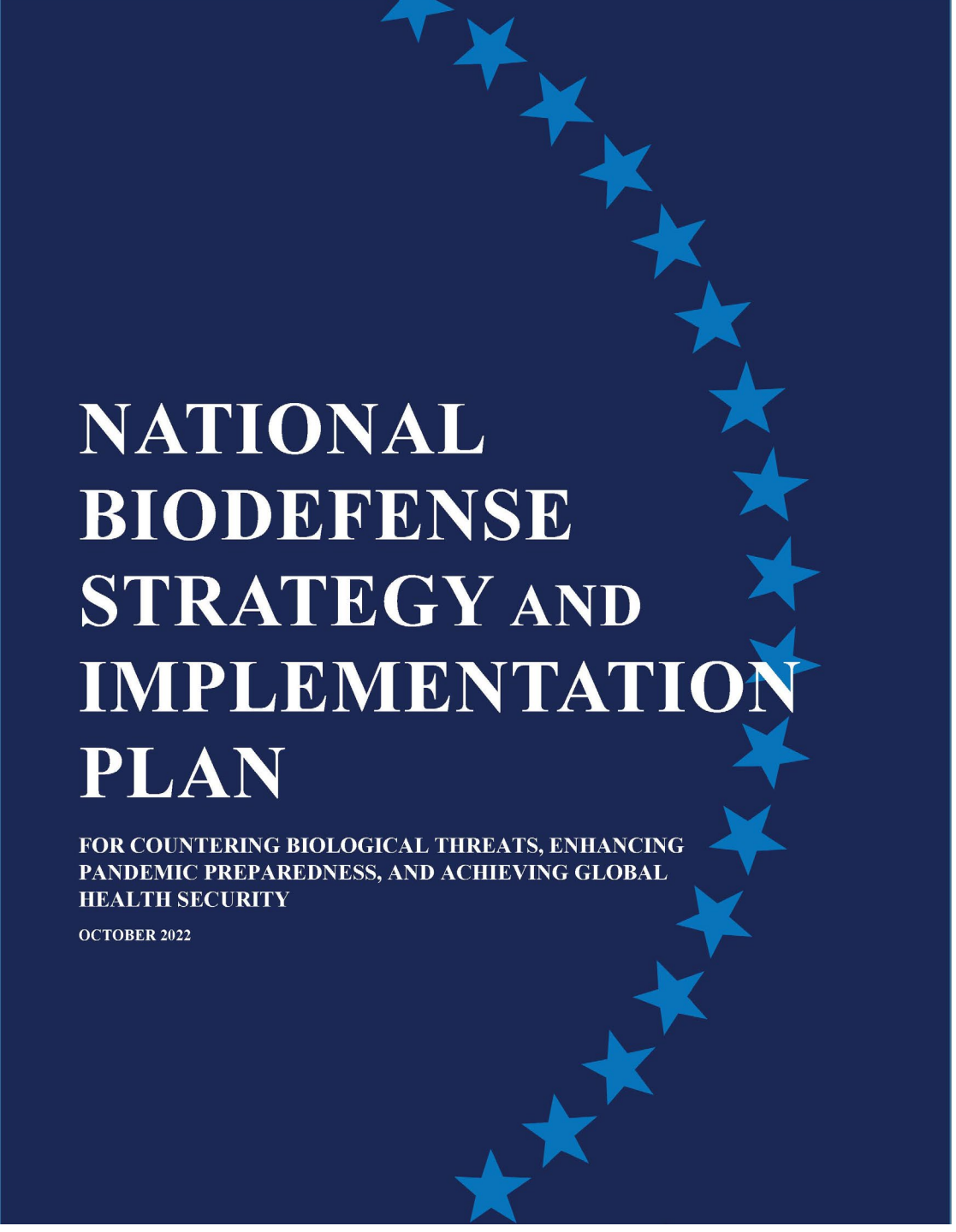


NATIONAL ACADEMIES Sciences Engineering Medicine

GUIRR Webinar:

One Health Approach for Effective Biodefense and Global Health Security

David Stiefel
National Security Council

Joanna M. Prasher, PhD MPH
Centers for Disease Control and Prevention

Cyril G. Gay, DVM, PhD
Agricultural Research Service

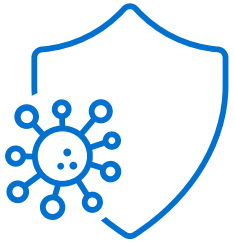
CDC's Role in Supporting Effective Biodefense and Global Health Security

