

# Canine Decontamination

Guidelines for Emergency, Gross, and Technical Decontamination of the Urban Search & Rescue Canine



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# Why Decontaminate?

- Canines are exposed to multiple hazards during search
- The toxicity to canines ranges from the very mild (dirt, mud) to life-threatening (chemical, biological, radiological)
- They may also transmit hazardous materials back to others

# Definitions

- **Gross Decontamination**
  - ❑ Emergency
  - ❑ Non-Emergency
- **Technical Decontamination**
  - ❑ Emergency/Medical
  - ❑ Non-Emergency/Medical

# Gross Decontamination

- **Emergency** = immediate reduction of contaminant for life-threatening conditions
  - ❑ Goal: save lives
- **Non-Emergency** = bulk removal of non-life threatening contaminant
  - ❑ Goal: quick wash



# Technical Decontamination

- ♥ **Emergency/Medical** = HazMat or WMD situation, complete decon is part of life-saving medical treatment
  - ❑ Goal: save lives
- ♥ **Non-Emergency/Medical** = complete removal of non-life threatening contaminant to avoid future complications
  - ❑ Goal: thorough decontamination



# Treatment Before Decon?

- **Need, ability depend on several factors**
  - ❑ Medical status (life-threatening?)
  - ❑ Medical personnel presence in hot/warm zone
  - ❑ On site medical supplies
  - ❑ Safety of personnel



## Canine Factors

- Routes of Exposure
- Ambulation, Ground Proximity
- Sensitivity
- Toxic Agents of Concern
- Anatomy, Metabolism
- Physical Signs, Symptoms
- Familiarization and Training

## K9 Routes of Exposure



- Ocular
- Inhalation
- Ingestion
- Dermal
- Injection

## Ocular Route of Exposure

- **K9 more susceptible due to**
  - 👁️ Lack of eye protection
  - 👁️ Sniffing may aerosolize particulates
  - 👁️ Settling dust closer to the ground
  - 👁️ Eye protection may interfere with mobility in tight spaces



## Inhalation Route of Exposure

- **K9 more susceptible due to**
  - 🐾 Increased use of respiratory tract
  - 🐾 Sniff near ground where contaminants tend to concentrate
  - 🐾 Increased surface area more absorption area



Advantages:

Traps contaminants, inflammatory mediators and lung defense mechanism advantages

## Ingestion Route of Exposure

- **K9 more susceptible due to**
  - 🐾 Adventurous taste-testers of unidentified substances
  - 🐾 Hunger or thirst during long search may tempt even the best trained
  - 🐾 Licking nose, mouth, and to clean self
  - 🐾 Licking paws heavily exposed to environment



## Dermal Route of Exposure

- **K9 more susceptible due to**
  - 🐾 No PPE
  - 🐾 Fur attracts and traps contaminants
  - 🐾 Fur may decrease detection of a wound
  - 🐾 Less-furred areas have increased exposure (inner ear, axillae, abdomen, flank, scrotum)

Advantage: fur traps contaminant and keeps it from skin absorption (makes decon harder)

## Injection Route of Exposure

- **K9 more susceptible due to**
  - 🐾 High risk wounding of unprotected paws
  - 🐾 Fur may hide a wound where absorption can occur
  - 🐾 Nature of urban search is rubble - sharp objects, hazards increase risk of wounding



## K9 Ambulation, Ground Proximity

### Working close to the ground:

- 🐾 Hazardous materials concentrate on ground, low surfaces
- 🐾 Chemical agents often dispersed as gases/aerosols heavier than air
- 🐾 Eyes, nose, mouth, paws subjected to constant exposure

## K9 Toxin Sensitivity

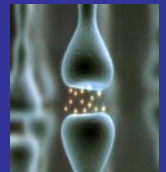
Compared to Humans

- **Chemical Agents**
- **Biological Agents**
- **Radiological Agents**

## Chemical Agent Sensitivity

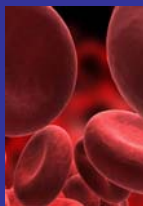
### ☠️ Nerve Agents

- ☠️ **Tabun (GA)**
  - 1/4 as sensitive to inhalation form
  - 1/2 as sensitive to dermal form
- ☠️ **Sarin (GB)**
  - 1/4 as sensitive to inhalation form
  - 2 times as sensitive to dermal form
- ☠️ **Venom X (VX)**
  - ~ same sensitivity as humans to both forms



