POULTRY

Using Ventilation Shutdown for Emergency Mass Depopulation of Poultry

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USAHA TDP Committee

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Outline

- Priorities
- What is Ventilation Shutdown (VSD) for Mass Depopulation
- Reasons for using ventilation shutdown (VSD) in emergency situations
- Decision making process for or against using VSD
- Further information needs

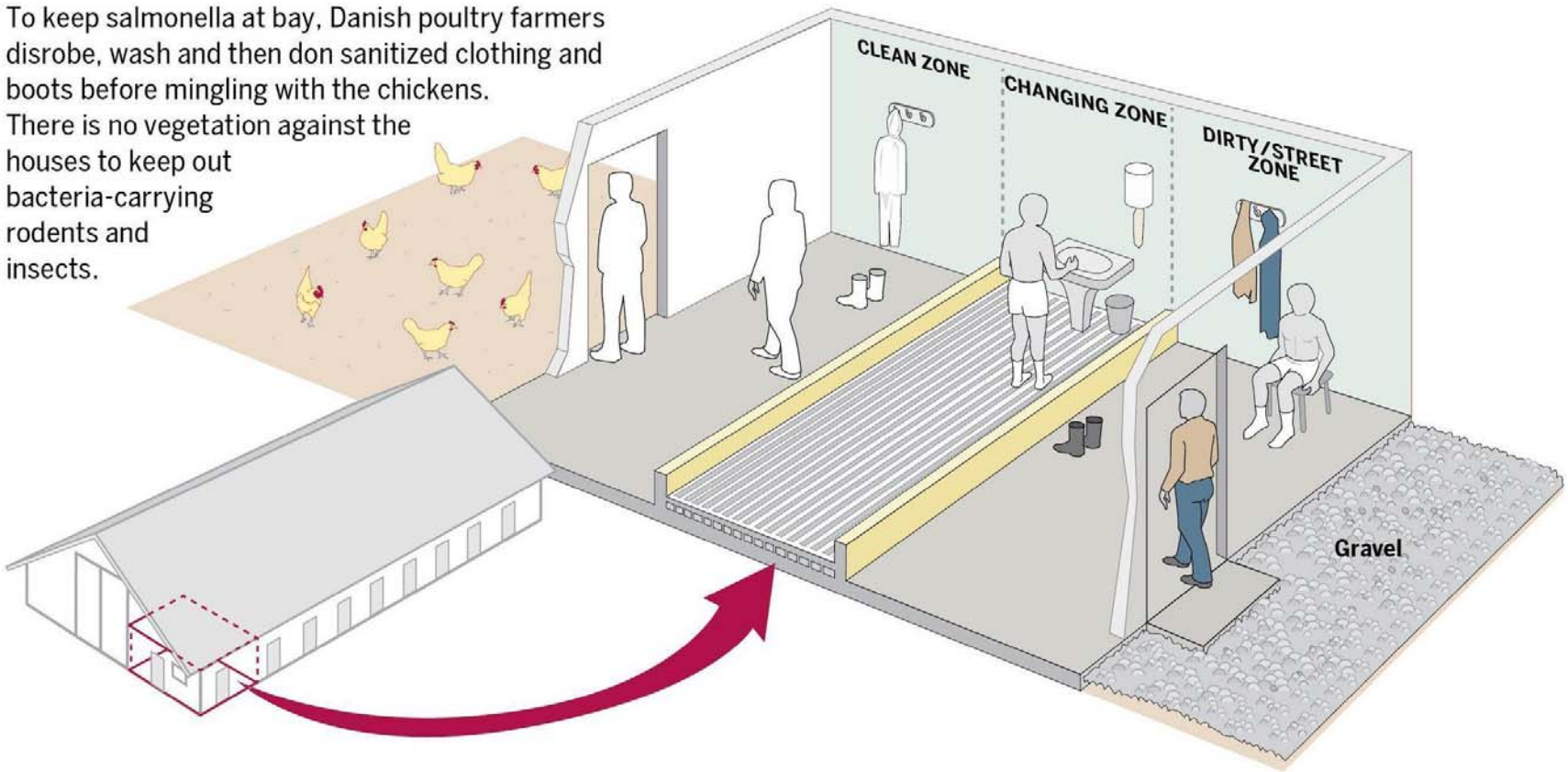
Priorities

Ventilation Shutdown is not the answer to controlling HPAI

Biosecurity and early detection is

Biosecurity Investment

To keep salmonella at bay, Danish poultry farmers disrobe, wash and then don sanitized clothing and boots before mingling with the chickens. There is no vegetation against the houses to keep out bacteria-carrying rodents and insects.



▲**Figure 1:** Foam sanitizer is sprayed across the doorway appropriately; allowing forklift wheels traveling through the doorway to be exposed to the foam.

