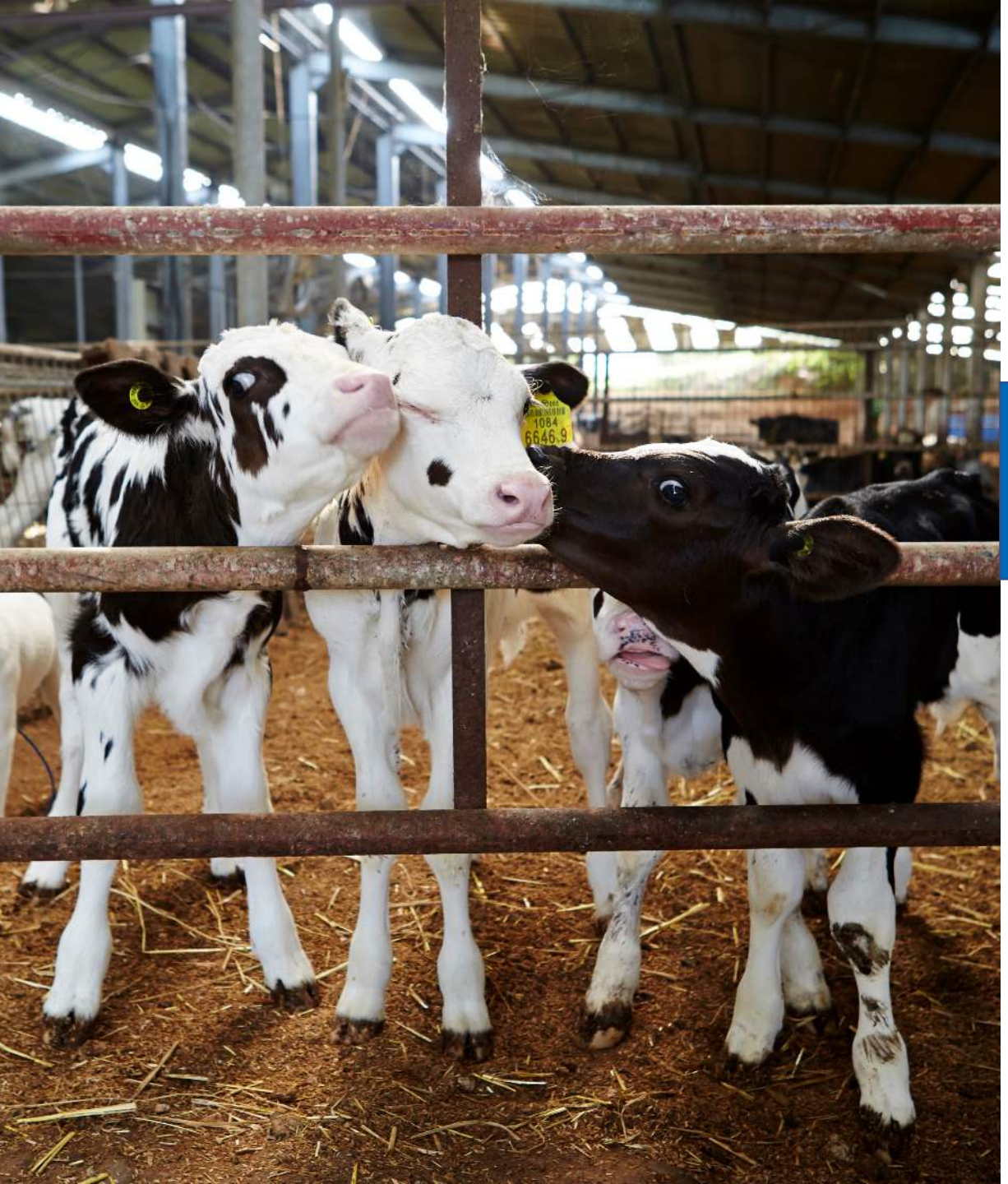

Calf Care and Hygiene

Ginger Braml & Emma Swyers

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The Primary Health Issue with Calves

Scours Symptoms:

Scours = Diarrhea

- Watery, bloody, or milky feces with mucus
- Dehydration
- Poor Nutrient Absorption
- Weak or lethargic
- Sunken Eyes
- Swollen/Inflamed Joints