## Chemical Agent Sensitivity

- ☀️ **Blister Agents**
  - ☠️ **Mustard (HD)**
    - 2/3 as sensitive to inhalation form
    - 1/4 as sensitive to dermal form
- 🔴 **Blood Agents**
  - ☠️ **Hydrogen Cyanide (AC)**
    - 4 times as sensitive to inhalation form
    - ~ same sensitivity to dermal form
- 🌊 **Riot Control Agents**
  - ☠️ **CN, CS, OC**
    - Quite insensitive to these



## Biological Agent Sensitivity

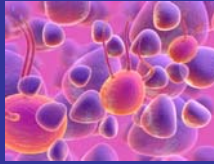
- 🦠 **Bacteria**
  - 🌟 **Anthrax** - 500-1000 times more resistant
  - 🌟 **Typhoid** - naturally resistant
  - 🌟 **Brucellosis** - susceptible, zoonotic
  - 🌟 **Plague** - intermediate host for flea transmission
  - 🌟 **Tularemia** - susceptible but less sensitive



## Biological Agent Sensitivity

### Rickettsia

- Q Fever – susceptible but less sensitive



### Virus

- Venezuelan Equine Encephalitis - susceptible but less sensitive
- Smallpox - canines naturally resistant

## Biological Agent Sensitivity

### Toxins – canine susceptible but less sensitive

- Botulinum
- Ricin
- Staphylococcal Enterotoxin B



Castor Beans



Ricinus communis

## Radiological Agent Sensitivity

- Radiological materials emit ionizing radiation - enough energy to alter cells



### Forms of radiation

- Alpha particles - dangerous if ingested
- Beta particles - dangerous if ingested
- Gamma - significant penetration
- Neutron - cell damage on contact

## Radiological Agent Sensitivity

- Canines appear to be ~ 25% - 50% more sensitive than humans to the acute effects of the same radiation exposure
- Due to lack of PPE, decontamination is an important aspect of treating exposure

## Toxicological Agents of Concern

- Some commonly encountered toxins in an urban search and rescue environment
- Decontamination important for health of canine and all with whom they contact

## Toxic Agents of Concern

- Hydrocarbons**
  - Gas, oil, trans fluid, toner, inks, adhesives
  - Ingestion/inhalation most harmful
- Polychlorinated Biphenyls (PCBs)**
  - Coolant, turbines, air conditioners, TVs
  - Dermal/oral exposure → organ failure/cancer
- Hazardous Metals**
  - Chromium, cobalt, lead, mercury, nickel, zinc
  - Inhalation concern; wet coat, do not brush

## Toxic Agents of Concern

- Asbestos**
  - Fireproofing, insulation, bind in pipes/cement
  - Inhalation concern; wet coat, do not brush
- Soaps and Detergents**
  - Industrial disaster, fire suppression foam
  - Cationics toxic: corrosive, pain, paralysis
- Acids and Alkalis**
  - Battery fluid, oven/pipe/toilet/drain cleaners
  - Corrosive, burns on contact or if inhaled

## Toxic Agents of Concern

- Ethylene Glycol**
  - Antifreeze, deicer, solvents, brake fluid, inks
  - Sweet taste; 'animal safe' has bad taste
  - Mainly ingested → renal failure, neuro signs
  - Decon feet (licking), black light may show up
- Propylene Glycol**
  - Drugs, ink, antifreeze, deicer, resin, lubes
  - Rapid absorption if ingested
  - 1/3 toxicity of EG: organ damage, sz, coma



## Toxic Agents of Concern

- Phenol**
  - Resins, detergents, dyes, antiseptics
  - Caustic, absorption → seizure, coma, death
  - Ingestion highly toxic
- Alcohols**
  - Solvents, intermediary chemicals
  - Problems if absorbed in large quantities

## Documented Toxin Levels

New York Police Department working canines deployed to the World Trade Center, Sept 11-19, 2001 Fox PR, JAVMA Vol 233, July 2008

Prolonged exposure compared to brief exposure

- Mean blood [lead] significantly higher
- Mean serum [iron] not significantly different



## Documented Toxin Levels

New York Police Department working canines deployed to the World Trade Center, Sept 11-19, 2001 Fox PR, JAVMA Vol 233, July 2008

Environmental toxins detected in serum of dogs in both prolonged and brief exposure groups