Joanna M. Prasher, PhD MPH

January 24, 2023

CDC Priority Areas Under the National Biodefense Strategy

Early Warning



Prevention

Global Health Security

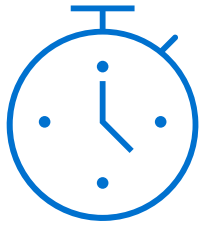
Domestic Health Capacity

Diagnostics

PPE

Vaccines

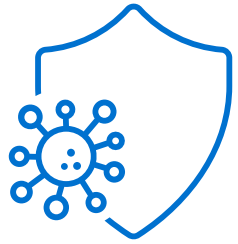
Cross-Sector Work Supporting the NBS



Early Warning

- CDC is committed to improving our early detection and threat characterization capabilities
- Increasing coordination with clinical, commercial, academic, and public health laboratories to build out pathogen-agnostic public health surveillance systems

Cross-Sector Work Supporting the NBS



Prevention

Global Health Security

- CDC is collaborating with partners from government, NGOs, industry, academic partners, and others
- Developing national One Health framework
- Establishing One Health federal interagency coordination mechanism

Thank you

Thank You

- For more information visit:
  - www.cdc.gov
  - www.cdc.gov/onehealth

NATIONAL ACADEMIES Sciences Engineering Medicine

GUIRR Webinar:
One Health Approach for Effective Biodefense and Global Health Security

U.S. National Biodefense Strategy

Agricultural Research Perspective

Cyril G. Gay, DVM, PhD
Senior National Program Leader
Animal Production and Protection
Agricultural Research Service
US Department of Agriculture
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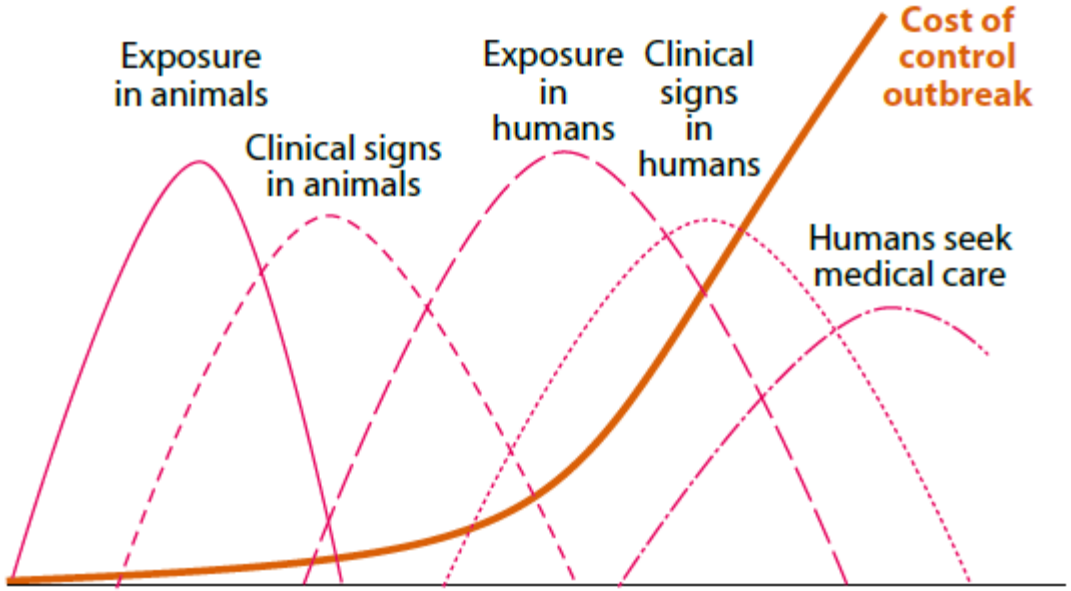
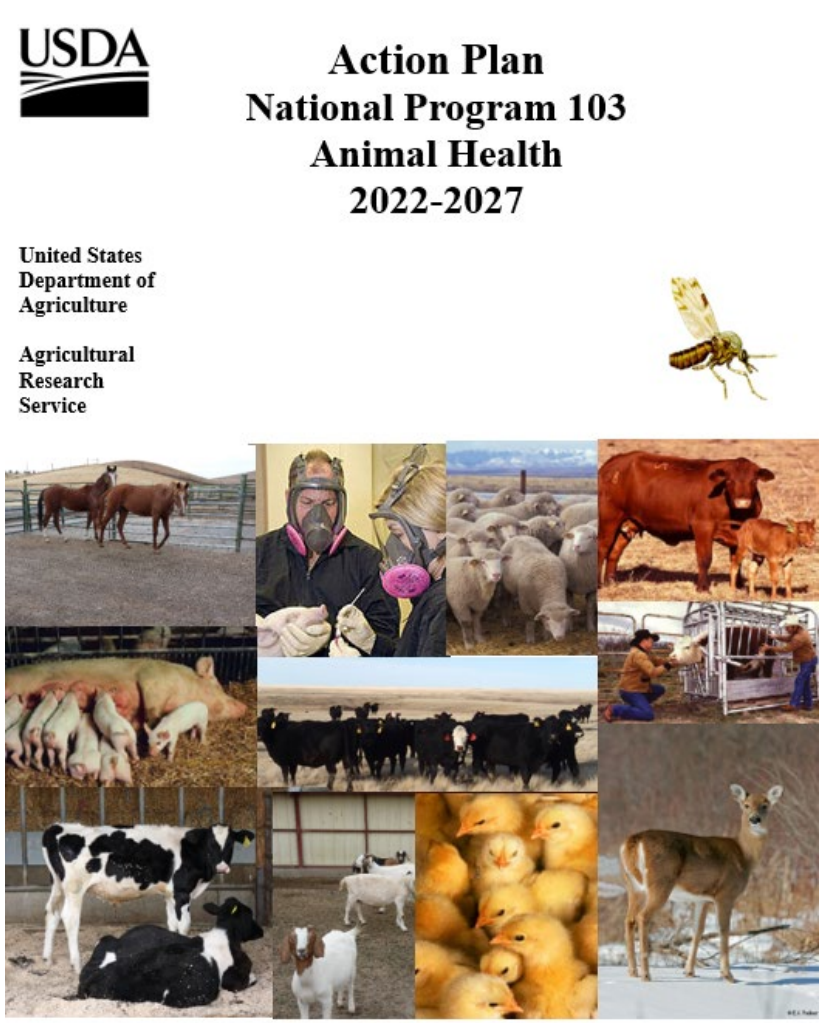
Importance of Animal Agriculture