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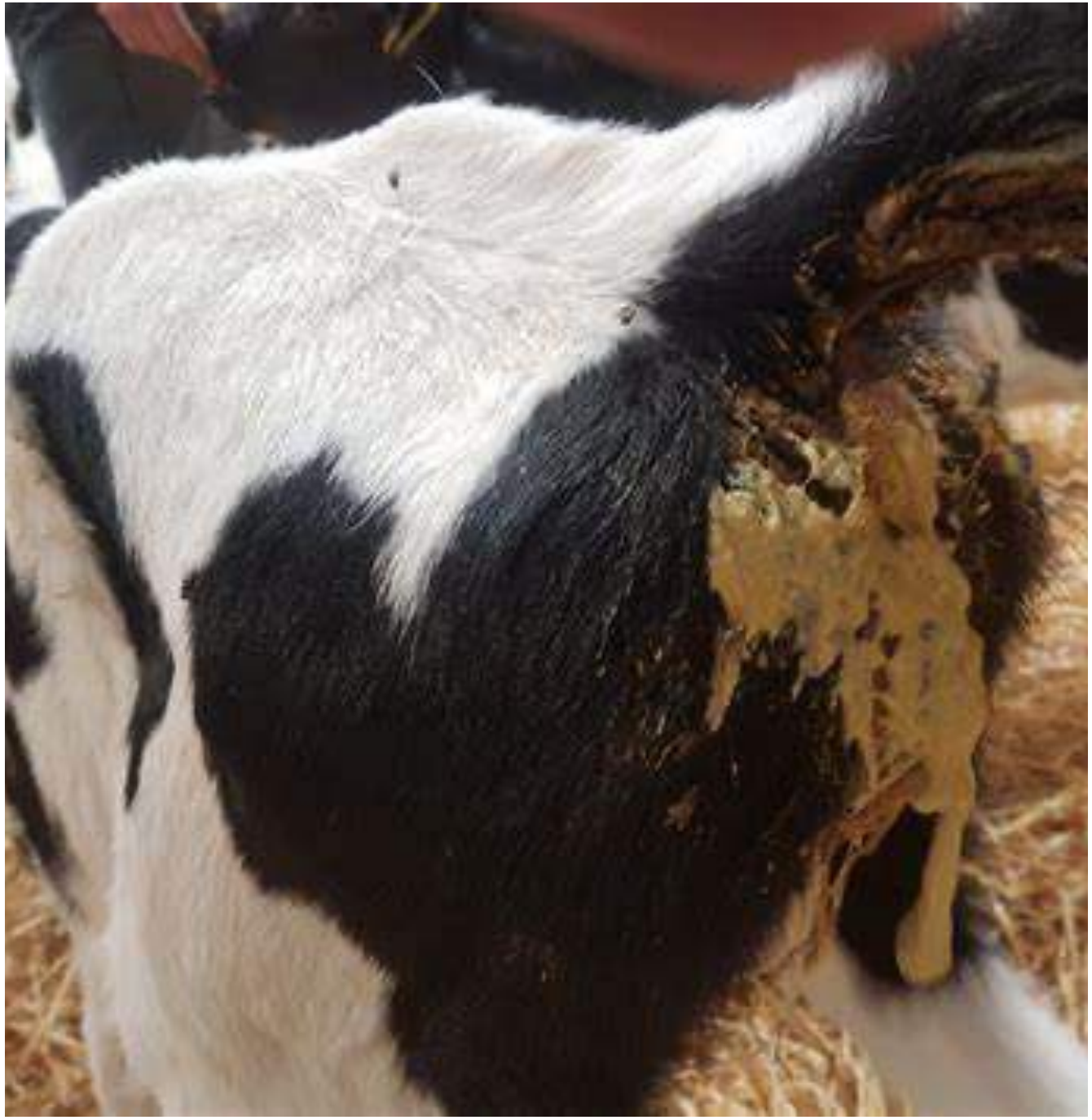
Non-Infectious Causes of Scours

- Health of Cow Prior to Calving
  - Quality of Colostrom
- Poor Management
  - Quantity of Colostrom in Timely Manner
- Quality and Cleanliness of Calving Facilities
- Temperature

