

# **Avian Influenza A Virus in Dairy Cattle**

GlobalVetLink Webinar

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Federal and State Veterinary, Public Health Agencies Share Update on HPAI Detection in Kansas, Texas Dairy Herds

# Federal and State Veterinary, Public Health Agencies Share Update on HPAI Detection in Kansas, Texas Dairy Herds

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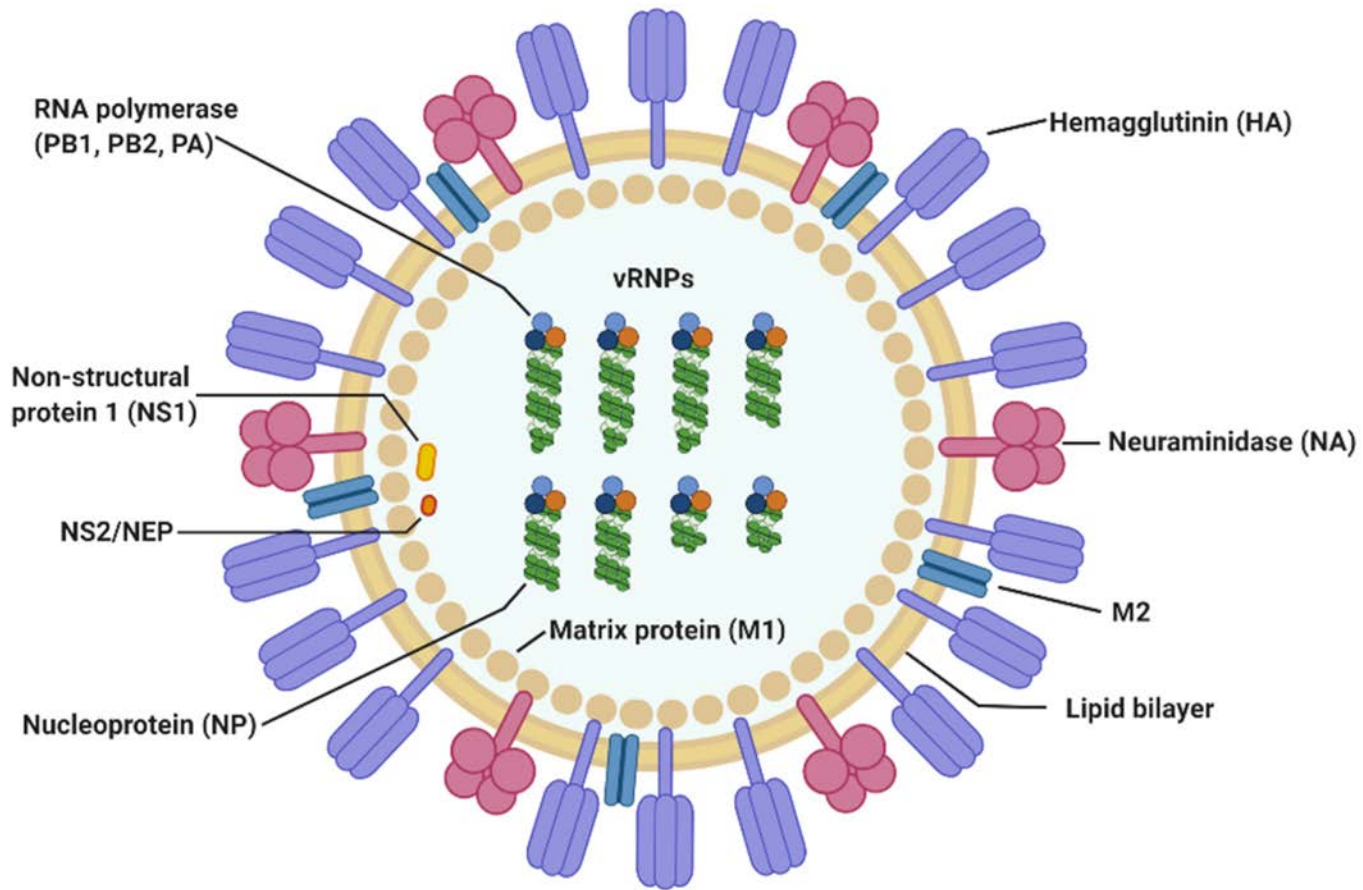
*Wild migratory birds believed to be source of infection; viral testing and epidemiologic efforts continue  
Commercial milk supply remains safe due to both federal animal health requirements and pasteurization*

