



Planning for the Decontamination of Animals in Disaster

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Tests reveal extremely toxic floodwater in Houston after Hurricane Harvey

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HOUSTON, TX – Some of the flooding left behind by Hurricane Harvey is now making people sick.

The New York Times reports it had the high water in two Houston neighborhoods tested.

One site had levels of e-coli that were 135 times what is considered safe.

Elevated levels of lead, arsenic and other heavy metals were also found.



HOUSTON, TX - AUGUST 30: Flooded homes are shown near Lake Houston following Hurricane Harvey August 30, 2017 in Houston, Texas. (Photo by Win McNamee/Getty Images)

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Radiological Incident or Other CBRNE Event



Companion Animal Decontamination

- Decontamination:
 - Can involve external and/or internal
 - We are focusing on external decon in this situation
 - Can be dry, gross or technical level
 - Animal decon is a mixture of gross and technical decon depending on resources and focus (working dogs vs general population)
 - Goals are to prevent further health issues in pets or working canines and to prevent secondary exposures
 - Process needs to consider human and animal safety at all times
 - Veterinary medical assistance/support is essential



Decon Approach: Dry vs. Wet

- Dry decontamination alone in companion animals is *only recommended to sweep off* coat particulates prior to wet decon – this is especially important if dry, visible particulates are observed – less important if the materials present on the coat are oily or wet
- Reasons:
 - Haircoat length and thickness precludes complete removal
 - Most contaminants are oily and attach to feet/undersides
 - Response to vacuums or other noisy equipment is poor
 - Dry particulates may be pushed nearer to skin with brushing – so use of a dry or slightly damp microfiber towel to wipe is best (based on recent study by Erin Perry and colleagues)

Common Assumptions

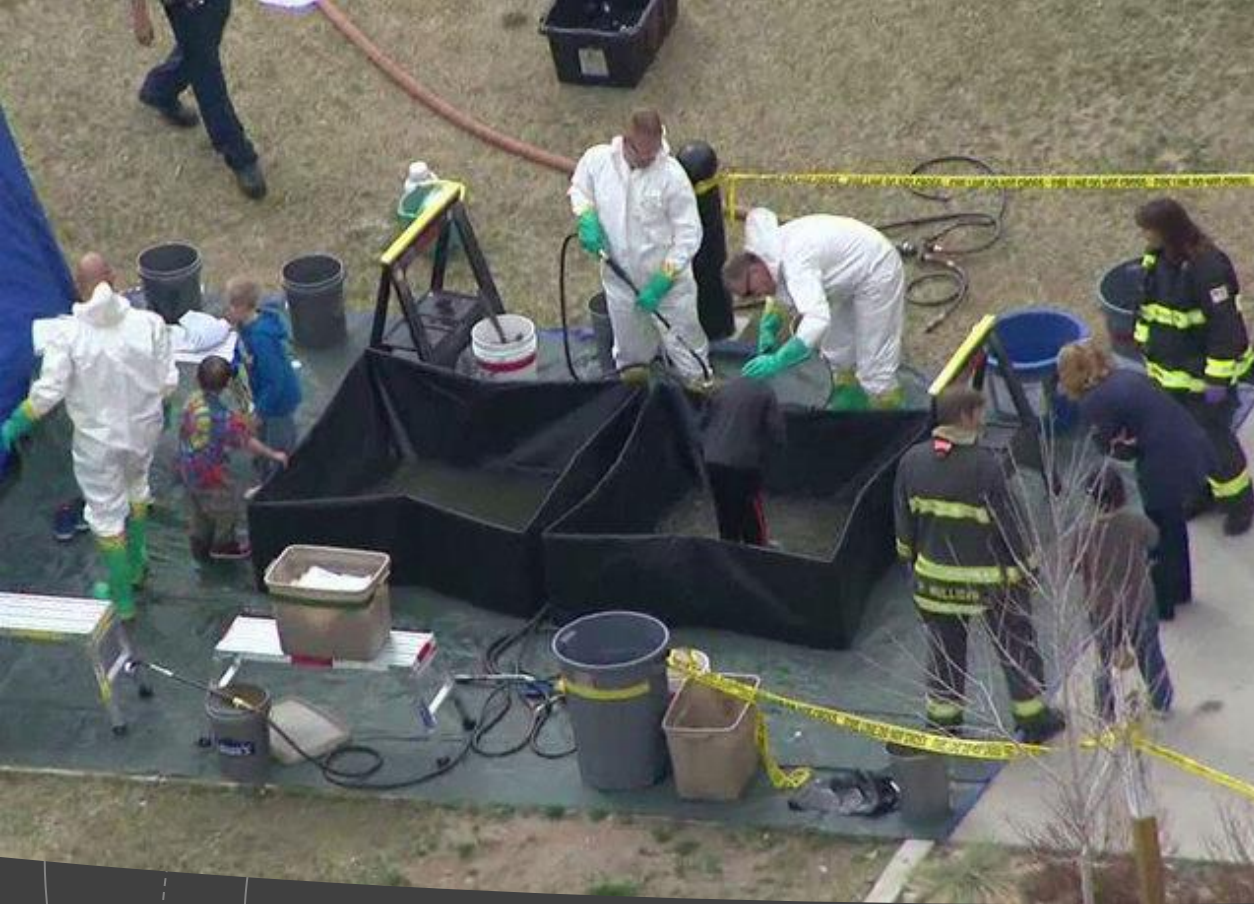
- Plan: Owners will perform decontamination on their pets
 - Owners may not be present (animal rescued)
 - Risk of secondary exposures
 - Decrease speed of human decontamination lines
 - Behavior/fear issues
 - Safety
 - Species differences
 - Cats, birds, pocket pets



