Biosecurity: Overview

During an animal health emergency, controlling the spread of diseases to other animals, premises and responders will be necessary. This is accomplished through the use of biosecurity measures.

Biosecurity

A series of management practices to prevent the introduction and spread of pathogenic agents.

- **Bioexclusion**: prevent the introduction of disease onto a premises considered non-infected
- **Biocontainment**: Prevent disease spread off a premises considered infected

Biosecurity and ICS

- **Biosecurity Group of ICS**
- **Biosecurity Officer**
  - Experienced veterinarian or consults with one
  - Develops site-specific biosecurity plan
  - Trains personnel on biosecurity protocols
  - Ensures appropriate biosecurity measures used
- **Biosecurity Team Members**
  - Front line assistance in containing and controlling outbreak
- **All responders should receive a biosecurity briefing upon arrival**

Basic Biosecurity Elements

- Start biosecurity procedures quickly
- Awareness of biosecurity measures
- Understand disease transmission routes
- Prevent disease spread by
  - Movement of animals
  - Movement of personnel
  - Movement of equipment

Movement Control and Restriction

Movement control and restriction efforts will be used to minimize the spread of pathogens by items, including infected animals, vehicles on the site, and even response personnel.

- **Stop movements**
- **Movement restrictions**
  - Any animals from a premises confirmed or suspected of the disease;
  - Any animals that have had contact with infected or suspected animals;
  - Any susceptible animals near the infected or suspected premises; and
  - Any transport vehicles that do not meet biosecurity standards (e.g., C&D procedures).

Personnel

- Restrict access
- Control movement on and off premises
- Log book for those allowed to access
- Post highly visible signage describing biosecurity protocols and designating Perimeter Buffer Area, Line of Separation, and Biosecurity Work Zones

Vehicles

- Park in areas away from animal locations
- Clean and disinfect before entering and exiting premises

Routes of Transmission

Pathogenic agents can be spread from animal-to-animal through a variety of ways.

- **Direct contact**—physical contact of susceptible animal with infected animal or pathogen
- **Fomites**—indirect transfer of pathogens by inanimate objects (e.g., equipment, clothing, footwear, vehicles)
- **Aerosol**—inhalation of droplets containing pathogens
- **Oral**—ingestion of pathogenic agents (e.g., contaminated food or water, licking or chewing on contaminated object
- **Vectors**—spread by insects capable of transferring the pathogen (e.g., mosquito, biting midge)

Isolation

- Infected or exposed animals should be housed in separate areas
- Proper carcass disposal of euthanized or dead animals.

Personal Protective Equipment

- Two functions
  - Prevent further spread of disease off premises and between location on the premises
  - Protect responders in situations involving zoonotic diseases
- Don PPE prior to entry into area
  - Disposable Outerwear: Tyvek® coveralls, gloves, boot covers, masks
  - Reusable Outerwear: Cloth coveralls, rubber boots, goggles
- Doff PPE before returning to Cold Zone
  - Leave disposable items on premises or place in designated area
  - Clean/disinfect reusable items on site
- Wash hands

Cleaning and Disinfection (C&D)

The proper C&D procedure is a 2-step process.

- Cleaning
  - Remove all organic matter (e.g., manure, dirt, feed, etc.)
  - Wash and rinse
- Disinfection
  - Use proper concentration
  - Allow proper contact time
  - Read safety precautions
  - Wear appropriate PPE

Vector and Wildlife Control

Insect vectors (e.g., mosquitoes, biting midges) capable of spreading disease agents will need to be control to limit the spread of some diseases.

- Source reduction: Prevent egg laying, minimize vegetation (e.g., mowing)
- Control adults: Insecticides (spraying, fogging, baiting)
- Minimize animal interaction: Screens on buildings, animal treatment

Wildlife may carry disease agents on and off of the property and infect additional susceptible animals.

- Keep animals isolated from wildlife contact
- Ensure boundary measures are checked regularly and maintained
- Store food in a way that does not attract wildlife

Biosecurity Lines

On-site, biosecurity lines are established to act as a barrier to reduce the spread of disease on-site.

- Perimeter Buffer Area (PBA), [light blue shading], is the outer control boundary set up around the perimeter of the premises or building to reduce the potential for contamination of the area around the buildings.
  - Designate PBA with fencing, flags, ropes
  - Non-essential vehicles should not enter
  - Vehicles and equipment that are not cleaned and disinfected should not enter
  - Personnel training on purpose and boundaries

- Line of Separation (LOS), [red line around the green production barn], consists of the building walls separating the animals from the outside, and is established to isolate animals from potential disease sources.
  - Clearly marked line at entry site of building
  - Cleaning and disinfection protocols must be completed prior to movement across the LOS (entry and exit)

Biosecurity Work Zones

These work zones apply to personnel and vehicle traffic onto the site as deemed necessary.

- The **Hot Zone or Exclusion Zone (EZ)**: potentially contaminated or unsafe area (e.g., infected animal premises). PPE must be worn in this area.

- The **Warm Zone or Contamination Reduction Zone (CRZ)**: also a high risk area due to the potential for exposure to pathogens and chemical disinfectants. PPE must be worn in this area.

- The **Decontamination or Decon Corridor**: area between Hot Zone and Warm Zone. Personnel decontamination and equipment disinfection occurs here. Teams exit and enter the site through this corridor (through Control Access Points).

- The **Cold Zone or Support Zone (SZ)**: clean/uncontaminated area of the site; should be no exposures to hazardous conditions; support functions are based here. Donning of PPE prior to entry into the Hot Zone occurs here.

Additional Resources

USDA Foreign Animal Disease Preparedness (FAD PReP) Biosecurity Guidelines  
http://www.aphis.usda.gov/animal_health/emrs/nahems.shtm

Poultry Biosecurity Officer Information Manual  
http://www.poultrybiosecurity.org/

Additional Just-In-Time Trainings  

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