## Press Release

Contact: [aphispress@usda.gov](mailto:aphispress@usda.gov)

WASHINGTON, March 25, 2024 – The U.S. Department of Agriculture (USDA), Food and Drug Administration (FDA) and Centers for Disease Control and Prevention (CDC), as well as state veterinary and public health officials, are investigating an illness among

# Influenza Virus Makeup



Enveloped RNA virus  
18 types of hemagglutinin (HA)  
11 types of neuraminidase (NA)

8 genome segments

4 Types: A, B, C, D

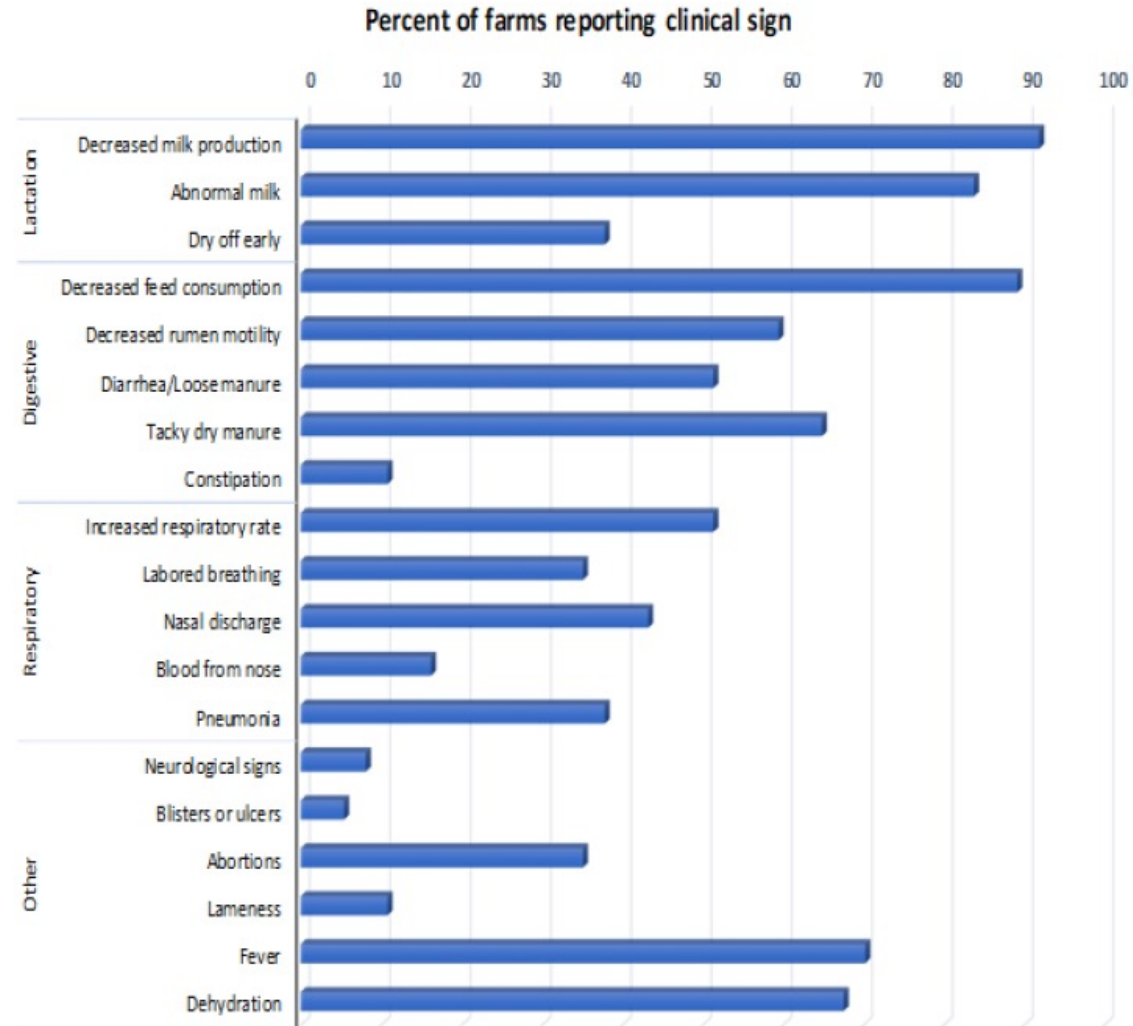
Type D traditionally thought to  
cause disease in cattle

