a Best Practices Guide to
Open Air Poultry Slaughter

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Small-scale poultry producers in Oregon who meet certain conditions have the option of slaughtering their poultry in an open air setting. The conditions and regulations are outlined in full in a "Frequently Asked Questions" (FAQ) document from the Oregon Department of Agriculture[1], but are primarily:

- The farmer processes no more than 1000 birds per year;
- The birds are of his or her own raising; and
- The processed birds are sold direct to household consumers, at the farm itself.

Farms that qualify to raise, process, and sell poultry under this new rule are legally exempt from many of the requirements that state-licensed poultry processing facilities must follow. The most notable difference is that state-licensed facilities must be securely enclosed with four solid walls, roof, and floor to protect cleaned poultry carcasses from outside sources of contamination. The new rule does not require this level of construction.

Yet it is still essential for any poultry processor of any size to operate in a safe, sanitary, and environmentally sound way.

We wrote this guidebook to help you with that. Some of our advice – like washing your hands – will sound like common sense. However, the consequences of carelessness can be high: contaminated poultry, sick consumers, personal/farm liability, penalties for environmental damage, and so forth. Other suggestions may be new to you. Take time to come up with a plan that you can and *will* carry out every day you process poultry.

This guide is not a manual for how to slaughter and process poultry, nor does it tell you what equipment you need or how to market your poultry. We have listed useful resources for those topics at the end.

[1] Available on the ODA website: http://www.oregon.gov/ODA/shared/Documents/Publications/FoodSafety/FarmDirectPoultry.pdf. The Oregon Administrative Rules are OAR 603-028-0710 through 603-028-0750.

Processing Site

Processing site refers to the whole area where slaughter and processing takes place, including the holding pens for live birds. Bottom line: it should be clean, well-drained, trash-free, and pest-free.

The rule requires that you reasonably protect your slaughter site, equipment and supplies, poultry, and poultry carcasses from potential contaminants, such as dust, mud, pests, or any other source of contamination. You can do this with a combination of tarps, canopies, and floor mats. A clean, grassy area can work, but make sure it is pesticide-free, to avoid potential pesticide contamination of finished poultry.

Some farms have found a concrete pad to be very useful, because it is easier to clean than grass or bare ground. It does not have to be unduly expensive: for example, a Benton County poultry farmer put in an 8' x 22' concrete pad himself for $450 in materials.

To prevent contamination of clean carcasses, create distinct areas within your processing site and keep them clearly separate: a "dirty" area for slaughter, bleed-out, scalding, and plucking; an area for evisceration; and a clean area for chill tanks and final packaging. Regularly inspect your processing site for trash, blood, feathers, fecal material, or any other potential sources of contamination. If you find anything, dispose of it immediately.

Other areas to keep clean, trash-free, and pest-free:

- Buildings or sheds where you store processing equipment and supplies;
- Coolers and freezers where processed birds are stored;
- Toilets, hand-washing stations, and other personal hygiene areas.

More on pest control:

- Rodents. Most farms have them, but keep them out of your processing site. Look for and get rid of any "harborages" – likely places for rodents to live and breed;
- Strictly exclude wild birds and domestic and wild animals from the processing site;
- Exclude insects. If tarps and canopies aren't enough, spray or bait, but ensure any sprays or baits you use are approved for food processing areas. Start processing early before insects are a problem; use a fan to blow insects out of the processing area.
- Keep trash cans covered.

Remember:

ODA has the authority to inspect your site at any time, with no advanced warning. *Be ready.*

Water

Poultry processing requires a supply of potable water sufficient for processing, chilling, cleaning, sanitizing and personal hygiene. One small farm estimates they use 1 to 2 gallons of water per bird, just for processing. They need additional water for the other uses.

Sources of potable water include municipal water, private wells that are properly managed and regularly tested, closed portable water containers filled with potable water, and bottled drinking water.

Provide hot water (112˚F minimum) for personal hygiene, including all hand washing, and for equipment cleaning.

Set up a hand washing station. A water cooler suitable for hot water, with a toggle-style on/off spigot, works well. Provide hand soap in a pump dispenser. Place a 5 gallon bucket below to collect the grey water.

Prevent backflow that could contaminate your potable water supply: leave an air gap between the hose or fill pipe and the bucket, tank, or other container you are filling. The air gap must be at least two (2) times the diameter of the fill hose or pipe. If you have a plumbed outdoor sink with hoses suspended over the sink, make sure the end of the hose does not hang below the top of the sink.