- Quinoline
  - 3-methyl quinoline
  - Isoquinoline
  - Diphenylamine
  - Surfynol
  - 2-(1-phenylethyl) phenol
- } carcinogenic, mutagenic



## K9 Anatomy, Behavior, and Metabolism

Aspects of the canine make this species both more susceptible to harm as well as more resistant to the dangers they may face during search

## K9 Anatomical Considerations

### EYES



- Similar to human anatomy
- Disadvantages
  - ⦿ No eye protective equipment worn
  - ⦿ Close to ground where contaminants concentrate
  - ⦿ Sniffing can aerosolize dust near eyes

## K9 Anatomical Considerations

### EARS



- Middle & internal similar to human, canal differs
- Advantages
  - ♂ Floppy cartilages some protection to canal
  - ♂ Canal 90° turn, adds protection to ear drum
- Disadvantages
  - ♂ No ear protective equipment worn
  - ♂ Upright cartilage open to exposure

## K9 Anatomical Considerations

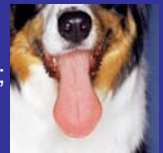
### NOSE



- Different to humans in length, sensitivity, intricacy inside
- Advantages
  - ∞ Length, intricacy traps particles
- Disadvantages
  - ∞ No nose protective equipment worn
  - ∞ High risk for inhalation exposure
  - ∞ Mucosal surface sensitive absorptive area

## K9 Anatomical Considerations

### TONGUE



- Similar (but larger) to humans; other purposes (pant, scent)
- Disadvantages - behavioral
  - ♂ Potential damage if licks something harmful
  - ♂ Open mouth during scenting/panting allows increased exposure to particle contaminate
  - ♂ Lick contaminated nose, mouth, body, paws

## K9 Anatomical Considerations

### SKIN



- Different blood supply than human
- Advantages
  - ♂ Many areas protected by thick fur
- Disadvantages
  - ♂ No protective suit worn
  - ♂ Vulnerable spots: inner ear, nose, axilla, abdomen, inner flank, scrotum, paw pads
  - ♂ Does not blister; wounding hidden by fur

## K9 Anatomical Considerations

### FUR



- Different distribution and thickness than humans
- Advantages
  - ♂ Traps particles, protecting skin
- Disadvantages
  - ♂ More difficult to decontaminate
  - ♂ Skin wounds more difficult to detect

## K9 Anatomical Considerations

### TAIL

- Unique and expressive body part
- Advantages
  - 🐾 Behavioral monitor for humans
- 🎵 Just a note
  - 🐾 Don't forget the tail in decontamination
  - 🐾 Hard to get to the underside and perineal area if it is tucked in tight



## K9 Anatomical Considerations

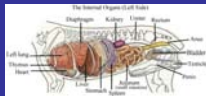
### AMBULATION, PAW PADS, HEIGHT

- Unique aspect compared to humans
- Advantages
  - 🐾 Thick, tough pads protect
- Disadvantages
  - 🐾 Pads - hairless, sweat glands, will absorb nerve agents
  - 🐾 Deep crevasses hard to decontaminate
  - 🐾 Ambulation, low to ground ↑'s exposure



## K9 Metabolic Considerations

- Rate that organs handle contaminants
  - Absorption via skin, respiratory tract, digestive tract into circulatory system
  - Filtering and altering through liver, spleen, kidneys
- Sensitivity and metabolism depend on many factors
  - Health status, body condition, age, dose of toxin, decontamination and treatment



## K9 Exposure Signs and Symptoms

- Many signs of toxin exposure are common in canine and human
- Other signs are more difficult to recognize or confirm

## Recognized K9 Exposure Signs

- 🐾 Respiratory - cough, choke, gasp for air
- 🐾 Mucous Membranes - red eyes and gums
- 🐾 Ocular - tearing, pinpoint/dilated pupils
- 🐾 GI Signs - salivation, nausea, vomiting, diarrhea, abdominal cramping
- 🐾 Mentation - malaise, fatigue, disorientation
- 🐾 Neurological - twitching, seizure, paralysis

## Hard to Recognize Signs in K9

- 🐾 Headache
- 🐾 Tightness in chest
- 🐾 Sweating - axillae, inner flank, paw pads
- 🐾 Skin rash - in places hidden by fur until advanced; may detect sensitivity by touch
- 🐾 Blisters - due to different blood supply, skin forms burn-like wounds instead