Source: [https://en.wikipedia.org/wiki/Influenza\\_A\\_virus](https://en.wikipedia.org/wiki/Influenza_A_virus)

# Avian Influenza A Virus (H5N1) in Dairy Cattle - Introduction

- February-March 2024 – Dairymen in TX started to describe a syndrome affecting approximately 10-15% of their lactating dairy cattle
  - Decline in feed intake – herd
  - Drop in rumination (rumen hypomotility) - individual
  - Decreased milk yield across the herd
  - Thicker, yellow to tannish milk
  - Mortality low/zero
  - Other symptoms inconsistently described
  - Mostly 2+ lactation, mid to late lactation

# USDA Epidemiological Brief



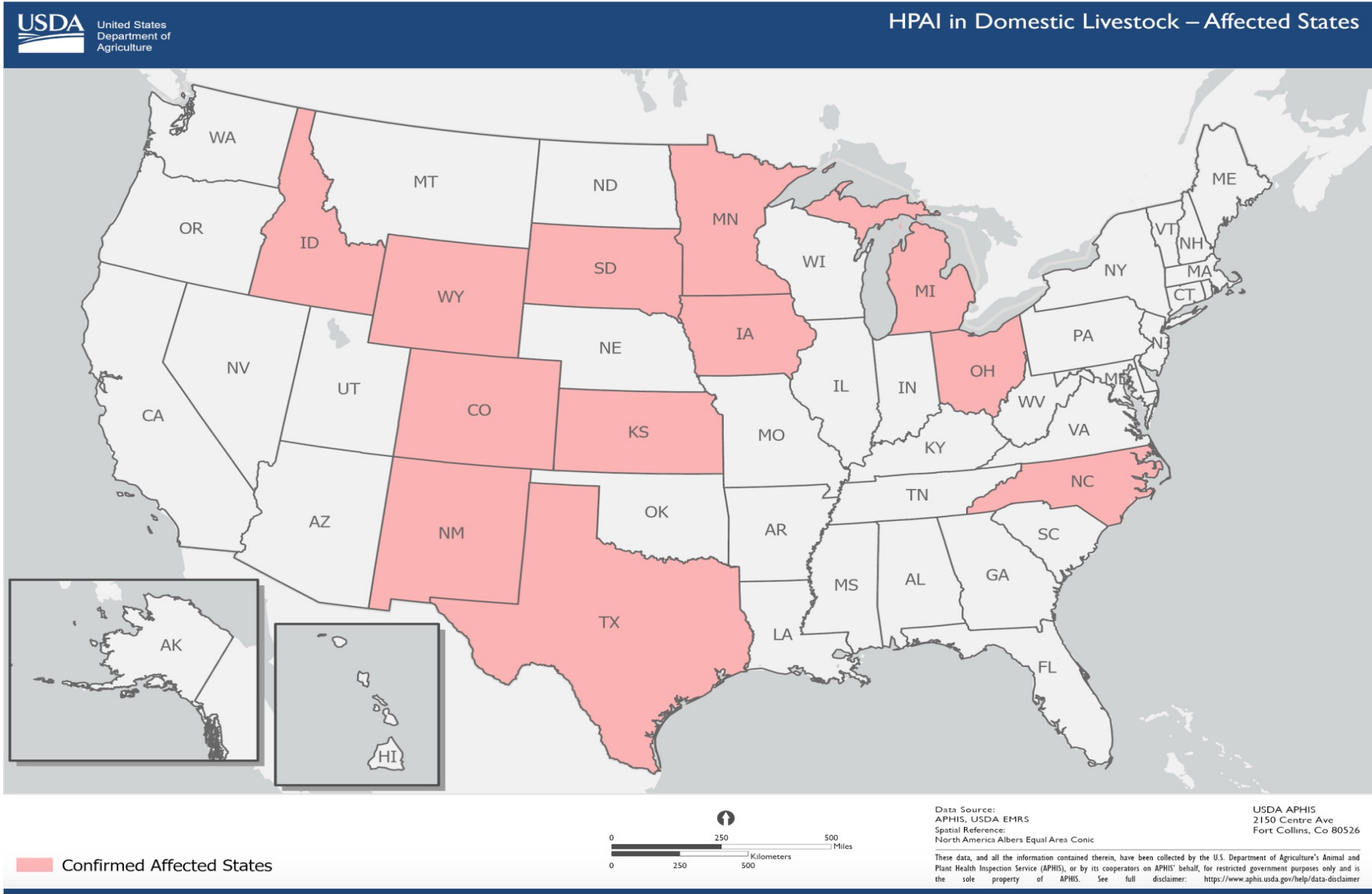
# USDA Epidemiological Brief

Cattle class	Farms % reporting animals exhibited clinical signs	Percent of animals that exhibited clinical signs (average)	Percent of animals that recovered (average)	Percent of animals culled (average)	Percent of animals that died (average)
Preweaned calves	0	0	0	0	0
Weaned unbred dairy heifers	0	0	0	0	0
Bred dairy heifers	4	0	0	0	0
1st lactation dairy cows	96	4	2	0	0
2nd lactation dairy cows	93	7	3	1	0
3rd or high lactation dairy cows	100	9	4	1	0
Dry dairy cows	35	5	3	2	1
Beef animals	0	0	0	0	0
Dairy bulls	0	0	0	0	0

# The Outbreak

- Lasts 10-14 days, Herds recover in 30-45 days
- March – other herds in TX, KS, NM listed