Use food grade hoses for all water that will come in contact with the poultry. "Food grade" materials will not transfer noxious or toxic substances into the food or water it is holding. If you aren't sure if a hose is food grade, check the label or ask the manufacturer if it is FDA-approved as safe for food use.

Ice: make sure your ice source is potable/food grade. Make sure you have enough ice when you start your slaughter day. Processing on a hot summer day might require twice the amount of ice needed on a cooler day. If you have extra clean ice, you can bag some for your customers to keep their poultry cold on their way home.

Personal Hygiene

The following practices may sound obvious – so obvious they may be overlooked. Too many food-borne illness outbreaks are caused when processing personnel make personal hygiene mistakes.

- Don't smoke, eat or drink, or chew gum or tobacco while actively slaughtering, preparing, or handling poultry;
- Don't allow anyone with a cold, the flu, or any other communicable disease; with open sores or infected cuts on hands; or who has been vomiting or has diarrhea, to be in the processing site;
- Wear clean and appropriate clothing. Poultry processing is a dirty business; if clothing becomes too soiled to process safely and sanitarily, change it.
- Consider wearing a full-length, vinyl apron to add extra protection for the poultry carcass; *only* wear the apron on the "clean" side of your processing site – *never* in the bathroom;
- Remove all hand jewelry that cannot be adequately sanitized when carcasses are handled. And/or wear gloves that are disposable or can be completely cleaned and sanitized;
- Hair: tie long hair back or wear a hat. Consider a beard net for processors with long beards.

Equipment

Keep it clean and sanitized

Keep a dedicated bucket of sanitizing solution in your slaughter area for rinsing and storing the wipe-down cloths used to sanitize the equipment and slaughter/preparation areas. Use an EPA-approved sanitizer. A full list of EPA-approved sanitizers can be found in the Code of Federal Regulations: 21 CFR 178.1010, http://edocket.access.gpo.gov/cfr_2002/aprqtr/pdf/21cfr178.1010.pdf .

The sanitizing solution must contain no more than 200 ppm for chlorine solution and no more than 25ppm for iodine solution. Make up the solution with cool water and change the sanitizing water every one to two hours while you are slaughtering.

Always follow the label directions precisely when you mix a sanitizing solution. Adding more chlorine to your water solution may actually reduce its anti-microbial effectiveness.

Maintain and store it securely

Keep all your processing equipment, knives, and other tools in good condition. The processing will be more efficient, and the tools will be easier to clean and sanitize. After each processing day, store your cleaned and sanitized equipment, knives, and other tools, as well as cleaning and sanitizing supplies in clean, secure storage areas.

Pathogen Control

Salmonella is the primary pathogen of concern for this scale and approach to poultry processing. Very small flocks and processing runs are unfortunately not immune. Birds processed in "exempt" facilities and sold at farmers' markets in Pennsylvania and Washington, D.C. tested positive for salmonella, making national headlines.[2] With the boom in sales of local poultry processed at small-scale, exempt operations, scrutiny is increasing.

Salmonella is found in feces and eviscerate; even a small speck left on a carcass can spread the pathogen to other carcasses. Protect your consumers and your farm: create a system to prevent contamination *and* growth. Exclude pathogens, and keep any that remain from multiplying.

Prevent contamination and cross-contamination

- Withhold feed from poultry 8-12 hours before slaughter;
- Clean, rinse, sanitize all product contact surfaces, equipment, utensils, and coolers at the beginning of the slaughter day, as needed during the day, and at the end;
- Do not process diseased poultry;
- Clean any dirt or foreign matter from birds before slaughter;
- Start with clean and sanitized equipment and tools;
- Clean equipment and tools at least every 4 hours;[3]
- Clean and sanitize equipment and tools during processing if you suspect *any* contamination has occurred;
- Start with clean water in the chill tank;
- Change the chill water regularly, at least once per day or per every 50 birds slaughtered, whichever is more often;
- If you suspect contamination has occurred in the chill tank, change the chill water immediately, and re-rinse all chilled carcasses at risk;
- Before placing each carcass into the chill tank, inspect it for any feces, eviscerate, or anything else that could cause contamination. Practice "zero tolerance": trim away anything you find, and inspect the carcass again;
- Use an anti-microbial spray before chilling.

[2] French, Kramer, and Clark. "DC Farmers Markets Highlight an Array of Food Safety Issues." Washington Post. July 22, 2011. Available at: http://www.washingtonpost.com/local/dc-farmers-markets-highlight-an-array-of-food-safety-issues/2011/07/18/gIQAROXZTI_story.html.

