

# Master of Public Health Field Experience Report

Presented by  
John E. Lawrence

# Kansas Department of Agriculture Division of Animal Health



# BIOSECURITY AND ZOOONOTIC DISEASE CHALLENGES AT THE KANSAS STATE FAIR (KSF)

- Capstone Experience
- Objective of my project- Create initial biosecurity recommendations that would provide KSF management guidance for improvements

# Brief History of the Kansas State Fair (KSF)

- More than 100 years of fair tradition and history
- A state institution – created by the Kansas legislature
- Multiple uses through the year other than KSF; rodeos, livestock shows, family gatherings, trade shows



Photo courtesy of Kansas State Fair , used with permission

# Kansas State Fairgrounds Map

- Hutchinson, Kansas
- The fairgrounds occupies 280 acres of land





# Benefits of the KSF to Kansas Agriculture

- Kansas Agriculture is showcased at the KSF
- Educating Kansans where their food comes from
- Human-Animal Bond in animal agriculture



# Benefits of KSF to Kansas

- Opportunities for 4-H and FFA (Future Farmers of America) livestock competitions
- Entertainment for all ages of people



# Background of Biosecurity at the Fair

- Early biosecurity plans were developed by Kansas Department of Agriculture Division of Animal Health
- KDA officials desired to be proactive in prevention of zoonotic diseases and livestock disease at the Kansas State Fair
- Interest by Kansas State Fair management in improvement of biosecurity



# Background of Biosecurity at the Fair

- National background
  - Ogden, Utah, May, 2011, EHM (Equine Herpes Myeloencephalopathy) / EHV- I outbreak in horses at equine event
  - Swine influenza outbreaks in fairs in other states (Ohio and Indiana) in 2012

# MAJOR RESOURCES USED FOR PREPARING INITIAL KSF BIOSECURITY RECOMMENDATIONS

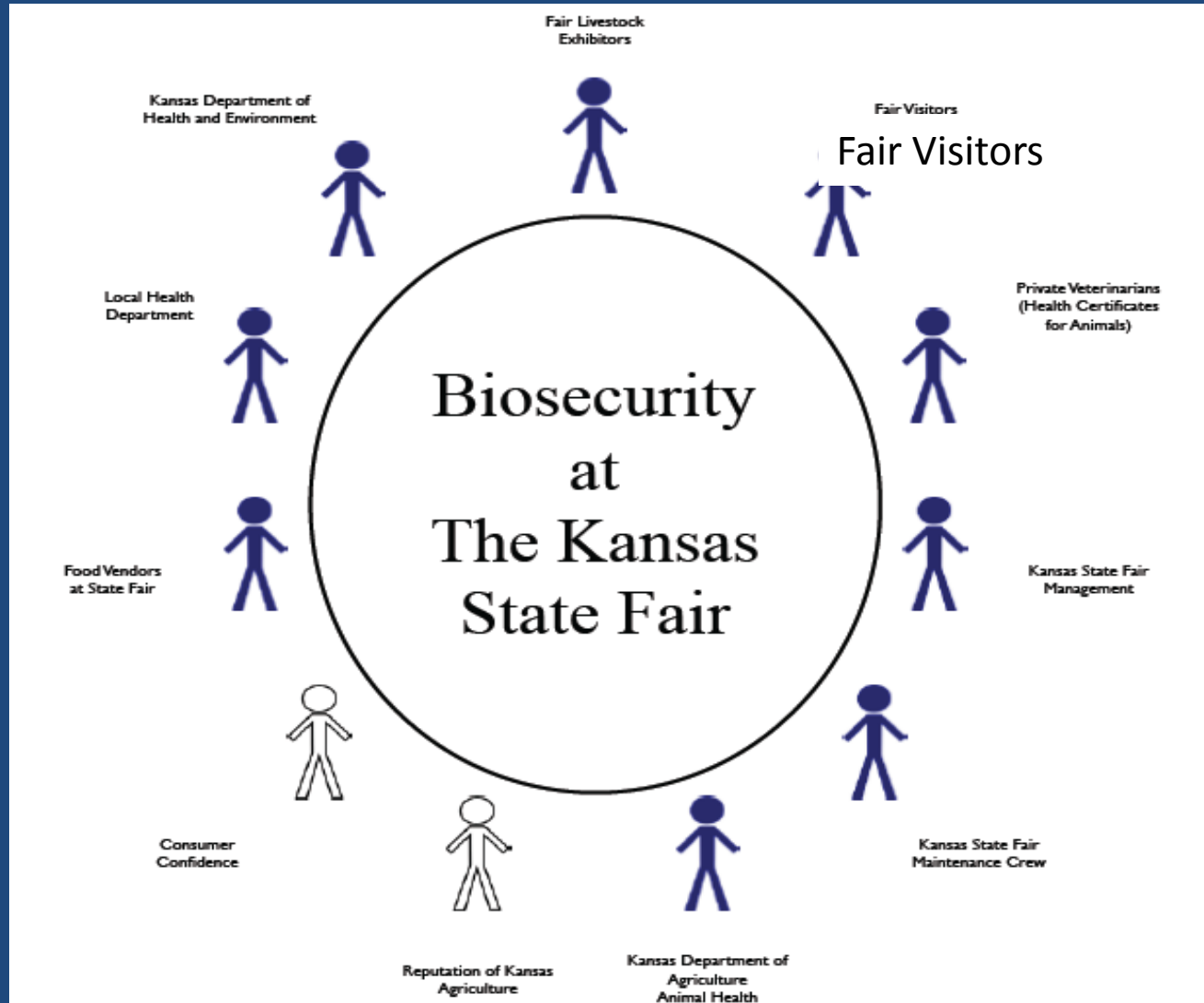
- California Department of Food and Agriculture, Animal Health Branch, Biosecurity Toolkit for Equine Events prepared by Dr. Katie Flynn - 2012
- National Association of State Public Health Veterinarians Committee - Compendium of Measures to Prevent Disease Associated with Animals in Public Settings - 2013
- Kansas Department of Health and Environment - Disease Prevention for Fairs and Festivals Toolkit - 2014



