






Animal Decontamination

*Chemical Events and
Natural Disasters*



Risks

- Natural disasters
 - Floods, hurricanes, tornadoes, earthquakes
- Agricultural or industrial
 - Chemical spill
 - Gas leak
- Terrorism/criminal event
 - Chemical toxins
 - Microbial pathogens

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Goals of Decontamination

- Neutralize/remove harmful materials
- Confine to specified area
- Limit exposure time
 - Limit tissue damage and absorption
 - Prevent systemic poisoning
- Prevent secondary contamination to responders and other animals

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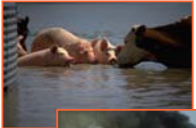

Contaminants of Concern

- Solids
 - Fecal materials from manure pits or septic tanks containing pathogenic microorganisms
 - Mold spores
- Liquids
 - Gasoline, diesel fuel, motor oil, solvents, kerosene, propane
 - Insecticides, herbicides, fungicides, rodenticides
 - Soaps, detergents, disinfectants, household cleaners
 - Heavy metals: Arsenic, lead
 - Antifreeze
- Particulates
 - Dust, smoke, debris in air
 - Fiberglass and asbestos fibers
- Toxic gases
 - Confined manure pits or tanks
 - Methane, hydrogen sulfide, carbon dioxide, ammonia
 - Anhydrous ammonia, chlorine
 - Toxic fumes from burning products
 - Chemical reactions
 - Ammonia + hypochlorite (bleach) = chlorine gas
 - Pipeline breakage
 - Gasoline/diesel exhaust
 - Welding/cutting torch fumes

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Exposure

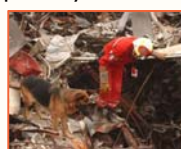

- Contact with skin
- Ingestion
 - Eating, drinking
 - Licking fur or contaminated surface
- Inhalation
- Ocular (eyes)
 - Fumes, dust, particulates, splashing liquid
- Indirect cross contamination

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Animals Affected

- Pets
- Service animals
- Working dogs
- Livestock, horses, poultry
- Captive and concentrated animal populations
- Wildlife

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Affects To Animals

- Similar to humans
- Immediate (acute) damage
 - Skin irritation, redness
 - Chemical burns, hair loss
 - Respiratory distress
 - Systemic shock, death
- Chronic injury
 - Respiratory damage, scarring
- Carcinogenesis

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Considerations

- Human safety
 - Animal welfare and health
- Response needs
 - Personnel and resources required
 - Personnel safety
- Specific toxic substance
- Number and variety of species
 - Time constraints

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Environmental Issues

- Large volumes of wastewater
- Contaminated objects
 - Leashes, collars, halters, hair
- Legal or jurisdictional issues/regulations
 - Consult with officials before and after regarding appropriate disposal measures
- Weather conditions
 - Fans, shade, shelter to avoid overheating
 - Dryer, heater, shelter to avoid hypothermia

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DECONTAMINATION SETUP

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Site Control Zones

- All areas should be clearly demarked
- Monitor access
 - Prevent unauthorized access
 - Contain contaminant

Hot Zone – contains hazard

Warm Zone – decontamination area 3 stations

Cold Zone – medical treatment, kennel area, quarters

Soric S, Belanger MP, Wittnich C. A method for decontamination of animals involved in floodwater disasters. JAVMA 2008 Feb 1; 232(3):364-370.

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Site Setup

- Location
 - Upwind and uphill
 - Close but safe distance from incident
 - Flat, level area
 - Ample size
- Water supply
- Runoff containment
 - Avoid environmental impact

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DECONTAMINATION PROCEDURE

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Warm Zone: Station 1

- Medical assessment
 - Emergency decontamination
- Photograph and record information
 - Owner, if available
 - Location found
- Remove and discard contaminated items (e.g., collars, halters)
- Place clean restraining device

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Station 1, continued


- Preliminary rinse
 - **Some contaminants may be reactive (and more dangerous) when mixed with water**
- Move to Station 2



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Warm Zone: Station 2



- Flush animal's eyes
 - Saline solution
 - **Not** eye ointment
- Wash-Rinse
 - Mild liquid detergent
 - Lukewarm water
 - Wipe head area with moist towelette/gauze
 - Careful attention to skin folds and creases
- Provide non-slip surface



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Station 2, continued


- Rinse thoroughly
- Repeat process as necessary
 - 3 times for maximum benefit
- Animal temperament
 - Muzzle or other restraint
 - Head gate or chute for large animals
 - Chemical sedation on limited basis



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Warm Zone: Station 3


- Kill microbial contaminants
 - Use antimicrobial solution
 - Minimum contact time
- Set up like Station 2
 - Wash basin/shower
 - Rinse station
- Re-examine
 - Contaminant found – Re-decontamination
 - No residual contaminant – Cold Zone



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Cold Zone


- Re-examine for residual decontamination
 - If found, repeat decontamination procedure
- If decontamination was adequate
 - Move to cold zone
 - Triage room for veterinary care



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Responders

- HAZMAT training
- Personal Protective Equipment
 - Eye protection, gloves, waterproof clothing, respirator
- Animal handlers
 - Not animal owner
 - Except for working dogs



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Responder Safety

- Injury from animals
 - Bites, scratches, crushing, kicks
 - Contaminant exposure
- Heavy lifting
 - Back injuries, muscle strain
- Biological hazards
 - Zoonoses
- PPE safety issues
 - Slip, trips and falls

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Resources


- National Alliance of State Animal and Agricultural Emergency Programs (NASAAEP). Animal Decontamination Best Practices. 2012. <http://www.learn.cfsph.iastate.edu/dr/node/157>.
- Soric S, Belanger MP, Wittnich C. A method for decontamination of animals involved in floodwater disasters. J Am Vet Med Assoc. 2008 Feb 1; 232(3):364-70.
- VMAT Decontamination Standard Operating Procedure. http://pennvetwdc.org/wp-content/uploads/2012/02/VMAT_DECON_SOP_APRIL2004.pdf
- FEMA Animals In Disasters – Technological Hazards at http://www.training.fema.gov/emiweb/downloads/is10_a-6.pdf
- FEMA Canine Decontamination <http://www.k9team.org/files/articles/Canine%20Decontamination%20Guide.pdf>

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Resources

- Murphy L, Slessman D, Mauck B. Decontamination of Large Animals. In Technical Large Animal Emergency Rescue, Gimenez R, Gimenez T, May KA, editors. 2008. Wiley-Blackwell, Ames. ISBN#978-0-813801998-3.
- Murphy L. Basic Veterinary Decontamination. In: Veterinary Disaster Response. Wingfield WE, Palmer SB, editors. 2009. Wiley-Blackwell: Ames. ISBN#978-0-8138-1014-0.
- Murphy L. Responding to Mass Exposures. In Small Animal Toxicology, 3rd edition. Peterson ME, Talcott PA, editors. 2013. Elsevier Saunders: St Louis. ISBN#978-1-4557-0717-1.
- Soric S, Belanger MP, Wittnich C. A method for decontamination of animals involved in floodwater disasters. J Am Vet Med Assoc. 2008 Feb 1; 232(3):364-70.

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