

Department of Animal Science

KEEPING POULTRY SAFE WITH BIOSECURITY PRINCIPLES AND SITE-SPECIFIC PLANS

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With the loss of approximately 58 million head of poultry to avian influenza and disease-related control efforts in 2022, avian influenza continues to be a serious threat to backyard and commercial poultry flocks across the U.S. As a best management practice and to aid in qualifying for USDA avian influenza indemnity payments for commercial premises, it is critical to create, maintain and follow a site-specific, operational biosecurity plan. This is true no matter what the size of your poultry operation. This biosecurity plan should be based upon and organized around the **14 National Poultry Improvement Plan biosecurity principles:**

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| 1. Biosecurity Responsibility | 8. Mortality Disposal |
| 2. Training | 9. Manure and Litter Management |
| 3. Line of Separation | 10. Replacement Poultry |
| 4. Perimeter Buffer Area | 11. Water Supply |
| 5. Personnel | 12. Feed and Replacement Litter |
| 6. Wild Birds, Rodents, Insects | 13. Reporting Elevated Morbidity and Mortality |
| 7. Equipment and Vehicles | 14. Auditing |

A well-designed biosecurity plan will: 1) describe the biosecurity culture (action items considered important to protecting flock health and how they are implemented) on your farm and 2) document the steps you take to protect the health of your flock. Your biosecurity plan describes the standard operating procedures (SOPs) you use to keep your flock safe. Commercial poultry operations formally participating in NPIP must have their biosecurity plan audited every other year to be eligible for indemnity, so it is important to make firm, realistic commitments when developing your day-to-day biosecurity practices because someone will check your work.

1. Biosecurity responsibility

Every operation (large or small) should have an employee that is formally designated as responsible for premise biosecurity. In most cases, this person serves as the biosecurity coordinator. The **biosecurity coordinator is responsible for the development, implementation, maintenance and ongoing effectiveness of the biosecurity program.** Depending on the type and size of the poultry operation, the biosecurity coordinator's responsibility could be at the farm, production site, production complex or company level. The biosecurity coordinator should be knowledgeable of all biosecurity principles in use. The biosecurity coordinator, along with personnel and caretakers on the farms and production sites, are collectively responsible for implementing the biosecurity program. The biosecurity coordinator should review the biosecurity program at least once per calendar year and make revisions as necessary, asking the following questions:

1. **Does the facility have a formally designated biosecurity coordinator?** That person should be listed by name in the biosecurity plan.
2. **Does a site-specific biosecurity plan exist?** Site-specific biosecurity plans can be either farm-specific or serve as complex-wide plans. Complex-wide plans can address general biosecurity principles. However, farm-specific plans and practices better address mass mortality disposal, including specifically burial or composting plans that account for farm specific variations in soil type and depth to water table. In Tennessee, the state veterinarian is asking **for all commercial and large backyard premises (any location involved in the commerce or movement of poultry) to have individual site-specific plans in place.**
3. **Is the biosecurity coordinator knowledgeable of biosecurity principles?** The biosecurity coordinator must be able to describe and interpret their company's biosecurity program and how it meets NPIP requirements.
4. **Does the biosecurity coordinator review the biosecurity plan at least once during each calendar year and make revisions as necessary?** The biosecurity coordinator must be able to provide recorded dates in which annual reviews were made and evidence that necessary revisions were completed.
5. **Does the biosecurity plan indicate there will be an additional review by the biosecurity coordinator in periods of heightened risk of disease transmission?** Documentation of NPIP compliance must include evidence that planning for increased biosecurity rigor occurred during periods of heightened risk (e.g., emails, memos, letters, text messages, phone logs, etc.). It is the responsibility of the biosecurity coordinator to clearly define and communicate the period of heightened risk in the biosecurity plan.

2. Training

The biosecurity program should describe required training that covers farm site-specific procedures as well as premises-wide and/or company-wide biosecurity procedures. All poultry owners and caretakers that regularly enter the perimeter buffer area (PBA; explained in detail below) must complete this documented training **at least once per calendar year.** New poultry caretakers should be trained at hire. Training records should be retained and kept for a minimum of three years. Review of SOPs for biosecurity should be included in initial and annual employee trainings. These SOPs must include company and site-specific requirements for personal protective equipment (PPE), pest control, cleaning and disinfecting procedures, equipment sharing, etc. Training should include a review of all SOPs and the biosecurity plan.