Working/Service Animals

- Key Considerations:
 - Protection and Detection canines are handler centric and should not be separated for the process
 - Should be in separate location/line from general / public decon
 - Risk of contamination often much higher and will have need for decon multiple days/times





Decontamination Units Intended for People

- HAZMAT Units may be used but require modification for dogs and are unacceptable for other companion animals (cats, pocket pets, etc)
- Issues: safety, containment, stress on personnel, water contamination of area

Home Made Versions





Decon unit considerations

- Raised platform or tub to reduce fatigue from bending over
- Prevent the dog from standing in wash water -- large holes or grates may create entrapment hazard or reduce safety
- Place berm and inside tent (or inside wash area) to reduce water splash contamination of persons and surroundings



Planning Factors

Location for decon lines
(relative to shelter,
triage/vet care, and
flow)

Water access, water
requirements, capture
of wastewater and/or
contaminates (bladders
or collection area)

Personnel requirements
(function of number of
animals expected, time
required/animal, no. of
stations)

PPE requirements -
event type (e.g.
radiological) or known
or suspected
contaminates (CBRNE)

Personnel rehab area
and animal housing
areas

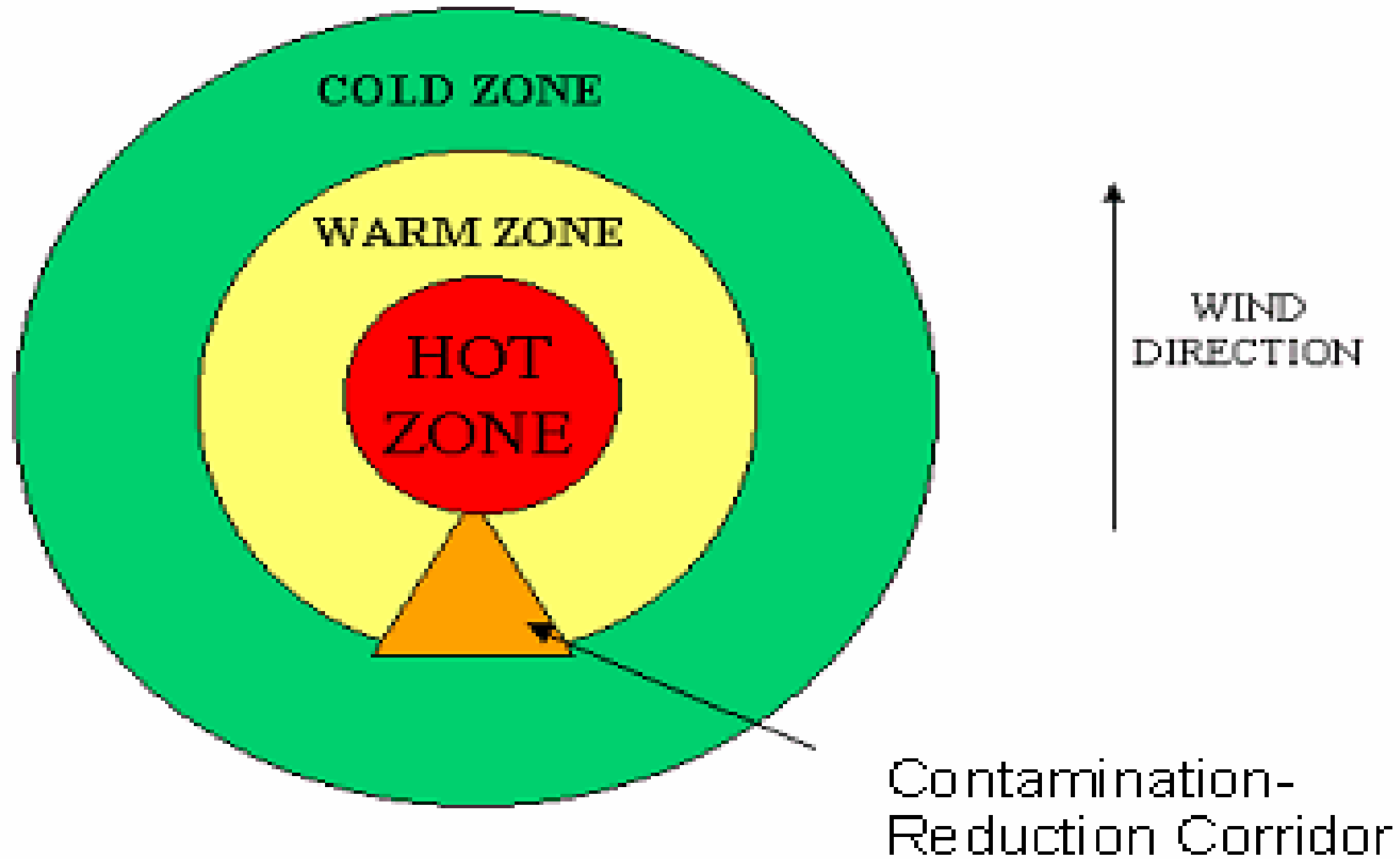
Special requirements
for environmental
issues (extreme heat or
cold)

Planning Factors: Location Considerations

- Shade and water spray capture
- Water source and drain or water capture
- Personnel rest area (rehab)
- Flow of patients/people



Planning Factors: Location



Contamination Reduction Zone



Personnel Planning Factors

- Personnel needed for one decon station:
- 1. Assessment, Preparation, Flush Eyes, wipe coat if indicated
 - 1-2 People
 - 1 Veterinarian (can be same for pre and post if not CBRNE)
- 2. Wash/Rinse Process
 - 2 people (Hazmat if CBRNE event)
- 3. Drying Station/Evaluation (Transition zone if CBRNE)
 - 1-2 People
 - 1 Veterinarian
- **Total:**
- 1 Vet +/- vet tech
- 4-6 Support staff

Personnel at
Decon
Station: Prep
Area



Personnel: Decon Station



Process Planning Factors

The process must be standardized – to streamline and make sure the process is safe and effective, and as efficient as possible

Allows personnel planning and training (JIT)

PPE requirements to be met (hazmat vs rain suits) ,and consideration of work/rest cycles (time, PPE, location for rehab, etc)

What equipment do you have / need to create decon lines and your process (donning/doffing area, etc)

Working under a cover/tent or some other environmental protection can be essential

