UNIVERSITY OF MARYLAND EXTENSION | AgFS Agriculture & Food Systems

COMMERCIAL POULTRY NEWS

IN THIS ISSUE

Maryland Department of Environment Approves New Statewide Animal Feeding Operations Permit

MDE News Release: The Maryland Department of the Environment (MDE) announced the approval of a new statewide general discharge permit for animal feeding operations (AFOs), completing the renewal process required under the federal Clean Water Act. The permit will take effect on May 8, 2026.

The permit establishes requirements for animal feeding operations to manage manure, litter, and wastewater in a manner that protects water quality in Maryland's rivers, streams, and the Chesapeake Bay. It applies to large poultry operations, dairy farms, cattle operations, and other agricultural operations.

"Maryland's farmers play a vital role in our economy and our food system," said Maryland Environment Secretary Serena McIlwain. "This permit provides clear, consistent standards to support agricultural operations while ensuring the protection of our waterways and communities."

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New Statewide Animal Feeding Operations Permit(continued)

The renewed permit reflects input gathered through a series of public meetings, stakeholder engagement sessions, and written comments received during the formal public comment period. The Maryland Department of the Environment worked in coordination with the U.S. Environmental Protection Agency to finalize the permit.

Animal feeding operations covered under the permit are required to implement comprehensive nutrient management plans and comply with conditions designed to prevent discharges to surface waters. These requirements are part of Maryland's broader strategy to reduce nutrient and sediment pollution and meet water quality goals.

Additional information, including the final permit and supporting documents, is available on the MDE website. MDE.Maryland.gov

Research to Reality: What New Poultry Science Means for Your Farm

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Article 2
Bird Flu Risk Starts Outside the Farm, But Biosecurity Still Makes the Difference

Source:
Gonnerman M., Mullinax J.M., Fox A., Patyk K.A., Fields V.L., McCool M.-J., Torchetti M.K., Lantz K., Sullivan J.D., Prosser D.J. Avian influenza spillover into poultry: environmental influences and biosecurity protections. One Health21:101172 (2025).
Open access: https://www.sciencedirect.com/science/article/pii/S2352771425002083

Why This Study Matters

Researchers examined HPAI spillover events across the continental United States that were most likely linked to wild birds rather than farm-to-farm spread. They also used survey data from commercial turkey farms to evaluate which biosecurity practices were associated with lower spillover risk after accounting for environmental conditions.

What the Researchers Studied

Researchers looked at bird flu virus samples collected over time from wild birds, backyard flocks, and commercial poultry farms across North America. By comparing the genetic makeup of the virus and where and when it was found, they were able to understand how often H5N1 entered poultry operations, whether outbreaks were connected to each other, and how wildlife contributed to repeated introductions. Importantly, this was a large-scale ecological study designed to understand how the virus moves through the environment, not an evaluation of individual farms or management practices.

Key Findings (What the Science Shows)

1. **Environmental pressure strongly influenced spillover risk**

Spillover risk was higher in areas with more waterfowl, colder winter temperatures, and greater winter precipitation. This means some farms face higher outside pressure simply because of where they are and what is happening seasonally in the surrounding environment.

2. **Risk varied by region and time of year**

The study identified clear geographic and seasonal patterns. Some regions, including parts of the Midwest and Pacific Northwest, showed higher cumulative risk, and broader national patterns suggested two periods of elevated risk during the year.

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Research to Reality: What New Poultry Science Means for Your Farm Article 2 (continued)

3. Several practical biosecurity measures were linked with a lower risk
Lower spillover risk was associated with measures related to litter handling and traffic sanitation. These included the use of fresh litter, heat treatment of litter before delivery, vehicle wash stations, restroom access for visiting crews, and avoiding shared dead-bird disposal sites with other farms.

4. Human movement and shared traffic likely play a major role
The findings point to people, vehicles, equipment, litter, and shared service pathways as important ways the virus may enter farms. In this study, those pathways appeared more informative than wild-bird exclusion measures alone.

