FUNCTIONAL ELECTROLYZED WATER

Livestock Agriculture Platform

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Complete file base deck for dairy cattle, swine, poultry, equine and farm hygiene applications.

Based on the ID&T Dairy Cattle presentation and PBSWC Inc. Files supporting livestock, water-quality, sanitation and CIP documentation.

One livestock platform, multiple practical uses

Functional Electrolyzed Water is positioned as a water-centered farm operations tool, not a single-species product.

1 | Drinking-water support

- Improve palatability and intake behavior
- Support hydration, digestion and productivity observations
- Start with water-quality testing and baseline records

2 | Hygiene and biosecurity

- Low-pH/high-ORP acidic water for surface sanitation
- Facility, stall, enclosure and equipment cleaning
- May reduce microbial pressure when SOPs are followed

3 | Equipment and CIP

- Alkaline and acidic streams fit dairy CIP functions
- Peer-reviewed work shows EO water CIP can perform as well or better than conventional CIP
- Potential lower chemical operating cost

4 | Odor and waste

- Manure odor
- Ammonia / nitrate-related management goals
- Lagoon and barn environment support

The coherent message: treat livestock water, surfaces, equipment and farm environments as one connected system.

Source: Dairy cattle-1; Pig & Hog; Poultry; Equine; EO Water CIP; Farm Water Quality documents

Evidence posture and claim boundary

The documentation includes different evidence levels; the deck keeps each claim in its proper lane.

1

Field reports

27 dairy farm reports; poultry, swine and equine application summaries; practical observations.

2

On-farm studies

Aurora dairy trial and Wellness Dairy Study provide measured production / SCC observations.

3

Peer-reviewed / academic

Milking system EO-water CIP studies and veterinary microorganism activity studies.

4

Regulatory boundary

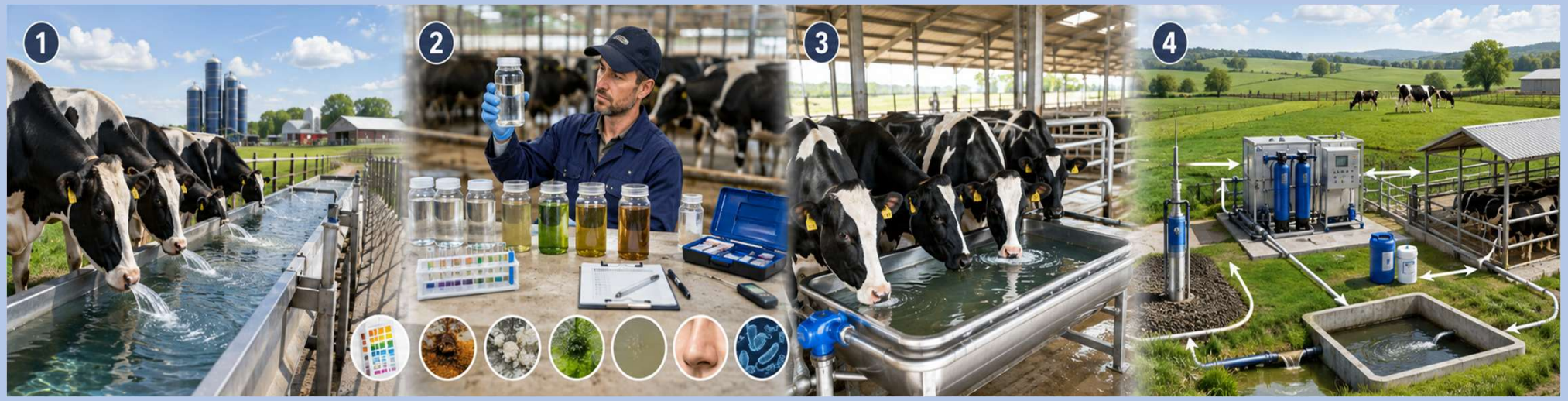
Use as farm water, hygiene and sanitation support. Do not position as an approved pesticide, veterinary drug, vaccine replacement, or disease cure.

Presentation language: “reported,” “observed,” “proposed,” “validation-stage,” and “SOP-based” where appropriate.

Source: dairy cattle-1 - Copy; Wellness Dairy Study; EO Water CIP studies; The Anti-microbial Activity of EOW against veterinary microorganisms

Water is the first livestock input

Drinking water, cleaning water, cooling water and sanitation water all affect productivity and farm management.



Dairy water demand

Dairy cattle consume large daily volumes; the dairy source material describes 30-40 gallons per cow per day, while other water-budget sources show intake rising with milk yield and warm conditions.

Water quality risks

pH, iron, hardness, corrosion, salinity, sodicity, turbidity, algae, color, taste, odor and bacterial growth can affect livestock, equipment and irrigation systems.

Water intake behavior

Palatability, odor, flow rate, waterer cleanliness, competition and water temperature can all influence intake and performance.

System view

A livestock water program must consider source water, electrochemical processing, distribution, surfaces, equipment loops and waste handling together.

Functional Electrolyzed Water belongs in this larger water-management system.

Source: dairy cattle-1 - Copy, pages 3-5; UF Water Budgets; Water: the often forgotten nutrient; NSW Farm Water Quality

How the platform is produced

Controlled electrochemical processing changes water into functional acidic, alkaline and neutral-use mediums.

Water
Municipal, well or treated source water

→

NaCl Salt
Weak neutral acid electrolyte

→

Applied electricity
Controlled amperage / voltage

→

Dual-Polarity Electrochemistry Membrane Separation

→ **1/-0 ~ Acidic Stream**
Low pH / high ORP ROS sanitation role

→ **0/-1 ~ Alkaline Stream**
High pH / Reducing ORP organic-load role

↓

Dual-Polarity Electrochemistry Neutral Bonding

→ **1/-1 ~ Neutral Stream**
Bonded Neutral
(+) Residual Sanitation Role
(-) Drinking Water Support

Drinking-water support | **Surface sanitation** | **CIP cleaning** | **Odor / waste management**

Source: Canadian government presentation; Graham Dairy Farm Presentation; EO Water CIP studies

Three useful water personalities

Different output streams perform different practical roles in livestock operations.