## K9 Familiarization and Training

- Familiarization for both handler and canine will decrease stress, speed the process, and limit errors
- Drills allow for decontamination stations to be set up and for canines to be run through them

## Preventative Measures

Preventative measures are worth far more than can be calmly expressed

*DO THEM...  
PLEASE!*

## Prevention – Skin, Fur, Pads

Minimizing dermal contamination and absorption

- 🐾 Bathing, rinsing, wiping coat decreases particle load  
(baby wipes; inner ear, face, under tail)
- 🐾 Booties when not needed for traction  
(familiarize at training, not on site)
- 🐾 Frequent body checks for cuts, abrasions; treat/protect early



## Prevention – Eyes

Minimizing ocular contamination and absorption

- 👁 Regular flushing of the eyes with 0.9% saline or purified water  
(keep applicator tip clean, do not touch to eye)
- 👁 Goggles when not needed for search if in dusty environment  
(familiarize at training, not on site)



## Prevention – Nose and Mouth

Minimizing facial contamination and oral absorption

- ∞ Routinely wiping around nose and mouth  
(baby wipes work well if available)
- ∞ Canines often use tongue to wipe these areas and toxin ingestion a real concern



## Prevention: Hydration



Maintaining adequate hydration

- 💧 Maintains health, decreases medical issues - important in cold and warm weather
- 💧 Decreases temptation to drink from a standing pool of liquid - **potential disaster!**
- 💧 Encourage drinking bottled water - frequent small amounts, place low so won't aspirate
- 💧 Flavoring, hydration powders - encourages drinking, does not significantly alter electrolytes



## Hydration Guidelines

- ◆ **Maintenance fluids** are ~2-4 mg/kg/hr, (about 3 liters a day for an 80-90 pound dog)
- ◆ **Additional needs** are based on the humidity, temperature, workload, and time worked (intake may ↑ 1.25, 1.5, even 2X maintenance)
- ◆ **Periodic evaluation** of hydration status is important (mucous membranes, capillary refill, skin tenting, dark/concentrated/infrequent urine)



## Prevention – Work Rest Cycles

### Adequate Work-Rest Cycles

- 🐾 **Important aspect for canine health**
  - 🐾 Minimizes fatigue and medical issues
  - 🐾 Maximizes search efficiency and safety
- 🐾 **FEMA search canine guidelines**
  - 🐾 Shift length of 12 hours
  - 🐾 For every 20-45 minutes of work, rest for equal time period



## Documentation of Acute Injuries Reason for Preventative Measures

New York Police Department working canines deployed to the World Trade Center, Sept 11-19, 2001 Fox PR, JAVMA Vol 233, July 2008

- 🐾 Fatigue 62.9%
- 🐾 Conjunctival irritation 62.9%
- 🐾 Respiratory problems 16%
- 🐾 Dehydration 13%
- 🐾 Cuts and abrasions 12%



## Decontamination Principles, Procedures, Goals

- Basic Decontamination Information
- Human Safety in Decon Line
- Going Through the Line
- Decontamination Corridor
- HazMat Concerns: Chemical, Biological, Radiological
- Petroleum-Based Contaminants

## K9 Decon Basics

### Canine Decontamination

General Principles for the  
Removal of Contaminants

## K9 Decontamination Basics

Consult references if possible

### 📖 Books

- Material Safety Data Sheet (**MSDS**)
- Emergency Response Guidebook (**ERG**)
- Small Animal Toxicology & Poisonings by **Gfeller, Messonnier**

### ☎ Telephone

- Animal Poison Control Center (APCC) **888-426-4435**, \$60
- National APCC @ University of Ill **800-548-2423**, \$30
- ChemTrec **800-424-9300**
- National Response Center **800-424-8802**

### 🌐 Internet

- CDC and ATSDIR @ [www.bt.cdc.gov](http://www.bt.cdc.gov)
- CBRNE @ [www.bigmedicine.ca/toolsGregoryBanner.htm](http://www.bigmedicine.ca/toolsGregoryBanner.htm)

## K9 Decontamination Basics

### ➤ Powders

- Initially wipe off with moist towelette
- **Avoid brushing** - aerosolizes contaminant, increasing inhalation exposure



### ➤ Thick Caked-On Substance

- Break down - mechanics' soap, mineral oil for petroleum-based, or scrape with putty knife
- Clippers rarely last, use scissors with caution (laceration potential)

