

Salmonella Interventions in the U.S. Broiler Industry

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Overview

- Survey results
 - Industry comments
 - Summary
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Materials & Methods

- Highly scientific – Not exactly
 - Contacted food safety specialists in major broiler companies
 - Statistically valid sample
 - Only those that responded are included
 - Meaningful? - PROBABLY
 - Probably still represents the common practices in the majority of the commercial broiler processing facilities
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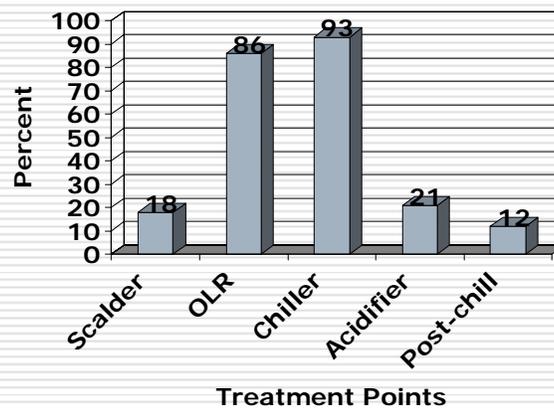
Salmonella Interventions Survey

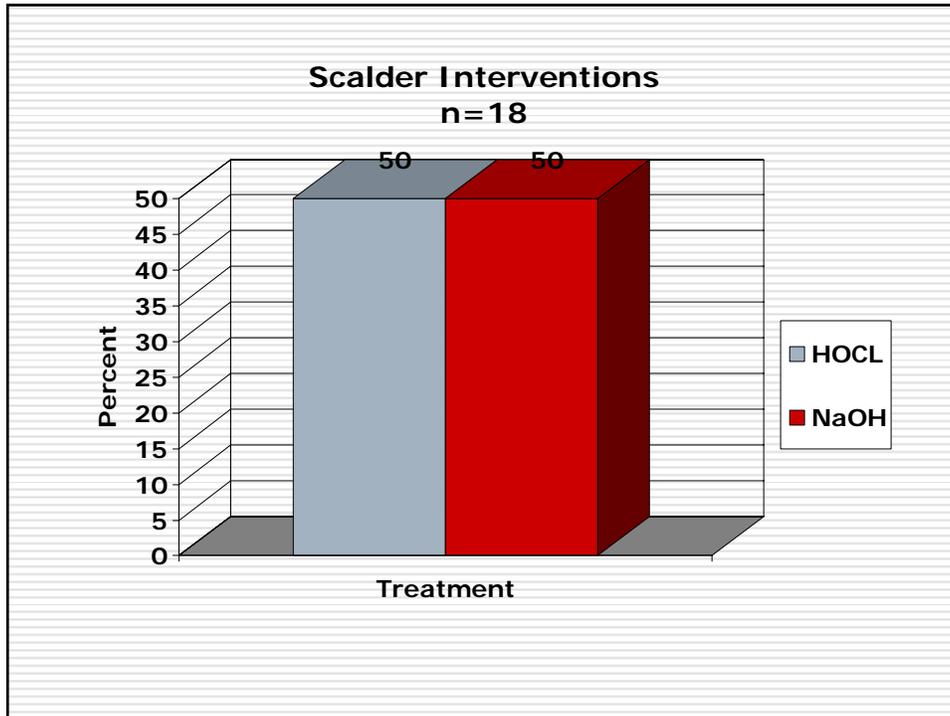
- 100 broiler processing facilities
 - 8 integrated companies
 - 5 treatment points
 - Pre-scalding brushes
 - OLR
 - Chiller
 - Chiller acidification
 - Post-chill treatments
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1st Question:

- Do you have an antimicrobial intervention at any of these locations?
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**Salmonella Interventions
Broiler Processing Plants
n=100**