Acidic / oxidizing water

- Typical low pH range in source materials: about 2.5-3.0 or lower depending on generator settings
- High ORP; active chlorine / HOCl-related antimicrobial behavior
- Uses: surface sanitation, stall/enclosure hygiene, equipment sanitation, animal-surface wash concepts under validation

Alkaline / Reducing water

- Typical high pH range in source materials: about 11.0-12.0
- Useful against fats, proteins and organic soils
- Uses: organic-load reduction, milking system alkaline wash function, cleaning of surfaces before acidic sanitizing step

Neutral / Recombined water

- Recombined finished medium for use where neutral compatibility is desired
- Potential residual support and preventative maintenance surface conditioning
- Use case depends on local approval, target concentration and SOP validation

Source: dairy cattle-1 - Copy; Presentation for 03-06-08; Texas Screwworm main deck; EO Water CIP

Practical livestock application map

The same platform can serve multiple animals and farm work areas.

Functional Electrolyzed Water

Dairy & Cattle
Production, SCC, udder hygiene, CIP

Swine / Hogs
Piglets, sow support, stalls, lagoons

Poultry
Chicks, eggs, enclosures, odor

Facilities & Biosecurity
Spray, washdown, surfaces, SOPs

Farm Water Systems
pH, iron, algae, taste, odor, bacteria

Equine
Hydration, recovery support, barn hygiene

Source: Dairy cattle, poultry, pig/hog, equine and farm-water supporting documentation

Dairy cattle: the most documented livestock use

Drinking-water support, herd wellness observations and equipment cleaning all converge in dairy operations.

Reported production effects

Original dairy documents summarize reported milk-production increases and improved quality across multiple farms.

Herd condition observations

Reports repeatedly mention appetite, digestion, fecal odor, leg strength, udder condition and veterinary visits.

Quality / SCC angle

Somatic cell count is a practical tracking point because it relates to milk quality, infection pressure and economic bonuses.

CIP & milk safety

EO water has peer-reviewed support as a promising alternative for milking-system cleaning-in-place.

Dairy is the ideal anchor for the livestock presentation because it links drinking water, animal performance, surfaces, equipment and measurable economics.

Source: dairy cattle-1 - Copy; Aurora Dairy Study; Wellness Dairy Study; EO Water CIP

Dairy evidence dashboard

Measured and reported outcomes should be presented as evidence tiers, not as universal guarantees.

15%

Aurora trial

Reported milk production increase in treatment group vs control

8.5%

Wellness study

Average milk production increase in 3,000-cow study

~50%

SCC reduction

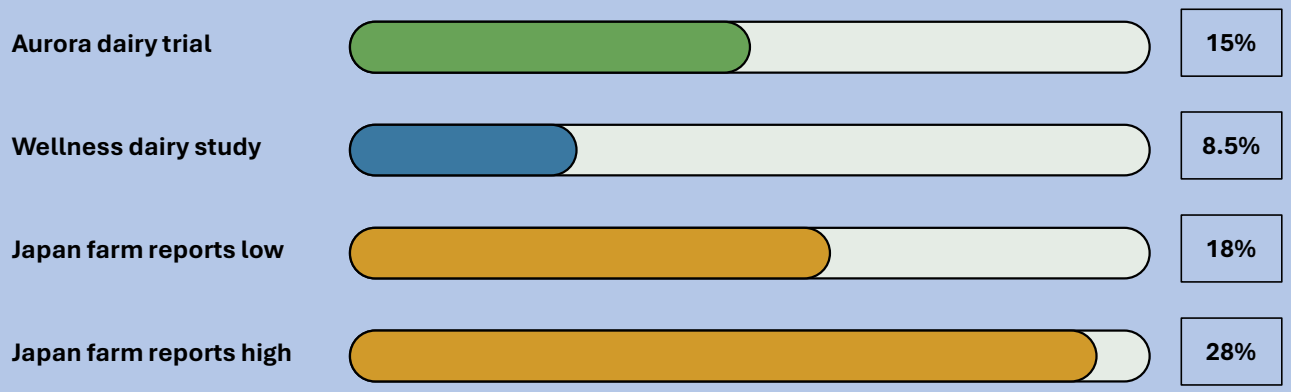
SCC dropped from about 200,000 to 117,600 after acclimation

18-28%

Farm reports

Range summarized in original dairy documents

Compare outcomes by evidence type



How to communicate this

- Field and farm reports are useful business signals.
- Controlled pilots should confirm performance in each herd.
- Track milk/cow/day, SCC, water intake, feed, temperature, disease events and SOP compliance.

Source: Aurora Dairy Study; Wellness Dairy Study; dairy cattle-1 - Copy; Reports from 27 Dairy Farms