## K9 Decontamination Basics

### ➤ Physical removal of contaminant



- 💧 **Water** - lukewarm, high vol, low pressure
- 💧 **With soap** in 3 rinse-soap-rinse cycles
  - ☆ Dish soap (Dawn®, Palmolive®)
  - ☆ Shampoo (Prell® – less soapy, easier to rinse?)
  - ☆ High pH neutralizes, dissolves
- 💧 **Decon** head to tail, shoulder to forelegs, back to belly, hips to hindlegs, under tail, paw pads



⚠ **Note:** some hazardous materials become reactive when exposed to water; check 2008 ERG pp 342-347

## K9 Decontamination Basics

### ➤ Eyes



- 👁 **Small bottles** OTC ophthalmic rinse ideal for gentle but steady flush stream
- 👁 **Uncooperative?** Remove as much as possible around eyes with towelette, flush at vet check
- 👁 **Do not** apply eye ointment until vet check (Traps contaminant, ↑ absorption, worsens corneal damage)

## K9 Decontamination Basics

### ➤ Avoid soap into eyes, nose, mouth

- ⚠ **High pH** damages mucous membranes
- ⚠ **Neutral soaps** nice but less effective in neutralizing chemicals
- ⚠ **Soap and water in ears** promotes vigorous shaking (don't forget your eye protection!)

## K9 Decon Special Considerations

### ➤ Chemicals that worsen if exposed to water

- Apply baking soda/flour to form cake, then brush/comb or wipe/brush



### ➤ Paw pads need special attention

- Deep crevasses trap particles
- Soft-bristled brush (BD E-Z Scrub 160)



### ➤ Eye flushing for 15 minutes

- Important for blister, blood, and metabolic agents of concern (mustard, Lewisite, arsine, cyanide)

## K9 Decon Special Considerations

### ➤ Bathing K9 in 0.5% hypochlorite

- Dilute bleach solution, follow with soap/water
- For blistering agents and flood water decon

### ➤ Dermal exposure to phenols

- All personnel wear gloves, gowns, masks
- Blot fur and skin with paper towels before washing

### ➤ Never use hydrocarbon-based solvents to decon an animal

- Defats the dermis - **Painful!**
- Increases absorption of toxins (PCBs)



## K9 Decon Special Considerations

### ➤ Contaminated Run-off

- Do not allow canine to drink decon run-off
- Elevate canine or provide for drainage
- Basket muzzles won't stop, can't decon face with regular muzzle

### ➤ Weather conditions

- Fans, shade, shelter to avoid hyperthermia
- Dryer, heater, shelter to avoid hypothermia



## K9 Decon Special Considerations

### ➤ Post decontamination checks

#### 👤 HazMat safety check

- Visual inspection
- Black light
- Radiation detection

#### 🐾 Veterinary check

- Complete physical examination
- Treatments, follow-ups as needed



## Human Safety in the Decon Line

- Safety Officer, HazMat Specialist, Command Staff all contribute to decisions on PPE
- Additional conditions, like heat stress and hypothermia, are also factored into these decisions

## Human Safety PPE

- PPE for those working the decon line should be not more than one level less than that of who they are decontaminating
- Same principle applies to canine decon, as if they had PPE, despite the fact they are not wearing any
- Waterproof over-garment if using less than Level A or B



## Human Safety PPE



### Boots

- 👉 Knee-length rubber boots, slip-resistant soles



### Gloves

- 👉 Nitrile, polyvinyl chloride gloves are good protection, durable, resist tearing
- 👉 Double-gloving with outer heavy glove



## Human Safety PPE

### 👁 Eye protection

- Tight fitting goggles against splash hazards
- Safety glasses not protective enough

### ⚙ Respiratory protection

- N-96 Particulate respirators protect from spray mists
- Other as deemed appropriate by safety/HazMat



## Human Safety – Physical Strain

Back & knee injuries common when dealing with animals



- Decontamination procedures may require much bending, back/knee strain
- Consider proper posture, knee-pads, raising a platform upon which the canines stand for their decontamination

## Going Through Decon Line

- Medical Assessment
- Preparation
- Rinse - Wash
- Drying
- Antimicrobial Station Option
- Monitor, Treat, Return to Service