Agricultural  
Terrorists

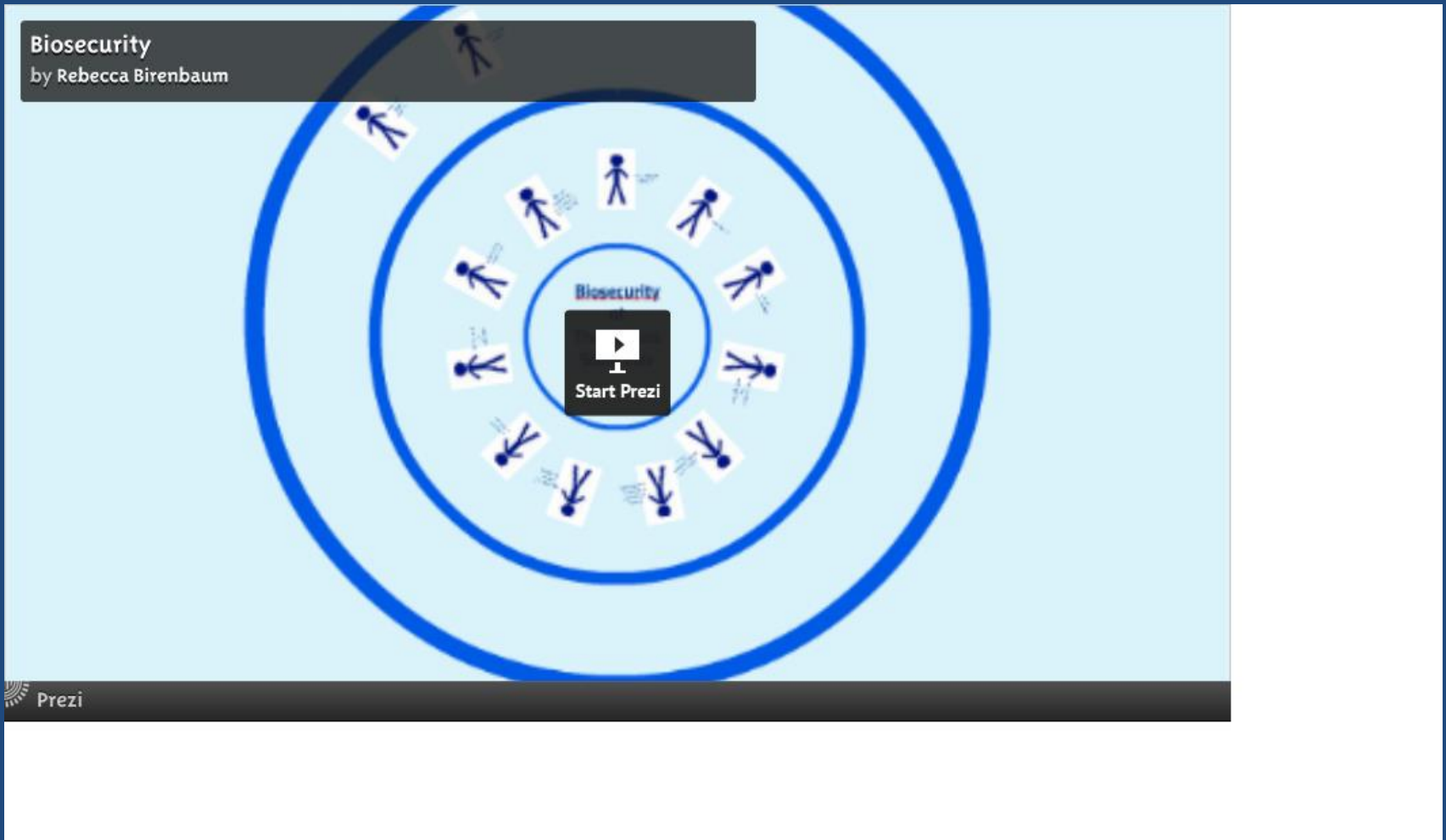


Personal Injury  
Lawyers



## STAKEHOLDERS IN BIOSECURITY AT THE KANSAS STATE FAIR

# STAKEHOLDERS IN BIOSECURITY AT THE KANSAS STATE FAIR



# Challenges of Biosecurity at the Kansas State Fair

During 10 days of operation in September 2014:

- Mass gathering of 355,000 people
- >2,000 livestock and poultry entries
- Food and Drink - 123 vendors
- Millions of human-animal interactions
- Aging fairground facilities





# Challenges of Biosecurity at the Kansas State Fair

- Limited budgets - gate fees, food vendor fees and exhibitor fees provide most of the income
- Negative incidents have high media coverage potential



