

INTRODUCTION TO CECURE

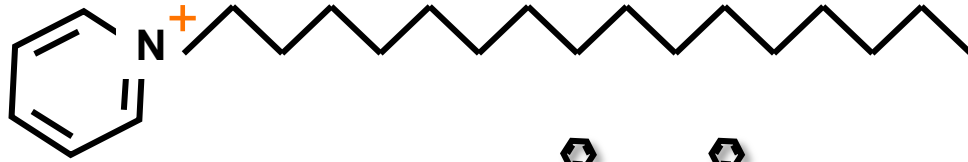
Industry-Leading Antimicrobial Technology



What is Cecure®?

- A patented solution of cetylpyridinium chloride (CPC) and propylene glycol
- Used as a direct food contact antimicrobial and processing aid
- Used by over half of US poultry processors and in 7 countries
- Approved in 15 countries

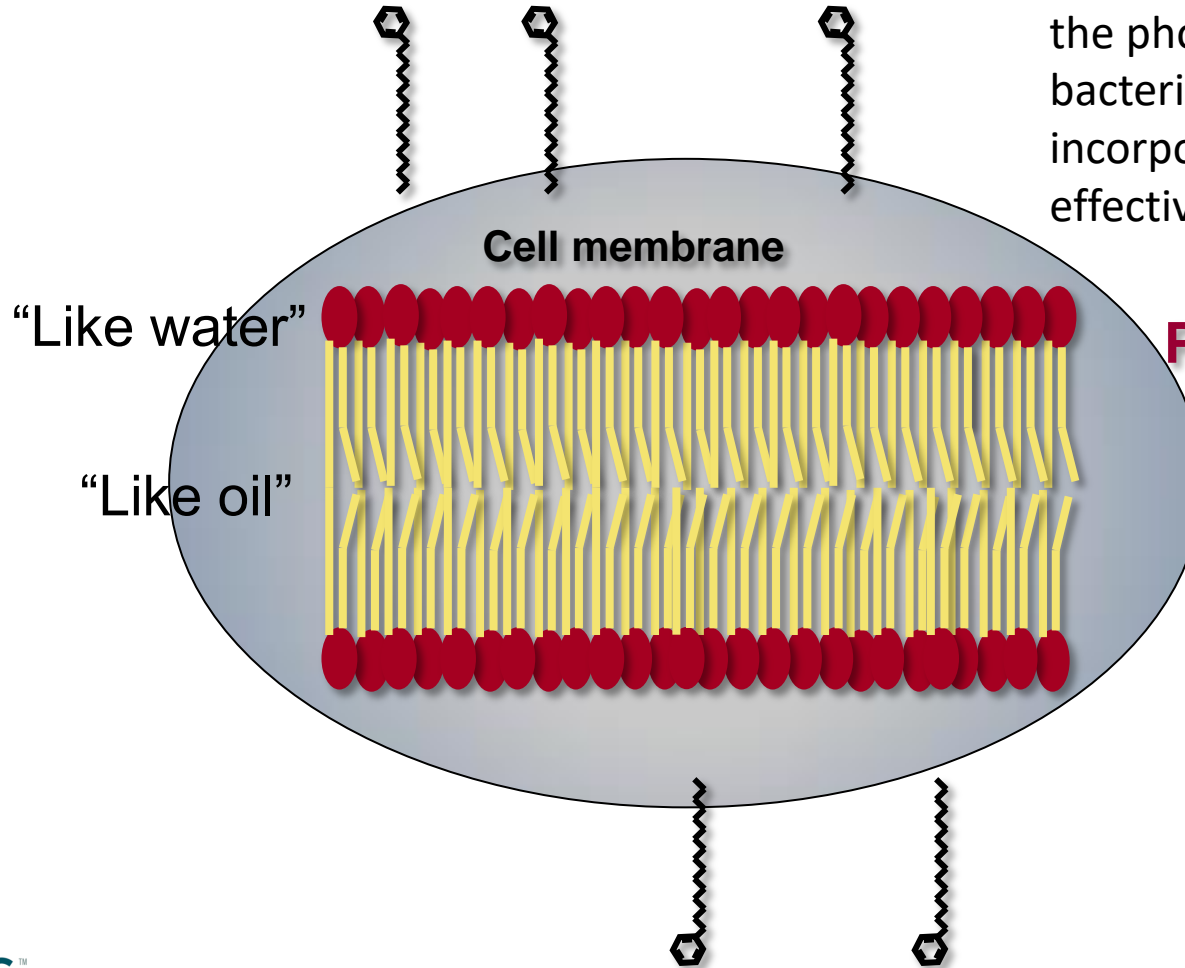
Mode of Action



CPC (cetylpyridinium chloride)