Dairy drinking water: practical management connection

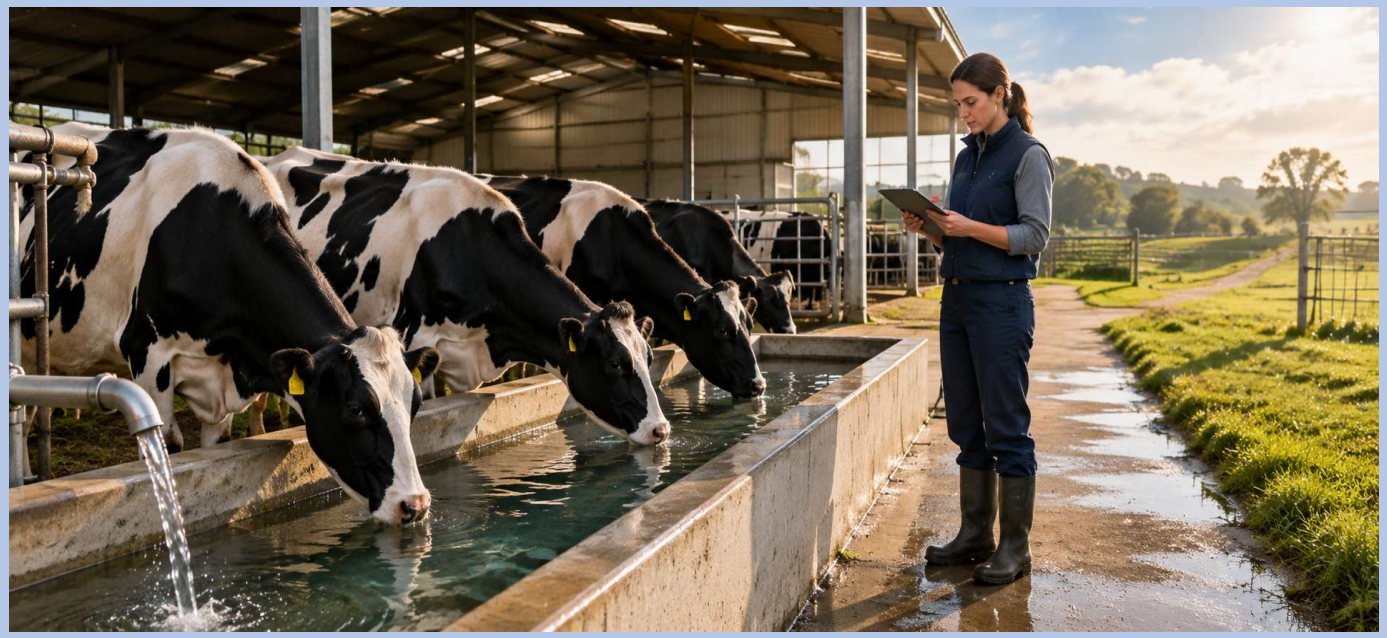
The most important nutrient is also one of the easiest inputs to overlook.

Intake drivers

- Milk yield
- Dry matter intake
- Season / heat stress
- Waterer flow rate and accessibility
- Taste, odor and cleanliness

What to monitor

- Gallons per cow per day
- Milk pounds per cow per day
- SCC and mastitis events
- Manure consistency
- Waterer slime / scale / algae



Use the farm's actual baseline. The deck should not promise a fixed increase; it should propose a measurable water improvement program.

Operational Thesis

If cows drink more clean, palatable water and the water-management system reduces microbial, mineral, taste and odor problems, the farm has a measurable path to improved production, animal comfort and equipment reliability.

Source: Water: the often forgotten nutrient; UF Water Budgets; dairy cattle-1 - Copy

Farm water quality: problems FEW must be designed around

Functional water does not replace source-water testing; it performs best when integrated into a proper treatment train.

pH

Affects plants, equipment, disinfection and corrosion risk

Taste / odor

Can reduce stock intake and create barn complaints

Iron / manganese

Can form deposits, slime and blockages; may reduce palatability

Hardness / scale

Can affect pipes, waterers and CIP effectiveness

Algae / bacteria

Can impair stock water and irrigation water

Salinity / sulfates / nitrate

Can affect animal health and productivity

Recommended approach: test source water, correct upstream problems, then set FEW chemistry targets and SOPs.

Source: NSW Farm Water Quality and Treatment; UF Water Budgets; Water: the often forgotten nutrient

Dairy milking systems: cleaning-in-place opportunity

Milking systems connect milk quality, microbial control, chemical cost and labor.

Conventional CIP

- Warm water rinse
- Alkaline wash
- Acid rinse
- Sanitizer circulation

Why it matters

Cleanliness of on-farm milking systems directly affects raw milk quality. EO water CIP has been studied because its acidic and alkaline streams match the basic functional needs of the four-step cleaning process.

EO-water fit

- Alkaline EO water addresses organic deposits
- Acidic EO water addresses mineral deposits / sanitizing role
- Both streams come from weak NaCl electrolysis

CIP is one of the strongest scientifically supported practical uses in the deck.

Source: Wang et al., EO Water for CIP of On-Farm Milking Systems; Dev et al., EO Water CIP Optimization

EO-water CIP: performance and cost signals

Peer-reviewed dairy CIP work gives the platform a practical, measurable farm-operation use.

1. Equal / better

Cleaning performance

ATP and bacterial presence results supported EO water CIP vs conventional CIP

2.

25% Lower CIP cost

Estimated lower operating cost when generator is already purchased

3

55% Cycle-time reduction

Modeling study validated shortened CIP process in simulator conditions

4. Practical translation

- Program EO water CIP by pipeline configuration, temperatures and chemistry targets.
- Validate with ATP, bacterial tests and milk-quality outcomes.
- Optimize by farm type rather than assuming one universal cycle.

5. Economic value

- Reduced chemical consumption
- Reduced handling of aggressive chemicals
- Potential reduced water temperature / energy optimization
- Improved hygiene confidence

6. Next validation step

- Farm-specific SOP
- Long-term performance
- Equipment compatibility
- Regulatory acceptance

Source: EO Water for CIP-On-Farm Milking Systems; EO Water - CIP Modeling JFE 2016; Dev et al. 2014

Dairy implementation workflow

A practical rollout should measure baseline, install the water platform, and validate outcomes by SOP.

1 - Baseline

Water analysis
Milk/cow/day
SCC + mastitis
Vet visits + odors

2 - Install

Source pretreatment
FEW generator
Dedicated lines
Storage / dosing

3 - Apply

Drinking water
Teat / surface hygiene
CIP loop
Barn washdown

4 - Verify

pH / ORP / chlorine
ATP / bacteria
Milk / SCC
Animal comfort

5 - Optimize

Flow rate
Contact time
Water quality
ROI + SOPs

Outcome goal: a farm-specific water system that improves performance without disrupting animal routines or dairy compliance.

Source: Aurora Dairy Study; Wellness Dairy Study; EO Water CIP; UF Water Budgets

SW

Swine and Hog Farms

The practical focus is drinking-water support, piglet performance, sow condition, stall hygiene and odor management.

