

# Climate Change, Zoonoses, & Animal Agriculture

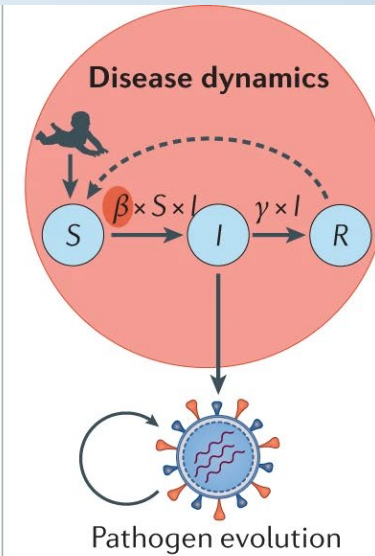
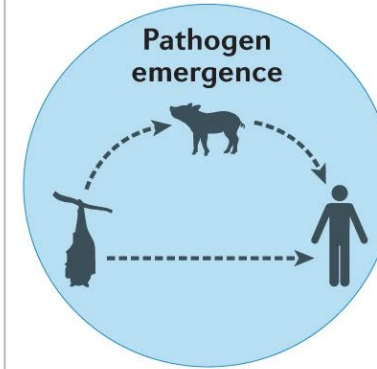
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VERMONT LAW SCHOOL

ANIMAL LAW SYMPOSIUM 2022

**PANEL 1: CLIMATE CONTINGENCIES AND FARMED ANIMALS: BUILDING RESILIENCE**



# Climate Change & Disease



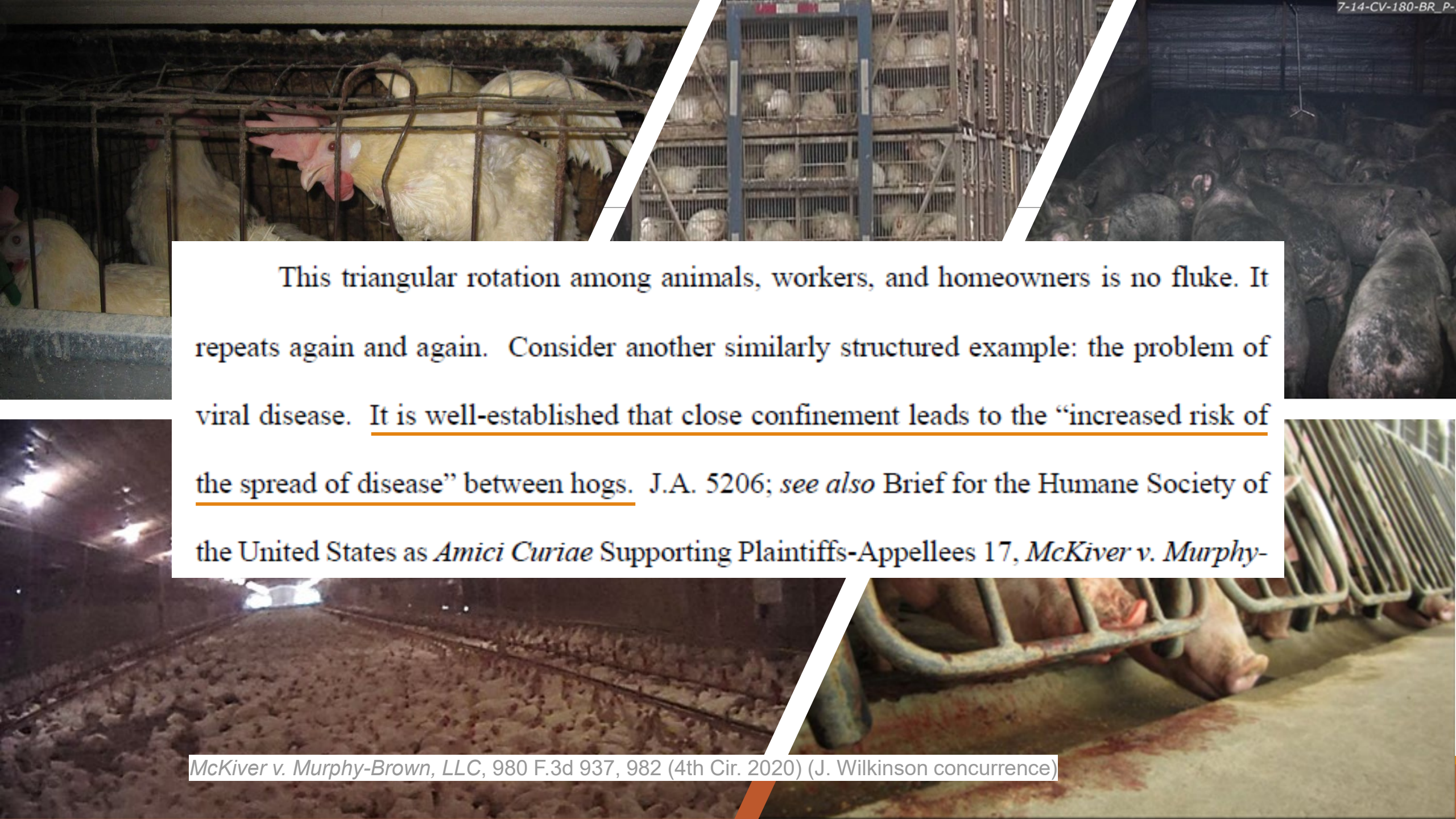
<b>Climatic change</b>	Drives range shifts for reservoir species	Affects transmission and susceptibility	Affects the geographical range of vectors
<b>Technological change</b>			
Transportation	Improved global surveillance		Air transit and high-speed rail affect pace and range of spread
Health care		Vaccination affects dynamics	Improved care reduces burden
<b>Demographic change</b>			
Population growth and land use	Increased contact with reservoir species	Population numbers affect evolution, birth rates affect dynamics	Larger population travelling
Urbanization	Depends on species	Density affects contact rate	Urban population more connected
Ageing	Immunosenescence affects spillover risk	Ageing population increases transmission	Possible larger burden