- Food security
  - Feed 9 billion people by 2045
- Economic security
  - Livelihood of 1 billion people
- Public health
  - Zoonotic diseases
  - Emerging diseases
  - Antimicrobial resistance
  - Food safety



Effective control of zoonotic diseases requires early detection and accurate diagnosis at the animal source. Disease surveillance in animals is critical for preventing the spread of disease between animal populations, and minimizing the risk of transmission to human populations. The cost of disease control increases exponentially once the disease spreads among humans.[10]

Source: World Bank (2012)



Research Components

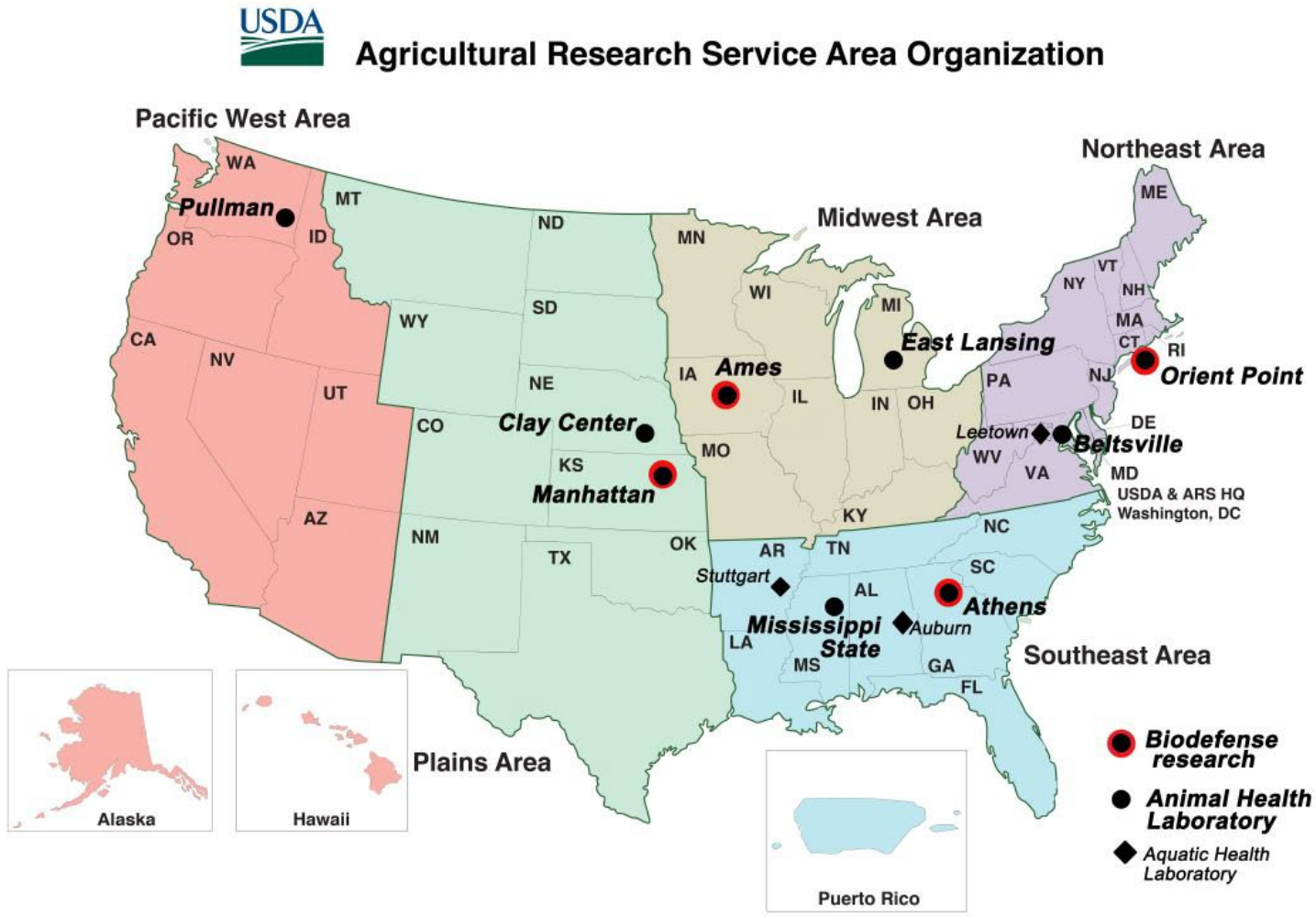
1. **Biodefense**
2. Antimicrobial Resistance
3. Endemic Bacterial Diseases
4. Endemic Viral Diseases
5. Parasitic Diseases
6. Transmissible Spongiform Encephalopathies