Functional water uses

- Piglet weight-gain support as reported in the swine summary
- Sow support prior to gestation with healthier piglets as the practical objective
- Improved digestion goals with reduced ammonia / nitrate content in feces
- Reduced stress, feed intake and antibiotic-dependence goals

Acidic water uses

- Topical hygiene and wound / sore management support under veterinary protocols
- Stall disinfection and washdown
- Stagnant manure odor and lagoon support
- Reduced chemical usage goals

Positioning for swine: a water-centered management platform to support growth, digestion, hygiene and odor reduction - not a replacement for veterinary care, vaccination, nutrition or approved medications.

Source: Pig & Hog.doc

PO

Poultry Operations

Poultry applications combine drinking-water performance, enclosure hygiene, egg surface hygiene and ammonia/odor management.

Functional water uses

- Higher chick survival goals
- Weight-gain support through drinking-water mineral absorption observations
- Improved digestive system with reduced ammonia / nitrate content in feces
- Healthier, less antibiotic-dependent flock goals

Acidic water uses

- Enclosure disinfection and washdown
- Wound and sore hygiene support
- Reduced bacteria count on eggs
- Manure / lagoon odor support and reduced chemical usage goals

Poultry message: improved water management plus sanitation SOPs can reduce environmental pressure around birds, eggs and manure handling.

Source: Poultry.doc; references within EO Water CIP papers to poultry/egg surface studies

EQ

Equine Operations

The equine use case is hydration-centered, with barn hygiene and recovery-support framing.

Functional water observations

- Improved overall hydration is the primary reported equine benefit
- Source document reports reductions in arthritis and joint discomfort
- Source document reports reduction in lactic acid buildup after exercise

Practical barn uses

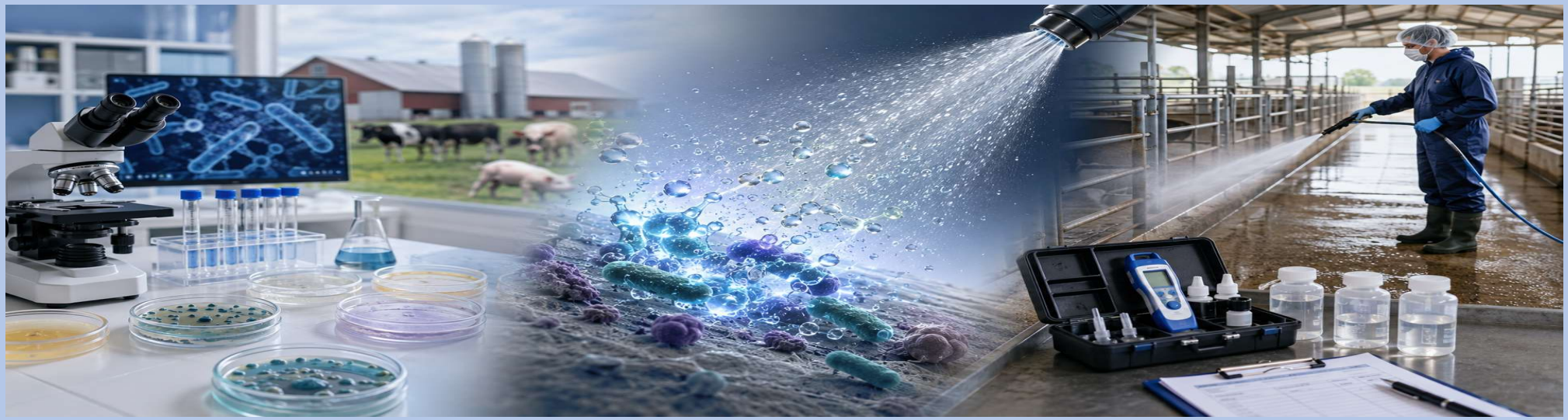
- Drinking-water palatability and intake tracking
- Stall and trailer washdown with appropriate medium selection
- SOP-driven hygiene around shared equipment and high-traffic surfaces

Equine message: present as hydration and management support. Do not position as a veterinary treatment for joint disease or metabolic conditions without veterinarian-supervised validation.

Source: Equine.doc

Biosecurity and Microbial-Pressure Management

Low-pH / high-ORP acidic water is the strongest sanitation-oriented part of the platform.



Veterinary microorganisms study

- Anode EOW was evaluated against bacteria and yeast relevant to veterinary medicine.
- S. aureus and P. mirabilis were completely inactivated after 5-minute exposure to 7.5% anode EOW in the study conditions.
- The authors emphasize need to evaluate operating conditions in animal production facilities.

Mechanism language

- Low pH favors undissociated HOCl, a major antimicrobial factor.
- HOCl can diffuse through cell walls and oxidize enzymes.
- Organic matter / serum can reduce activity; cleaning comes before sanitizing.

Farm translation

- Use as part of surface hygiene SOPs.
- Measure pH, ORP and available chlorine.
- Validate contact time, organic load, surface compatibility and worker safety.

Important: sanitation is not a veterinary drug claim, disease-treatment claim, or vaccine replacement.

Source: The Anti-microbial Activity of Electrolysed Oxidizing Water against Microorganisms Relevant in Veterinary Medicine; UF MRSA document; IDT MRSA documents

Odor, manure and environmental handling

The livestock documents repeatedly connect water quality, digestion, manure odor and barn atmosphere.

Observed odor themes

- Dairy reports mention reduced feces and urine odor.
- Swine and poultry summaries mention reduced fecal odor related to ammonia / nitrate content.
- Acidic water summaries mention manure lagoon odor reduction.

Operational uses

- Waterer cleanliness
- Barn, stall and enclosure washdown
- Manure-handling areas
- Drainage points and lagoon-perimeter odor control

How to validate

- Baseline odor complaints / observations
- Manure ammonia / nitrate sampling where feasible
- Air quality observations
- Water use and chemical-use tracking

Odor reduction is a practical farm-management benefit when backed by local measurement and repeatable SOPs.

Source: dairy cattle-1 - Copy; Pig & Hog.doc; Poultry.doc; Farm Water Quality and Treatment

Animal-surface hygiene and myiasis risk integration

The platform can be presented as a staged, validation-stage animal-surface hygiene concept.