**Chicago Tribune**

**Animal rights group sues Kansas State Fair  
over slaughter video**

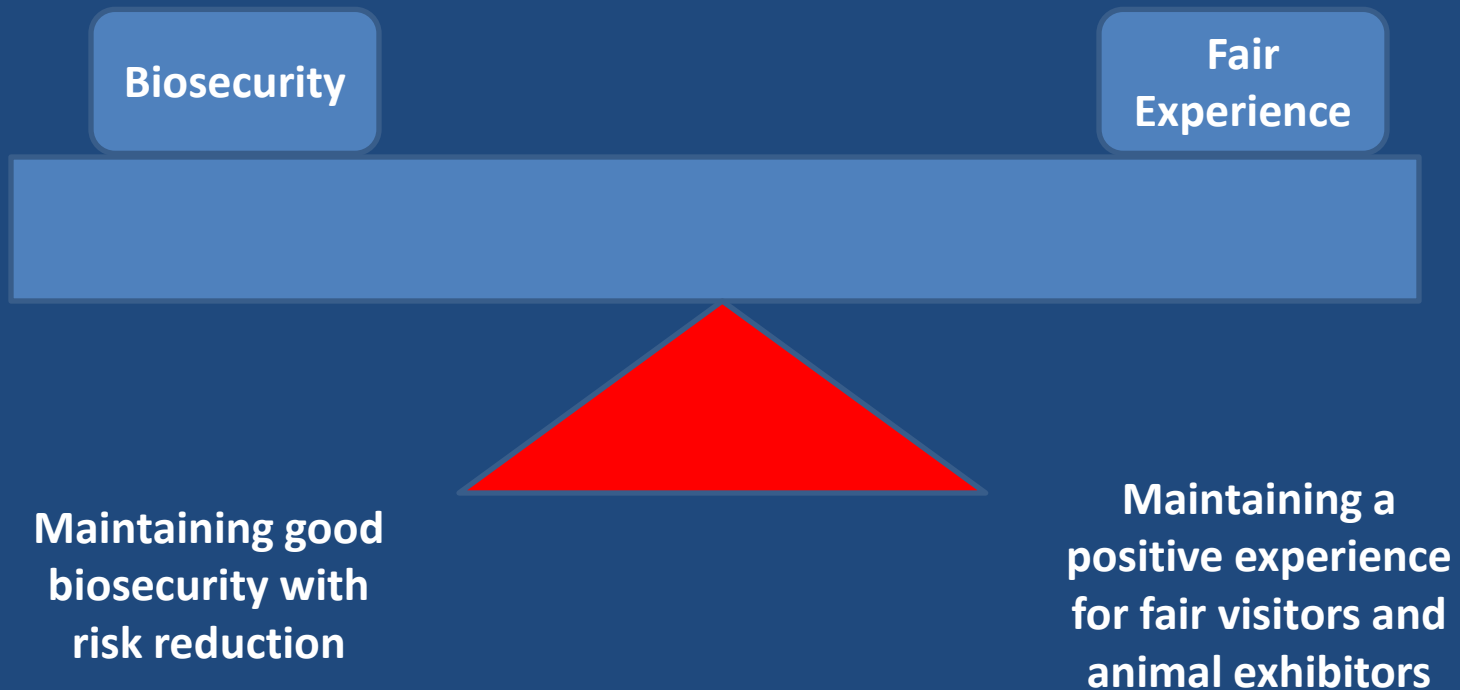
August 27, 2012 | Kevin Murphy | Reuters

# Keep the Kansas State Fair Safe for Visitors and Livestock

- An outbreak of zoonotic disease at the KSF among fair visitors would have substantial economic, legal, public health and medical effects
- Priorities:
  - Keep children and adults safe while at the fair
  - Prevent transmission of livestock disease



# Biosecurity vs. Fair Experience for Visitors and Exhibitors



## E. coli outbreak linked to Cleveland County Fair now over 100 cases

By KATHY KRAVITZ, KATY KRAVITZ FOR THE EXAMINER | 10/17/2011 11:11 AM | 10/17/2011 11:11 AM | [Subscribe](#)



Photo by KATHY KRAVITZ for the Examiner. Photo by KATHY KRAVITZ for the Examiner.

## Gaston child dies of E. coli complications after attending Cleveland County Fair

Published: 10/17/2011 11:11 AM  
Updated: 10/17/2011 11:11 AM

ARTICLE

COMMENT



### EXAMINER'S TAKE

Over the years, especially around and through farm visiting, or fairs, there's been a lot of E. coli outbreaks, particularly after using the restroom after eating, drinking, or touching animals, especially when eating, drinking, or playing with them.

Any child with diarrhea or bloody diarrhea has been in it, and because of the way the outbreak, parents should not let their children go to the fair, even if it's just to see the animals and ride the rides, and children have to be careful not to touch anything, especially when they're eating.

Symptoms include severe abdominal cramps, nausea and vomiting, some people have bloody stool. Some people experience it with no other symptoms, including bloody stool or severe cramps.

Many children, the elderly and people with other health conditions are particularly at risk. Children, kids can get it, so it's important that parents tell their kids not to touch anything, especially when they're eating.

That's the reason it's so important to keep kids away from anything that's not theirs, especially when they're eating, drinking, or playing with them, and to make sure they're not eating anything that's not theirs, especially when they're eating, drinking, or playing with them.