▶**Figure 2:** Foam sanitizer should always be maintained in high-traffic areas, and the automatic recycling timer shoud be set to reapply the foam sanitizer before it is completely dissipated.

Biosecurity Investment

Operational Biosecurity Examples

- Training, training, and more training
- Comply with entry requirements
  - Danish system
- No poultry exposure 48 hours prior to work on a different farm
- Crews enter through worker entry and do not exit buildings
- Designated parking areas for employees

Early Detection

- High mortality layer flocks likely were infected 10+ days earlier
- Layer flocks that don’t reach high mortality do not shed a lot of virus
- Detection early allows the use of normal depopulation methods, molting of other flocks on the complex, and a more controlled situation

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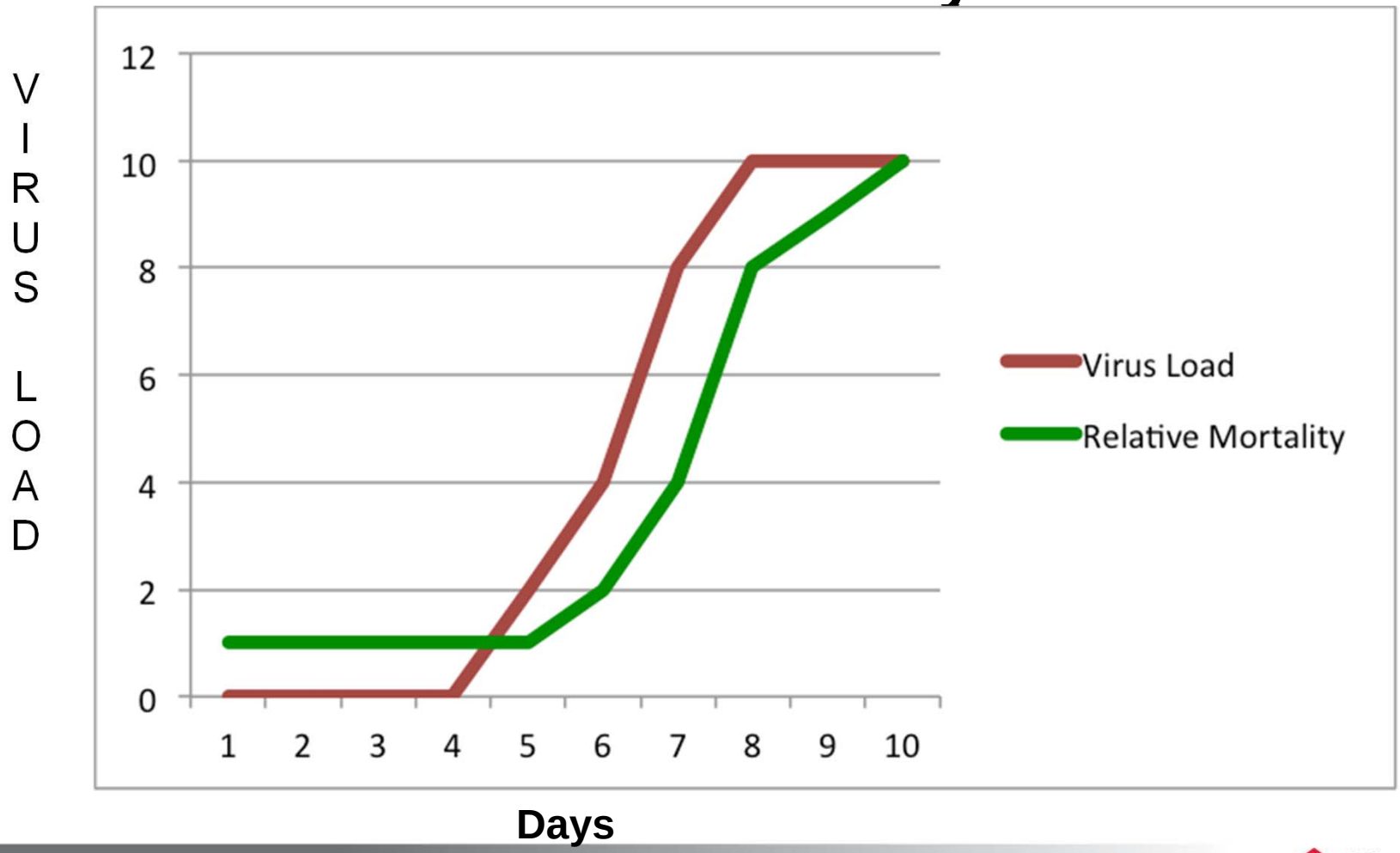
Theoretical Environmental Virus Load and Mortality