What This Means for Growers

- Regional HPAI pressure can rise even when nothing has changed on your farm.
- You cannot control wild birds, weather, or landscape conditions, but you can control how the virus moves onto the farm.
- Shared vehicles, shared equipment, and shared disposal arrangements should be treated as serious biosecurity pressure points.
- Vehicle sanitation and movement control near poultry houses should be viewed as daily essentials, not optional extras.
- Litter handling deserves close attention, especially when outside HPAI pressure is elevated.
- Simple support practices, such as restroom access for crews, may help reduce unnecessary movement and contamination risk.
- Strong biosecurity is still the most practical way to reduce the chance that outside virus pressure becomes an inside-farm infection.

This research supports what Extension and USDA guidance have emphasized for years:
Biosecurity is about blocking entry, not eliminating virus presence in the environment.

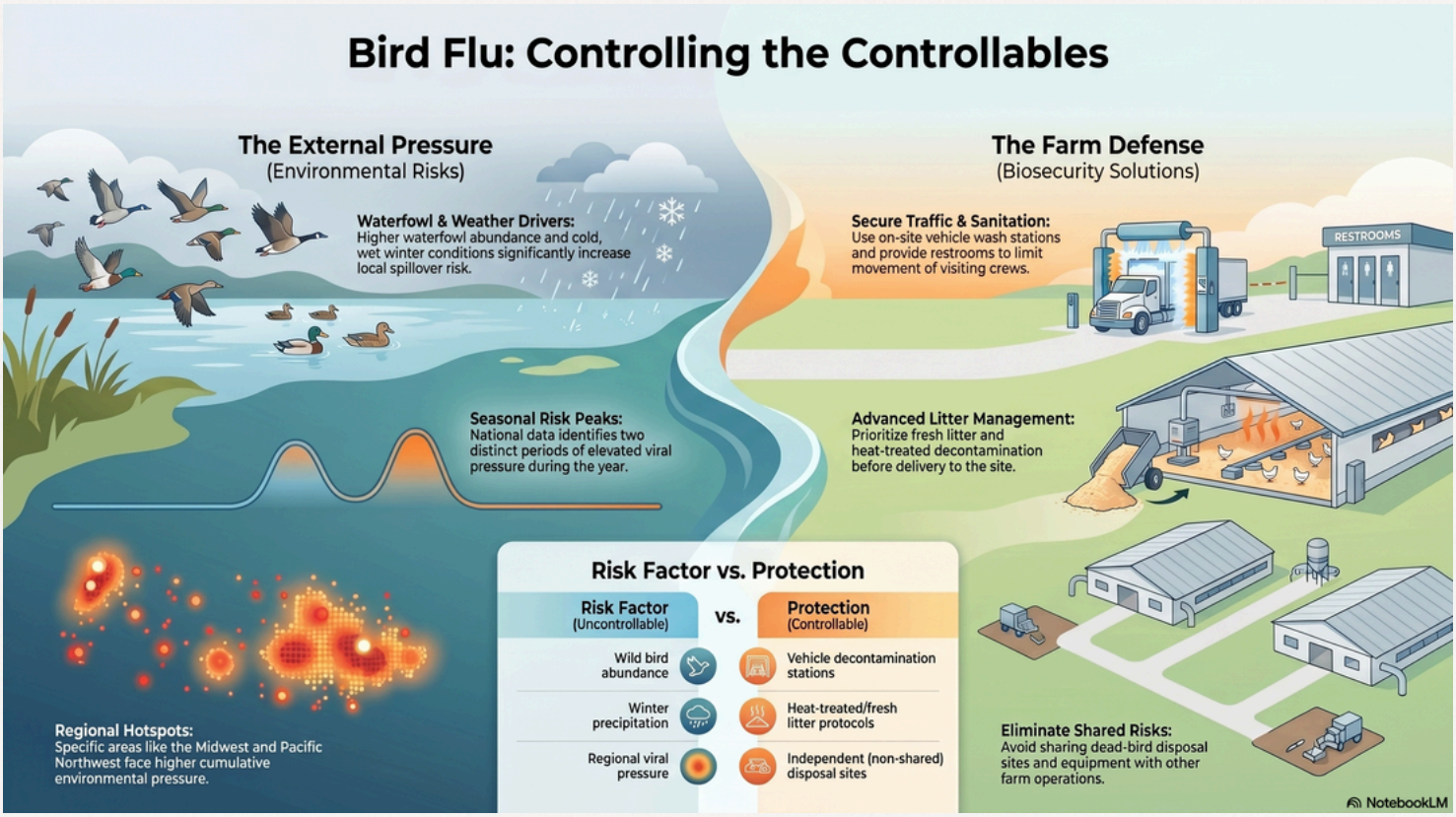
What This Study Does Not Mean

- It does not mean farms can relax biosecurity when cases decline.
- It does not show that farm-to-farm airborne spread was the primary driver of this outbreak.
- It does not mean that farms in higher-risk areas have poor management or weak biosecurity.
- It does not prove that one single biosecurity step can prevent HPAI introduction.
- It does not mean direct wild-bird contact is the only pathway that matters.

Take-Home Message

HPAI spillover risk is shaped by both environmental pressure and everyday farm practices. Farms cannot control wildlife or weather, but they can control the daily actions that determine whether the virus is carried onto the operation. Consistency, not complexity, remains one of the most practical and effective ways to reduce risk.

Research to Reality: What New Poultry Science Means for Your Farm
An Extension research translation series by the University of Maryland Extension



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Water Quality and Electrolyte Balance in Summer Broiler Production

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Summer broiler management is typically framed around heat stress, but drinking water quality can be just as influential as house temperature. As water intake increases during hot weather, any deficiency in the water system, including biofilm accumulation, elevated microbial load, inadequate sanitation, or improper electrolyte balance, can quietly compromise gut integrity, litter condition, and overall performance (Fairchild & Ritz, 2015; Watkins, 2013).

Biofilms are complex microbial communities embedded in an extracellular polymeric matrix that adheres to the interior of pipes and drinker components. These structures consume disinfectants, shield pathogens from sanitizers, and intermittently release bacteria into the water stream (Flemming et al., 2016). Warm water temperatures and zones of low or intermittent flow promote biofilm development, so summer conditions are particularly favorable. Indicators such as slimy residues on filters, recurring nipple drinker malfunctions, or increasing bacterial counts over the grow-out cycle point to the need for a structured line-cleaning program (Watkins, 2013; Luyckx et al., 2015).