## Food Safety News

Breaking news for everyone's consumption

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## North Carolina Mom Sues County Fair After Son Part of E. coli Outbreak

By KATHY KRAVITZ for the Examiner

Juste Warrall, a 10-year-old boy, died of E. coli after attending the Cleveland County Fair in Gaston, North Carolina, after his mother said she had noticed he had been sick since he had been to the fair. His mother, Jennifer Warrall, filed a lawsuit against the fair on Monday.



According to the North Carolina Department of Health, there were 101 reported illnesses and a death associated with the outbreak, and the outbreak is believed to have started at the fair. The outbreak is believed to have started at the fair, and the outbreak is believed to have started at the fair.

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## Toddler dies from E. coli after trip to county fair

By KATHY KRAVITZ for the Examiner

Updated: 10/17/2011 11:11 AM

### STORY HIGHLIGHTS

- 2-year-old died after going to fair in N. Carolina
- 10 people have shown signs of the infection
- Outbreak has not been over

(CNN) — The number of cases of E. coli stemming from a county fair in North Carolina has grown to 10, including one child who died, the state's department of health said Monday.

More than 100,000 people attended the Cleveland County Fair, which ended October 7.

# One Health

## Animal Health

Environment



Human  
Health



# Recent Fair Zoonotic Disease Outbreaks

## Multiple Pathogens

- Commonly reported disease agents include at fairs:
- *E. coli* O157:H7
- *Campylobacter jejuni*
- *Cryptosporidium* species
- *Salmonella enterica*- non typhoid
- Swine origin Influenza A virus--(H1N1v and H3N2v)



# Multiple Venues for Transmission of Zoonotic Diseases

- Petting zoo
- Animal Birthing Center
  - operated by KVMA and KSU/CVM
- Livestock and poultry exhibits



# People at High Risk for Zoonotic Disease at the KSF

- Children aged < 5 years
- Persons who are mentally impaired
- Immunocompromised persons
- Older persons > age 65





# Water systems vulnerable



Washington County Fair (New York State, 1999):

- No municipal water supply
- Water wells:
- Shallow wells & untreated water
- Resulted in 928 human cases and 2 deaths from *E. coli* O157:H7 and *Campylobacter jejuni*

# Direct Contact With Animals



Photo courtesy of TN Department of Agriculture; used by permission



# Indirect Contact



Photos courtesy of TN Department of  
Agriculture: used with permission

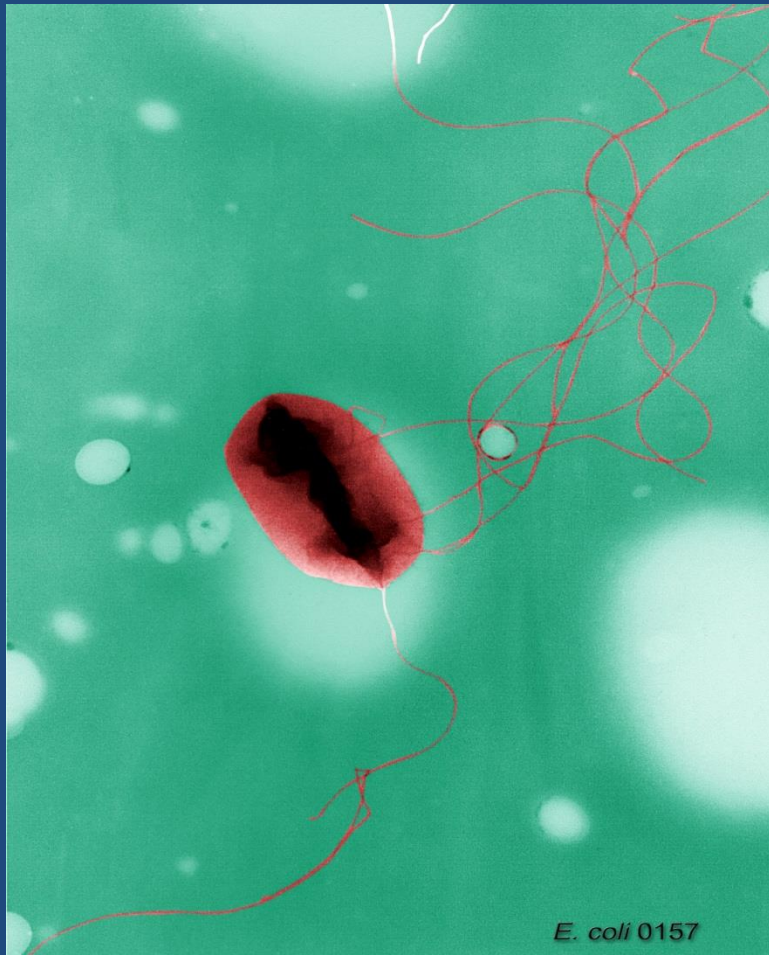
# Common zoonotic pathogens and Enteric Disease