## Going Through Decon

### Assessment: Emergency or Non-Emergency

- ♥ Emergent, contaminant not life threatening: gross emergency decon, medical attention
- ♥ Emergent, contaminant removal part of treatment: technical emergency decon, medical attention
- ♥ Non-emergent: gross and/or technical decon performed based on contaminants involved

## Going Through Decon

### Handler should accompany canine

- ✂ If unable, another experienced handler best
- ✂ If canine cannot be taken safely without handler, confine to contain contamination
- ✂ If handler needs decon, confine canine until handler clean, dons PPE, can take through
- ✂ Handler unavailable, no other can, confine, consult for options: gross decon in kennel, sedation

## Going Through Decon

### Preparation

- ✂ Remove K9 equipment/gear to container  
Cleanse (bleach), dispose
- ✂ Maintain control, stay in corridor confines  
So as not to spread contaminant
- ✂ Muzzle for safety, prevent drinking?  
Basket versus nylon, pros and cons

## Going Through Decon

### Rinse – Wash Cycles

- ◆ Initial gross decon water removal of bulk of contaminant (powder, water-reactive, caked)
- ◆ Wipe/wash head/face, inner ears
- ◆ Eye flush if practical
- ◆ Wash - rinse X 3 head to tail  
back to toes



## Going Through Decon

### Drying

The body shake is inevitable

⚠ Weather-related pitfalls to consider

- ☀ Warm weather hyperthermia: shade, fan
- ❄ Cold weather hypothermia: shelter, dryer



## Going Through Decon

### Antimicrobial Station Option

For suspected biological contamination  
Spray, bathe, or walk through solutions

- ❖ Hypochlorite (bleach) @ 100-500 ppm or 0.5%; rinse afterwards
- ❖ Biguanide (chlorhexidine) @ 0.05-4%
- ❖ Quaternary ammonium @ 400 ppm or 0.1-2%
- ❖ Iodophore (povidone-iodine) @ 100 ppm
- ❖ Peroxygen @ 20 g/L or 1%
- ❖ Alcohol (ethyl, isopropyl) @ 70%

## Going Through Decon

### Monitor, Treat, Return to Service

- 🐾 Monitor for contamination
- 🐾 Special check of eyes, ears, nose, throat, paws, under tail
- 🐾 Repeat decon if need, new collar/leash
- 🐾 Complete veterinary exam, treat, monitor
- 🐾 Return to service



## Decontamination Corridor

Stations, modify as needed

- Equipment Removal Station
- Washing Station
- Rinsing Station
- Antimicrobial Station
- Drying Station

## K9 Decontamination Corridor

Hot Zone to Cold Zone



Drop Bucket → Washing Pool → Rinsing Pool → Foot Bath → Drying Area → Vet Check

## HazMat Specifics

- Chemical Exposure
- Biological Exposure
- Radiological Exposure

## Chemical Exposure Decon

### ☠ Remove

- 🐾 Relocate to ventilated upwind area
- 🐾 Remove, replace gear (metal, nylon)
- 🐾 Liquid: pinch/blot, not rub (just spreads)
- 🐾 Powder: dampen, then remove (brush, wipe)

### ☠ Wash

- 💧 High volume, low pressure lukewarm water
- 💧 Don't delay for lack of soap or warm water

### ☠ Monitor

- 🏥 Veterinary evaluation, monitor, recheck

## Biological Exposure Decon

Remove, Wash, Monitor as for Chemical

- ☹ Concern is likely to go unnoticed until symptoms develop
- 😊 Good news – dogs resistant to most biological weapons
- ☹ Bad news – they can still be vectors, so decontamination important

## Radiological Exposure Decon

Remove, Wash, Monitor as for Chemical

- 🏥 Alpha radiation masked by water, so thorough drying before monitoring
- 🏥 Careful not to aerosolize particulates ( $\alpha$  and  $\beta$ )



## Petroleum-Based Contaminants

'Like Dissolves Like'

A method for decontamination of oil-based substances was tested and confirmed at drill

## MA TF-1 Drill: Oil-Based Decon

Test Material: oil-based non-toxic product



Glo Germ® Powder



Glo Germ® Liquid



Canine 'Contamination'