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Early Detection

- Look for abnormal mortality patterns
- Look for clinical signs of HPAI
- If waterfowl presence known in area, begin surveillance of dead birds, 5 per house per week

Definition

- Ventilation Shutdown - Ventilation shutdown is defined as the cessation of natural or mechanical ventilation of atmospheric air in a building where birds are housed, with or without action to increase the ambient temperature.
- Birds die of hyperthermia

www.defra.gov.uk

GUIDELINES FOR KILLING POULTRY USING VENTILATION SHUTDOWN (VSD)

http://www.slideshare.net/charmkey5/operating-guidance-vetilation-shutdown-procedure-defra

September 2009

Version 9

VSD for Mass Depopulation

- Goal – Reach 104F+ within 30 minutes and hold for 3 hours. 75% relative humidity goal
- Must seal house beforehand
- Add temperature monitors
- Water is not turned off
- Supplemental heat may be required
  - 50 to 100 btu/hour/ft^2 suggested to make sure bottom levels of cages reach desired temps (high rise)
  - 1 to 1.5 million btu/h may be needed for large layer houses
  - Circulation fans may be run to equalize temps

Research on VSD

Modeling Ventilation Shut Down (VSD) of Layer Houses

Hongwei Xin, PhD; Yang Zhao, PhD

Dept. of Agricultural & Biosystems Engineering

Iowa State University; Egg Industry Center

hxin@iastate.edu

A Presentation at 2015 Iowa Egg Industry Symposium

October 1, 2015, Scheman Building, Ames, Iowa

Materials Needed To Stockpile

- Materials to seal houses; plastic rolls, boards, nails, etc.
- Portable heaters and fuel
- Water to raise humidity

500,000 btu/h Propane

Reasons to Use VSD

- Stop birds from shedding virus shortly after confirmation of disease
  - Stop production of virus that can spread
  - Reduce rate of virus shed from birds infected (birds early in the infection shed less)
  - VSD stops exhausting virus from house
  - Meet the 24 hour timeline set by USDA
- Minimize exposure of people to AI virus

Reasons Not to Use VSD

- VSD not considered humane
- Dead birds may be difficult to remove after many days if left in cages
- Some birds may not die (especially in lower cage tiers) and another method will be needed