Review Article | Published: 13 October 2021

## Infectious disease in an era of global change

Rachel E. Baker , Ayesha S. Mahmud, Ian F. Miller, Malavika Rajeev, Fidisoa Rasambainarivo, Benjamin L. Rice, Saki Takahashi, Andrew J. Tatem, Caroline E. Wagner, Lin-Fa Wang, Amy Wesolowski & C. Jessica E. Metcalf 

*Nature Reviews Microbiology* **20**, 193–205 (2022) | [Cite this article](#)



This triangular rotation among animals, workers, and homeowners is no fluke. It repeats again and again. Consider another similarly structured example: the problem of viral disease. It is well-established that close confinement leads to the “increased risk of the spread of disease” between hogs. J.A. 5206; *see also* Brief for the Humane Society of the United States as *Amici Curiae* Supporting Plaintiffs-Appellees 17, *McKiver v. Murphy-*

# Avian Influenza

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- Avian influenza (AI or bird flu) is a viral respiratory disease that infects all avian species and can also infect pigs and humans
- Common disease but frequently changes
- Highly infectious and potentially fatal virus
- Based on the severity of illness, the disease is classified as either high or low pathogenicity avian influenza (HPAI/LPAI)

# Mitigation

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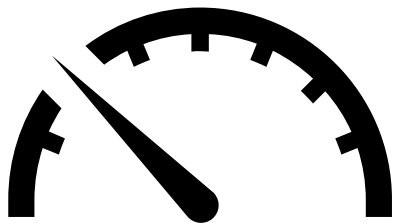
Lower stocking density reduces the risk of the incubation and spread of disease

**Issue:** *One commenter suggested APHIS should reduce the number of birds allowed in poultry houses.*

*In terms of saving resources and*

*protecting human and animal health*  
*prevention is a far more intelligent and*  
*effective use of energy than trying to*  
*contain and clean up an outbreak once*  
*it's begun* – The World Organisation for Animal Health (OIE).

Response: The commenter suggested including an alternative where APHIS agreements with farmers require reductions in the number of birds per house, theoretically decreasing the potential for HPAI incursion spread by ventilation systems. APHIS and the poultry industry agreed that the impact of a HPAI outbreak is limited where poultry production is highly concentrated or networked. Due to the impact of this outbreak, the poultry industry is reconsidering the construction of highly concentrated and networked poultry production complexes. While APHIS is not going to adopt this type of governmental restriction at this time, APHIS will encourage farmers to consider reducing the number of birds in poultry houses as part their best management practices.



