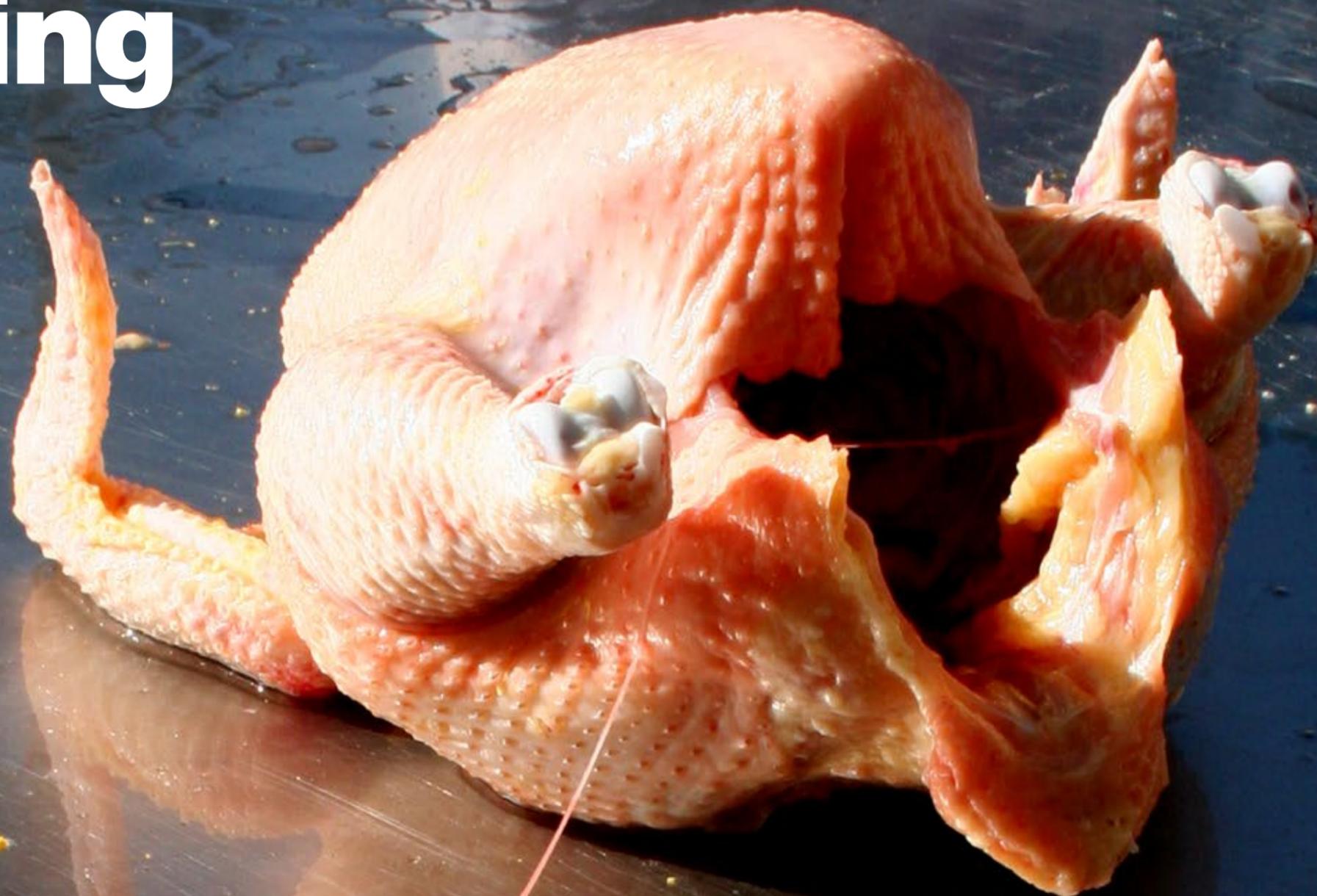


Processing Poultry Safely

Identifying disease abnormalities and other important tips

By Maurice Pitesky DVM, MPVM, ACPVM

Processing poultry for meat is becoming more common for some backyard poultry enthusiasts, as well as small commercial poultry businesses who may sell poultry meat at a local farmers market or through a community supported agriculture (CSA) program. Before we go over a few tips, remember that whenever you sell food it is important to study your local and state laws and regulations in order to determine what steps you need to take to sell that food legally. Also, if you want to process your birds but are uncomfortable with slaughter and evisceration—or don't want to pay for all the necessary equipment—there are a handful of entrepreneurs who specialize in mobile slaughter and processing of poultry for smaller flocks.