Biodefense

Foreign Animal Diseases
Emerging Diseases

https://www.ars.usda.gov/animal-production-and-protection/animal-health/

Animal Health Research Locations

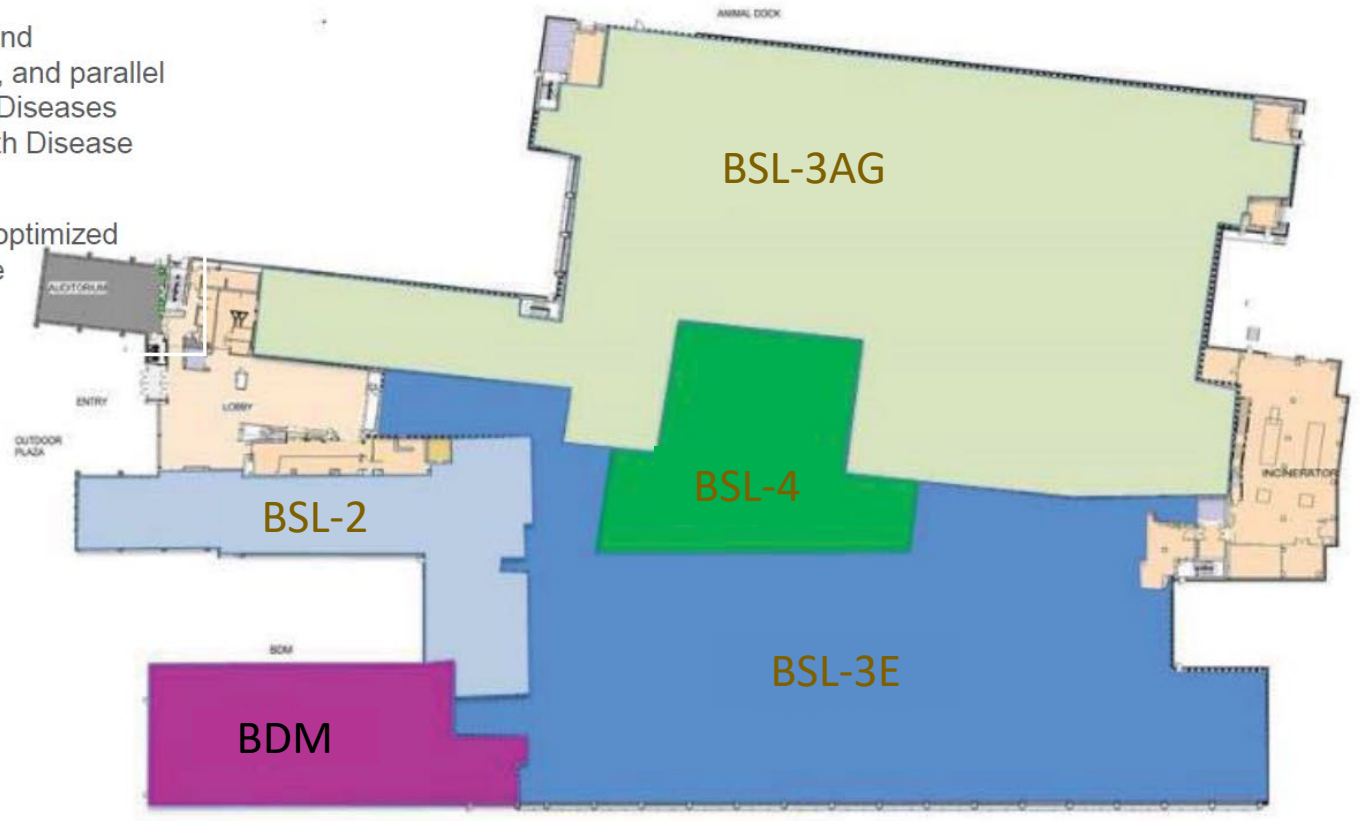


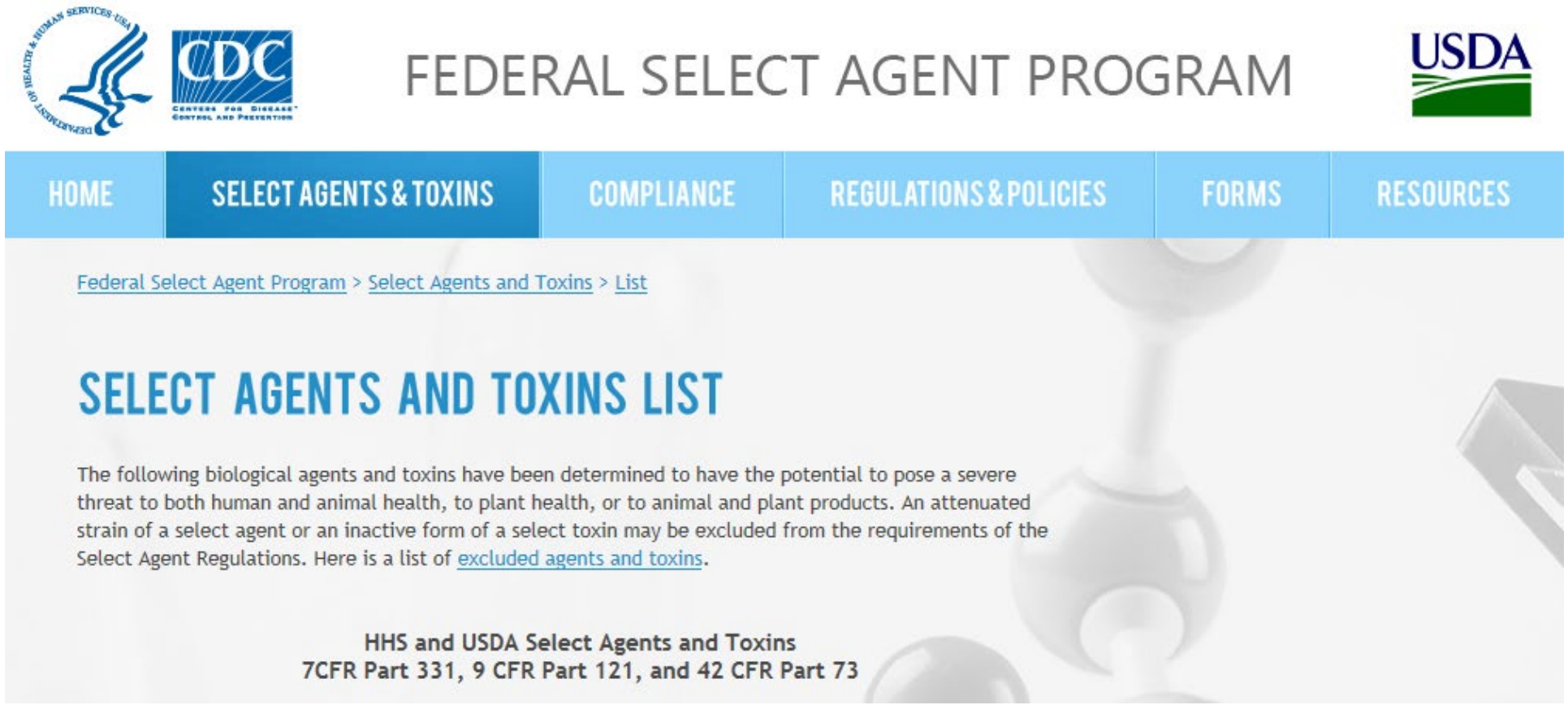
National Bio and Agrodefense Facility (NBAF)

The NBAF, a new, state-of-the-art biosafety level (BSL) 3 & 4 facility located in Manhattan, KS, will enable the U.S. to conduct comprehensive research, develop vaccines and anti-virals, and provide enhanced diagnostic capabilities to protect our country from numerous foreign animal, emerging and zoonotic diseases to assist in protecting our food supply and the nation's agriculture economy and public health.

NBAF Programmatic Areas

- **BSL-4:** High consequence zoonotic diseases
- **BSL-3E + BSL-3Ag** Research and Development (R&D), diagnostics, and parallel vaccine trials for Foreign Animal Diseases (FADs), to include Foot and Mouth Disease (FMD)
- **BSL-2:** Assay, characterization, optimized throughput, and multi-agency use