[3] Based on Oregon's Retail Food Code, 4-602.11: Equipment Food-Contact Surfaces and Utensils, available at: http://www.oregon.gov/ODA/shared/Documents/Publications/FoodSafety/FoodCode.pdf.

Anti-Microbial Spray Step

Anti-microbial spray step

- A more thorough approach to preventing pathogen growth is to spray each carcass with a 2% lactic acid solution, and allow it to hang briefly before it goes into the chill tank. If done correctly, this proactive technique can vastly reduce dangerous pathogens on the birds you sell your customers. Research conducted at Washington State University indicated that this was effective at controlling pathogen re-growth.[4] A commercial alternative to lactic acid is Chicxide®,[5] a lactic acid-citric acid based product. Chicxide effectively controls pathogens and is affordable[6] for small scale poultry processors.

Using anti-microbials

- Following label directions and using potable water, mix a gallon of 2% or 2.5% Chicxide solution or a 2% lactic acid solution. Each gallon of solution will be sufficient for a 50 bird run.
- Apply solution with a spray bottle or pump sprayer with all plastic or all stainless steel parts. Acetic solutions will corrode brass.
- Thoroughly wet each cleaned poultry carcass inside and outside with the solution. Hang for 1½ minutes if using Chicxide, or 3 minutes if using lactic acid,[7] and then place in the chill tank.
- Each bird requires a little more than 2 ounces of solution. A gallon of solution (128 ounces) will treat 50 to 60 birds. A gallon of Chicxide will make 43 – 50 gallons of solution and will treat well over 2000 birds, i.e. more than two years of processing under the new rules. At ~$25/gallon, the cost per bird is just over a penny.[8]

Preventing pathogen growth on cleaned carcasses:

- Chill cleaned carcasses to 40˚F within the following time periods after entering the chill tank: 4 hours for a 4 lb bird; 6 hours for 4-8 lb bird; 8 hours for a bird greater than 8 lbs. These time periods are USDA requirements.
- Store chilled, packaged poultry at 40˚F or lower.

Keep track so you know:

- Check the temperature of the chill tank regularly during processing to ensure the water temperature remains between 33˚F and 40˚F.

[4] Washington State University researchers tested in a mobile poultry processing unit and found that lactic acid was even more effective than chlorine at reducing salmonella and coliforms (Killinger et al. 2010).

[5] We thank Scio Poultry Processing for this recommendation. Chicxide is a product of Birko Corporation. www.birkocorp.com.

[6] About a penny per bird processed to use Chicxide.

[7] Following the methods in Killinger et al. 2010. Scio Poultry puts birds directly in the chill tank after spraying.

[8] This estimate is based on a Feb. 2012 price quote from Birko and includes shipping. Lactic acid prices may vary.

- Measure the internal temperature of 2 or 3 birds during the processing period to ensure chilling to 40˚F occurs within 4 hours.
- Remember: the larger the bird, the longer it will take to cool.

Use a thermometer that can be calibrated to check the chill tank water temperature. Such thermometers are readily available and very inexpensive.

How to calibrate: start with a 12 ounce cup of ice, add a little water, and insert the thermometer. Stir the ice for one minute. If the thermometer reads 32˚F, it is well calibrated. If it does not, adjust the thermometer according to the manufacturer's instructions, until it reads 32˚F when in the ice water for one minute. Create a log to record thermometer calibrations. Calibrate your thermometer often enough to be confident that it is accurate. If you drop it, drop something on it, or otherwise abuse it, calibrate it.

Measure the internal cavity temperature of poultry carcasses with a thermal probe that can be calibrated. Calibrate it according to the manufacturer's instructions.

Packaging

Food grade plastic bags are the typical packaging for finished poultry. Double bag or make sure your bags are thick enough to withstand puncture or leakage in the cooler when exposed to ice's rough edges. As mentioned above, "food grade" means it will not transfer noxious or toxic substances into the food it is holding. If you aren't sure whether packaging is food grade, check the label or ask the manufacturer if it is FDA-approved as safe for food use.

See the last page of this guide and the ODA FAQ for full labeling rules.

Monitoring & Recordkeeping

ODA *requires* that you make and retain the following sanitation records for at least two years after the final entry:

a. Daily cleaning logs for each slaughter date;
b. Washing and cleaning logs for all utensils, cutting boards, and any other items used during slaughter and processing;[9]
c. Lists of chemicals used in sanitation of the facility.

[9] ODA refers to this category of items as "ware," and will ask for "ware washing and cleaning logs."