- Enteric (GI) diseases:
  - *E. coli* especially *E. coli* O157:H7
  - *Campylobacter jejuni*
  - *Salmonella enterica*-non typhoid
  - *Cryptosporidia* spp.
- Fecal-oral transmission
- Illness and outbreaks of enteric disease are well documented



Photo by Dr. Ingrid Garrison, used by permission

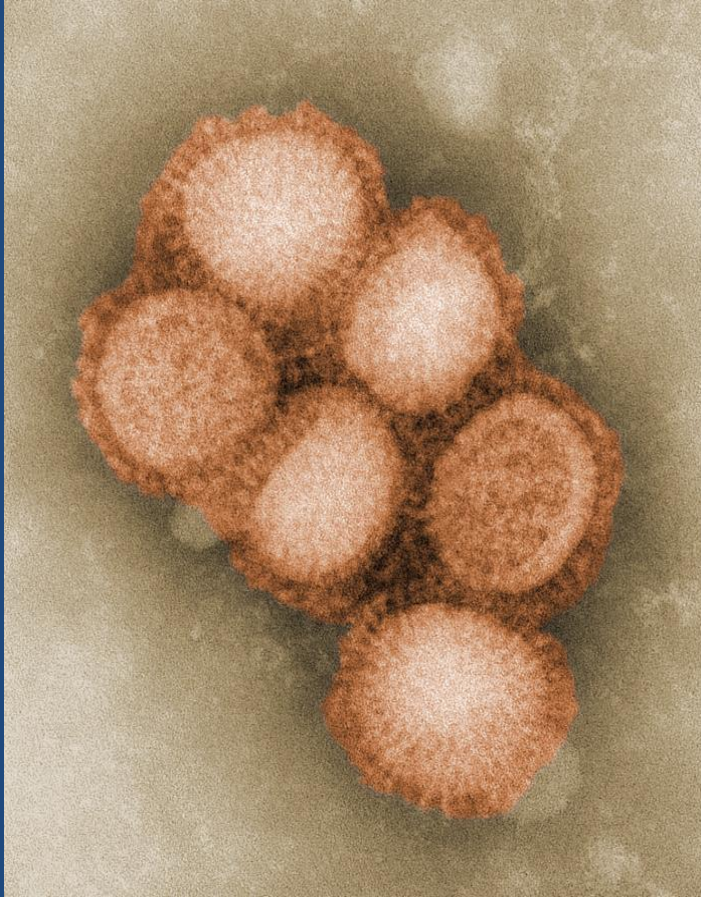
# *E. Coli* O157:H7 is an important human pathogen



- Diarrhea
- Hemorrhagic colitis
- Hemolytic Uremic Syndrome; kidney failure in children and senior citizens ( high risk groups)



# Common zoonotic pathogens observed in fairs



- Respiratory Diseases
- Swine origin Influenza A
- H1N1v virus- common pathogen in outbreaks; but also H3N2v and H1N2v have been isolated
- Transmission usually by direct contact
- Can have bidirectional transmission of influenza viruses between humans and swine

# Behavior of fair visitors that results in increased risk of disease transmission

- Lack of hand washing after animal contact
- Hand-mouth and hand face touching while in the animal exhibits
- Direct contact with livestock (feeding or petting)



Photo from Dr. Ingrid Garrison, used with permission



# Risky Behaviors



- Indirect contact with manure
- Eating, drinking or use of infant pacifiers
- Use of strollers which are then taken home