The positive charge of CPC attracts the molecule to the surface of negatively charged bacteria

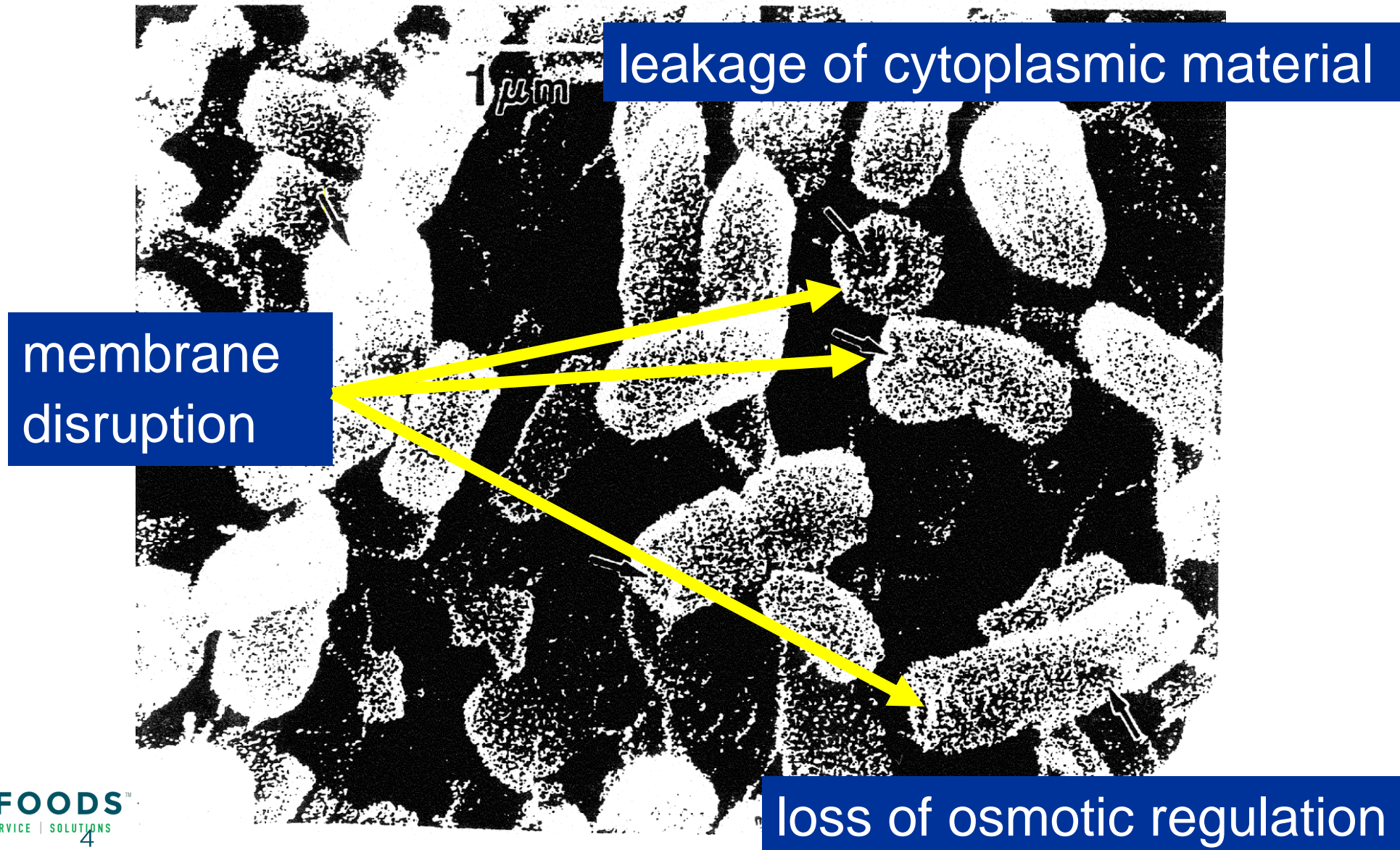
CPC molecule structure resembles structure of the phospholipid bilayer that makes up the bacterial cell membrane, allowing it to quickly incorporate itself into the cell membrane, effectively punching holes in the membrane



