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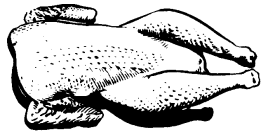


PROCESSING TIP . . .

CONTROLLING *SALMONELLA* CROSS-CONTAMINATION IN THE SCALDER

Scalding is one of the most important processing steps with regard to controlling the prevalence of *Salmonella* on processed ready-to-cook carcasses. The scalder is the first area in the plant where pathogenic bacteria associated with the surface of one bird can be washed free from that bird and be spread to the surfaces of other birds. This situation may lead to increases in overall prevalence of *Salmonella* on carcasses. Interestingly, the actual number of *Salmonella* on positive carcasses decrease as bacteria encased in excreta are washed free from the surface of the bird. However, because *Salmonella* negative birds may then become contaminated, the overall prevalence increases.

Before birds enter the scalder, a few precautionary measures should be taken. Application of large amounts of water through misters in the growout house should be avoided if possible. This causes the birds to become wet and pick up excreta on their skin and feathers. This situation results in the material being washed off in the scalder, leading to a filthy scalder and cross-contamination. If the birds are large and the temperature and humidity are so high that misting cannot be avoided or high mortality will result, then bird scrubbers and washers should be installed. Bird scrubber/washers consist of two rotating large brushes (approximately 3 feet long) on either side of the birds as they go down the processing line just prior to the scalder. Moreover, as the birds pass between the rotating brushes, chlorinated water should be sprayed over the surface of the bird. This system can drastically cut down on the quantity of excreta that is transferred from the skin and feathers of the bird to the water in the scalder.

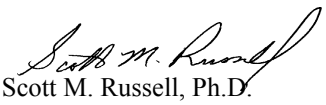
Some companies that use multi-stage scalders have begun to decrease the temperature in the first scalder tank from the normal temperature range of 128-132°F to 100-110°F. This should not be done because excreta, as it comes off of the surface of the birds, will sink to the bottom of the scalder tank. As the shift progresses, more and more excreta may build up in the bottom of the scalder. If the temperature of the scalder is 100 to 110°F, and there are any *Salmonella* in the excreta at the bottom of the tank, the *Salmonella* will begin to multiply rapidly. Essentially, at 100°F, the processor is operating the world's most expensive *Salmonella* incubator. In the scalder tank at low temperature, the *Salmonella* cells have all of the components they need to multiply rapidly. They have the optimum growth temperature, moisture, nutrients, pH, etc. Thus, the processor will essentially be inoculating bird after bird with *Salmonella* as they go through the scalder.

It is extremely important for the water in the scalder to move against the carcasses, going from the exit of the scalder toward the entrance (counter-current). This opposite directional flow is essential to remove feces from the birds

as they travel through the scalder, moving from the dirtiest water to the cleanest. Most older scalders are similar to a bath, as opposed to having a counter-current flow. This counter-current flow has the effect of washing the chickens, much as a fast moving river would wash dirt from a person better than would a bathtub. The rate of water flow should be as high as possible, so as to dilute the concentration of feces and bacteria in the scalder. There is a common adage that goes "dilution is the solution to pollution" and it applies in this case. However, many poultry companies have difficulty in increasing water flow because of municipal water supplier limits.

Some plants use single stage scalders. A gradient of clean to dirty water cannot be produced as well in these types of scalders. Plants not equipped with multi-stage scalders should attempt to make their scalders multi-stage.

If the surface of the carcass is contaminated with *Salmonella* in the scalder as a result of the bacteria being transferred from bird to bird, another problem may occur in the next processing step. In the picker, feathers are removed and the contaminated water from the scalder may be massaged into the open feather follicles. This allows *Salmonella* to become encapsulated within the follicle, which later closes due to contact with cold water in the chiller. Encasement in the follicle protects *Salmonella* from disinfection by automated reprocessing systems (TSP or Sanova) or from chlorine in the chiller. Thus, prevention of contamination in the scalder is an essential step in reducing overall *Salmonella* prevalence on finished carcasses.



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