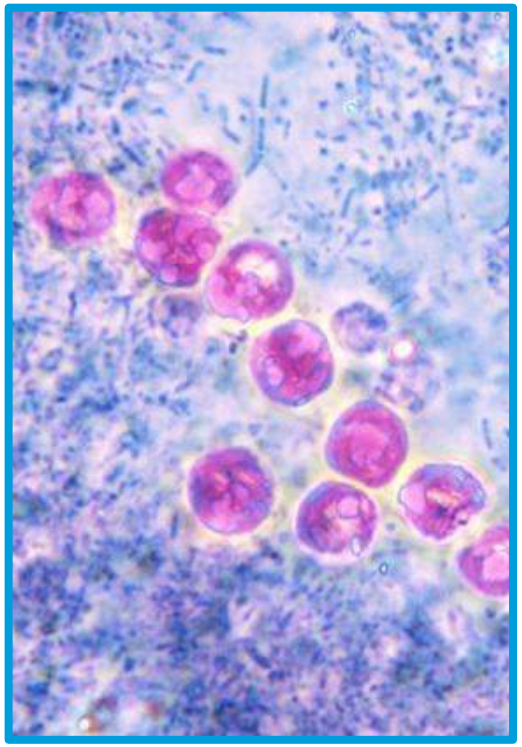
Scours Causing Infectious Agents

- Bacteria
  - E Coli, Salmonella, and Clostridium perfringens
- Viruses
  - Rotavirus, Coronavirus, Bovine Viral Diarrhea Virus, and Infectious Bovine Rhinotracheitis
- Protozoan
  - Cryptosporidium and coccidiosis are responsible for calf scours
- Molds



Cryptosporidium Parvum

- “Crypto”
  - Protozoan-single cell organism
    - Tough Outer Shell
    - Produces oocytes and sporozoites
- Cryptosporidiosis
  - Sporozoites and oocytes attack intestinal cells
    - Intestinal cells die
    - Causes atrophy and fusion of intestinal villi
      - Reduced nutrition absorption
  - Sheds through feces
    - Contagious to other animals
    - CALVES LICK EVERYTHING!
  - Chlorine and Bleach Sanitizing will Not Kill Crypto



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SCOURING CALF

- Increased mortality during early rearing period
  - Direct loss of value
  - Indirect loss of calf's future breeding and potential
- Direct cost of treatment: vet, medication, hydration, labor
- Increased susceptibility to other diseases (18x more likely to develop pneumonia)
  - Additional cost of medication and labor
- Lower growth rate. Decreased daily weight gains
  - Delayed breeding maturity
    - Fewer calves during cow's life
      - Higher cost of replacement
    - Higher risk of involuntary waste at first lactation (2.5x more likely to be sold)

References: 1. National Youngstock Survey (2018) MSD Animal Health data on file. 2. ADAS Economic Impact of Health and Welfare Issues in Beef Cattle and Sheep in England (2012). 3. GfK August 2019. 4. Heinrichs A & Heinrichs B (2010) A prospective study of calf factors affecting first-lactation and lifetime milk production and age of cows when removed from the herd. J. Dairy Sci. 94:336-341. 5. Waltner-Toews D, Martin S & Meek A (1986) The effect of early calfhood health status on survivorship and age at first calving. Can. J. Vet. Res. 50:314-317.