- Reports of dead birds and sick cats on dairy farms
- March 22 - ISU and TX D Labs – detected influenza A by PCR in milk samples (ISU & TX) & cat tissues (ISU)
  - Confirmed by USDA NVSL

# Current Situation-USDA June 4, 2024 – 84 herds (?)





# The Outbreak

- New states – MI, ID, OH, SD, NC, & CO
  - MI, ID, OH, SD, & NC – some herd outbreaks associated with moving lactating cows from farms that were not showing clinical signs when they left – later broke with disease
  - Details CO, IA, & MN - ?
- Multiple states have imposed movement restrictions
  - Resources:
    - Interstate Livestock - <https://www.interstatelivestock.com/>
    - Livestock Marketing Association - <https://www.lmaweb.com/hpai>



# Federal Order to Assist with Developing a Baseline of Critical Information and Limiting the Spread of H5N1 in Dairy Cattle: Frequently Asked Questions

*April 25, 2024*

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- April 29 – USDA limiting movement **of lactating cows** for **interstate** travel without prior testing
  - Modifications added for moving cull cows – cannot ship from infected premises for 30 days
  - Shipping arrangements may be possible – contact the state veterinarian
- Mandatory reporting by laboratories and state veterinarians of positive nucleic acid detection and positive serologic detection