Phospholipids

Bacteria are negatively charged.
(-)

As CPC binds to the cell membrane, it enters into the bacterial membrane, causing:



Pathogen Reduction with Cecure®

ORGANISM	BEFORE OLR (PRE-CHILLER) (AVERAGE LOG ₁₀ CFU/ML)	AFTER OLR (POST-CHILLER) (AVERAGE LOG ₁₀ CFU/ML)	PATHOGEN REDUCTION
APC	3.85	0.96	2.89
<i>E. coli</i>	2.25	0.20	2.05
Campylobacter	2.05	1.0*	1.05+*
<i>Salmonella</i>	20%	4%	16%

*Lowest detection limit 1 log, no bacteria seen

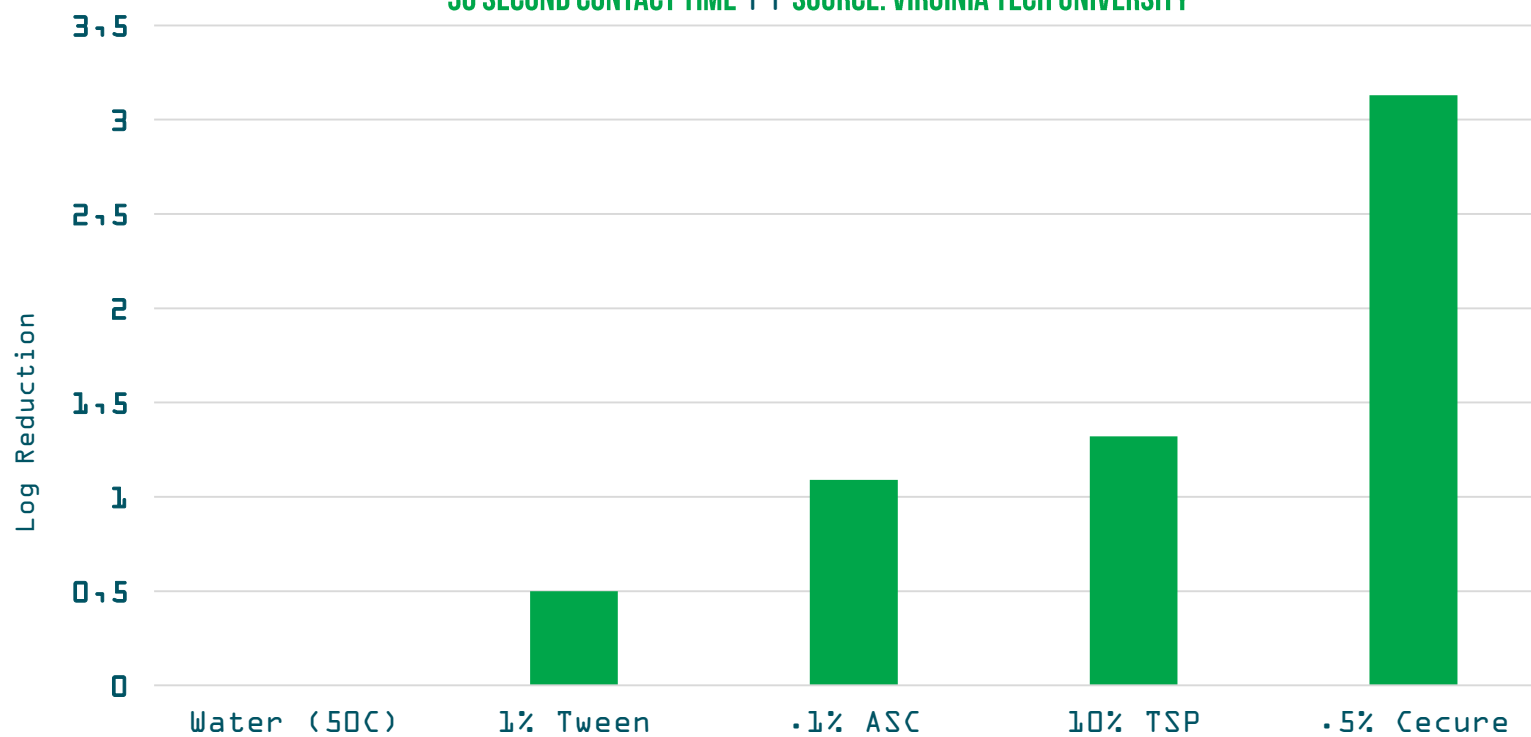
- Cecure spray cabinet at OLR (OnLine Reprocessing)
- Concentration between 0.8 and 1.0% CPC



