

# Cleaning and Disinfection:

## Personnel



Cleaning and disinfection (C&D) procedures are a crucial part of any animal health emergency response. Responders working at sites of animal health emergencies will be exposed to disease-causing organisms. Measures must be taken to decontaminate individuals and to disinfect all personal protective equipment (PPE), prior to leaving the response area to prevent the spread of pathogens to additional animals, locations or response personnel.

### Personnel Disinfection Station

Personnel disinfection stations should be set up adjacent to or at the entrance/exit points to the infected premises.

- Location should be on flat terrain with impermeable surface (e.g., plastic sheeting)
- Gather C&D supplies (e.g., tubs, scrub brushes, sprayers) and a water source
- Determine wastewater containment
- If possible, set up near a building or shelter with a water supply, drainage and privacy for personnel

### Preparation

- **Prepare (4) buckets of fresh warm water (110°F)**
  - Bucket 1 – Add mild detergent/cleaner
  - Bucket 2 – Rinse water
  - Bucket 3 – Add EPA-registered disinfectant
  - Bucket 4 – Rinse water
- Water temperatures should be no greater than 110°F
- Running water is preferred
- **Disinfectant Solutions**
  - Use according to product label
  - Use only EPA-registered or approved products
  - Prepare fresh solutions – old solutions may have reduce efficacy
  - Use test kits to check for disinfectant active ingredient concentration or degradation
- **Maintain biosecurity work zones to prevent the spread of pathogens (see diagram on next page)**

### Basic C&D Protocol

Conduct PPE and personnel C&D in a systematic manner to ensure efforts are effective.

#### A. Cleaning

- **Dry Clean**
  - In the Hot Zone, dry brush the exterior of PPE to remove gross contamination
  - Spray PPE with disinfectant [Note: This does not constitute “disinfection”]
  - Enter the Decon Corridor
- **Wash and Rinse**
  - Wash reusable items with detergent using a soft brush, cloth or sponge
  - Rinse items with clean, warm water

#### B. Disinfection

- **Disinfectant Application**
  - Apply an EPA-registered disinfectant solution to the exterior of the PPE items – pay close attention to creases, zippers and collars, soles of boots
- **Contact Time**
  - Allow the solution to sit for the appropriate contact time
  - Items must remain “wet” with the solution throughout the necessary contact
- **Doff PPE Items**
  - Place disposable clothing items in plastic garbage bags
  - Spray the outer surface of the bag with disinfectant solution
  - Place the bag at the perimeter for removal

#### C. Personnel

- After doffing PPE items, obtain clean clothing/shoes
- Privacy (e.g., tent, shed, trailer) for changing needs should be provided when possible.
- Individuals must thoroughly wash their hands with antibacterial soap before leaving the premises
- A complete shower should be taken – when possible on-site – or upon returning home
- **Safety Concerns**
  - Skin, eye, respiratory tract irritation from chemicals
  - Physical injury from slips, trips on slick surfaces

## Respirator C&D Procedures

Some respirators, if properly cleaned and disinfected, may be used again. Suggested respirator cleaning and sanitation procedures are available from OSHA (see Additional Resource). They are summarized below:

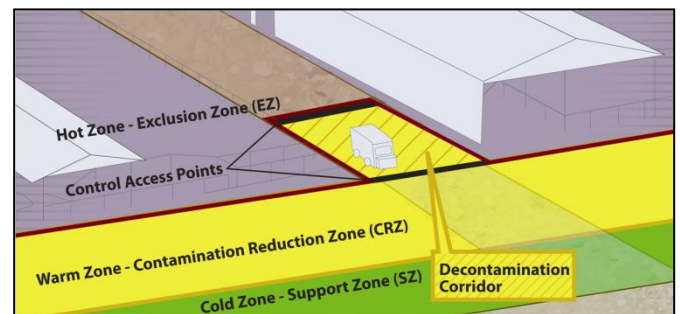
- A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing valves, hoses, or any components as recommended by the manufacturer. Discard or repair any defective parts.
- B. Wash in warm (110°F) water with a mild detergent/cleaner recommended by the manufacturer. Use a soft cloth/sponge to wipe all surfaces.
- C. Rinse components thoroughly in clean, warm, preferably running water. Drain.
- D. Wipe or immerse components in an EPA-registered disinfectant (see OSHA guidelines).
- E. Allow appropriate contact time.
- F. Rinse components thoroughly in clean, warm (110°F). Drain. Rinsing is essential as detergents or disinfectants dried on components may result in dermatitis for the user on subsequent use or cause deterioration of rubber or metal parts if not completely removed.
- G. Components should be hand-dried with a clean lint-free cloth or air-dried and reassembled.

## Biosecurity Work Zones

Biosecurity work zones must be maintained to prevent the spread of microorganisms.

- **The Hot Zone or Exclusion Zone (EZ):** High-risk area where infected animals were housed and is potentially contaminated and considered unsafe. PPE must be worn. Initial decontamination and disinfection of personnel and PPE begins here prior to exiting.
- **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. Final decontamination and disinfection as well as final doffing of PPE occur in the Decontamination Corridor of the Warm Zone-Contamination Reduction Zone.

- **The Decontamination or Decon Corridor:** Area running between the Hot Zone and Warm Zone. Decontamination of personnel and PPE occurs along this corridor with the goal of decreasing the level of contamination as moving toward the Cold Zone.
- **The Cold Zone or Support Zone (SZ):** The “cleanest” work zone with the lowest relative risk of exposure to pathogens and chemical disinfectants. Donning of PPE prior to entry into the Hot Zone occurs here. Contaminated articles and equipment are prohibited in this area. Decontamination activities are also prohibited.
- **Biosecurity Work Zone Diagram**



## Additional Resources

USDA APHIS. Foreign Animal Disease Preparedness and Response Plan (FAD PReP). Cleaning and Disinfection Guidelines.

[http://www.aphis.usda.gov/animal\\_health/emergency\\_management/downloads/nahems\\_guidelines/cleaning\\_disinfection.pdf](http://www.aphis.usda.gov/animal_health/emergency_management/downloads/nahems_guidelines/cleaning_disinfection.pdf)

Occupational Safety and Health Administration (OSHA). Respiratory Cleaning Procedures. 29 CFR Part 1910.134 Appendix B-2.

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9782](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9782)

Development of this educational material was by the Center for Food Security and Public Health at Iowa State University through funding from the Multi-State Partnership for Security in Agriculture MOU-08-0168-HSMS-NE and MOU-09-0168-HSMS-NE. June 2011. Revised July 2014.