3. Line of separation

The line of separation (LOS) is a **functional line separating the poultry house(s) from exposure to potential disease sources**. It is generally defined by the walls of the poultry building with practical deviations to account for entry points and outside access areas. The site-specific biosecurity plan should describe or illustrate the boundaries of the LOS and clearly outline the procedures to be followed when caretakers, visitors or suppliers/repair personnel cross it.

For poultry enclosed in outdoor pens, similar principles for the LOS can be applied that define and control entry to each pen. In this circumstance, the walls of the outdoor pens would provide the template for defining the LOS when entering or exiting the pens. For poultry with non-enclosed outdoor access, a LOS is highly recommended but not required. When an emergency disease risk is heightened, all poultry should be enclosed within a protective LOS.

Provide a diagram, map and/or a detailed description of the LOS (Figure 1) and requirements for crossing the LOS for each premises. Biosecurity signs at the LOS entry to each house are recommended. Foot baths should be at the LOS entry point to each house and the biosecurity plan should address that they be kept clean and disinfectant replaced at least as often as recommended by the manufacturer. Hand sanitizer and/or a hand washing station should be available at each house and everyone should be required to use these. Visitor logs should be required for non-farm personnel and all employees and visitors should be aware of the requirements for crossing the LOS by signage or other methods.

4. Perimeter buffer area

The perimeter buffer area (PBA) is a **functional zone that separates and protects the poultry houses or poultry rearing areas within the LOS from adjacent sites that are unrelated to poultry production** (Figure 1). The PBA is comprised of the poultry houses and the poultry rearing areas as well as nearby structures and high traffic areas involved in the daily function of the poultry farm. This would usually include but not limited to the feed bins, composting areas, litter sheds, egg rooms, generator sheds and control rooms. The site-specific biosecurity plan should describe or illustrate the PBA boundaries as well as the procedures that caretakers, visitors or suppliers/repair personnel must follow when entering and leaving the PBA.

5. Personnel

The biosecurity program and/or the site-specific biosecurity plan should include provisions specifically addressing **procedures and biosecurity PPE for site-dedicated personnel**. The plan should likewise address the **procedures and biosecurity PPE for non-farm personnel**. The plan should also specify **procedures which all personnel having had recent contact with other poultry or avian species should follow before entering the PBA**. PPE should be described in the biosecurity plan for each type of production facility for site-dedicated and non-farm personnel. Visitor logs, including dates and location of last contact with other poultry, should be kept and documented with no exceptions.