Cecure® Comparative Efficacy

CAMPYLOBACTER REDUCTIONS ON CHICKEN SKIN WHEN ANTIMICROBIAL APPLIED AFTER INOCULATION

30 SECOND CONTACT TIME | | SOURCE: VIRGINIA TECH UNIVERSITY



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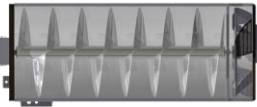

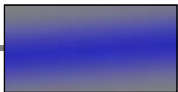
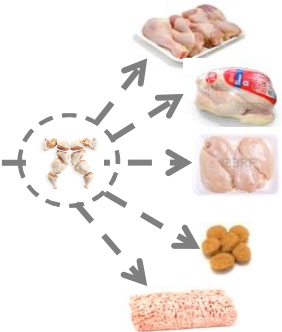



Cecure[®] Benefits

- Protect brand reputation by reducing pathogens
- Expand export potential with improved food safety

Cecure[®] Advantages

- Non-oxidative
 - No equipment or floor corrosion
 - No organoleptic changes
- Non-reactive
 - No dangerous chemical interactions
 - No off gassing
- Neutral pH
 - No effect on yield
 - No unusual worker safety issues

Cecure Points of Use

STAGE OF PROCESSING	PREPARATION (E.G. SCALDING, EVISCERATION)	"PRE-CHILL" ONLINE RE-PROCESSING ("OLR")	CHILLER	REHANG	POST-CHILL	FURTHER PROCESSING
						
CECURE POSSIBLE APPLICATION POINTS						

Dosage Levels

- Concentrated solution (40% CPC) automatically diluted prior to application.
- Use concentration varies according to plant needs, from 0.2% up to approximately 1.0% CPC.
- Typical recommended dosage ranges between 0.3-0.8% CPC concentration.
- Volume limitation in the U.S. of up to 5 gallons per bird.