The most important thing to remember when processing poultry is to keep things cold and always err on the side of caution with respect to discarding or condemning birds. "When in doubt, throw it out" is always a good approach in order to reduce the potential risk of food poisoning. Therefore, your goal during processing should be to identify and remove carcasses that show evidence of pathological (e.g. disease conditions) and non-pathological lesions (e.g. bruises and breast blisters).

This is basically what the Food Safety Inspection Service (FSIS) does for us in large commercial broiler and turkey facilities. However, while most of what the FSIS does is visual inspection they also collect sample for microbiological testing of *Salmonella* and *Campylobacter* (the two most common pathogenic bacteria associated with food-borne outbreaks in poultry). The practicality of doing this for small producers and backyard enthusiasts is probably not feasible.



However, focusing on visual inspection and the general health of the birds while they are alive is a reasonable course to pursue in conjunction with good hygiene practices.

Things to do when inspecting poultry carcasses:

Use your eyes

There is no replacement for a thorough visual inspection of the outside of the carcass, inside of the cavity, and visceral organs for evidence of pathological and non-pathological lesions. The best way to get good at identifying abnormal conditions is by observing what a normal healthy carcass looks like. The more you train your eyes to look at normal muscle, organs, and tissues, the more obvious they will be when abnormal. Take plenty of high-resolution photos and notes, and consult with experts. For example, the University of Minnesota Extension website has an excellent webpage dedicated to "home processing of poultry."

In general, when inspecting the outside, inside cavity, and viscera, if you do find something abnormal, often times you can just trim or remove that specific part. However, fall back on "when in doubt, throw it out" if you are unsure.

During your visual inspection you should look for the following relatively common occurrences:

Bruises: Broken bones accompanied by green hemorrhages indicate that the injury occurred long before slaughter.

What you should do: Condemn the entire carcass

Localized bruise: A red-purple bruise indicates that the bruise happened during slaughter. Trim and condemn only the affected part

Diseases: It is important to realize that many poultry diseases are "epi-zoonotic," meaning they only affect the birds and not humans. However, if the bird has a disease they are most likely more susceptible to other diseases including some *Salmonella* species which are zoonotic (i.e., they make us sick). Also remember that just because your birds "look healthy" that doesn't mean they are not carrying zoonotic diseases. For example, *Salmonella* Heidelberg and *Salmonella* Enteritidis for the most part do not make the birds sick but *do* make humans sick. Consequently, when we see abnormalities, the minimum recommendation is to condemn the affected tissues, and in many cases,

to condemn the entire carcass. However, many zoonotic diseases show no apparent pathology via visual inspection. This is often the reason why the FSIS and even the processing companies do their own microbiological testing.

The following is a partial list of relatively common diseases and other abnormalities to watch for during your visual inspection:

Leukosis and other tumors: Unless the tumor has only affected one visceral organ, the whole carcass should be condemned. Lymphoid leucosis is a tumor-producing epi-zoonotic viral disease of chickens that are usually 16 weeks of age or older. Due to the age, it is a more common disease in laying hens, although it can affect some younger broiler birds. Look for whitish-gray masses in the liver, spleen, ovaries, testes, eyes, or muscles. Also the appearance of nodular enlargement of feather follicles is found in skin leucosis

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Septicemia-Toxemia (Sep-Tox): Septicemia refers to the presence of bacteria in the blood stream. When birds become septicemic their organs begin to malfunction and the cells within their body deteriorate. It is important to note the bird is only septic for a brief period and then either recovers or dies. However, even if the infection subsides, the carcasses are typically not aesthetically desirable and are therefore often condemned. If the bird has septicemia when it is processed, then the following may be observed: petechial (pinpoint) hemorrhages (e.g. bleeding) on the heart, liver, kidneys, and muscles. Unaffected portions of the carcass may be salvaged.