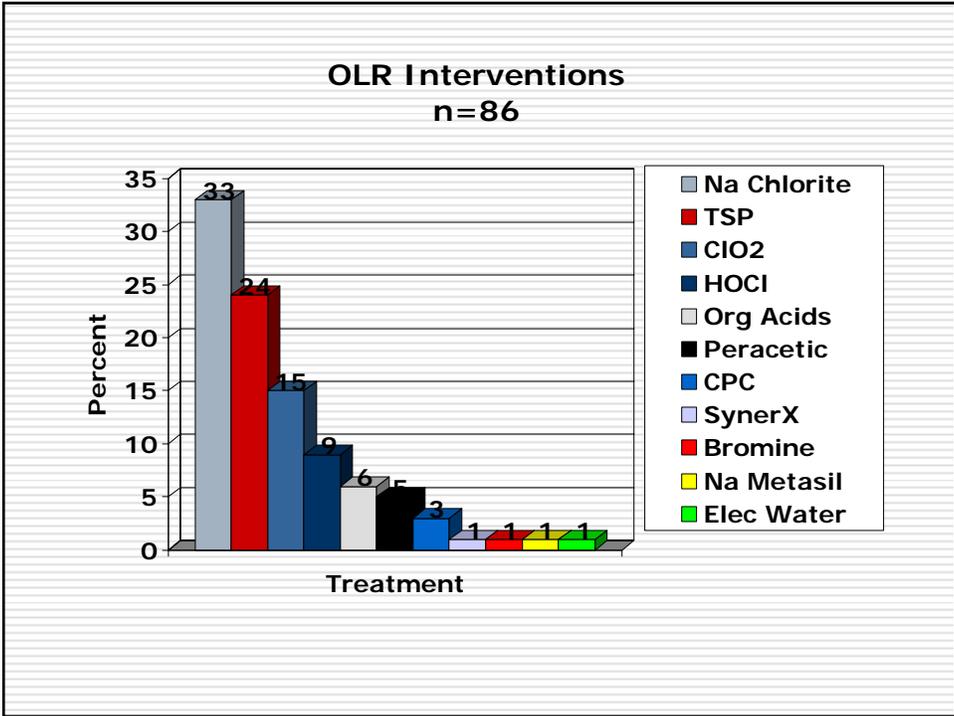




Chemicals used - OLR

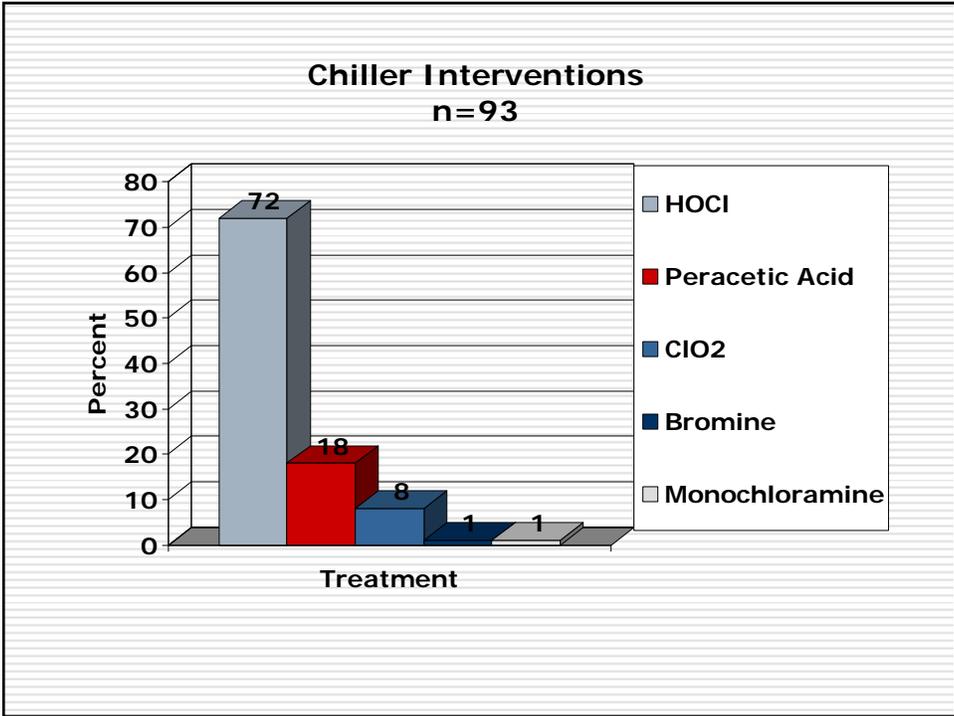
□ 11 products used

- | | |
|-----------------------------|---------------------|
| ■ Acidified sodium chlorite | Sanova® |
| ■ Bromine | Bromitize™ |
| ■ ClO ₂ | Chlorine dioxide |
| ■ CPC | Cecure® |
| ■ Electrolyzed water | |