Stage 1

- Low-pH acidic FEW wash
- Primary cleansing exposure
- pH / ORP / comfort validation

Stage 2

- Optional high-pH wash
- Organic-load reduction
- Hide cleaning / degreasing support

Stage 3

- Optional neutral residual stage
- Post-wash support
- Surface conditioning concept

Validation Required

No pesticide, larvicide, wound-medication, or cure claim.

This slide lets the livestock deck include the screwworm/myiasis work without turning the presentation into a treatment claim.

Source: Texas New World Screwworm scientific main deck

Deployment models across livestock farms

The same core generator can support several farm workstreams with different plumbing and SOPs.

Central water-room unit	**Pretreated source water, generator, storage, distribution and testing point.**
Animal drinking line	**Dedicated line or blending where appropriate for species and target chemistry.**
Portable surface system	**Spray carts, foamers or washdown hoses for barns, trailers and equipment.**
Dairy CIP loop	**Programmable alkaline and acidic EO water cycles for milking systems.**
Waste / odor zone	**Managed application to manure-handling areas and lagoon-adjacent odor points.**

A successful installation is designed from the farm's current water source, plumbing, species mix, labor flow and compliance requirements.

Source: Graham Dairy Farm Presentation; EO Water CIP; Farm Water Quality and Treatment; species summaries

QA and SOP dashboard

Functional water should be managed like any other critical farm input: measurable, repeatable and documented.

Chemistry

- pH
- ORP
- available free chlorine / target ppm
- flow rate / contact time

Animal outcomes

- milk/cow/day
- SCC and mastitis events
- weight gain / feed intake
- appetite / water intake

Sanitation outcomes

- ATP swabs
- bacterial counts when needed
- organic-load pre-cleaning
- surface compatibility

Operations

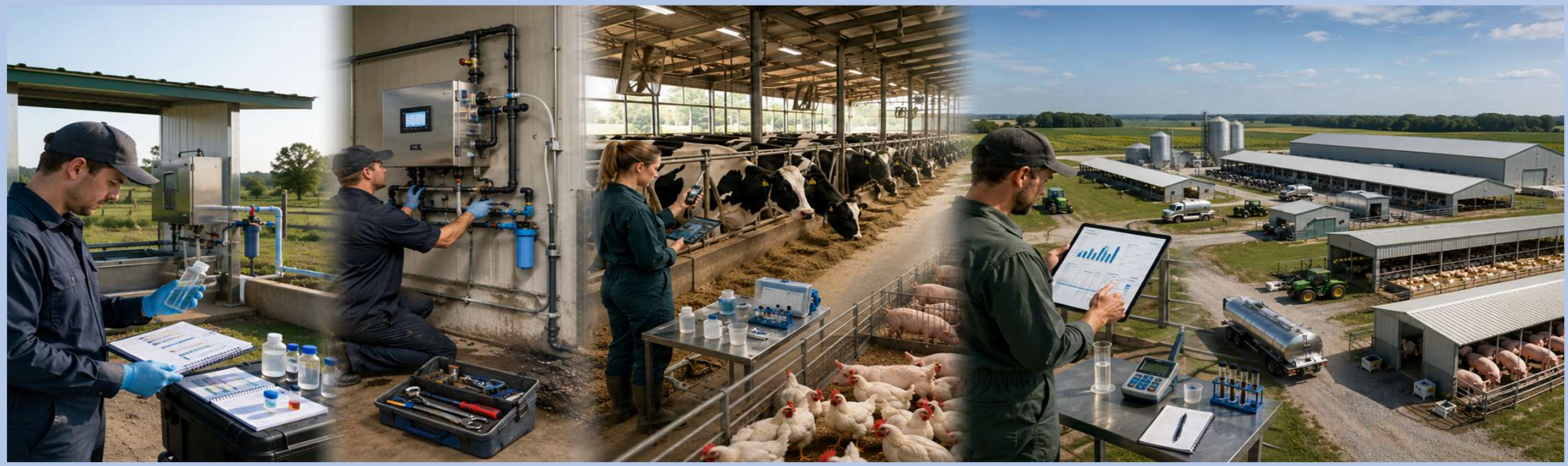
- chemical use
- water use
- labor time
- odor complaints / observations

Document targets, test daily at startup, and adjust by SOP before making performance conclusions.

Source: EO Water CIP; Farm Water Quality; Aurora Dairy Study; Wellness Dairy Study

Recommended livestock pilot program

A credible rollout turns reported benefits into site-specific data.



Phase 0 - Prep
Source-water test
Baseline KPIs
Veterinary / compliance review

→

Phase 1 - Install
Generator and plumbing
Training and safety
Chemistry targets

→

Phase 2 - Run
30-90 day monitoring
Routine test logs
Animal and sanitation KPIs

→

Phase 3 - Validate
Compare baseline
ROI calculation
SOP optimization

→

Phase 4 - Scale
Species expansion
CIP integration
Facility-wide water plan

Pilot goal: prove value on the farm's own numbers before scaling to more barns, species or sanitation workstreams.

Source: Aurora Dairy Study; Wellness Dairy Study; EO Water CIP; species application summaries

Practical uses by species and work area

This matrix keeps the presentation coherent across livestock categories.

Area	Dairy	Swine / Hog	Poultry	Equine
Drinking water	Milk, SCC, hydration	Piglet/sow support	Chicks, flock growth	Hydration / recovery
Surface wash	Udder, hide, barn	Stalls, sores, pens	Enclosures, eggs	Stalls, trailers
Equipment	Milking system CIP	Feeders / lines	Egg handling areas	Buckets, tack areas
Odor / waste	Urine/feces odor	Manure / lagoons	Ammonia / litter	Barn odor
Biosecurity	SOP hygiene	SOP hygiene	SOP hygiene	SOP hygiene

Key: each species uses the same functional-water platform differently. Start with the highest-value measurable use for that operation.

Source: Dairy, swine/hog, poultry, equine, CIP and water-quality supporting documents

Implementation readiness checklist

Use this before an on-farm proposal, pilot or demonstration.