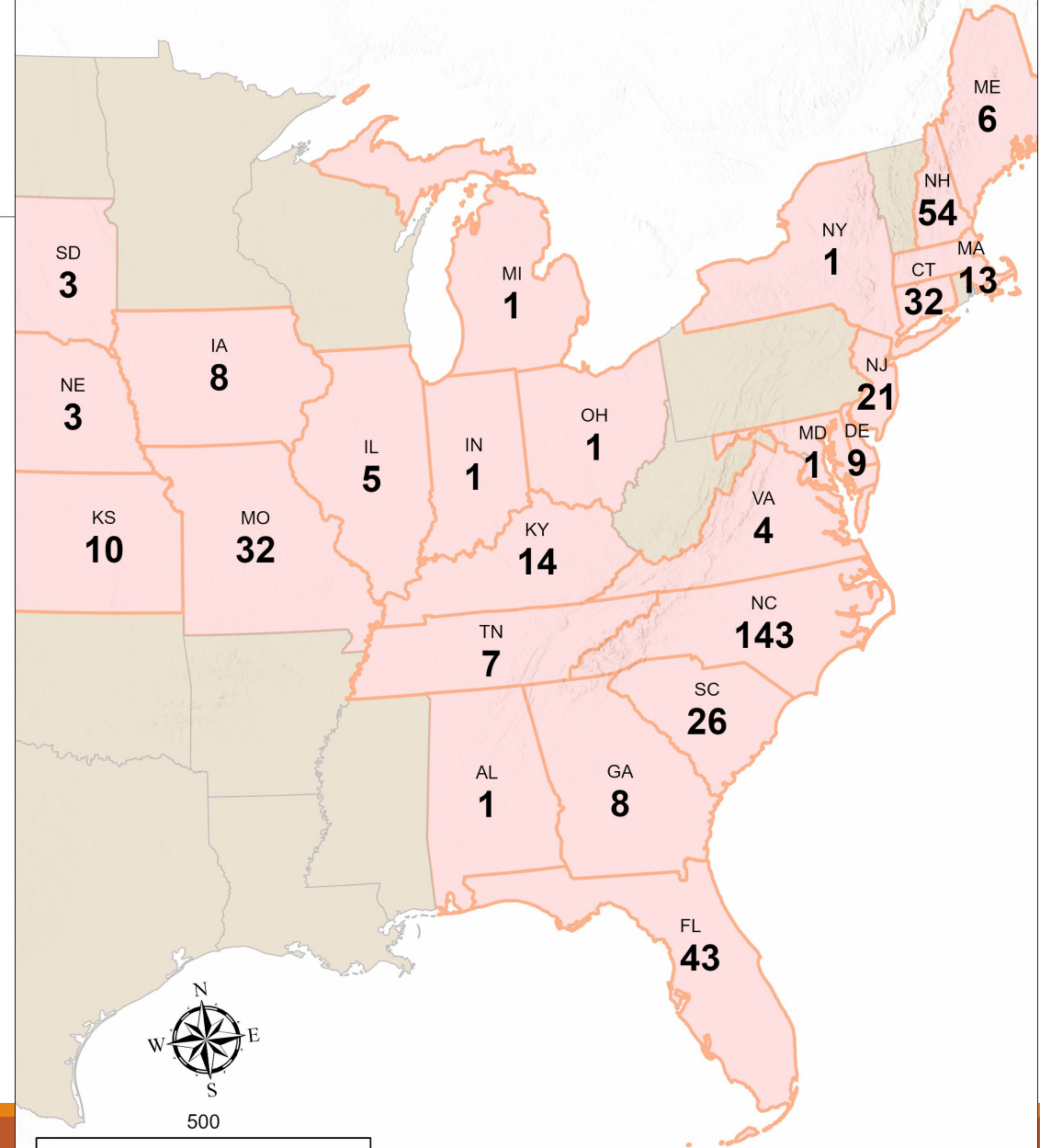
# SECOND BIRD FLU OUTBREAK IN MISSOURI IN TWO DAYS

By [Chuck Abbott](#)

3/11/2022

States with HPAI detections in wild birds  
Numbers indicate the number of positive wild bird samples.