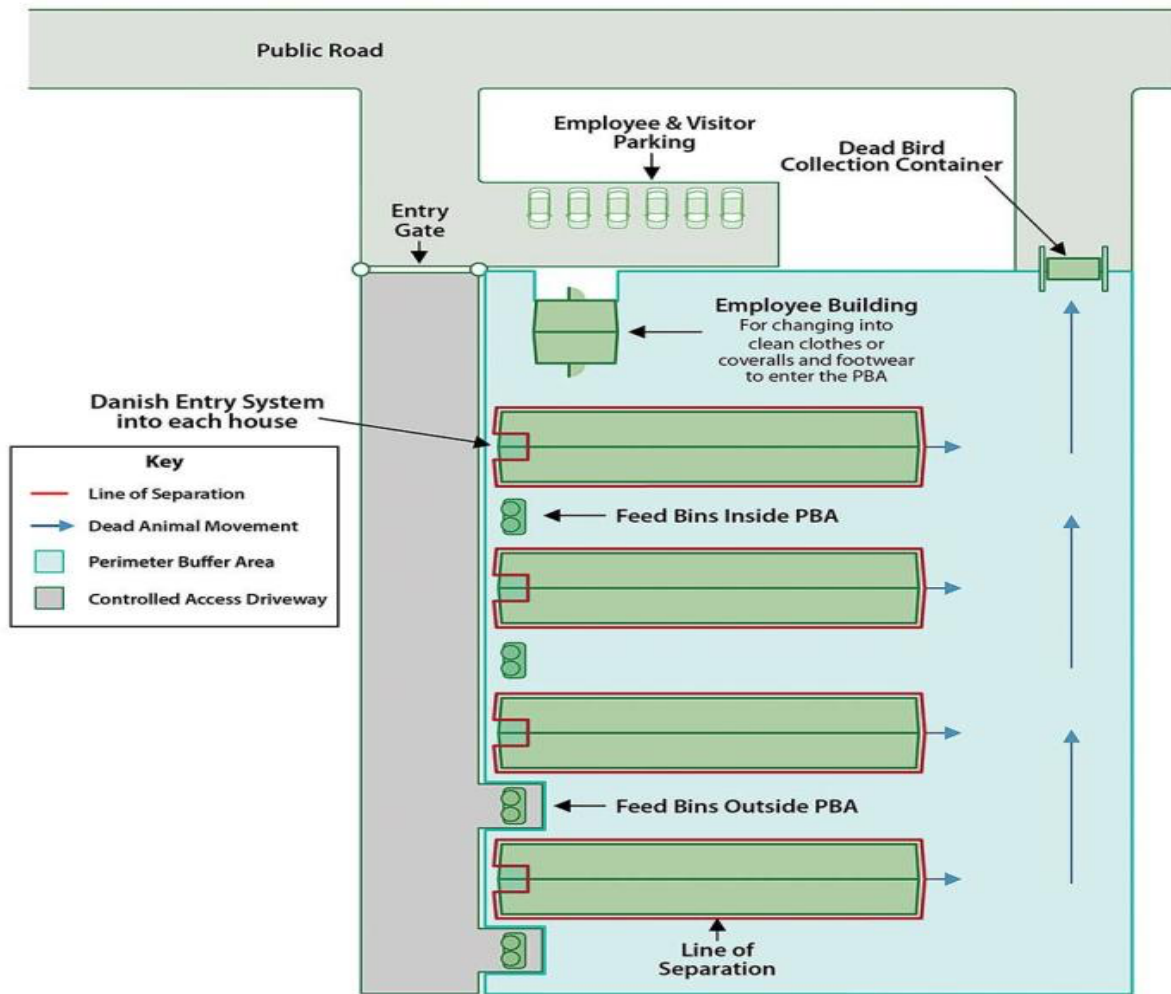


Figure 1. Perimeter buffer area in blue-green with line of separation in red and barns in green. (Source: Center for Food Security and Public Health, Iowa State University).

6. Wild birds, rodents, insects

Poultry operations should have control measures continuously in place to prevent contact between poultry and wild birds, wild bird feces, and wild bird feathers that are production system specific. These procedures should be reviewed for enhancements during periods of heightened disease transmission risk. Control programs for rodents, insects and other animals should be in place with log sheets that document when bait stations are monitored and restocked.

7. Equipment and vehicles

The biosecurity plan should include provisions for procedures for cleaning, disinfecting and restricting access or sharing of mobile equipment. Vehicle access and traffic patterns should be defined in the site-specific biosecurity plan.

8. Mortality disposal

Mortality should be collected at least daily and stored and disposed in a manner that does not attract wild birds (including vultures), rodents, insects and other animals and minimizes the potential for cross-contamination to and from other nearby poultry facilities or premises. It is **recommended that dead bird disposal be on-site**, if possible. Mortality disposal should be described in the site-specific biosecurity plan. Is a mass mortality disposal plan in place in event of a catastrophic loss? Is a plan in place in the event of a disease outbreak that describes depopulation and disposal procedures? A guide for using the [USDA NRCS Web Soil Survey Tool](#) to plan for burial of mass poultry mortalities is provided in [University of Tennessee Extension Publication W792](#) which includes appropriate buffers from sensitive areas such as nearby wells.

9. Manure and litter management

Manure and spent litter should be removed, stored and disposed of in a manner to prevent exposure of susceptible poultry to disease agents. Onsite litter and manure storage should limit attraction of wild birds, rodents, insects and other animals. Is a mass mortality disposal plan in place that addresses litter stored in stacking sheds, compost material, feed left in feed bins, eggs awaiting transfer, etc. in event of a serious disease break? For farms that plan to bury these materials, [University of Tennessee Extension Publication W792](#) provides worksheets to compute the disposal volume and plan construction of adequately sized burial trenches.

10. Replacement poultry

Replacement poultry should be sourced from health-monitored flocks in compliance with the NPIP Program. They should be transported in equipment and vehicles that are regularly cleaned and disinfected and that should be inspected before entering the premises. Does the biosecurity plan clearly define regular cleaning and disinfecting? Biosecurity protocols must be in place for equipment and personnel involved in the transport of replacement poultry.