✓ **Water source tested**	pH, TDS/EC, hardness, iron, sulfates, nitrates, bacteria, algae/taste/odor issues
✓ **Species and use case defined**	Dairy / swine / poultry / equine; drinking water, CIP, surface hygiene, odor or biosecurity
✓ **Chemistry targets set**	pH, ORP, available chlorine, flow rate and contact time based on use case
✓ **SOPs written**	Generation, storage, application, testing, worker safety and recordkeeping
✓ **Boundary reviewed**	No drug, pesticide, disease-cure, vaccine replacement or unapproved label claim
✓ **Metrics agreed**	Milk, SCC, weight gain, water intake, feed, ATP/bacteria, odor, vet events and chemical use

Source: All supporting documents consolidated into practical deployment guidance

Source highlights used in this updated deck

The deck is built from the original Dairy Cattle PDF plus supporting livestock, water quality and sanitation materials.

Dairy, water and farm operations

- dairy cattle-1 - Copy.pdf
- Dairy Cow Study conducted in Aurora, Colorado, Mar-May 2001.doc
- Reports from 27 Dairy Farms Using Alkaline Water
- Wellness Dairy Study.pdf
- Water: the often-forgotten nutrient.doc
- UF - Water Budgets for Florida Dairy Farms UF.pdf
- 2014 - Farm-water-quality-and-treatment.pdf

Sanitation, species and biosecurity

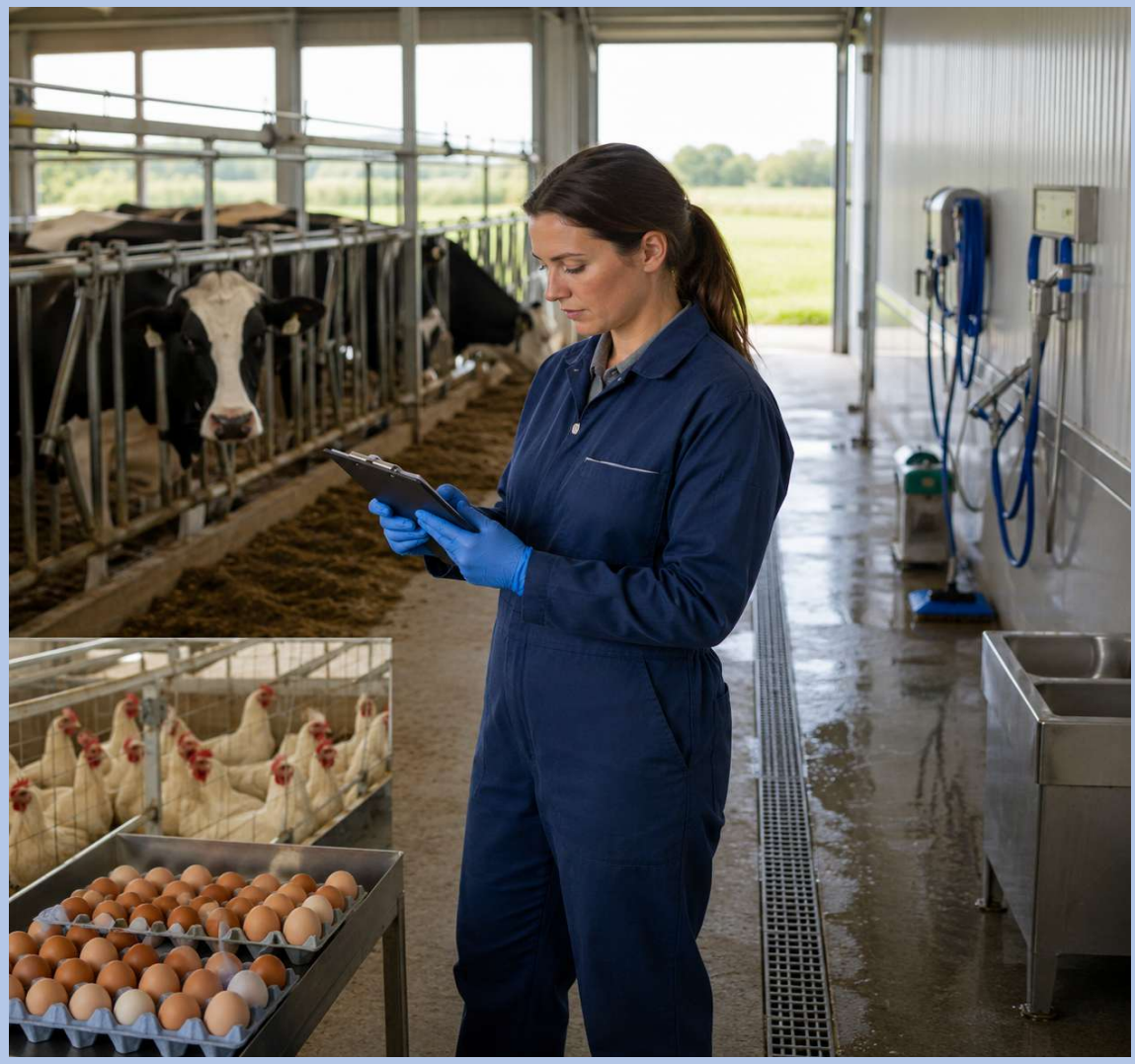
- EO Water for CIP - On-Farm Milking Systems
- Dev et al. - Optimization and Modeling of EO Water CIP
- EO Water - CIP Modeling - JFE 2016
- The Anti-microbial Activity of EOW against Veterinary Microorganisms
- Pig & Hog.doc; Poultry.doc; Equine.doc
- UF MRSA / Blackleg reference documents
- Texas New World Screwworm scientific main deck

Suggested next step: add farm-specific data, equipment photos, local compliance details and product labels before customer delivery.

GOVERNMENT REGULATOR UPDATE

Livestock and Animal Use Only

This added section keeps the deck focused on livestock operations, animal surfaces, dairy equipment, poultry egg handling, meat/poultry processing water, farm hygiene, and regulatory-ready SOPs.



Core compliance Message

Regulatory references support specific uses and limits.