# For Your Safety

**DO NOT** bring these items  
into the animal area



Please watch  
your children

**Wash your hands** as  
soon as you exit!

**SORRY**  
**NO STROLLERS**  
**NO FOOD**  
**NO BARE FEET**

thank you

**CHILDREN MUST BE  
ACCOMPANIED BY AN ADULT.**

**PLEASE leave outside corral:  
STROLLERS, BABY BOTTLES, PACIFIERS,  
and FOOD/BEVERAGES.**

**PLEASE refrain from putting your hands in your  
mouth while in the corral and USE HAND WASHING  
STATIONS after exiting corral.**

**Thank you.**

# Biosecurity Recommendations for Reducing Zoonotic Disease at KSF

- Hand hygiene
  - single most important measure to reduce zoonotic disease transmission in fairs
- Soap and water best
- Hand Sanitizer Stations





# Recommendations for Reducing Zoonotic Diseases at KSF



- Assure adequate hand hygiene stations
- KSF workers to urge visitors to practice hand hygiene and observe safe behaviors
- Signage in both English and Spanish



# Biosecurity Recommendations for Reducing Zoonotic Diseases at KSF

## Zoonotic disease education

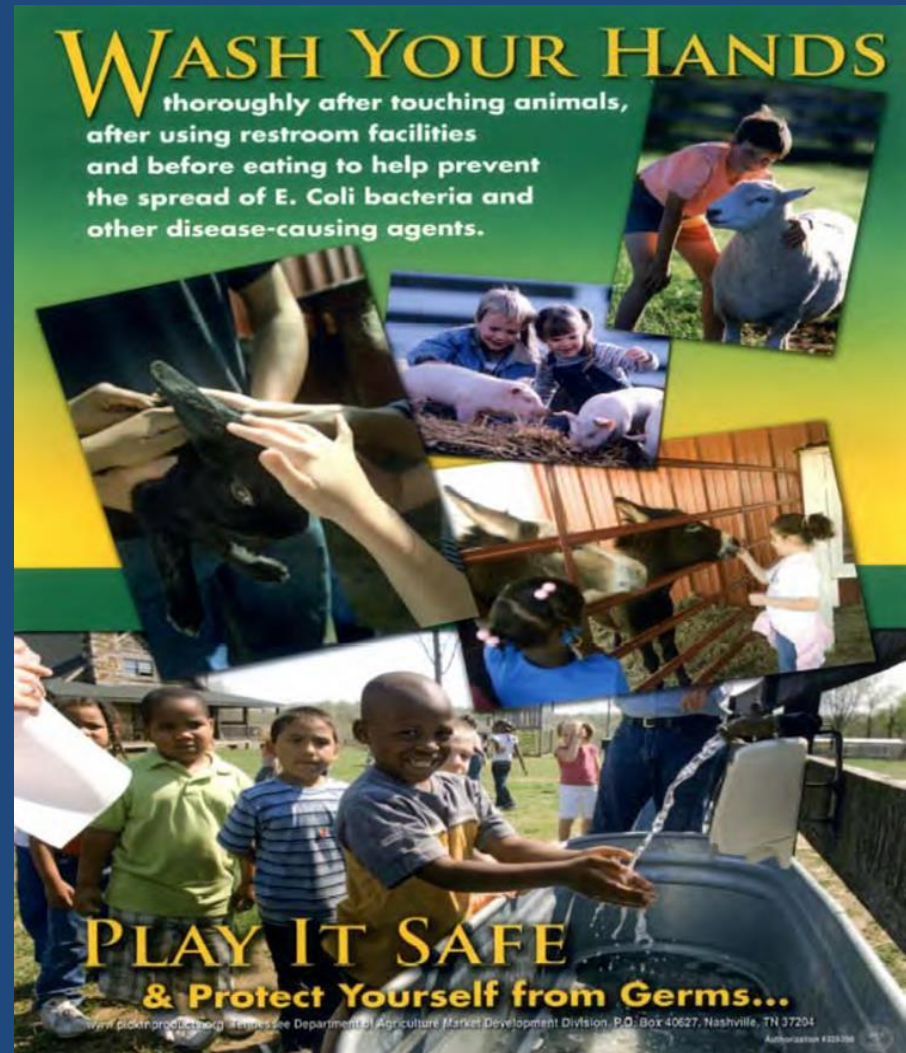


Photograph courtesy of TN Department of Agriculture, Used with permission.