- **BDM:** **Biologics Development Module**





- HHS Select Agents and Toxins
- USDA Select Agents and Toxins
- Overlap Select Agents
- Tier 1 Select Agents

APHIS Factsheet

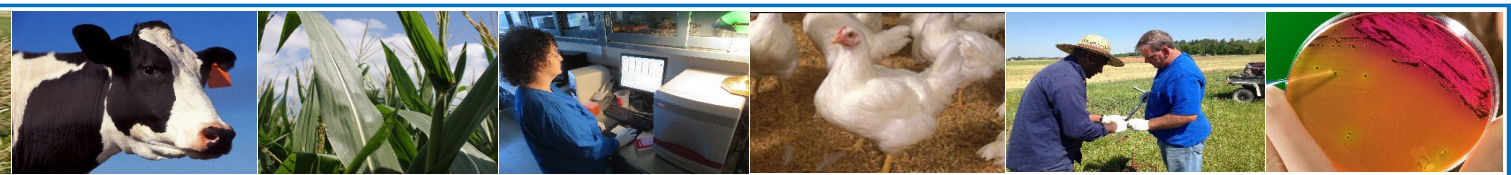
Veterinary Services

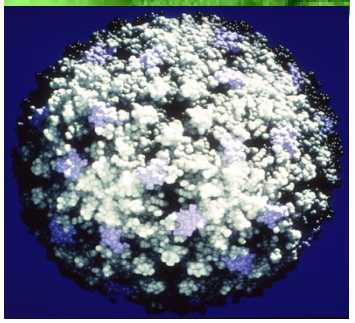
July 2013

High-Consequence Foreign Animal Diseases and Pests

In carrying out our safeguarding mission, the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) works to ensure the continued health and welfare of our Nation's livestock and poultry populations. One important aspect of this work is emergency preparedness—making sure we are ready to respond effectively when faced with a foreign animal disease outbreak or pest infestation. As part of these efforts, APHIS' animal health officials identify "high-consequence" foreign animal diseases and pests. These are serious diseases and pests that do not currently exist in the United States. If introduced here, they pose a severe threat to U.S. animal health and, in some cases, the economy and human health as well.