“Another day,  
another state  
confirms HPAI  
presence”



<https://www.meatingplace.com/Industry/News/Details/103797>



# 2022 Detections of Highly Pathogenic Avian Influenza in Wild Birds

Last Modified: Mar 9, 2022

 Print







Animal and Plant Health Inspection Service  
U.S. DEPARTMENT OF AGRICULTURE

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## 2022 Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks

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Last Modified: Mar 10, 2022

 Print



state	County	Date Confirmed	Flock Type	Flock Size
Missouri	Lawrence	3/9/2022	Commercial Turkeys	37,770
Maryland	Queen Anne's	3/8/2022	Commercial Broiler Chickens	150,000
Delaware	New Castle	3/8/2022	Commercial Pullet Chickens	265,000
Missouri	Jasper	3/8/2022	Commercial Turkeys	28,525
Iowa	Buena Vista	3/8/2022	Commercial Turkeys	49,818
South Dakota	Charles Mix	3/5/2022	Commercial Mixed Species	47,330
Missouri	Stoddard	3/4/2022	Commercial Broiler Chickens	380,000
Maryland	Cecil	3/4/2022	Commercial Layer Chickens	496,272
Missouri	Bates	3/4/2022	Backyard Mixed Species (non-poultry)	44
Indiana	Dubois	3/2/2022	Commercial Turkeys	16,494



# Highly Pathogenic Avian Influenza

## A Guide To Help You Understand the Response Process



### 1 Detect

You see unusual signs of illness or sudden deaths in your flock. You can report it to your private veterinarian or a State or USDA veterinarian. Samples are taken and tested. You find out your flock is positive for HPAI.

### 2 Quarantine

USDA and State personnel come to your farm. We assign you a case manager, who will be your main point of contact onsite, answer your questions, and guide you through the needed paperwork. We will also place your operation under quarantine, meaning only authorized workers are allowed in and out, and movement restrictions for poultry, poultry products, and equipment go into effect. We contact neighboring poultry farms and start testing their birds to see if they've been affected, too.

### 3 Appraise

We work with you to create a flock inventory. This lists how many birds you have, what species they are, their age, and other key details. USDA will compensate for birds that must be destroyed using species-specific calculators.

### 4 Depopulate

Infected flocks are depopulated as quickly as possible—ideally within 24 hours of the first HPAI detection—to get rid of the virus.

### 5 Compensate

Affected producers and growers must certify that a biosecurity plan was in place prior to an HPAI detection. Split payments can be provided between the owner and contract grower. You receive your first indemnity payment early on in the response process. We also pay you a standard amount for virus elimination activities (cleanup work).

### 6 Manage Disposal

USDA will help you dispose of the dead birds safely. Disposal methods include composting, burial, incineration, rendering, or landfiling. The options you'll have depend on several things: what type of farm you have, the specific conditions there, State and local laws, and what you prefer.

### 7 Eliminate Virus

The next step is to wipe out all traces of the virus at your property. To kill the virus, thoroughly clean and disinfect the barn, equipment, and all affected areas of your farm. You can do this work yourself or hire contractors to handle it.

### 8 Test

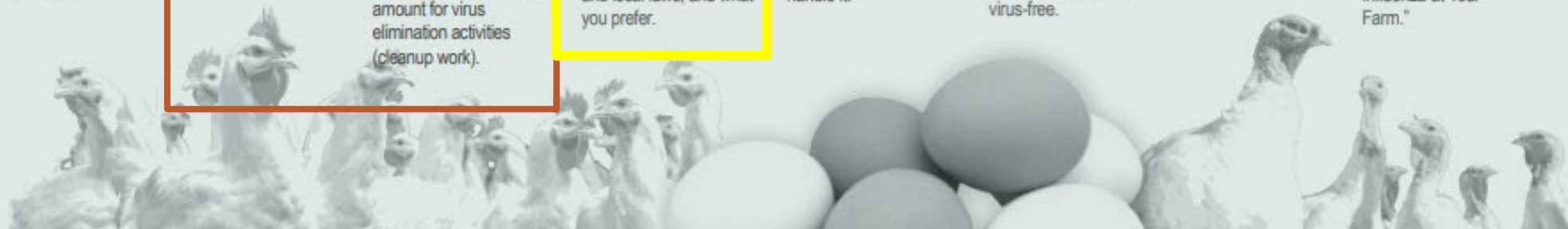
As soon as you're ready, let your case manager know you're finished with cleanup. Your site must then stay empty for at least 21 days. During this time, we'll return to collect and test environmental samples. We need to confirm that your property is completely virus-free.