An effective program includes thorough between-flock sanitation using an approved detergent followed by a compatible disinfectant, with particular attention to removing organic scale before disinfection. Lines should be aggressively flushed, especially at terminal ends and in any dead-leg sections where stagnation occurs. During the flock, maintaining a consistent low-level sanitizer residual is critical. Verifying sanitizer levels at the end of the line helps ensure system-wide efficacy, and periodic flushing during hot weather can reduce in-line water temperature and support bird thermoregulation while also improving water hygiene (Fairchild & Ritz, 2015).

Electrolyte balance in drinking water is the second critical factor. Heat-stressed birds increase panting and water consumption, which alters acid-base equilibrium and disrupts electrolyte balance, particularly through changes in blood carbon dioxide and bicarbonate levels (Borges et al., 2004). Before administering soluble vitamin-electrolyte supplements

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("stress packs"), it is essential to establish baseline water chemistry, including sodium, potassium, chloride, sulfate, alkalinity, total dissolved solids, and pH. Without this baseline, supplementation may exacerbate imbalances rather than correct them (Watkins, 2013).

Coordinated water testing, proactive biofilm control, and targeted electrolyte supplementation can position the water system as a practical tool for maintaining gut health, litter quality, and performance during summer production. Routine water analysis is a practical first step in managing both microbial load and electrolyte balance. The University of Arkansas Cooperative Extension Service offers poultry-relevant water testing through its diagnostic laboratory system; more information on their services is available at https://cal.uada.edu.

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Poultry Housing Tips
Keeping Birds Warm and Comfortable with Dry Litter

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Though controlling litter moisture is crucial for limiting ammonia production in houses, it also helps keep birds warm during cold weather. One of the key functions of litter is to protect birds from the cold, hard clay or concrete floors in a house. Essentially, the litter serves as a blanket that helps minimize heat loss from the undersides of their bodies. The R-value of sawdust is about 2.5 per inch—roughly the same as blown fiberglass, which means the floor beneath the birds is nearly as well insulated as the ceiling above them. You can often see birds taking advantage of the insulating ability of dry litter when they bed down in it if house temperatures become too cool.