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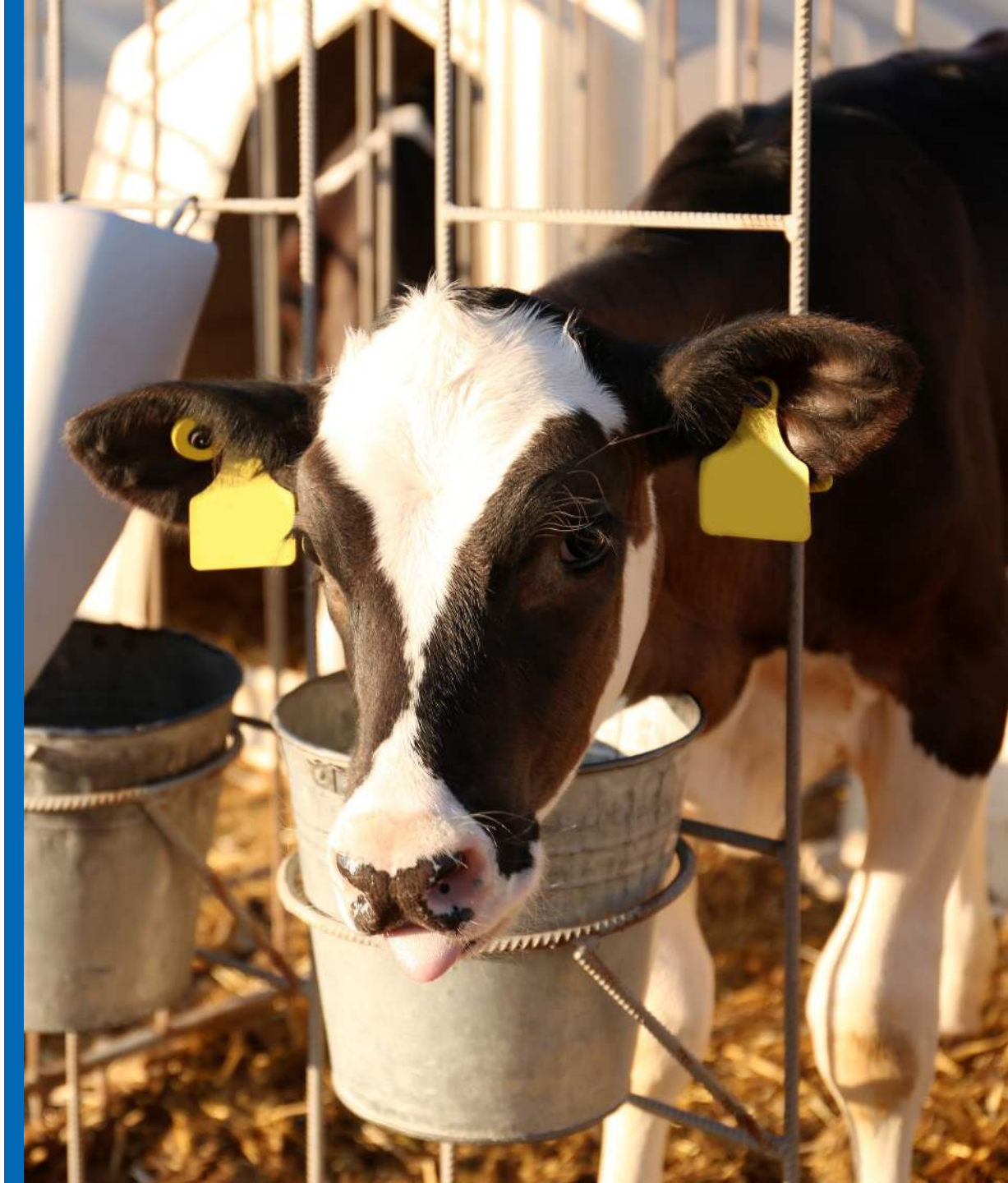
Scours Treatments

- Hydration
  - Orally or Intravenous
- Electrolytes
- Prayer

THE KEY IS PREVENTION!



Scours Prevention

- Cow Health
  - Adequate nutrition, good body score
- Colostrum
  - 4 Qts of Quality Colostrum within 2 Hours of Birth
- Calving Pen
  - Clean, Dry, and Warm
- Clean Calf Facilities
  - Pens, buckets, bottles, water
- Calf Nutrition
  - Consistent, quality, and quantity
- Vaccination for Cow
  - E.coli

How Can We Help?

- Cow Health
  - Adequate nutrition, good body score
- Colostrum
  - 4 Qts of Quality Colostrum within 2 Hours of Birth
- Calving Pen
  - Clean, Dry, and Warm
- Clean Calf Facilities
  - Effective Cleaning Procedure of Pens, buckets, bottles, water
    - Not just visibly clean
- Calf Nutrition
  - Consistent, quality, and quantity
- Vaccination for Cow
  - E.coli

CALVES LICK EVERYTHING!!!!!