Air Xsaculitis: Is an infection of one or more of the nine air sacs found in chickens' chest and abdomen. The air sacs are normally clear thin membranes. If they are cloudy—or "cheesy"—it can be a sign of infection including *E. coli*. For our purposes, it is best to condemn the entire carcass if observed.

Contamination: When doing an inside-and-out inspection of the carcasses, check for any type of contamination, such as crop and intestinal contents and feces. If trimming can't be done, the entire carcass is condemned. You can try to wash out contaminated carcasses, but it is important to appreciate that bacteria such as *Salmonella* are very "sticky" and form biofilms that make removing them entirely impossible. This is why it is so important to prevent any cross contamination between the bacteria in the gut and the carcass during evisceration (i.e. the removal of the visceral organs from the body cavity).

As a reference point, the approximate condemnation rate of commercial broilers is approximately 2-percent. Keep track of your condemnation rate and identify what diseases and other abnormalities you observe. This is an excellent way to evaluate your husbandry program. Do not eat dead birds that died before slaughter, and if you notice significant problems during processing, consider alternatives and mitigations to your husbandry, biosecurity, welfare, and other relevant practices.

While the above give some more specific detail, another way to approach your visual inspection is to use the following general rules listed by the University of Minnesota's Extension website on "home processing of poultry." In general, **do not** use birds that have any of the following:

1. Lumps or spots of any size on the surface of the liver or other organs
2. Any measurable quantity of fluid in the body cavity.
3. Fat in a poorly fleshed bird which is orange rather than yellow or white.
4. Any internal organs that are roughly two or more times greater than normal size (although you can ignore changes in size of the gall bladder).
5. Breast meat with the same coloration as meat of the thighs and legs.
6. Meat showing white streaks or an area of abnormal enlargement when compared to the same area on the opposite side of the bird.

What about organ meat and offal?

Offal is defined as the entrails (intestines) and internal organs of an animal used as food. Giblets are the heart, gizzard, liver, and neck. Eating organ meat from poultry such as liver and gizzards is very common in many parts of the world and



is becoming more and more common in the U.S. Many view the common practice in the U.S. of only eating poultry muscle as wasteful. While large commercial poultry facilities typically either compost or render the offal, smaller producers and backyard enthusiasts typically do not. When collecting these parts of the chicken, the same observations and practices described above should be implemented. Be especially cognizant of the potential for contamination since separating the gizzard and liver from the entrails cleanly can be challenging.

Also, remember that in many parts of the world, the chicken feet are eaten. In a poultry processing plant, the feet are passed through a "scald and scrub" procedure before being sold as a retail product. The scalding (at 125° to 130°F for 30 to 75 seconds) is part of the normal scalding procedure used at the beginning of processing. Scrubbing is essential for removing dirt from the feet.

Cold is your friend:

To keep bacterial growth down, always maintain a "cold chain" with your processed bird. Keeping the carcasses at refrigeration temperatures and below is essential for proper handling. For commercial poultry, chilling the carcasses within 4 hours and the giblets within 2 hours to 40°F (or 5°C) or lower is required. In modern commercial poultry plants, this usually occurs within an hour.

Conclusion

The best way to ensure healthy birds for processing is to keep your flock healthy. "Garbage in, garbage out" is an accurate statement when it

comes to poultry husbandry because it is much more difficult to address disease issues during processing as opposed to using proper husbandry and biosecurity practices when the birds are alive. Simply put, if your birds are healthy, processing them into healthy broiler meat is much easier than raising your birds under unhealthy conditions (contact with rodents, poor ventilation, etc.) and then trying to clean the meat.

About the author

Maurice Pitesky is a faculty member at University of California Cooperative Extension (UCCE) with an appointment in poultry health and food safety epidemiology. Pitesky earned his BS in biology from UCLA and his DVM and MPVM from UC Davis. Pitesky is also boarded in preventative veterinary medicine (DACVPM).



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