# The Outbreak

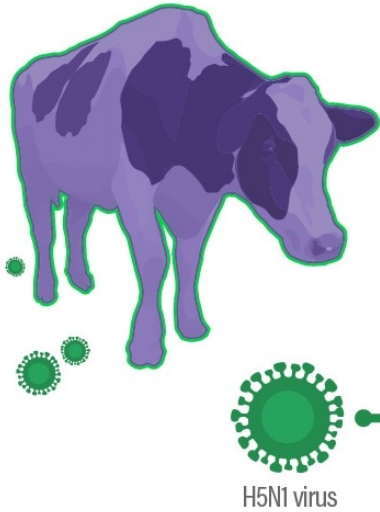
- USDA released genetic sequences from 239 from H5N1 clade 2.3.4.4b on April 21, 2024
  - Sequences posted are from cattle, cats, chickens, skunks, raccoons, grackles, blackbirds, and geese
  - Single spillover event from wild birds in dairy cattle in late 2023
  - Clade 2.3.4.4b B3.13 genotype
- Most recent outbreaks in poultry flocks have been confirmed with the B3.13 genotype
  - Epi investigations have established direct links between dairy farm and poultry farm outbreaks

# Three dairy farm workers have been confirmed with H5N1 infections

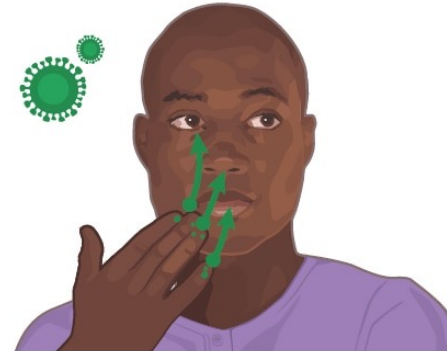
- 2 with conjunctivitis, 1 with upper respiratory symptoms
- CDC classifies virus in poultry & cattle as low risk to the general public
- Symptoms can include:
  - Fever (Temperature of 100°F [37.8°C] or greater) or feeling feverish/chills
  - Cough
  - Sore throat
  - Difficulty breathing/shortness of breath
  - Eye tearing, redness, or irritation
  - Headaches
  - Runny or stuffy nose
  - Muscle or body aches
  - Diarrhea

Source: <https://www.cdc.gov/flu/avianflu/h5/farm-workers.html#:~:text=The%20virus%20can%20infect%20people,cows%20in%20multiple%20U.S.%20states.>

# H5N1 Bird Flu Might Spread from Cows to People in Several Ways

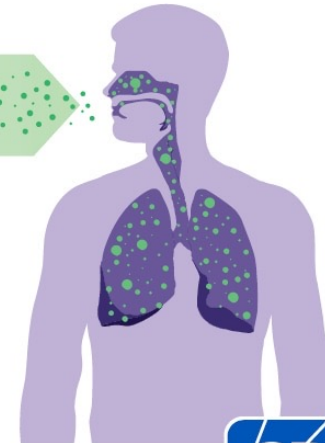
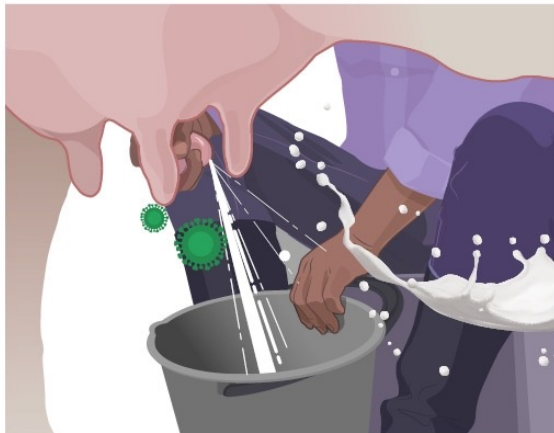


If you touch something contaminated with live virus and then touch your eyes, nose, or mouth



If a liquid contaminated with live virus splashes into your eyes (like raw milk from an infected cow, for example)

If you eat, drink, or inhale droplets contaminated with live virus



Source: CDC  
[https://www.cdc.gov/flu/images/avianflu/h5/cows-spread-flu.jpg?\\_=16637?noicon](https://www.cdc.gov/flu/images/avianflu/h5/cows-spread-flu.jpg?_=16637?noicon)

# Protect Yourself From H5N1 When Working With Farm Animals

H5N1 is a bird flu virus that could make you sick. Wear recommended personal protective equipment (PPE) when working directly or closely with sick or dead animals, animal feces, litter, raw milk, and other materials that might have the virus.