The insulating ability of any insulator is highly affected by moisture. For instance, just a 10%moisture content of fiberglass insulation can cut its R-value in half! While no study has measured how moisture impacts the R-value of built-up litter, it's reasonable to assume that insulation decreases rapidly as litter becomes wetter, underscoring the need to keep litter as dry as possible during cold weather. The fact that damp litter is a poor insulator is commonly demonstrated when a house is cleaned out and built-up litter is replaced with the fresh, damp, pine shavings. If the house is not properly preheated and the damp pine shavings are not occasionally turned to facility drying, chick performance often suffers due to the fact that they are being raised on a cool, damp "blanket" instead of a warm, dry blanket. Though this tends to occur more often in houses with fresh pine shavings, it can still be an issue in houses with built-up litter when it isn't properly dried between flocks and/or during preheating (Figure 1).

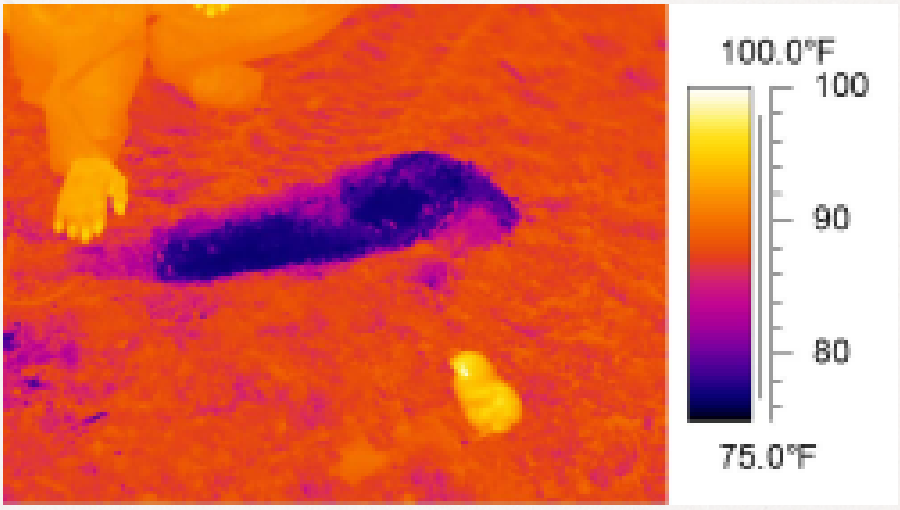

Figure 1. The top one inch of fresh pine shavings are dry, making it a good insulator. The problem is that the remaining four inches are damp, making it a poor insulator and thereby reducing the overall insulating ability of the fresh bedding material.

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Even if the chicks are placed on dry litter it is important that the litter remains dry for the remainder of the flock. If moisture builds up in litter to the point that it cakes over, it increases the difficulty of keeping birds warm during cold weather (Figures 2 and 3).

Figure 2. Damp, cool, caked litter a couple of feet from the feeders and warm, dry litter near feeders.

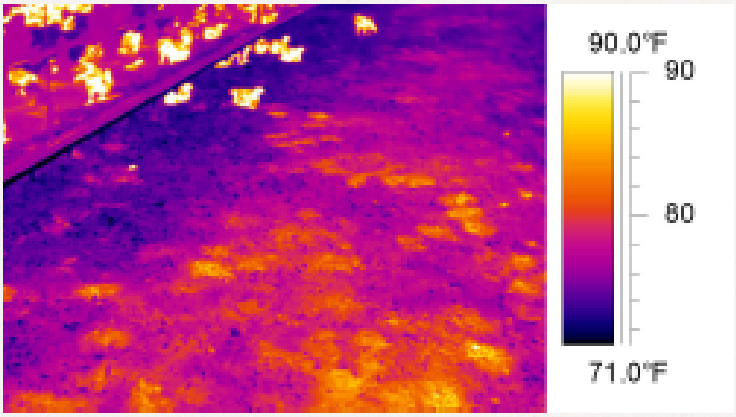

Figure 3. Cool, damp litter near drinkers and warm, dry litter a couple of feet away.