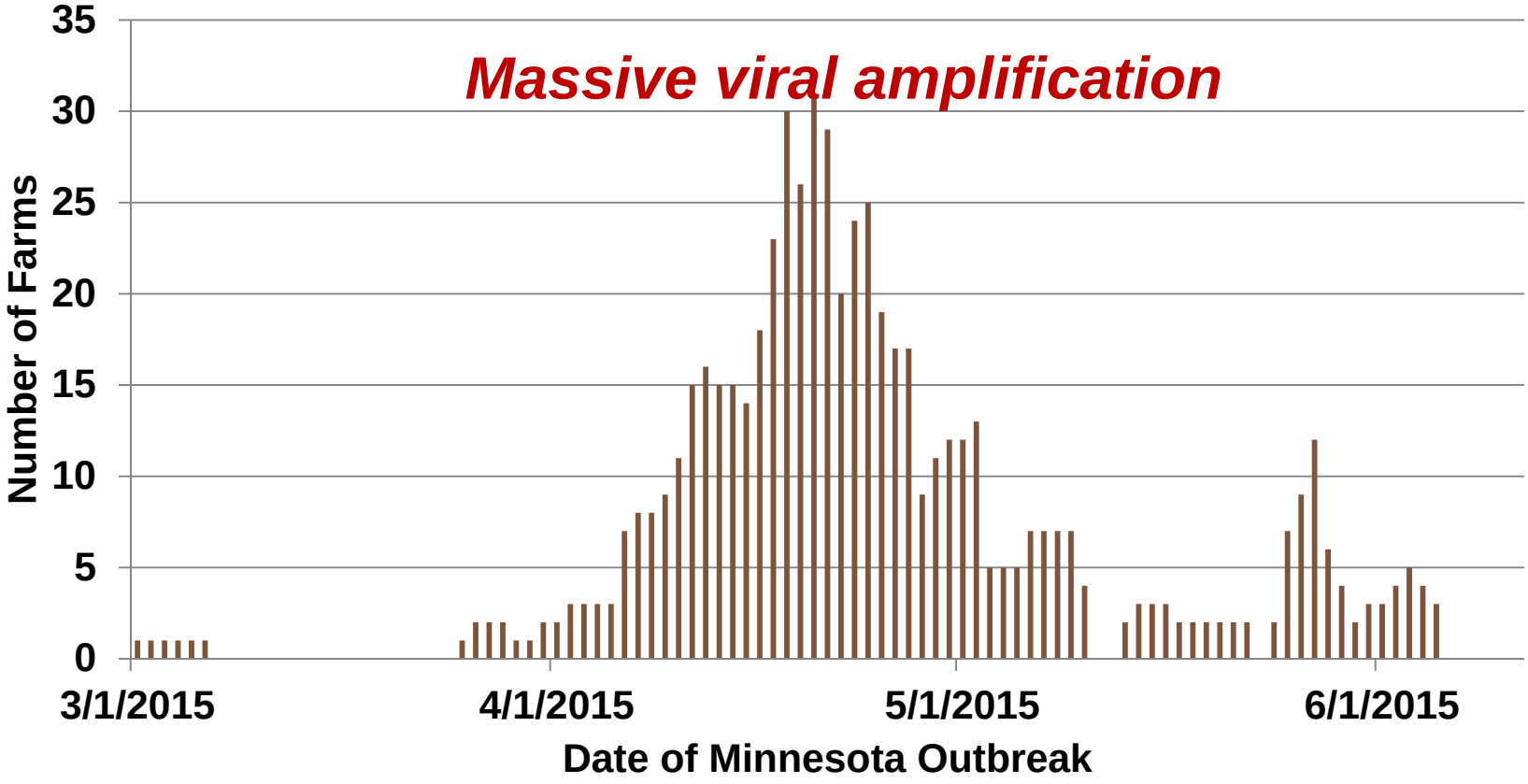
Problems Last Spring

- Delays in mass depopulation
  - Inherent time for performing cart gassing
    - Normal depop - 15 man crew, 80,000 birds, 10 hours, 2 to 3 x longer during outbreak
    - 5 to 10 days required for large houses
  - Lack of CO_2 supply for cart gassing layers
  - Lack of sufficient crew members and carts for cart gassing layers
  - Insufficient numbers of fire-fighting foam machines for the number of outbreaks for turkeys (2 needed per farm)

