

# Cleaning and Disinfection: Equipment



Cleaning and disinfection (C&D) procedures are a crucial part of any animal health emergency response. The cleaning and disinfection of equipment used during an animal health response will be necessary to prevent the spread of pathogens to other animals, locations or response personnel. This may include any number of items used for the care, treatment, restraint or euthanasia of animals, any necropsy or sample collection equipment, or any other items that have had contact with infected animals.

## Small-Scale Disinfection Station

Small-scale 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
- Runoff water should be contained and not allowed to drain in "clean" uncontaminated areas

## Preparation

- **Prepare (4) buckets of fresh warm water**
  - 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

### A. Cleaning

- **Dry Clean**
  - In the Hot Zone, dry brush equipment to remove gross contamination
  - Enter the Decon Corridor
- **Wash and Rinse**
  - Wash 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 with a low pressure sprayer, or by wiping or immersing the items in the solution
- **Contact Time**
  - Ensure all areas are covered thoroughly with the solution and remain "wet" throughout the necessary contact time; reapply if necessary
- **Rinse and Dry**
  - Rinse thoroughly with clean warm water – rinsing is essential as detergents or disinfectants dried on components may cause deterioration of rubber or metal parts if not completely removed
  - Allow items to air dry
  - Some items may be place in the sunlight for drying and additional disinfection
  - Place equipment in a clean plastic bag for removal from the premises

## Electronic Equipment

- Airtight electronic equipment may be C&D by wiping or spraying items with approved disinfectant
- Some small hand-held equipment (e.g., radios, cell phones) may be useable while protected inside plastic bags - this allows for immersion in disinfectant upon exiting, without damaging the electronic item
- Other electrical items will require fumigation measures for complete disinfection

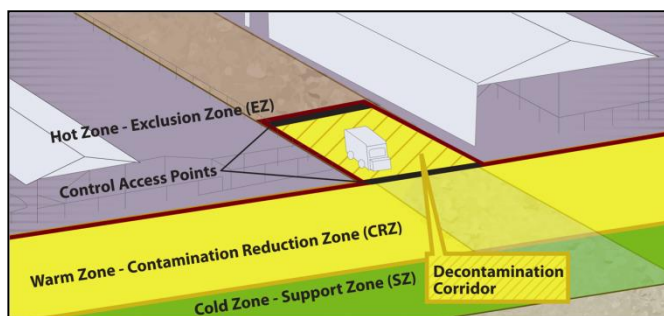
## Safety Concerns

- Skin, eye, respiratory tract irritation from chemicals
- Physical injury from slips, trips on slick surfaces

## 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 equipment 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 equipment occurs along this corridor with the goal of decreasing the level of contamination as equipment is moved toward the Cold Zone.
- **The Cold Zone or Support Zone (SZ):** This is 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)

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.



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