A broiler generates about 5 Btu/hr of essentially waste heat per pound of body weight as it digests feed. So, 25,000 birds weighing three pounds each produce nearly 400,000 Btu/hr—the same as ten radiant brooders. We use this waste heat to keep our houses warm during cold weather. What we don't want to do during cold weather is to remove heat directly from the bird, as can happen when the litter cakes over. While dry litter is an insulator, dense, caked litter is more of a conductor, increasing heat transfer from the birds to the floor. Try this. If you are in a kitchen with stone countertops, place your hand on a dish towel sitting on the counter. Then put your hand on the countertop. Though the towels and the countertop will be essentially the same temperature as the air in the kitchen, the countertop will feel colder because it is a conductor, allowing heat from your warm hand to be drawn into the countertop. When birds sit on dense, caked litter, heat can be drawn from the bird to the floor, making the bird feel cooler. The bird will tend to eat more feed to stay warm, resulting in a higher feed conversion rate.

The situation can become even more dire if the caked litter is damp; the birds are now essentially sitting on an evaporative cooling pad. As air moves over the floor, moisture evaporates, lowering its temperature, much as air moving through an evaporative cooling pad reduces the temperature of the pad and the air moving through it. Now the birds are not only sitting on a conductor, but on one that can be 10 degrees or more cooler than room air temperature, significantly increasing the amount of heat removed from a bird. Is it any wonder that birds tend to avoid sitting on caked litter, especially if it is damp?

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To optimize bird comfort and health during cold weather, we need to ensure we are ventilating enough to keep our litter dry, maximizing its insulating ability, and minimizing the risk of ammonia formation. To accomplish this goal, minimum ventilation rates during cold weather shouldn't be based on current litter conditions. The fact is, we don't want to wait until litter becomes damp and bird performance is adversely affected before increasing our minimum ventilation rates; we want to operate in a more preventive mode. This is why we should base our minimum ventilation rates on the relative humidity of the air in the house. If the relative humidity of the air is increasing over time, this means our litter moisture is increasing over time. You may not be able to see it, but it is increasing.

The ideal relative humidity is between 40 and 60%. Below 40% litter can become too dry, resulting in potentially excessive fuel usage and dusty conditions. If the relative humidity is above 60%, moisture levels in the litter will tend to build, resulting in increased ammonia production and, as noted previously, the increased potential to cool the birds. Think of the relative humidity of the air as an indirect rough measure of litter moisture. The higher the relative humidity, the higher the litter moisture will tend to be and the more bird performance and health will tend to suffer.

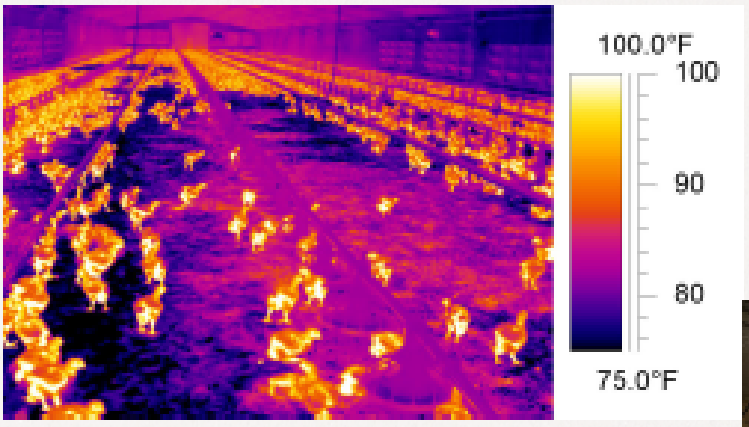

Figure 4. Cool, caked litter near drinkers and warm, dry litter near feeders.

Figure 5. Birds avoiding sitting on the caked litter near the drinker lines.

Commercial Poultry Expo

Sept 2, 2026

9am-2pm

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