HYGIENIC SLAUGHTER – POULTRY

There is no one step, process or treatment to ensure that a carcass is free from harmful bacteria. Meat safety is a multi-step process. It is important that effective good manufacturing practices are employed throughout slaughter and dressing processes to ensure that carcasses are as clean, both visibly and microbiologically, as possible prior to the application of an approved carcass wash intervention.

The following are a few key areas to focus efforts in reducing the risk of carcass contamination in poultry slaughter. Each operation should consider its own plant and process and any potential areas of concern.

Facility

Assess the facility to ensure that the design, construction, and overall operation contribute to the production of safe and wholesome products. Consider separation 'clean vs. dirty' by adding physical barriers, proper design of air flow, and proper flow of the operation and personnel.

Control the movement of air so that the flow moves from 'clean' areas out through 'dirty' areas to control airborne contamination, which can be significant. Consider the air-flow throughout the plant – coolers, cut floor, kill floor and receiving areas – to ensure that air is not carrying contamination onto exposed product.

In addition to the direction of air flow the heating/cooling/ ventilation system should minimize humidity and protect meat products from temperature abuse.

Ensure that the facility is equipped with sufficient sanitizing stations; tools, gloves, equipment, etc., to allow the employees to perform their job in a clean and hygienic manner.

Receiving - Control Incoming Bacterial Load

"Dirty in, dirty out." Research suggests that a "dirtier" incoming load will result in increased pathogen-positive birds and decreased shelf life of product. Control of pathogens should begin in live production if a true multi-hurdle approach is to be effective.

The chiller system, even with antimicrobials, will not be a solution to all problems. If a "dirty" flock is processed then there is a high probability that the remainder of the birds that are exposed to the chiller water will be exposed to pathogens. However, the risk can be minimized with proper controls such as sanitary slaughter practices, good water quality, proper antimicrobial use, and temperature.

Slaughter and Processing

Campylobactor and/or Salmonella-positive birds during defeathering and evisceration process contaminate the carcass, the slaughter equipment and will cross- contaminate the carcasses of subsequently slaughtered flocks. Defeathering, evisceration, scalding and chilling are critical control points at processing stages where cross-contamination may occur.

A control measure to reduce or eliminate cross-contamination is logistic slaughter; in other words, Campylobactor and/or Salmonella -negative flocks should be slaughtered before Campylobactor and/or Salmonella-positive flocks. Bleeding must be conducted in a sanitary manner and the bleeding time shall not be less than 90 seconds.

Dressing

In the dressing of poultry carcasses, all hair, feathers, dirt, scurf, etc., must be completely removed and the carcass thoroughly washed prior to any further incision being made. Single counter-flow water movement and maintaining the pH of scalder bath water below 6.5 by will reduce microbial contamination both of the birds and the scalding water. Scalder water temperature must be 51-53 °C.

Washing

In order to reduce the attachment of Salmonella and other bacteria to the skin, spray washing of carcasses must occur after defeathering and after carcass transfer. Sprays at washing stations shall be of sufficient volume and pressure, to completely remove visible foreign material from the surface of the carcass including the hocks and any exposed surfaces as a result of bleeding or decapitation.

Oil glands, heads and feet may be removed from poultry carcasses, either before or after evisceration. Oil glands, heads and feet removed before evisceration may only be removed after carcasses have been defeathered and thoroughly washed. If feet are presented with the carcass for post mortem inspection or examination, they must be free of visible contamination (e.g., manure).

Evisceration

Poultry carcasses must be eviscerated with respect to the following:

- carcasses and viscera must be hung in a way that will allow for internal cavity, viscera and external carcass examination (refer to corresponding Presentation Standards in this Chapter);
- accumulated water present in the vent area, must be removed prior to opening the carcass;
- the integrity of the gastro-intestinal tract (GIT) must be maintained throughout venting, opening and evisceration operations for all species of poultry including game birds (refer to the Evisceration Standards described in this chapter);

- the incision made should be no longer than required to permit evisceration; and,
- hands or equipment must be visibly clean before entering the abdominal cavity.

After post mortem inspection or examination, all viscera including the esophagus, crop, cloaca, lungs, trachea, kidneys and reproductive organs, shall be removed from the carcass before the final wash, and shall be handled as inedible material. Control of chilling parameters: air temperature, air movement, relative humidity and filtering air can reduce Salmonella or other microbial growth.

Use an anti-microbial such as peracetic acid in the water chiller with exact dosage and contact time to reduce Campylobactor and/or Salmonella and other microbial contamination on the skin.

Unfortunately, if not managed properly, the chiller can be a major point of cross contamination. To ensure this does not occur, there are several important tips concerning chiller maintenance that should be followed.

Interventions

Antimicrobial Use

Immersion chilling has a benefit of an increased "washing effect" which lowers the total microbial load on the birds; however, it is also a potential place for cross contamination to occur if a Campylobactor and/or Salmonella positive flock is processed.

There are several antimicrobials that are approved and effective for use in the chiller to decrease pathogens. In order for antimicrobials to be effective, time, coverage and concentration need to be considered. The chiller represents an unusual circumstance since the antimicrobials are applied in an immersion system.

Chlorine

Chlorine is the most common antimicrobial used in the chiller. General use is 50 ppm with a water pH of 6 for increased effectiveness. Water is not water. Water pH and water hardness all contribute to decreased functionality in the chiller. A pH of above 7 will render chlorine ineffective. Therefore, keeping your pH at or below 6 is more economical for use with chlorine. Since chlorine has lower activity due to the high organic load in the chiller, it is always a good practice to measure free chlorine. If there is free chlorine present (amount is dependent upon organic load) then that ensures there is enough chlorine to cause effective destruction of pathogens.

Peroxyacetic acid (PAA)

Peroxyacetic acid (220 ppm maximum level) has also been used effectively as a chlorine replacement for processing plants. PAA is a combination of peracetic acid and/or acetic acid and hydrogen peroxide. The use of PAA proved to be far superior to chlorine as an antimicrobial in chill systems for several reasons. It was very effective at controlling pathogens and spoilage microorganisms during immersion chilling and also reduced cross-contamination.

Other antimicrobials approved include Bromine, CPC, organic acids, TSP, acidified sodium chlorite and chlorine dioxide.

Whichever antimicrobial is chosen, ensure that limitations and usage levels are understood to have an effective and cost-effective product. A higher concentration than needed as well as too low of a concentration can both be costly.

Know your Sanitation Practices

Sanitation is not often considered as an important practice to include in chiller management. However, it is critical. There are many components to the chiller that if not cleaned properly can result in higher microbial load (decreased shelf-life) and higher pathogen positive birds. For example, if air agitation is used, the air lines should be cleaned and sanitized regularly to prevent mold and other bacteria from infiltrating the chiller.

In addition, the Clean-In-Place system requires certain chemicals to ensure proper cleaning of the pipes and to prevent build- up of compounds that can decrease efficiency.

A best practice is to work with a chemical company and a sanitation expert who has experience in poultry meat plants and can develop a sanitation plan to ensure cleaning and sanitizing efficacy.

For more information, resources, or help with your program please contact:

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