| ■ HOCl | Hypochlorous acid |
| ■ Organic acids | SteriFx® |
| ■ Peracetic acid | Inspexx® |
| ■ Sodium metasilicate | AvguardXP® |
| ■ Citric acid and HCl | SynerX® |
| ■ TSP | Trisodium phosphate |
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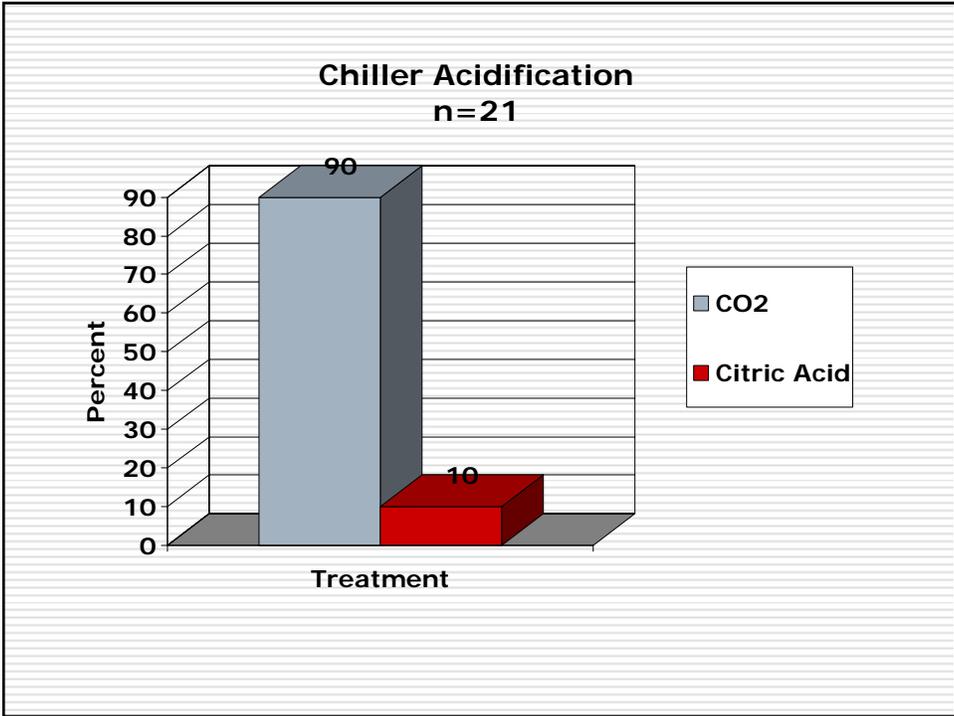
Chemicals used - Chiller

