Cleaning and Disinfection:

Overview

Cleaning and disinfection (C&D) procedures are a crucial part of any animal health emergency response. The C&D of premises, equipment, vehicles and personnel will be necessary to prevent the spread of animal pathogens to other animals, locations or response personnel.

Assessment and Planning

Cleaning and disinfection measures should begin as soon as possible; however, develop a site-specific plan before beginning C&D procedures.

- Identify pathogen
- Determine areas & items
- Select proper disinfection method
- Identify & address hazards & safety issues
- Determine personnel, equipment & supplies needed

Basic C&D Protocol

A. Cleaning

- Can remove 90% of microorganisms
- Improves disinfection efficacy
- Conducted prior to application of disinfectant
- **Dry Cleaning**
  - Remove gross contamination (e.g., soil, manure, bedding, feed, etc.)
  - Dispose of materials in a manner that minimizes spread of pathogen and complies with any state or federal regulations
- **Washing**
  - Use detergents to remove adhered organic materials, oils, grease, exudates
  - Pre-soaking may be needed
  - Warm to hot water increases efficacy of some products
  - Make sure electrical equipment is shut off and covered tightly with plastic
  - Avoid high pressure measures in cases of highly infectious or zoonotic diseases
- **Rinse and Dry**
  - Rinse with cold water at low pressure
  - Inspect surfaces to ensure they are visibly clean and no beading should occur
  - Allow surfaces to dry completely (overnight if possible)
  - Fans can be helpful in drying but should not be used with zoonotic or highly infectious pathogens

B. Disinfection

- **Disinfectant Preparation**
  - Only use EPA-registered products
  - Only use fresh solutions, as old solutions may have reduced efficacy
  - Test kits are available to determine chemical degradation of active ingredients
  - Quantity determined by total surface area. Typically, one gallon covers 100-150 sq. feet
- **Disinfectant Application**
  - Use a systematic manner when applying to ensure adequate coverage and greatest efficacy
- **Contact Time**
  - Allow necessary contact time!
  - Contact time is the most important measure
  - Chemical disinfectant solutions may need to be reapplied to keep "wet"
- **Rinse and Dry**
  - Surfaces must be rinsed after contact time as most disinfectants are harmful to animals
  - Surfaces must be allowed to dry

C. Downtime

- Area free of any animals or activity
- Areas should be blocked off
- Further reduces microorganisms by drying
- At least three times expected incubation period; varies based on pathogen

Evaluation

- Final inspection of the premises should be conducted by experienced personnel.
- If there is any doubt or sign of inadequate procedures, the disinfection measures must be repeated.
- Once final inspection of the premises has occurred, any and all personnel present should proceed through the C&D site before leaving the premises.

Safety

Most disinfection methods have some level of hazard.

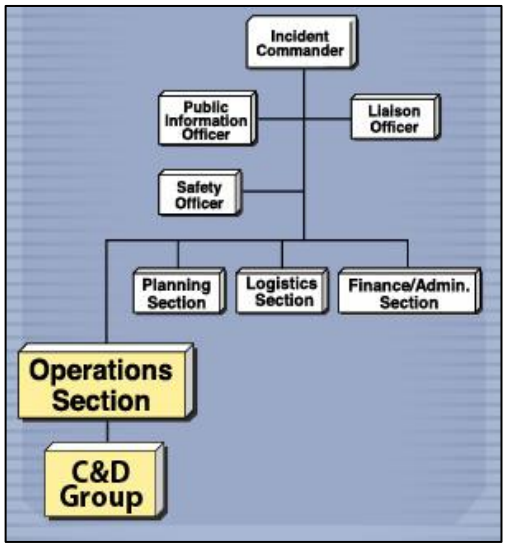
- **Chemical Hazards:** Skin, eye, respiratory irritation, ingestion (animals)
- **Physical Hazards:** Slips, trips, falls, heat injury, high pressure sprayer

To avoid many of these hazards, C&D personnel should wear personal protective equipment (gloves, masks, eye protection) when handling, mixing and applying disinfection solutions.

ICS: C&D Group

The Cleaning and Disinfection Group functions as part of the Operation Section of the Incident Command System.

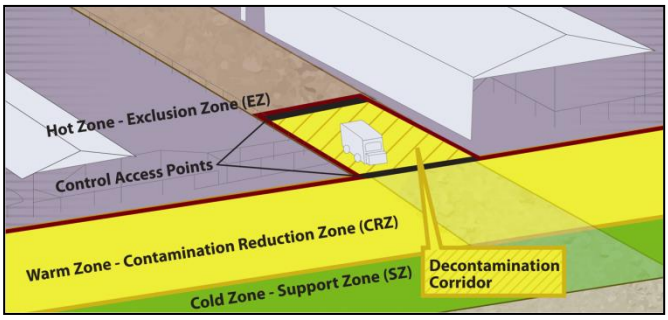
- **C&D Group Supervisor**
  - Ensures C&D measures are implemented effectively
  - Ensures personnel are familiar with proper C&D techniques and protocols
  - Identifies team members with required expertise
- **C&D Team Leaders**
  - Supervises on-site activities of Teams
- **C&D Team Members**
  - Implements C&D procedures determined necessary for the incident



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.
- **Biosecurity Work Zone Diagram**



Additional Resources

USDA Foreign Animal Disease Preparedness (FAD PReP) Health and Safety Guidelines
http://www.aphis.usda.gov/animal_health/emergency_management/downloads/nahems_guidelines/fadprep_nahems_guidelines_health_safety_final_16may2011.pdf

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