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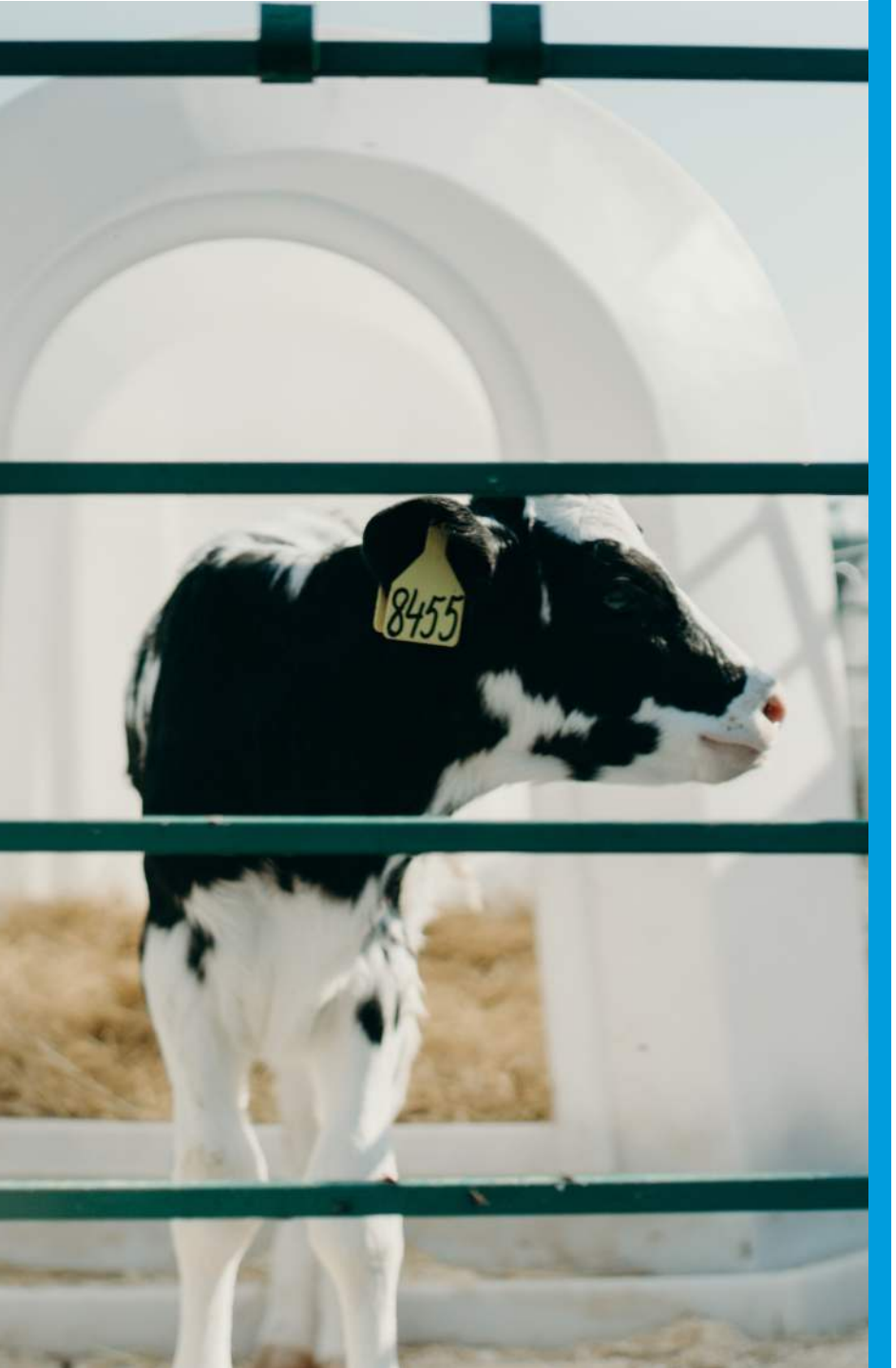

Proper Calf Facility Cleaning

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When Do We Need to Clean

- Buckets, Nipples, Bottles, Tubers, Milk Mixing Equipment
  - After each use
- Pen Panels, Flooring, and Housing
  - After each group of calves
- Waterers and Automatic Milk-Feeders
  - Weekly or when visibly dirty
- Group Feeder Nipples
  - Daily