Cecure® Application Methods

- Spray, dip, or drench





GEN3 Spray System

The Next Generation of Application Equipment

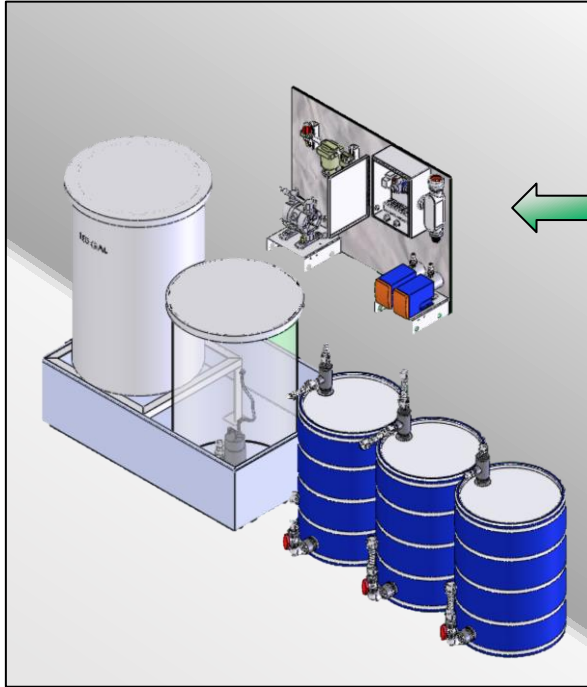


SAFE FOODS™

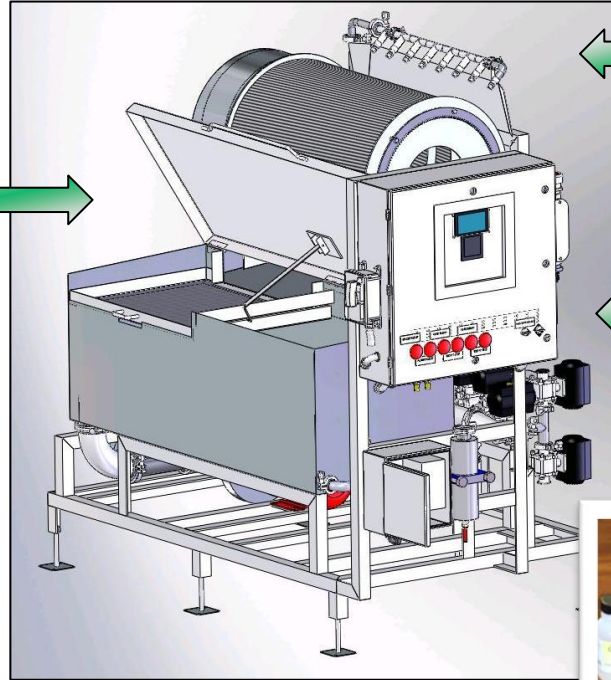
KNOWLEDGE | SERVICE | SOLUTIONS

Cecure Gen3 Application System

Concentrate Location and
System Discharge Area



Recycle Skid and
Concentration Management (CMS)



(Cecure Titration Kit)

Drench Cabinet
(Up to Six Lines)



- Simple system design and operation
- Simple installation and small footprint
- Minimize water usage and eliminate discharge concerns

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Advanced Application System

- 100% product coverage through spray or drench
- Exclusive system for Cecure application
- Recycles Cecure to optimize use
- Prechill or postchill intervention
- Simple and low maintenance
- MARC software-enabled

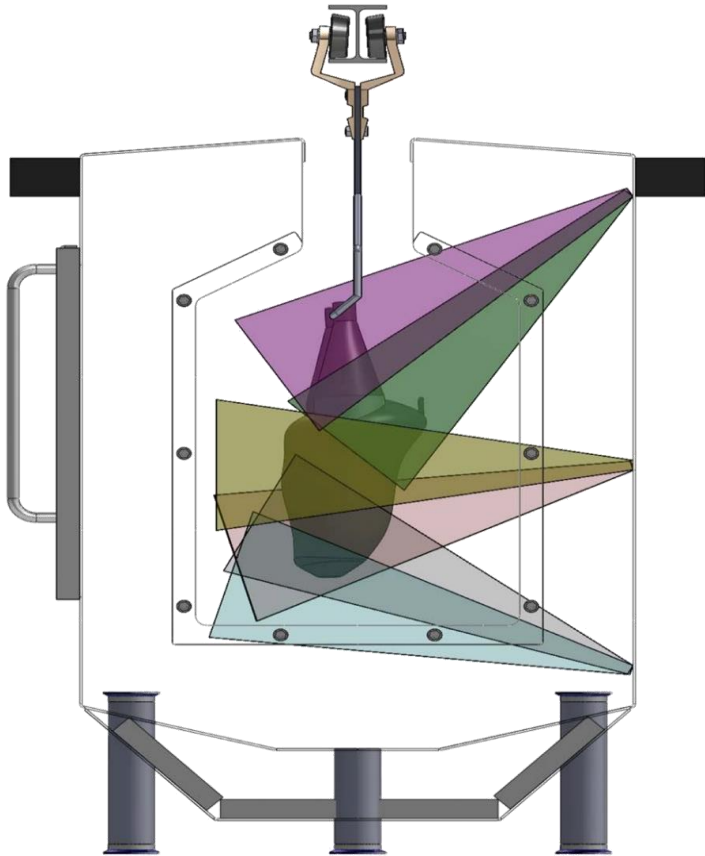


Cecure® Gen3 System



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100% Product Coverage



GEN3 Video

- [Spray/Drench Cabinet](#)



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