They do not turn the platform into an approved veterinary drug, vaccine replacement,
animal disease cure, or unrestricted pesticide claim.

Regulatory map for livestock operations

Each agency applies to a different use area: animals, facilities, equipment, animal products, and process water.

EPA	**FIFRA / eCFR**	Pesticide registration, tolerance exemptions, minimum-risk criteria, animal-applied inert ingredients, and food-contact sanitizer limits.
FDA	**Food-contact**	HOCl process-water/ice use for meat, poultry and shell eggs, with available chlorine limits in the notification.
USDA FSIS	**Meat, poultry, eggs**	Safe-and-suitable ingredient framework for inspected meat, poultry and egg-product facilities.
USDA NOP	**Organic livestock**	Organic livestock and handling guardrails for chlorine materials and electrolyzed-water / HOCl interpretations.
CDC	**Disinfection**	Useful disinfection principles: clean first, maintain concentration, manage contact time, and avoid overclaiming.

Source: eCFR 40 CFR 180.930 / 180.940 / 180.950; FDA FCN 1811; USDA FSIS 7120.1; USDA NOP chlorine materials; CDC chlorine disinfectants guidance.

EPA guardrails most relevant to livestock

Use EPA material to define boundaries, not to create unsupported product claims.

1 Animals

40 CFR 180.930 covers inert ingredients applied to animals when used in accordance with good agricultural practice. This is relevant to animal-contact compliance review.

2 Dairy equipment

40 CFR 180.940 includes food-contact surface sanitizing solutions and specifically names dairy-processing equipment and food-processing equipment/utensils.

3 NaCl / KCl base inputs

40 CFR 180.950 addresses minimal-risk active and inert ingredients; the uploaded compliance files identify NaCl and KCl as relevant electrolyte materials.

Deck language to keep “EPA-aligned tolerance and ingredient pathways exist for specific livestock-related uses; final product claims, labels, concentrations, and state requirements must be verified for the actual use pattern.”

Source: EPA eCFR 40 CFR 180.930, 180.940, 180.950; uploaded PBSWC / pH3 compliance documentation.

FDA + USDA FSIS: meat, poultry and egg connection

This material belongs in the deck only where livestock becomes animal-product processing or inspected facility sanitation.

FDA FCN 1811

HOCl process water/ice may contact meat and poultry, including carcasses, parts, trim and organs, and may be used for shell egg washing/rinsing. FCN 1811 specifies available free chlorine not to exceed 60 ppm.

Practical placement: processing plant, chiller water, wash/rinse/dip/scalding water - not a livestock disease-treatment claim.

USDA FSIS 7120.1

FSIS maintains the complete list of safe and suitable ingredients used in production of meat, poultry and egg products. Use this as the inspected-facility reference point.

Practical placement: slaughter, processing, egg product operations, sanitation SOPs, plant verification records

Source: FDA FCN 1811; FDA environmental decision memo for FCN 1811; USDA FSIS Directive 7120.1.

USDA Organic livestock and handling framework

Organic use requires certifier review, residue control, and language tied to allowed use patterns.

What the NOP materials support

Electrolyzed water contains hypochlorous acid generated from salt and water electrolysis.

Chlorine materials are addressed in the organic rules for livestock and handling uses.

Allowed use depends on the exact application, residual chlorine limits, and the certifier's interpretation.

How to phrase it

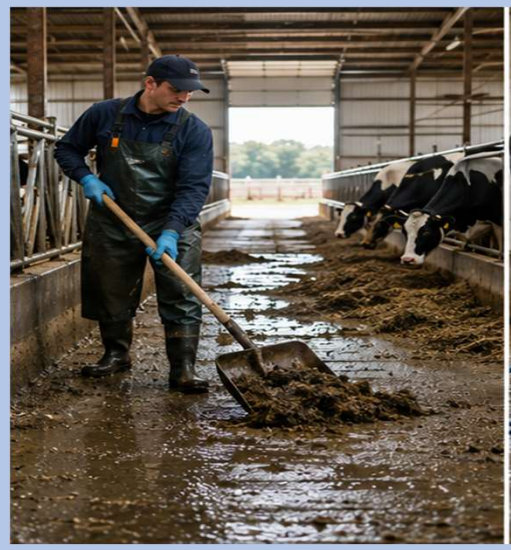
"For organic livestock and animal-product facilities, electrolyzed-water / HOCl should be treated as a chlorine-material compliance question. Confirm the exact use, concentration, contact surface, residual expectations, records and certifier approval before deployment."

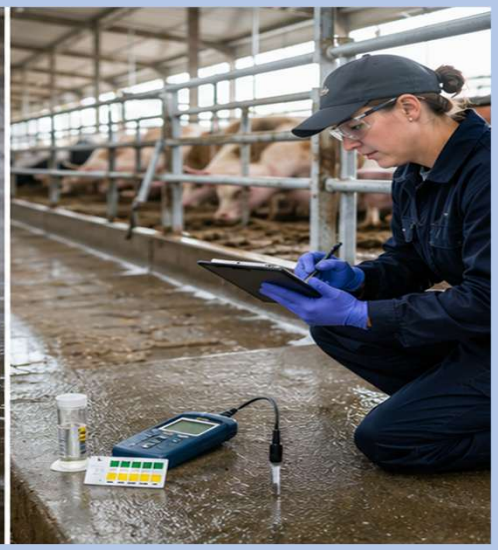
This avoids crop language and avoids implying automatic approval for all animal-contact or disease-control applications.

Source: USDA NOP PM 14-3; NOP 5026 chlorine materials guidance; NOSB hypochlorous acid livestock materials.

CDC disinfection principles translated for barns

CDC healthcare guidance is not a livestock label, but it provides useful sanitation logic for SOP design.



1 Pre-clean

Remove manure, bedding, milk film, blood, fat, dust and other organic load before disinfection.

→

2 Apply correctly

Use the right surface method: spray, mist, foam, CIP loop, soak, or wipe based on the work area.

→

3 Contact time

Maintain wet contact and dwell time; only contacted surfaces can be disinfected.