Scours Prevention

Traditional Washing and Sanitizing

- Scrub
- Rinse
- Wash with alkaline cleaner (11-13 pH) and water above 140°F
- Rinse (2-4 pH) (100°F)
- Sanitize
- Dry

Problems Washing and Sanitizing

- Hot Water 160° F
- Traditional Sanitizers Can Not Penetrate Protozoan Membrane
- Only wash with Chlorine or Bleach

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How to Clean Housing

- Mobile parts (panels, and wire pens)
  - Move outside
  - Pressure wash
  - Foam wash
  - Rinse
  - Dry
  - Ideal rest period
  - Sanitize prior to new bedding and animals moving in
- Immobile parts (walls, and floors)
  - Remove manure and other organic material by scrapping out
  - Spray with low foam wash and scrub
  - Rinse
  - Sanitize
  - Dry

How To Clean Feeding Equipment

- Mimic CIP practices
- Recognize materials working with
  - When is a piece of equipment unsalvageable
- Ensure cleaning is being done with something clean
  - Change out scrub brush approx. once a month

Rinse

- Use lukewarm water (100-120 degrees)
- Remove organic material (milk)

https://animalwelfare.cals.wisc.edu/wp-content/uploads/sites/243/2021/02/03-Hygiene-practices.pdf

Detergent

- Hot water (120°- 160°F)
  - What if this temperatures cant be achieved?
- 11-12 pH to achieve this use a chlorinated alkaline
- Use 3-6 oz per gallon of water
- Chlorine dissolves proteins
- Alkaline dissolves fats
- **SCRUB**!!! To remove films fully

https://animalwelfare.cals.wisc.edu/wp-content/uploads/sites/243/2021/02/03-Hygiene-practices.pdf

Recommended Products

- Buckets, Nipples, Bottles, Mixing equipment, Tubes and etc
  - Foaming Chlor-Alkaline Manual Cleaner, Agroclean 305, Agroclean RTC (low temp), Low Temp Calf Detergent, Control 885
- Pen separators, Pen siding, Walls, and Floors etc.
  - Control 885, Foaming Chlor-Alkaline Manual Cleaner

CONTROL 885

AgroClean

FOAMING ALKALINE CLEANER

Optional Extra Rinse

- To prevent contamination into the acid sink
- Remove any lingering debris
- Lukewarm water

Acid

pH 3-4

Warm water 100°F- 120 °F

To remove mineral buildup

To prevent future bacteria growth (many bacteria don’t grow with acidic environments)