### 9 Restock

Once USDA and the State both approve, you can restock your facilities and start production again. State officials will release your farm from quarantine after all required testing and waiting periods are done.

### 10 Maintain Biosecurity

After restocking, you'll need to continue maintaining the highest biosecurity standards to keep the virus from coming back. For biosecurity tips, go to [www.aphis.usda.gov/](http://www.aphis.usda.gov/) publications and download the factsheet "Prevent Avian Influenza at Your Farm."





# “Depopulation”

(Euphemistic term for mass killing)

Ventilation Shutdown

Water-based Foam

Other Methods

- Gassing
- Poisoning
- Blunt force trauma



# Compensate

Affected producers and growers must certify that a biosecurity plan was in place prior to an HPAI detection. Split payments can be provided between the owner and contract grower. You receive your first indemnity payment early on in the response process. We also pay you a standard amount for virus elimination activities (cleanup work).

Birds are destroyed usually within 24–48 hours of detecting the disease. USDA pays for birds that must be destroyed.



[https://www.aphis.usda.gov/publications/animal\\_health/2015/poster-hpai-guide-to-understanding-the-process.pdf](https://www.aphis.usda.gov/publications/animal_health/2015/poster-hpai-guide-to-understanding-the-process.pdf)

# Disposal

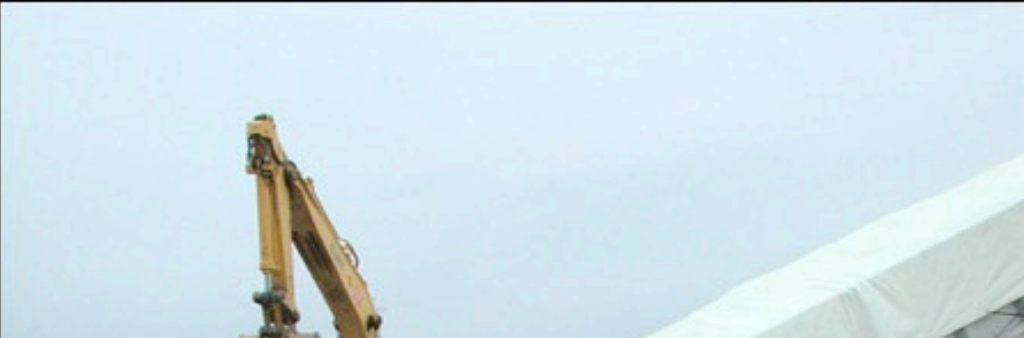
(Discarding of carcasses)

Unlined Burial

Open-air Incineration

Other Methods

- Composting
- Grinding



USDA or your State can help you dispose of dead birds.



Figure 2-1.



You can restock your birds when USDA and your State confirm the virus is gone. You can resume normal operations when State officials release your farm from quarantine.



## Restock

Once USDA and the State both approve, you can restock your facilities and start production again. State officials will release your farm from quarantine after all required testing and waiting periods are done.

# *HSUS, et al., v. USDA, et al., No. 2:20-cv-03258 (CDCA 2020)*

A Litigation Strategy to Improve Animal Conditions  
on the Farm and Mitigate the Spread of Disease

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## HSUS sues USDA over policies that risk future pandemics

April 8, 2020 3 Comments



Influenza spreads within factory farms directly from animal to animal or by way of workers, flies, manure, and rodents. When thousands of animals are tightly confined it creates a recipe for disaster, in which potential pathogens can recombine and generate viral forms with the ability to infect people.

Today the Humane Society of the United States [filed a federal lawsuit](#) challenging the response plan for Highly Pathogenic Avian Influenza (or “bird flu”) of the United States Department of Agriculture. The response plan, produced by the Animal Plant Health Inspection Service, is shortsighted and dangerous.