The list divides diseases and pests into tiers according to risk level, as described below.





Emerging Diseases

Human

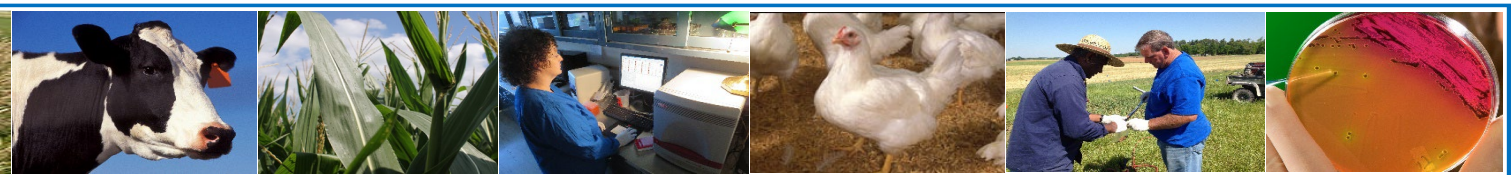
- HIV/AIDS
- Ebola*
- SARS-CoV*
- Dengue
- West Nile*
- Nipah virus*
- Rift Valley Fever*
- Chikungunya virus
- Prion diseases*
- pandemic H1N1
- H5N1 AI*, H3N2v*, H7N9*
- MERSCoV*
- SARS-CoV-2**
- Zika virus*

Animal

- Ebola*
- Bluetongue virus
- Epizootic Hemorhagic Disease
- West Nile*
- Foot-and-Mouth Disease
- Classical Swine Fever
- Blue Ear Pig Disease
- Rift Valley Fever*
- Nipah and Hendra*
- African Swine Fever
- pandemic H1N1**
- H5N1 AI*, H3N2v*, H7N9*
- Schmallenberg virus
- PEDV/PDCoV