A simple cleaning log could have three columns: (1) a list of items/areas to be cleaned and sanitized; (2) a space to note the date/time when each was cleaned and sanitized; and (3) a larger space for your own notes (for example, if a particular piece of equipment has a particularly difficult place to clean, and what you're doing about that).

As discussed above, we *recommend* that you monitor and record the following:

d. Chill tank temperature once per hour during the slaughter day;
e. Times of chill tank water changes during the slaughter day;
f. Internal cavity temp of 2 to 3 birds for each 50 birds slaughtered;
g. Cooler or freezer temperature once per day when the equipment is used for poultry storage;
h. Date of thermometer or thermal probe calibration.

In addition, both ODA and USDA *require* that you keep records that:

- Demonstrate that you raised the poultry since the poultry was two weeks of age or younger;
- Calculate the year-to-date cumulative total of each species slaughtered and total quantity of poultry slaughtered;
- Contain the date of slaughter;
- Contain sales information including:
  - Purchaser's name and address;
  - Species and quantity of poultry sold;
  - Date of the poultry's slaughter and the date of sale; and
  - Address of the poultry business.

Wastewater & Offal Disposal

You need a proper disposal plan for waste water and offal: eviscerate (guts), blood, heads/feet, and feathers. You may compost up to 20 tons (40,000 lbs.) of solid and liquid waste (blood, offal, feathers) on farm without a permit from any agency of the State of Oregon.[10] This does *not* include land application of processing wastes (e.g. by sprinkler, drain line, or bucket). You must ensure that the composting process won't contaminate surface or ground water.

Applying any waste water directly to the surface of the land – by hose, bucket, or any other means – may require a permit from ODA's Natural

[10] Or 40 tons if in "containers designed to prohibit vector attraction and prevent nuisance and odor generation." Exemptions for small-scale operations are described in OAR, Division 96, 340-096-0600: http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_096.html.

Resources Division. Call NRD for further information and specific permit requirements, at (503) 986 4700.

There are many resources providing technical guidance about composting. Two are cited in the Useful Resources section of this document. State laws about composting are administered by the Oregon Department of Environmental Quality; see their website for fact sheets and permit information: http://www.deq.state.or.us/lq/sw/compost/.

ODA's Ag Water Quality Program rules prohibit you from discharging waste water – even from processing one chicken – into surface water or ground water. Learn more about the program and the rules here: http://www.oregon.gov/ODA/programs/NaturalResources/AgWQ/Pages/default.aspx.

Zoning

The law and the Oregon Administrative Rules regarding the 1000 bird exemption were created by the Oregon state legislature and the state agriculture department. The law does not exempt producers from zoning laws and rules. However, in 2013, the Oregon legislature added the slaughtering, processing and selling of up to 1,000 poultry as an outright permitted nonfarm use, subject to specified limits, in areas zoned for exclusive farm use (HB2393). It is still prudent to investigate potential limitations in your location before starting a poultry business.

Useful Resources

Small-Scale Poultry Processing, by Anne Fanatico, NCAT-ATTRA, 2003, https://attra.ncat.org/attra-pub/summaries/summary.php?pub=235

NCAT Sustainable Agriculture Project, poultry resources (wide ranging): https://attra.ncat.org/attra-pub/poultry/

Mobile Poultry Processing Unit, Food and Farm Safety Management Guide for Small-Scale Poultry Producers and Processors Using a Massachusetts-Inspected MPPU. http://nesfp.org/resources/mobile-poultry-processing-unit-farm-food-safety-management-guide

There are many instructional videos available online; the Featherman Equipment Company has a useful set: http://www.featherman.net/videodemos.html

Nels Youngberg, of Mineral Springs Poultry, in Willamina, OR, has a 1-hour "how-to" video on processing based on his 30 years of experience. http://mineralspringspoultry.com/portfolio.html

Joel Salatin's book Pastured Poultry Profits (1995) includes a detailed "how to" chapter on small-scale poultry processing.

Animal Welfare Approved poultry standards, which cover slaughter: http://animalwelfareapproved.org/standards/meat-chicken-2015/

On-Farm Composting Handbook by Bob Rynk, et al., 1992, NRAES-54. Northeast Regional Agricultural Engineering Service. http://campus.extension.org/pluginfile.php/48384/course/section/7167/NRAES%20FarmCompost%20manual%201992.pdf

Field Guide to On-Farm Composting by Mark Dougherty, editor. 1999. NRAES-114. Northeast Regional Agricultural Engineering Service. http://palspublishing.cals.cornell.edu/nra_order.taf?_function=detail&pr_booknum=nraes-114.

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