# Biosecurity Recommendations for Reducing Zoonotic Diseases at KSF

- Zoonotic Disease Education





YOU CAN LEAD A HORSE  
TO WATER BUT YOU  
CAN'T MAKE HIM DRINK

YOU CAN PROVIDE EDUCATION ABOUT ZOO NOTIC DISEASES AND  
PROVIDE HAND WASHING FACILITIES AT THE LIVESTOCK EXHIBITS

... BUT YOU CAN NOT MAKE FAIR VISITORS WASH THEIR HANDS!

# One Health

## Animal Health

Environment



Human  
Health

# Animal to animal disease transmission at the KSF - Major concerns

Lack of isolation  
facilities for sick  
animals at the KSF-

Where do we keep the  
sick livestock?



Example of a temporary isolation unit that can be set up at an equine facility or event.

Photo courtesy of CA Dept. of Food and Agriculture, Equine Medication Monitoring Program; used with permission

# Animal to animal disease transmission at the KSF - Major concerns

Where do livestock go  
after the fair?

- Check-out procedures
- Traceability
- Biosecurity at home





# Animal-to-animal disease transmission at the KSF - Major concerns



- Is the KSF prepared for a Foreign Animal Disease Outbreak and a 'stop movement' order?
- What if this rare event were to occur during the Kansas State Fair exhibition days?

# Biosecurity Recommendations to Kansas State Fair

- Make construction of isolation stalls a priority
- Implement a more robust check out procedure for tracing livestock when they leave the fair
- Educate exhibitors about biosecurity
- Prepare for the rare event of an foreign animal disease outbreak in Kansas



# Biosecurity Recommendations to Kansas State Fair

- Biosecurity by exhibitors needs to be improved when they return home from the fair:
- Isolation of animals returning from fair
- Clean and disinfect trailers and trucks
- Washing boots , clothes and equipment used at the fair



# Biosecurity Recommendations to Kansas State Fair

- In the unlikely event of a foreign animal disease outbreak such as foot and mouth disease in Kansas, the Animal health Commissioner would issue a 'stop movement order' and all livestock movement in Kansas could not move from its location until permitted by animal health officials



# Biosecurity Recommendations to KSF

## Foreign Animal Disease Outbreak

- The livestock that are at the fairgrounds at that time of issue would be on the fair grounds until state or federal animal health officials visited could make the needed inspections and permit healthy animals to return to their home ranch or farm





# Biosecurity Recommendations to KSF

## Stop Movement Order

- The KSF would need feed, bedding and personnel to continue holding perhaps several hundred head of livestock until permits could be issued to owners to return home with their livestock. KSF needs to prepare for this unlikely event and work with emergency management personnel for training events.



# How Can We Improve Biosecurity?

GOLD LEVEL

SILVER LEVEL

BRONZE LEVEL



# Looking to the Future

- An observational study needs to be carried out at the fair to determine how many visitors visit the livestock exhibits, carry out hand hygiene and practice high risk behavior at the KSF
- Hopefully a future MPH student will carry this out



# Conclusions

- The KSF offers much to Kansans
- There are zoonotic risks associated with animal contact at the fair
- These risks can be reduced if visitors use good biosecurity measures such as hand hygiene and avoiding certain behaviors
- The comingling of livestock in the fair environment can expose livestock to new diseases
- Being prepared for a disease outbreak at the fair is essential



# Thank you

- To God, who gave me the strength and grace to finish this MPH degree
- To my family, for their patience, support and encouragement
- For my MPH graduate committee; Drs. Sanderson, Renberg and Kastner
- For the staff at Kansas Department of Agriculture , Division of Animal Health, especially Dr. Crnic
- To Dr. Ingrid Garrison , State Public Health Veterinarian at Kansas Department of Health and Environment
- For Kansas State University faculty and staff who gave me a chance to learn