



Solving Fecal Contamination Problems in the Processing Plant

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Since the inception of the Hazard Analysis and Critical Control Point (HACCP)/Pathogen Reduction Final Rule instituted by the USDA-FSIS, poultry processors have been required to produce finished carcasses that are free from fecal material. This requirement is termed *zero tolerance* because the U.S. Department of Agriculture does not allow any carcass contaminated with excreta to proceed to the chiller system. Cases have been reported by the industry where carcasses with almost indistinguishable amounts of excreta or ingesta have gone into the chiller, only to have the USDA stop the line and remove all of the carcasses to be re-washed by hand (reprocessed). So this regulation should be strictly followed.

Prevention of fecal contamination in the poultry processing plant begins long before the birds enter the facility. Proper management of chickens in the field coupled with correct adjustment of processing equipment, can have a tremendous impact on fecal contamination in the plant. The most important aspect of reducing fecal contamination is to first diagnose the origin of the problem. You must determine whether the problem is related to deficiencies in the field or to deficiencies in the plant.

Growout Conditions

Companies that grow large birds and are located in extremely hot and humid climates may apply large amounts of water through misters in the growout house to keep the birds cool and prevent excessive mortality. Avoid this practice if possible; it causes the birds to become wet and pick up excessive quantities of excreta on their skin and feathers. The material picked up on the skin and feathers can be washed off in the scalders, leading to a filthy scalders and cross-contamination. If the birds are coated heavily enough, the material may not even be removed in the scalders. In some instances, the birds may continue to the pickers and on down the line with caked feces on the skin, causing a fecal contamination failure.

If the birds are large, and the temperature and humidity in the growout house are so high that misting

cannot be avoided, then install bird scrubbers and washers. Bird scrubbers/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 scalders. Moreover, as the birds pass between the rotating brushes, chlorinated water should be sprayed over the surface of the bird. This system can drastically reduce the quantity of excreta transferred from the skin and feathers of the bird to the scalders water; it will also reduce material that might remain on the skin of the bird as it progresses through the plant.

Processing Equipment

The scalders is one of the most important processing steps with regard to controlling external fecal contamination on processed ready-to-cook carcasses. The water in the scalders must move against the carcasses, going from the exit of the scalders toward the entrance (counter-current). This opposite directional flow is essential to remove feces from the birds as they travel through the scalders, moving from the dirtiest water to the cleanest. Many 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 to dilute the concentration of feces and bacteria in the scalders. Many poultry companies may have difficulty increasing water flow because of municipal water supplier limits.

Some poultry processing plants still 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 try to make their scalders multi-stage.

Within the processing plant, inspect each individual line to determine if differences in fecal contamination can be observed from line to line. If differences are observed,

then the machinery on a particular line may be the culprit. Then examine carcasses coming from each piece of machinery to determine the origin of the problem.

Squeezing carcasses after venting or after opening can provide information about the source of the problem if feces leak from nicked intestines or vents. Additionally, careful examination of the intestines and identification of the area in which the intestines are nicked can provide useful information as to the source.

As a last resort, if you find that the venter, for example, is not operating properly, contact the company that manufactured the equipment and apprise them of the situation. After evaluating the machine, if they do not agree with your assessment and blame the problem on “weak intestines,” then processing the birds from another plant that has not experienced fecal failures using the venter in question may provide clarification. If the fecal problem still persists, then the equipment is likely the culprit.

Another approach is to do the opposite. Process the chickens that supposedly have weak intestines in another plant that does not have any fecal failure problems and if the problem goes away, it's the venter, not weak intestines.

Improperly adjusted venting, opening or evisceration machines can nick the intestines, causing feces to spill onto the carcass during evisceration. This can become especially evident in cases where the feed withdrawal period was not optimal and the intestines retain feces or gas. Numerous processors have recently experienced problems with fecal contamination due to venting machinery that needed refurbishment. After replacing worn out parts in the venting machines or replacing the machines altogether, fecal failures decreased significantly.

Feed Withdrawal

By evaluating the intestinal strength and content within the plant, feed withdrawal problems or diseases may be identified. The intestines should be evaluated by a

qualified laboratory for diseases such as coccidiosis and necrosis. If evidence indicates that the birds have had intestinal diseases, then the growout operation needs to be improved to avoid contamination in the plant. Intestinal weakness may be tested using an Instron, which pulls the intestines apart until they break and measures the amount of force required to tear the intestines. By comparing these data to intestines that are strong and do not tear in other processing facilities, it can be determined whether the intestines are weak.

Notice seasonal trends as well. Unavoidable seasonal variation in fecal contamination levels can occur due to the birds gorging themselves in hot weather. They tend to eat large quantities of food at night and not as much during the heat of the day, which throws off their feed withdrawal schedule. Expect more fecal failures as the weather becomes hotter.

Some companies have installed a double bar system, which squeezes the back-end of the carcass just after picking. This causes any feces in the colon to be expelled. Just after squeezing, the back-end of the carcass is washed using a high-pressure sprayer. This process reduces fecal leakage from the vent during venting, opening and evisceration. It also reduces the amount of feces that may leak from the vent in the event of line jerking or swinging.

The inside/outside bird washer (IOBW) should be checked by the maintenance staff frequently to ensure that each nozzle is functioning properly and has the correct amount of pressure. Also, the orientation of the nozzle should be correct. This system can greatly decrease the amount of residual feces on the carcass.

Summary

Fecal failures can usually be traced to specific problems in the field or plant. By conducting a thorough evaluation and adjusting management in the field or equipment in the plant, great improvements can be made. Seasonal variation may also occur that is unavoidable due to the birds gorging themselves in hot weather. Expect additional fecal failures as the weather turns hotter.

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