→

4 Verify

Record pH, ORP, free available chlorine, dilution, lot/source, operator, and treated area.

Important boundary: sanitation guidance supports facility hygiene language; it does not support veterinary treatment, cure or prevention claims for livestock disease.

Source: CDC Guideline for Disinfection and Sterilization: chlorine compounds and disinfection efficacy factors.

Fogging: EPA lessons translated to livestock facilities

Use fogging as a facility method, not as an animal exposure method, unless the actual label and SOP authorize it.

Regulator-derived lessons

EPA evaluated chlorine-based sporicidal liquids applied by fogging in an indoor mock-office setting. Results were variable by material: nonporous surfaces were easier; porous or organic-based materials were more difficult. Volume, active ingredient concentration, dwell time, air exchange and surface type affected results.

Livestock translation: empty barns, trailers, rooms, equipment and hard surfaces only; pre-clean first; ventilate; control worker/animal re-entry; document concentration and dwell.

Source: EPA/600/R-17/134 (2017), Fogging of Chlorine-Based Sporicidal Liquids; uploaded Purple Haze fogging solution label material.

Livestock-only scope control

This keeps the presentation coherent and avoids plant, produce, human-health and crop-processing drift.

Keep in the deck

- Dairy cattle drinking-water support and farm water quality
- Milking-system CIP and dairy-processing equipment
- Barns, stalls, trailers, holding areas and enclosure hygiene
- Poultry, swine/hog, equine and cattle operating uses
- Egg, meat and poultry processing-water references
- Animal-surface hygiene concepts with validation-stage wording

Keep out of this deck

- Plant, crop, greenhouse, produce-wash and sugarcane sections
- Human healthcare, COVID or hospital marketing language
- Claims of disease cure, vaccine replacement, antibiotic replacement or guaranteed pathogen elimination
- Unrestricted pesticide claims without matching product label and registration/exemption basis
- Fogging occupied animal spaces unless label/SOP specifically supports it

Source: User direction: livestock and animals only; regulatory claim-boundary language from uploaded compliance files and official regulator sources.

Regulatory-ready operating record

The strongest livestock presentation is one that can become a farm SOP and audit trail.

1	**Source water**	Lab water test; pH, hardness, iron, bacteria, odor, turbidity.
2	**Generated medium**	pH, ORP, FAC/HOCl, batch/lot, generator settings, date/time.
3	**Use pattern**	Species/work area, application method, surface type, concentration, contact time.
4	**Pre-cleaning**	Organic load removed before sanitation or fogging step.
5	**Verification**	Chlorine strips/meter, ATP/bacterial swabs where appropriate, operator signature.
6	**Boundary controls**	No animals present for fogging unless specifically allowed; re-entry/ventilation record.

Source: Farm water-quality documents; CDC disinfection factors; EPA fogging report; FDA/USDA/EPA compliance references.

Updated regulator source highlights

Regulator references added to the livestock deck; crop and produce uses are intentionally excluded from this update.

EPA eCFR: 40 CFR 180.930 animal-applied inert ingredients; 180.940 food-contact/dairy-processing sanitizer limits; 180.950 minimal-risk active/inert ingredients.

FDA FCN 1811: HOCl process water/ice with available free chlorine not exceeding 60 ppm for meat, poultry and shell eggs.

USDA FSIS Directive 7120.1: safe and suitable ingredients used in meat, poultry and egg-product production.

USDA NOP: electrolyzed water / HOCl and chlorine-material guidance for organic livestock and handling uses.

CDC: chlorine compounds are fast-acting disinfectants; effectiveness depends on surface contact, organic load, concentration, and dwell time.

EPA /600/R-17/134: fogging of chlorine-based sporicidal liquids shows useful hard-surface lessons and cautions for porous/organic materials.

Use this slide as the regulator reference page for the expanded livestock-only version.

Source: Official regulator sources plus uploaded PBSWC/pH3 compliance documents and Purple Haze label documents.

Conclusions and Recommended Direction

Functional Electrolyzed Water provides a versatile, science-supported platform that strengthens livestock productivity, hygiene and sustainability.

1. Water is Foundational

- Water quality directly impacts intake, health, production and equipment performance.
- A total-farm water management approach delivers the greatest benefit.

2. One Platform, Multiple Functions

- Acidic, alkaline and neutral waters serve distinct, complementary roles.
- Drinking-water support, hygiene, CIP and odor management work together as a system.

3. Evidence is Strong and Expanding

- Field reports, on-farm studies and peer-reviewed research show positive outcomes.
- Results vary by farm – SOPs, monitoring and records drive success.

4. Safe Use and Regulatory Alignment

- Use as water-quality, hygiene and sanitation support.
- Not positioned as a pesticide, veterinary drug, vaccine replacement or disease cure.

5. Practical, Scalable and Sustainable

- Equipment and operating costs are competitive.
- Reduced chemical use, less water impact and improved farm sustainability.

Recommended Next Steps

1. Baseline Water Testing
2. Develop SOPs and Protocols
3. Pilot and Monitor
4. Evaluate and Scale

By treating water, surfaces, equipment and environments as one connected system, farms can improve animal well-being, operational efficiency and long-term sustainability.

Conclusions and Recommended Direction

Functional Electrolyzed Water is best positioned as a measurable, farm-specific operating platform - not as a universal treatment claim.

1 - Water is the starting point

Test source water, establish animal and facility baselines, then set chemistry, flow and monitoring targets for the selected use.

2 - One platform, distinct functions

Acidic, alkaline and neutral streams serve drinking-water, hygiene, CIP, surface-conditioning and odor-management roles across livestock operations.

3 - Evidence supports measured pilots

Dairy observations, CIP research and sanitation studies justify site-specific validation, performance tracking and return-on-investment review.

4 - Compliance controls deployment

Match each use to product labels, concentrations, contact time, SOPs,
records and the applicable EPA, FDA and USDA framework.

Recommended next step: begin with the farm's highest-value measurable application, validate results for 30-90 days, then expand only after performance and compliance are confirmed.


Palm Beach Springs Water Company Inc.
Redefining H2O