For years, the HSUS has been [warning](#) USDA and the factory farm industry of the imminent threat of a pandemic resulting from zoonotic pathogens — diseases transmitted from animals to humans—that are closely associated with the intensive confinement of animals.

# Litigation Strategy

Challenge USDA's HPAI Response Plan as violating National Environmental Policy Act (NEPA) under the Administrative Procedures Act (APA)

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## NEPA

Mandates government examine major federal actions that significantly affect the quality of the human environment and evaluate alternatives that would cause less adverse environmental impacts

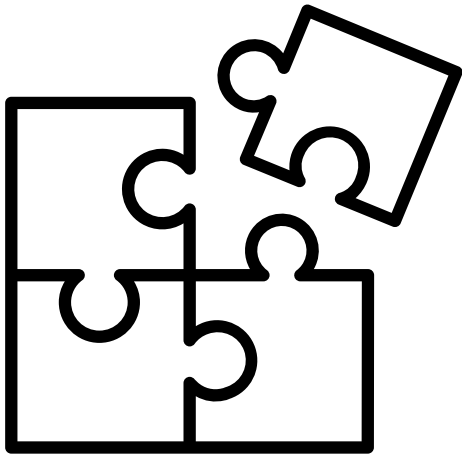
## APA

Final federal actions must be:

- made in accordance with law
- reasoned / supported by the facts
- not arbitrary and capricious

# Case Components

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**Environmental  
Impacts**

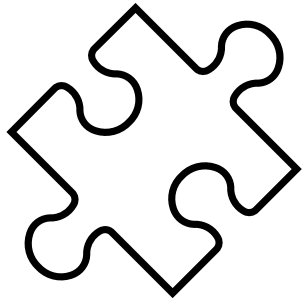
**Alternative  
Approaches**

**Environmental  
Justice**

**Mitigation  
Measures**

# Environmental Impacts

NEPA Regulation:  
40 C.F.R. § 1508.27(b)



Clean Water Act

33 U.S.C. § 1251



Clean Air Act

42 U.S.C. § 7401



Endangered Species Act

16 U.S.C. § 1538(a)(1)(B)



Migratory Bird Treaty Act

16 U.S.C. § 703(a)



Bald and Golden Eagle  
Protection Act

16 U.S.C. § 668(a)

# Environmental Justice

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Exec. Order No. 12898,

Identify and address “disproportionately

high and adverse human health or environmental

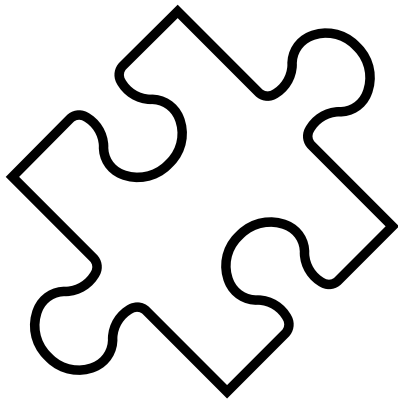
§  
It is well-established—almost to the point of judicial notice—that environmental harms are visited disproportionately upon the dispossessed—here on minority populations and poor communities. *See* Brief of the North Carolina Environmental Justice Network

*McKiver v. Murphy-Brown, LLC*, 980 F.3d 937, 982 (4th Cir. 2020) (J. Wilkinson concurrence)

# Alternative Approaches

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NEPA Requirement:  
42 U.S.C. § 4332(2)(C)



More humane  
“depopulation” method

Nitrogen-filled foam



Environmentally safer disposal methods



Condition indemnification on cage-free, low stocking density adaptations

# Case Status

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*HSUS, et al., v. USDA,  
et al., No. 2:20-cv-  
03258 (CDCA 2020)*



Central District of California

Motion to Dismiss: Denied

Gov't argued Ps' lack standing  
(injury, causation, redressability)

Continued pending settlement talks



# Questions?

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Laura Fox (JD/MELP '13)

[lfox@vermontlaw.edu](mailto:lfox@vermontlaw.edu)

ENV5336: Climate Change,  
Extinction, & Adaptation