**Wash hands with soap and water, then put on PPE in this order:**

1. Fluid-resistant coveralls
2. Waterproof apron, if needed for job task
3. NIOSH Approved® Respirator (e.g., N95® filtering facepiece respirator or elastomeric half mask respirator)
4. Properly-fitted unvented *or* indirectly vented safety goggles or face shield
5. Head cover or hair cover
6. Gloves
7. Boots

Scan to learn how to put on and take off a respirator



Source: CDC  
<https://www.cdc.gov/flu/pdf/avianflu/protect-yourself-h5n1.pdf>

# Dairy Food Safety

- Two studies (FDA & OSU) have shown store-shelf milk products were PCR-positive
- FDA Study
  - Milk, sour cream, & cottage cheese
  - Infant formula, yogurt – PCR negative
  - Further work has shown no viable virus present
- Pasteurization is effective!!!
  
- May 24 – USDA detected viral material in meat from 1 cull dairy cow

# Disease Testing & Ongoing Surveillance

- PCR detection in milk has consistency proven to be the best diagnostic sample
  - Swabs of upper respiratory tract
  - Urine
- NP-ELISA - validated by some labs for serological monitoring
  - NP = nucleoprotein
  - ISU VDL – serum and milk
- Consult with diagnostician on current testing strategy
- USDA is expanding epidemiological survey as new farms are identified
  - Rolling out programs to assist with sampling and to compensate for losses





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# USDA Assistance to Farms

- Farms with known positive status - for 120 days following confirmation of HPAI in cattle on premise
  1. Provide financial support to producers who supply PPE to employees and/or provide outerwear uniform laundering
    - Flat rate per employee up to \$2000/month
    - Must facilitate the participation of their workers
  2. Provide financial support to develop biosecurity plans based on existing secure milk supply plans.
    - This includes recommended enhanced biosecurity for individuals that frequently move between dairy premises—milk haulers, veterinarians, feed trucks, AI technicians, etc.
    - Compensation of up to \$1,500 per affected premises
    - \$100 payment to producers who purchase and install an in-line sampler for their milk system

# Assistance to Farms

- Farms with known positive status - for 120 days following confirmation of HPAI in cattle on premise
3. Provide funding for heat treatment to dispose of milk from sick cows
    - Producer must establish a system to heat treat all waste milk from sick cows before disposal
    - Up to \$2,000 per month, up to \$8,000 total, per affected premises.
  4. Reimburse producers for veterinarian costs
    - Veterinary fees & supplies – up to \$10,000/premise
  5. Reimburse shipping costs for testing at NAHLN labs
    - 2 shipments per month – up to \$50/shipment

# Assistance to Farms – Coming Soon

- Emergency Assistance for Livestock, Honey Bees, and Farm-raised Fish Program (ELAP)
  - Rulemaking currently – Intended to rule out last week of June 2024
  - Farmers will receive payments at 90 percent of lost production per cow
  - Set period of time retroactive to the date of the confirmation of their positive herd status
    - Starting with the first herd that tested positive in March 2024
  - Unclear on what cows USDA will include.

# Assistance to Farms – Coming Soon

- Voluntary HPAI Dairy Herd Status Program
  - Use repeated bulk tank milk PCR testing to establish disease status in herd
  - Allow for animal movement from certain herds without individual animal testing
  - May allow for establishment of state or regional disease status
  - Anticipated rollout – later June 2024

# Research

- Research has started/ongoing to address several questions
  - Limited by designation of virus as a select agent
  - Requires research activities to be conducted in Biosafety Level 3 (BSL-3) or Animal BSL-3 facilities
  - June 5, 2024 – USDA temporarily exempted H5 avian influenza viruses from select agent status
    - Still requires research work to be conducted in BSL & ABSL-3 facilities
  - Diagnostic testing validation –
  - Vaccination – unknown as to efficacy
    - No guidance on whether vaccination will be allowed – Poultry - No

**Questions?**