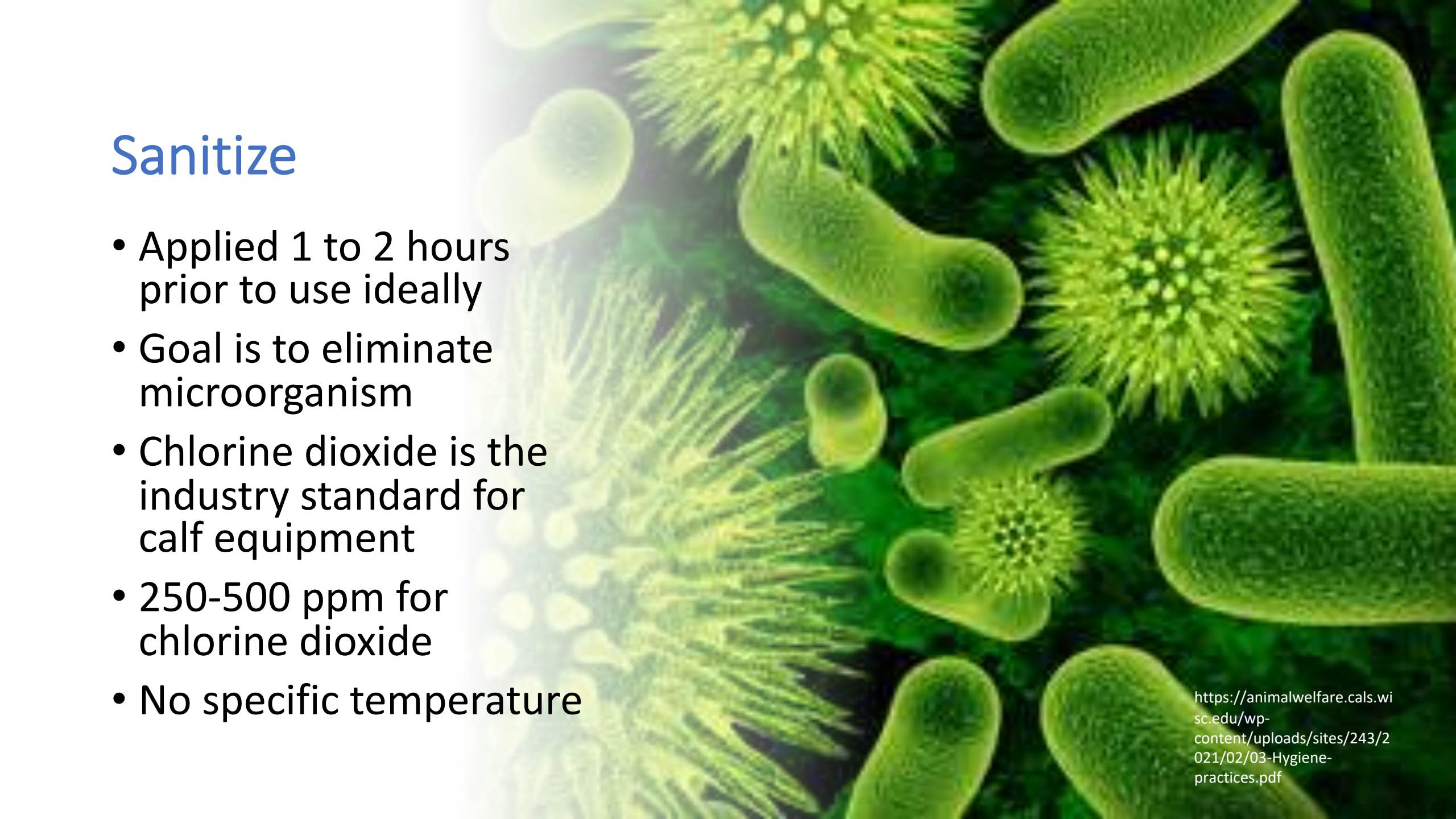
Dry

- Allowing equipment to dry prevents the growth of bacteria and molds
- “A warm, humid climate creates the perfect condition for mold and mildew to grow. ” – Dairy Herd Management

https://www.dairyherd.com/news-news-news-markets/milk-marketing/keep-your-calf-kitchen-clean-these-5-tips

Sanitize

- Applied 1 to 2 hours prior to use ideally
- Goal is to eliminate microorganism
- Chlorine dioxide is the industry standard for calf equipment
- 250-500 ppm for chlorine dioxide
- No specific temperature



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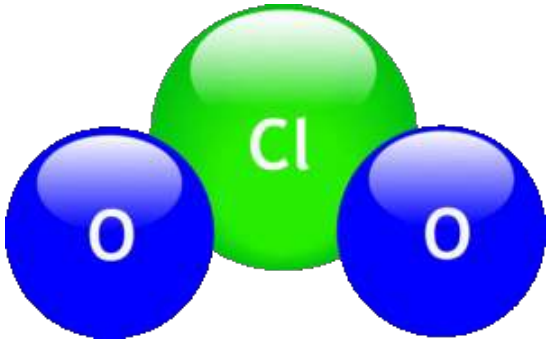
“Crypto” Prevention with Cl2O



Chlorine Dioxide (CD 114)

- Kills by Diffusion Through Cell Membranes
  - Inactivates Crypto inside out
- Prohibits Anerobic and Aerobic Bacteria Resistance Development
- More Effective Than Bleach or Chlorine

Traditional Wash

- Continue Recommended Wash Procedure
- Replace Sanitization Step
  - CD 114 can be use as a spray, foam, or soak

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CD 114 Cleaner and Deodorizer

Lab Data and Product Specs

- Mixing Rate=1:1:4
  - PPM of Cl20=2200 ppm
- 1:1:14-32 mixing ratio
  - 300-600 ppm