MAK Carts

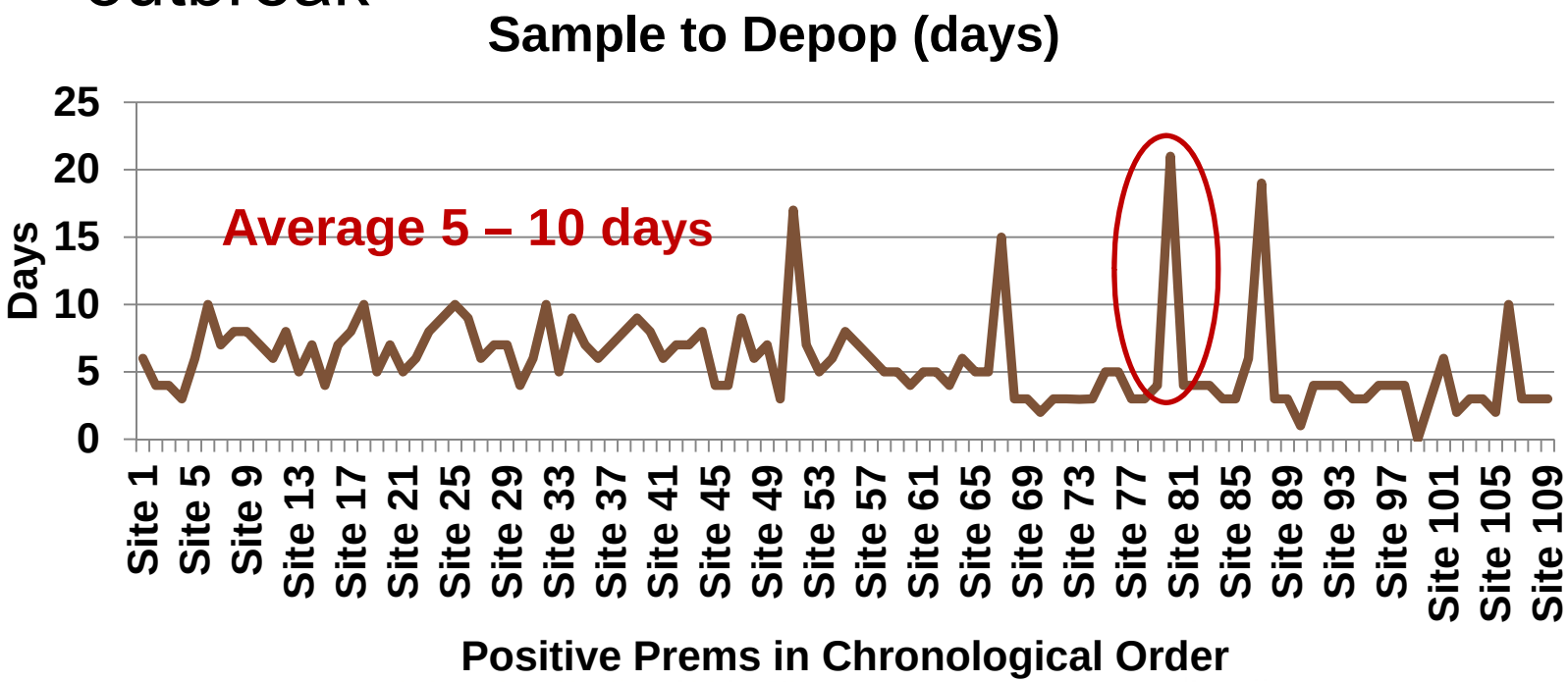
Fire Fighting Foam

Epi Curve of # Farms Shedding HPAI Virus



Mass Depopulation

- Timely depopulation, is one of the most critical control measures in containing a HPAI outbreak.
- Not accomplished during the recent HPAI outbreak