11. Water supply

Drinking water or water used for evaporative cooling should be **sourced from a contained supply such as a well or municipal system**. If drinking water comes from an open surface water source, water treatment must be used to reduce or preferably eliminate disease agents. If surfaces within the LOS are cleaned or flushed with surface water, these surfaces must be disinfected to prevent disease transmission. If water treatment is not possible, a risk analysis should be performed (e.g., regular water testing) to determine when action is required to mitigate risk.

12. Feed and replacement litter

Feed, feed ingredients, bedding and litter should be delivered, stored and maintained in a manner that limits access and contamination by wild birds, rodents, insects and other animals and their feces. Feed spilled within the PBA (outside the LOS) should be promptly disposed of to prevent attracting wild birds, rodents and insects. Feed spilled outside the LOS should not be taken inside the house and fed because of the risk of disease transmission.

13. Reporting elevated morbidity and mortality

Elevation in morbidity and/or mortality above normal expected levels, as defined by the biosecurity plan, should be reported immediately so that tests can be conducted to rule out reportable disease agents. The biosecurity coordinator must define what constitutes elevated morbidity and/or mortality in the biosecurity plan. Written procedures on how and where to report elevated morbidity or mortality must be included in the biosecurity plan. These procedures should include instructions for elevated morbidity or mortality that occurs during weekends and holidays.

14. Auditing

Auditing is vital to the success of any commercial operation's biosecurity program and NPIP compliance, so let's consider it more carefully. **NPIP audits shall be conducted at least once every two years** or a sufficient number of times during that period by each state's official state agency (in Tennessee, the Tennessee Department of Agriculture) to ensure the participant is complying. Each audit requires the biosecurity plan's training materials, documentation of implementation of the NPIP biosecurity principles, corrective actions taken and the biosecurity coordinator's annual review. The result of the agency's audit will be a summary report documenting either satisfactory or unsatisfactory compliance that is provided to the NPIP national office.

Participants who failed an initial audit conducted by an NPIP official state agency may elect to have a field audit performed by a team appointed by the national NPIP office, including: an APHIS poultry subject matter expert from USDA, the official state agency, and a licensed, accredited poultry veterinarian familiar with the type of operation. In order to be reinstated in compliance with the NPIP biosecurity principles, the participant must demonstrate that corrective actions were taken following the audit by the team appointed by NPIP.

Document everything

Putting together a biosecurity plan for your farming operation will take time and effort on your part. Following that plan day after day will take more time and effort but is critical to keeping your flock free of disease. When it comes to biosecurity, document everything you do. **If you don't write it down, it never happened!** It's that simple, and indemnity payment considerations in the future will likely be tied to whether biosecurity practices were in place and well-documented at the time of the disease outbreak. Iowa State University has a template for a site-specific poultry biosecurity plan that can help you create a plan for your operation and readily document your biosecurity efforts. (<https://www.cfsph.iastate.edu/secure-poultry-supply/>).

Integrators and commercial growers should be as self-reliant as possible and not depend on an official state agency or USDA to locate resources to respond to a disease outbreak. This means taking responsibility for planning and pre-locating necessary resources; crews for depopulation, disposal, cleaning, and disinfection; CO₂ (if available and being used); carbon material; heavy equipment; and equipment operators to efficiently respond to and contain a disease outbreak. Your biosecurity plan should document where these resources are located, who the contact person is, and how to get access to these resources on short notice. State and federal officials will

provide oversight and supply subject matter experts to assist during a disease outbreak but much of the response is in the hands of the poultry industry and its producers.

Summary

Avian influenza continues to be a serious threat to U.S. poultry flocks. Commercial and backyard flocks are at risk and with the spring migration season ramping up, the threat will likely increase over the next few months. Biosecurity is the best protection we can provide for our flocks. It is important that all flock caretakers, large and small, understand the 14 biosecurity principles developed by NPIP and follow these principles daily. We cannot medicate or vaccinate our way out of the risk posed by avian influenza. Biosecurity is the most powerful weapon we have in keeping our flocks safe. Knowing and following the NPIP biosecurity principles will minimize the risks and lessen the chances that avian influenza enters our poultry houses or backyard chicken coops. For more information on avian influenza see the USDA's website located at: [USDA APHIS | Highly Pathogenic Avian Influenza \(HPAI\)](#).



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