*** Zoonoses**

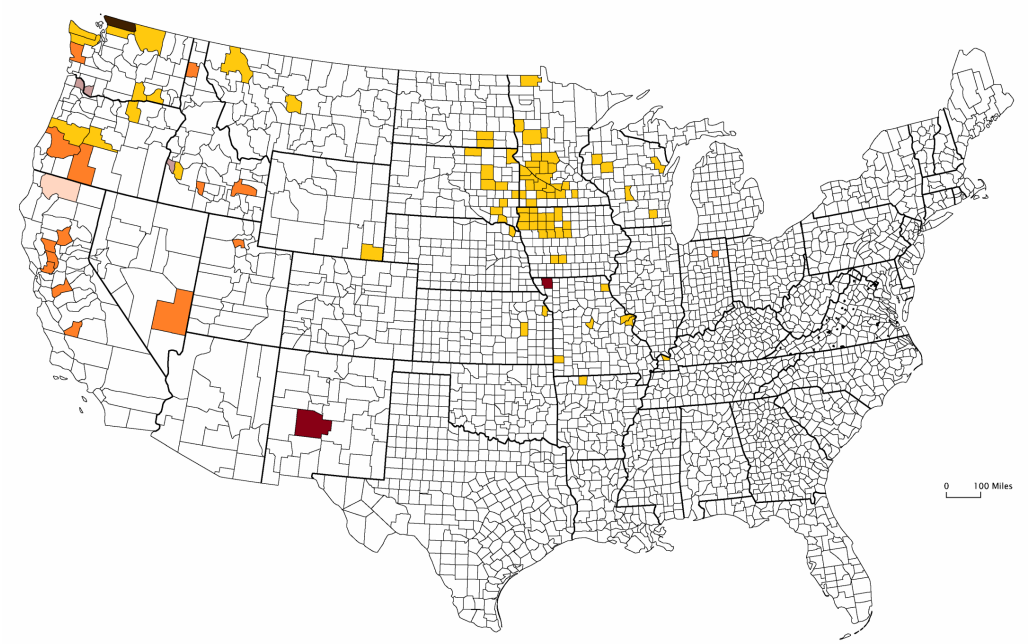
****Reverse Zoonosis**



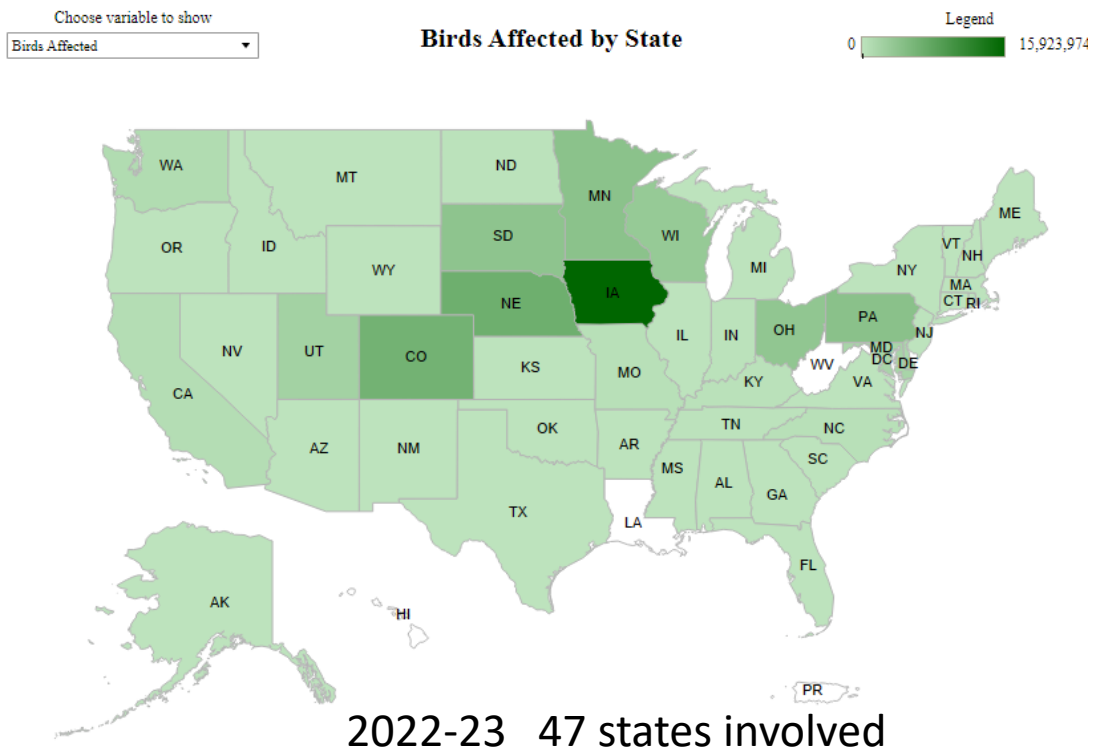
Highly Pathogenic Avian Influenza

USDA Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE

Comparison 2014-15 with 2022-23 HPAI Outbreaks



2014-15 21 states involved
48.6 million poultry affected

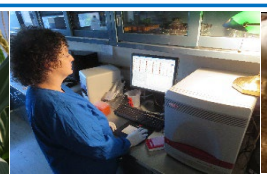


2022-23 47 states involved
57.9 million poultry affected

What is different between 2014-15 and 2022-23?

- The virus is more widespread in wild birds
  - Wider geographic region
  - More types of wild birds have been affected
- Outbreaks are predominantly directly wild bird to poultry
  - APHIS and states are controlling outbreaks quickly with fewer farm to farm spread
  - Large increase in both commercial and backyard flocks
- Experimental studies show recent viruses are more infectious than wild bird 2014-15 viruses
- Vaccines are being discussed, but unlikely because of trade issues
  - Zoo vaccination is likely to occur






Conclusion

The National Biodefense Strategy fosters multi-sectorial research teams to promote broader collaboration in the early detection, disease control, and development of strategic stockpiles of medical countermeasures to safeguard against the threat of emerging zoonotic diseases.

Thank you!

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