Consequences of Delays in Depopulation

- Increase in virus shed rate over time

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- Amplified total virus shed

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- Increased transmission to other flocks

AVMA Statement, May 2015

"While it is our duty as veterinarians to develop and employ methods of depopulation that minimize animal suffering, the current U.S. outbreak of highly pathogenic avian influenza (HPAI) is expanding faster than it can be controlled using conventional approaches. Furthermore, the capacity of state and federal regulatory agencies to apply preferred methods in a timely manner has been exceeded. Accordingly, the use of less ideal methods that result in a quick death for birds and support disease containment may become necessary. Decisions to implement non-preferred alternatives must be made on a case-by-case basis, only after taking extreme care to ensure appropriate justification for their use and considering all currently available resources, and as an absolute last resort. In all cases, depopulation efforts must comply with applicable state and federal law."

- *AVMA statement on need for flexibility in the application of approaches to depopulation during the 2015 highly pathogenic avian influenza (HPAI) outbreak*

- ***USDA Red Book: "Allowances of other methods of depopulation is warranted in the face of an FAD outbreak."***

AAAP Welfare Committee Motion

13 July 2015

"Motion to AAAP Board of Director's to allow the use of alternative methods of depopulation during an emergency foreign animal disease outbreak"

Passed Unanimously

AAAP Welfare Committee Goal

- To provide supportive language to increase the efficiency and acceptance of mass depopulation for outbreaks.
- Note: this is strictly a depopulation focused statement for emergency situations for foreign animal disease outbreaks

AAAP Welfare Committee Goal

- VSD will be evaluated on a case-by-case basis with veterinary oversight
- VSD will only be used as a last resort if normally used methods would not meet timing criteria

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Animal Agriculture Coalition Supports Use of VSD

Members of the Animal Agriculture Coalition (AAC) support the decision of the USDA to allow emergency methods of depopulation.

Members of the AAC, listed below, support the use of USDA approved emergency depopulation methods in response to extraordinary disease outbreaks, such as the recent Highly Pathogenic Avian Influenza (HPAI) outbreak in the Upper Midwest. We recognize that in the event of a foreign animal disease (FAD) or other highly infectious animal disease outbreak, timely depopulation is a critical factor in containing such an outbreak. As seen in the 2015 HPAI outbreak, delayed depopulation can escalate the severity of an outbreak, leading to more animals becoming infected. In these cases, it is imperative that infected premises be rapidly depopulated once the presence of disease is confirmed, preferably within 24 hours.

On behalf of:
American Association of Avian Pathologists
American Association of Bovine Practitioners
American Association of Small Ruminant Practitioners
American Association of Swine Veterinarians
American Association of Veterinary Laboratory Diagnosticians
American Dairy Science Association
American Farm Bureau Federation
American Feed Industry Association
American Sheep Industry
Animal Agriculture Alliance
Association of Veterinary Biologics Companies
Livestock Marketing Association
National Aquaculture Association
National Chicken Council
National Grain and Feed Association
National Pork Producers Council
National Renderers Association
National Turkey Federation
Poultry Science Association
United Egg Producers
U.S. Poultry & Egg Association

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AAAP VSD Position

- Information available at the AAAP website, www.aaap.info for AAAP members
  - AAAP position statement
  - FAQs
  - Background information
- Found under Committees/Animal Welfare/Emergency Mass Depopulation Guide and Avian Influenza Resources

AVMA Panel on Depopulation

- The Panel on Depopulation and its Working Groups are being convened and will consider applicability to the following species/activities in developing guidance for techniques appropriate for mass depopulation: poultry, cattle, swine, small ruminants, equids, aquaculture, companion animals (animal control and sheltering), laboratory animals, zoo and wild animals.
- Expected time frame – 2 years

