# *CAMPYLOBACTER*

## INTERVENTIONS DURING PROCESSING

Bacteria found in the intestines of poultry
Birds usually show no signs of illness
Contaminated poultry products can cause human illness

**800,000** human illnesses each year in the U.S.

Interventions on the farm and at the processing plant can reduce bacteria numbers

There is no single solution or remedy to prevent *Campylobacter* from contaminating poultry products. Multiple interventions on both the production side and on the processing side are needed, in combination, to reduce the level of contamination on the final poultry carcass products.

RISK · ACTION · REDUCE

### DURING PROCESSING

Bacteria levels vary with birds and flocks

**Scalding**

Countercurrent or multi-tank scalding are more effective

Scalding at temperatures above 130°F kills *Campylobacter*

Scalding can reduce *Campylobacter* levels 40%

Bacteria in the feces can be on poultry skin and feathers

**Equipment Maintenance and Cleaning**

Ensure proper maintenance of feather picking equipment

Sanitize equipment

**Defeathering is a high risk area for bacteria spread**

Bacteria in the intestine can contaminate the product

**Washing and Sanitization**

Use efficient equipment

Avoid cross contamination

Wash the inside and outside of carcasses

Sanitize equipment and area often

**Evisceration is a high risk area for bacteria spread**

Contamination can occur during any processing step

**Chillers and Post-Chill Processes**

Countercurrent or multi-tank chillers are more effective

Use post-chill antimicrobial rinses or dips to reduce bacterial numbers

Poor sanitation can impact the level of contamination

**Sanitization and Proper pH**

Monitor and ensure pH and concentration of sanitizing solution in the washing water and chilling water

Use FDA-approved sanitizers

REDUCE THE NUMBERS · REDUCE ILLNESS · WE ALL PLAY A PART

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## OVERVIEW

In processing plants, poultry pass through multiple steps, each representing an opportunity to increase or decrease *Campylobacter* prevalence and concentration. All plants should evaluate their own processing protocols to assess the effect of each step of processing to reduce contamination levels (both prevalence and concentration) of *Campylobacter*. For example, evaluating pre-scalding and post-scalding prevalence and concentration, pre-evisceration and post-evisceration prevalence and concentration…etc. (i.e., process mapping). This will allow for the identification of critical control points and facilitate targeted and customized intervention plans to be developed for each plant.

In general, the scalding, washing and chilling steps represent opportunities to control and reduce the prevalence and concentration of *Campylobacter* on poultry carcasses. On the other hand, the defeathering and evisceration steps represent areas of risk of increased contamination, both in percent positive carcasses and concentration per unit. However, each processing plant is different, and understanding the unique risks and opportunities in each plant is essential for customizing a strategic and targeted intervention plan.

## SCALDING

In most cases, scalding is an opportunity to reduce prevalence and concentration of *Campylobacter*. **Triple tank counter-current scalders** with temperature **above 130ºF (55ºC)** seem to produce the most reduction in prevalence and concentration (up to 40% reduction in prevalence).

## DEFEATHERING

Most studies that sampled carcasses before and after the defeathering process have shown an increase in *Campylobacter* prevalence and concentration during this step. It is generally agreed upon that the process of defeathering represents a **high risk of contamination** due to fecal material coming out of cloaca due to pressure from the picker fingers on the abdomen. Other than properly adjusting the picker fingers, there is limited opportunities for intervention in the defeathering step. Ensuring the proper maintenance of feather picking equipment and proper sanitization of equipment can help.

## EVISCERATION AND WASHING STATIONS

Evisceration (removal of internal organs) is another risk step, where there is an **increased chance for fecal contamination** due to breaking of the intestines and the release of intestinal content. Cropping (removal of the crop) is another step of potential carcass contamination. Properly timed feed withdrawal coupled with properly adjusted machines and water acidification could reduce the risk of contamination on the evisceration line.

An additional intervention on the evisceration line is the inside out washing stations. Multiple washing stations are strategically placed on the evisceration line, including a final wash immediately before going to the chillers, to remove any fecal contamination. Research data shows mixed results from washing stations; some studies show an increase in prevalence, others show a decrease. But, in general, it can be a powerful intervention step to reduce *Campylobacter* prevalence and concentration on the evisceration line.

## CHILLERS AND POST-CHILL PROCESSES

Chillers are the last opportunity for interventions before deboning. Some studies show decrease and others show increase in prevalence in water immersion chillers. However, the general trend is decreased prevalence post chillers. Most studies, on the other hand, show a decrease in concentration of *Campylobacter* post chillers. Similar to scalding, **counter-current and multi-tank chillers** are more effective in reducing the prevalence and concentration of *Campylobacter*. While cross contamination is a risk with water immersion chillers, the data indicates this method can be more effective than air chillers in reducing the concentration of *Campylobacter*. Post-chill antimicrobial rinses with potable water and dips in antimicrobial solutions can be used to further reduce the level of *Campylobacter* contamination in poultry meat.

## WATER SANITATION AND PROPER pH

Water in the processing plant is essential in reducing contamination. **Scalding water, washing water or chilling water** should all be sanitized. The following are FDA approved chemicals that can be used for water sanitation and carcass decontamination:

- acidified sodium chloride (ASC);
- calcium hypochlorite;
- cetylpyridinium chloride (CPC);
- chlorine gas;
- chlorine dioxide;
- 1,3-dibromo-5,5-dimethylhydantion (DBDMH);
- a solution of citric and hydrochloric acids;
- a blend of citric, phosphoric, and hydrochloric acids;
- ozone;
- sodium hypochlorite;
- peracetic acid (PAA); and
- trisodium phosphate (TSP)

Monitoring disinfectant concentration and pH in each step is necessary to maintain potency of used product.

Additionally, **monitoring the intervention** process in the plant is an integral part of its success and introducing modifications and changes when necessary. Similar to interventions in live production, no single step can solely produce the desired reduction in *Campylobacter* contamination in the processing plant. However, targeting high risk steps and **combining multiple strategies** can be effective in reaching carcass decontamination goals.