- 5 products used
 - Bromine Bromitize™
 - ClO2 Chlorine dioxide
 - HOCl Hypochlorous acid
 - Monochloramine PathX®
 - Peracetic acid Inspexx®
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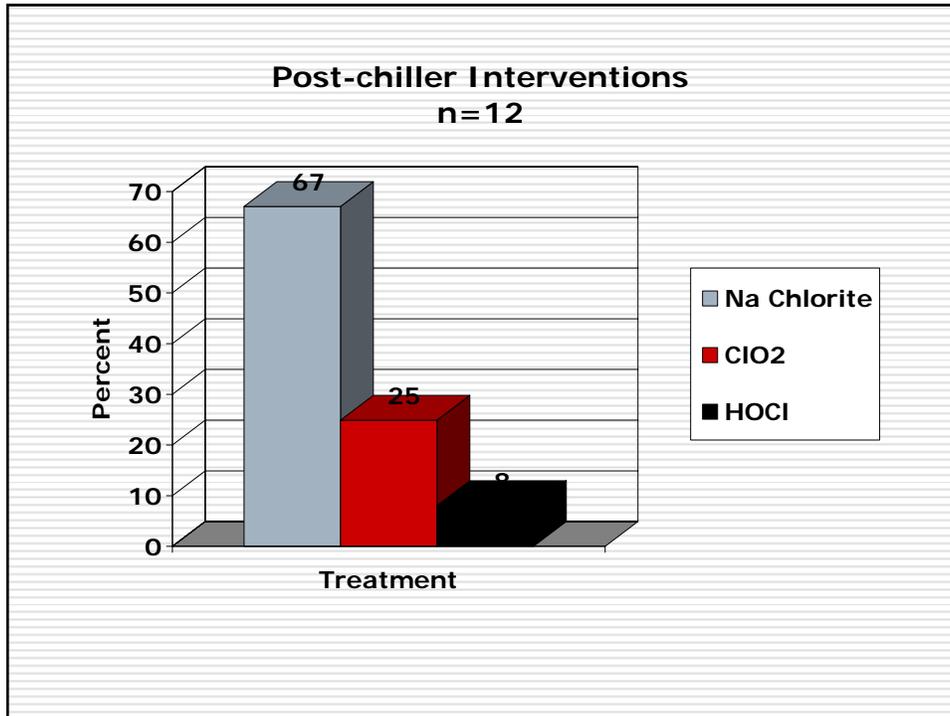
Chemicals used – Chiller acidifiers

- Carbon dioxide
 - Citric acid
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Chemicals used – Post-Chill

- Acidified sodium chlorite Sanova®
 - ClO2 Chlorine dioxide
 - HOCl Hypochlorous acid
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3rd Question:

- What are your overall impressions of the efficacy of these interventions?
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Industry comments

- It is difficult to say which are most effective or least effective because of the many variables in the plant that affect performance
 - Salmonella load, space restrictions, pH, mineral content, monochloramines from the city, employee safety, export country restrictions, wastewater impact, cost, etc. etc.
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Industry comments

- Multiple hurdles are required. None of these interventions will work without tremendous attention to the entire process
 - Regardless of what some of the suppliers say, there are none that can be installed and allow plant management to put the line on autopilot
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Industry comments

- High pH in the scalders appears to be effective
 - Chlorine dioxide in chillers is not very effective
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Industry comments

- FSIS limit of 5 ppm free available chlorine in the red water system needs to be re-assessed
 - Need higher levels of chlorine to effectively control salmonella
 - Chlorine used at a pH of 5.5 – 6.0 appears to be most effective
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Industry comments

- ❑ No confidence in Sanova or Inspexx as OLR or chiller application
 - However, Sanova in a post-chill dip tank IS effective if used in combination with Sanova at OLR location
 - ❑ TOMCO (HOCl) will give good solid protection
 - ❑ Won't back any other interventions except these two
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Summary

- ❑ Plethora of OLR antimicrobial chemicals on the market
 - 11 different products are used at OLR
 - Indicates that no single product has been determined to be highly effective
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Summary

- Majority of chillers (72%) are treated with chlorine
 - Works best when pH is also optimized to 5.5 – 6.0
 - Need to automate chlorine concentration and pH control of chillers
 - Minimize human element to improve consistency
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Summary

- Pre-scalding brushes increasing in use
 - TOMCO Pathogen Management system
 - Post-chill dips gaining popularity
 - Sanova (67%)
 - However, no single intervention appears to be sufficient
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