Marketing Strengths

- Effective at Killing Crypto When Sprayed on After Washing
- Calf hutches, floors, walls, buckets, calf bottles, etc.
- Holds Stable When Mixed Multiple Days
- Can Be Mixed More Dilute to Achieve Desired PPM
- Will Spray, Foam, or Fog

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CD 114 Stability Results

- Lab Data and Product Specs
  - Mixing Rate=1:1:4
  - PPM of CI20=2200 ppm

Dilution Rate	Start	24 Hrs.	48 Hrs.	72 Hrs.	96 Hrs.	120 Hrs.	144 Hrs.
1:1:4	2200 ppm	2300 ppm	2000ppm	1700ppm	1600ppm	1200 ppm	1000 ppm

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“Crypto” Prevention with CD 114

CD 114 Livestock Applications	CD114 Recommended Minimum Usage
Calf Water Treatment	1-3 ppm
Bottles, Nipples, Buckets, Mixing Equipment	>300 ppm
Environmental Spraying or Fogging (W/O Livestock Present)- Calf Hutches, Calf Pens, Calf Barns, Calf Feeders, Trailers	> 1000 ppm

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CD114 Pump

Mixing Chlorine Dioxide in Farm at Need

Dilution Rate	Active PPM	Recommended tip to achieve desired PPM
1:1:4	2000 ppm	Beige/Black Tip
1:1:14	600 ppm	White/Blue Tip
1:1:32	300 ppm	Yellow/Brown Tip
1:1:64	175 ppm	Light purple/Pink Tip

Other Recommended Products

- *Oxysan*
  - EPA registered sanitizer
  - Combines acid and sanitize step
  - Over 125 ppm sanitizes
  - 2-3 oz per 5 gallons of water

OXYSAN
ACID SANITIZER

Protocol Sheet

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CALF BARN CLEANING PROTOCOLS
ESTABLO DE TERNEROS PROTOCOLOS DE LIMPIEZA

DETERGENT/*DETERGENTE:* **ACID**/*ACIDO* **SANITIZE SINK**/*SANEAMIENTO DEL FREGADERO:*

STEP 1

FILL SINKS
LLENAR FREGADERO

gal Water/Agua
oz Detergent/Detergente:

gal Water/Agua
oz Acid/Acido
(DO NOT MIX WITH DETERGENT)
(NO MEZCLAR CON DETERGENTE)

ONLY Sanitize Product
(Use as Much to Rinse the Surface in)
(UNICO producto de desinfección (Utilizar lo suficiente para enjuagar la superficie)

STEP 2

RINSE 2x
(VERY IMPORTANT)
ENJUAGAR 2x
(MUY IMPORTANTE)

Rinse with Warm Water and then Dump out the Dirty Water
Enjuagar con agua tibia y luego tirar el agua sucia

STEP 3

Wash in the Detergent Sink and Scrub Thoroughly
Lavar en el fregadero con detergente y fregar a fondo

STEP 4

Rinse with Acid
Enjuagar con Ácido

STEP 5

Rinse with Sanitizer
Enjuagar con Desinfectante

STEP 6

Let Items Dry
Dejar Secar los Artículos

Measuring Cleaning Processes

- ATP meter AKA Luminometer
  - Measures the presence of ATP (adenosine triphosphate)
  - Measures in Relative Light Units (RLU)
    - More intense light= more ATP
- Goal: To have as little bacteria on surfaces as possible
- Food industry: <50 RLU
- Farm industry: <100 RLU
- Ensure a good sample

http://atticacows.com/library/newsletters/LuminometerUsingtoAchieveSanitationGoalsN19186_1.pdf

How to use ATP meter

- Turn on
- Swab area desired
- Do not touch swab
- Snap the top and squeeze all the liquid in
- Insert the test into the top
- Push “OK”
- Wait for result

Conclusions

- Scours is Most Costly Health Issue for Calves
  - They are Born With No Immunity
  - Time, Input Cost, Reduced Production
- There is No Treatment, only Prevention
  - The Factor You Can Help Them Control is the Cleaning Protocol
- Set Them up With a Correct Protocol
  - Correct Steps with Rinsing, Detergent, Acid, and Sanitizer
  - “Sanitize” with Chlorine Dioxide for Best Protection
- Measure their Success with Cleaning Using ATP
  - Not Number of Scours Cases

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QUESTIONS?