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Decision Making for Depopulation Method

United States Department of Agriculture

HPAI Outbreak 2014-2015

Ventilation Shutdown Evidence & Policy

September 18, 2015

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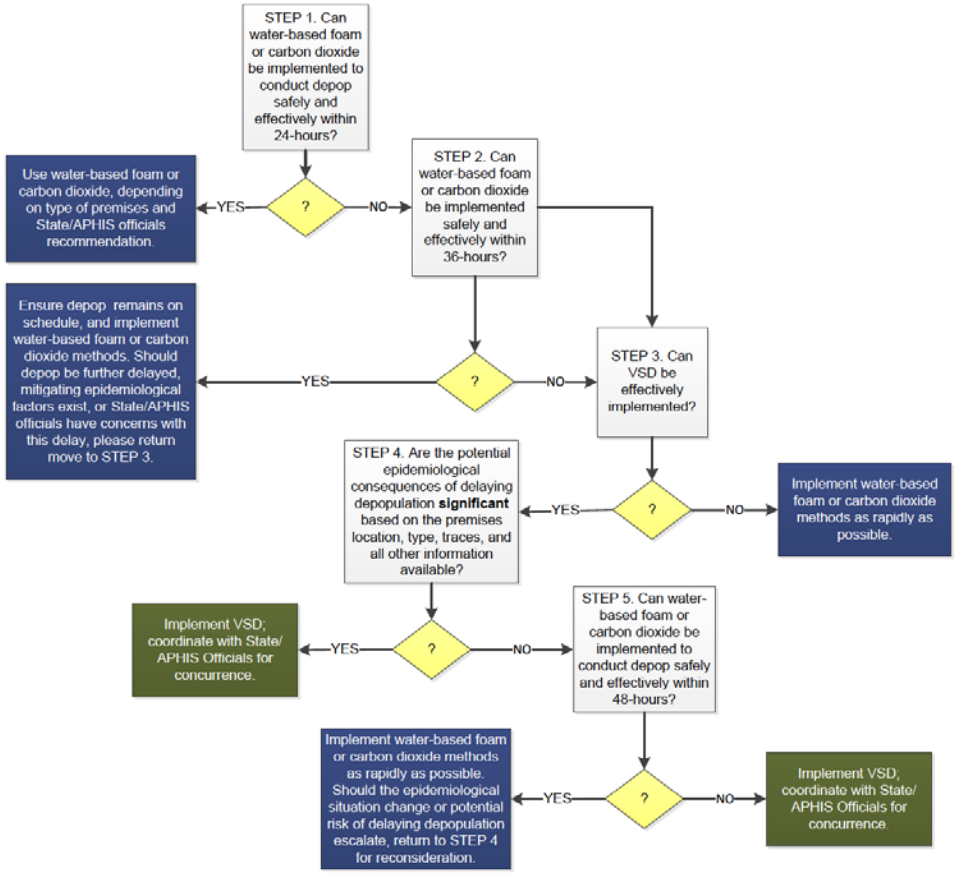
USDA Decision Tree

Figure 1. Decision Tree for Implementing VSD



6 Requirements for Using VSD for HPAI

1. Other methods are not available
2. High threat of transmission
3. Review of the USDA VSD Evidence and Policy document by veterinary officials
4. Incident Management Team approval
5. State officials approval
6. National Incident Coordinator approval

Research Needs

- Amount of supplemental heat needed in different housing and temperature situations
- Appropriateness of sealing houses
- Role of humidity
- Need for maintaining high temperature for 3 hours

Summary

- Priorities - Enhance biosecurity and detect early
- Use Ventilation Shutdown (VSD) only if other methods do not attain timely depopulation
- Determine best ways to conduct VSD

Questions???

“Success depends upon previous preparation, and without such preparation there is sure to be failure."

-- Confucius, philosopher and teacher