Decontamination Process

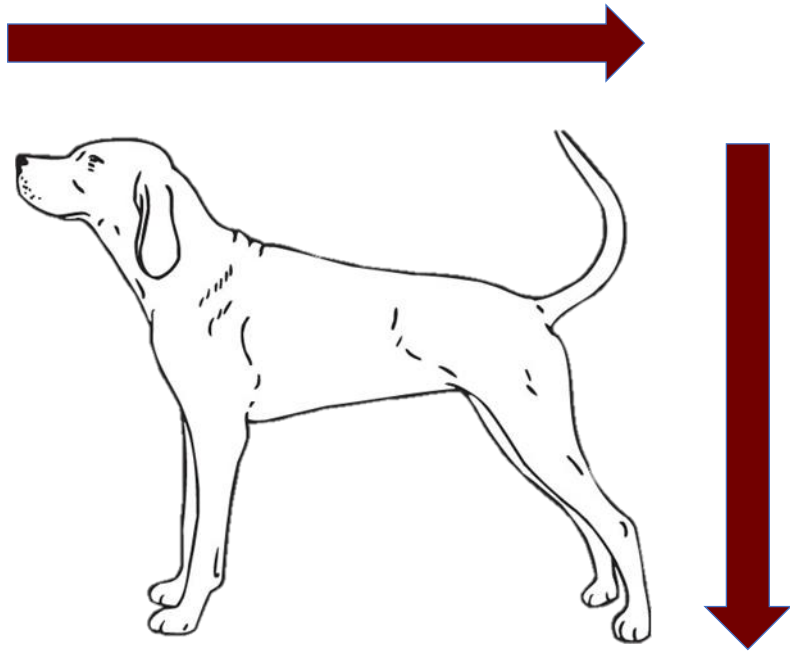
1. Assessment & Preparation

- Assess Animal Temperament
 - Requires trained personnel/vet
 - Physical safety (muzzle, handler)
 - Medical intervention (sedation)
- Remove any apparel from animal
 - Leashes, collars, vests, etc.
- Wipe coat with microfiber towel if dry particulates present
- Flush eyes (and nose if indicated)
 - Use saline eye wash solution



Decontamination Process

Process needs to be standardized and repeatable to allow just in time training, efficiency and effectiveness



Decontamination Process

2. Decontamination – Wet, Soap, Rinse

Thoroughly wet the coat of the animal

Apply soap and gently but thoroughly work in

- Liquid Dish Soap, Baby shampoo most common, some antibacterial soaps (Chlorhex)
- Lathering by hand massaging impt (no brushes)

Rinse completely – front to back, top to bottom – move to clean tub or area for towel drying and assessment

Studies show that most frequent locations for contaminants to remain post decon are under neck, inside flank, and between toes/pads of feet



Decon Process:
Contaminant locations

Decontamination Process

Drying Station

- Dependent on Ambient Temperature and Animal Body Temperature or health
 - Toweled dry
 - Blower systems
 - Heaters/heated tent



PPE and Donning/Doffing:
Hazmat Decision but must
at least use rain suits with
face/mouth/eye
protection (due to water
shaking and spray)



Decontamination Process

Key Findings on the Process from our Experience in Disasters and our Decon Studies*:

1. For S&R canines (short or medium coat) weighing 45-65 lb (20-30kg) – it requires 10-15 gallons of water/dog to complete decon, and it requires 8-15 min/dog (depending on canine cooperation, coat thickness or length, and mud/contaminant attached to coat)
2. Companion dogs (temperaments, sizes and coats varying widely) range from 10-25 gal/dog and 10-20 min/dog

Summary: Average 15 gal/dog, 12-15 min/dog (if tractable and short coat)

* Trained personnel publication in press

Planning Factors

What does that translate into for water, time, and people for 20 S&R or companion dogs:

- Each dog will require a minimum of 2 people (in addition to handler for decon process, in addition to vet/trained observer, person at dry station)
- Each dog will require (on ave) 15 gal water, thus, 300 gal water (and ability to hold/dispose of 300 gal)
- Each dog will require (on ave) 12-15 min/dog for wash, thus, 240 -300 hr (4-5 hr for one station or 1.5 hr for 3 stations) – up to 30 min/dog for station if very dirty or lless complaint
- If the temp is > 75F and level B or C PPE is required for protection of personnel, they will only be able to work 20-30 min at a shift (based on study we did with US Army Vetcon personnel) - thus 1-2 dogs/personnel group before rehab and replacement - Cost per person will become a critical factor (not considered here)



Don't Forget Other Species



Planning for dogs was the easy part...

- Cats, pocket pets and birds require special handling/approach – for their safety as much as yours



Decon Units with Containment vs a Building/Room



Planning Factors

- Cats, pocket pets and birds (and some dogs) will all require a completely different approach (not an assembly line)
 - Must have containment
 - May require sedation or much slower process
 - Skilled, species specific handling to prevent injury
- Veterinary medical assistance is essential for making the safest decisions on animal management (sedation and handling)

Summary Thoughts

- Decontamination of companion animals evacuated or rescued from contaminated environments should be included in all plans for emergency animal sheltering
- Requires significant input of expertise (vet), personnel, and thought into logistics of the process to be safe and successful
- Critical for CBRNE events, but decon should be implemented in all disaster response planning

Questions?