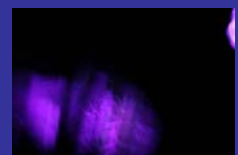
## Drill: Soap and Water Decon



Soap/water decon  
Attention to paws



Confirmation of contamination



Paw still contaminated after soap & water

## Drill: Like Dissolves Like

Mineral Oil sprayed onto paws



Pre-decon Contamination



Post oil-soap-water Complete decontamination

## Decontamination System Designs

- Canines in a Human System
- Canine-Design System
- Field Test

## K9 in Human Gross Decontamination System



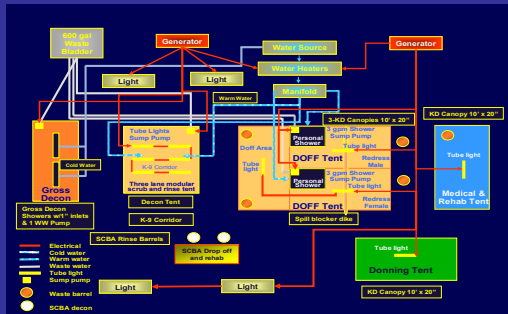
Enter after initial blotting of visible contaminate.  
Wash as long as deemed appropriate by staff.

## K9 in Human Technical Decontamination System



TVI Technical Decontamination System

## K9 Addition to FEMA US&R Decontamination Floor Plan



## Canine System Design

MA TF-1 US&R system development for search canine decontamination unit

## MA TF-1 K9 Decon System

### Materials and cost (2007/2008)

■ TVI Corp <a href="http://www.tvicorp.com">www.tvicorp.com</a>	2 TVI canine pools@ \$400 ea	\$800
■ Home Depot	4 plastic shelving units	\$ 70
■ Home Depot/Lowes	Sump pump for waste removal	\$ 70
■ Dri Dek; <a href="http://www.dri-dek.com">www.dri-dek.com</a>	12 Dri-Deck 12"x12" panels	\$ 60
■ Local hardware store	2 lengths of rope	\$ 5
■ Local hardware store	Plastic cable ties	\$ 5
■ Local hardware store	1 plastic sheet	\$ 10
■ Local hardware store	2 Hoses	\$ 20
■	Wash Hose & Wand	\$ 25

## MA TF-1 K9 Decon System



One shelf unit  
Light-weight plastic



TVI Pools  
Hose ports for run-off

## MA TF-1 K9 Decon System



Non-slip flooring



Altered shelf unit

## MA TF-1 K9 Decon System



Corridor boundary guide

## MA TF-1 K9 Decon System



Pool assembly



Shelf placement  
with plastic over-sheet

## MA TF-1 K9 Decon System



Search canine 'Uber' checks out the system



## MA TF-1 K9 Decon System

### System Advantages

- ❧ Inexpensive - <\$1100
- ❧ Light weight - 47 lbs/21 kg
- ❧ Compact - pools 4'x10', shelves 2'x3'x1.5'
- ❧ Durability - low cost to replace parts
- ❧ Easy to assemble - 10 minutes
- ❧ Reusable

## MA TF-1 K9 Decon System

### System Advantages

- ❧ Contain run-off - port holes for hoses
- ❧ Personnel safety - knees, lower back
- ❧ Better K9 decon - easy reach paws, belly
- ❧ Contaminated water - out of reach
- ❧ PPE suit protection - no kneeling/tearing

## Canine System Field Tested

Human remains search  
conducted after fire with  
additional asbestos and  
other hazardous materials

## K9 Decon System Field Tested



Gloucester Fire



HRD Canine Search

## K9 Decon System Field Tested



Decontamination  
Tent



Water Heater

## K9 Decon System Field Tested



Canine Decontamination



## K9 Decon System Field Tested

### Comments

- State trooper's canine did well
  - A little wobbly on the platform
  - Familiarization training needed
- One pole broke at base, taped
- Tent also had heat to decrease hypothermia potential

## K9 Decontamination Kit

- General Equipment
- Human PPE
- Decontamination Supplies
- Canine Supplies

## K9 Decon – General Equipment

- Box Container
- Waterproof tarp
- Industrial plastic bags
- Hose
- Spray nozzle, wand
- Buckets
- Water heater
- Pools
- Shelving
- Shallow pan

## K9 Decon - Human PPE Equipment

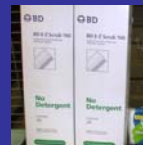
- Eye protection - goggles
- Gloves - nitrile, polyvinyl, +/- overglove
- Masks - particulate
- Tyvek suits or situation equivalent
- Rubber boots - knee length, overboots

## K9 Decontamination Supplies

- Absorbent Item - baking soda, cornstarch
- Liquid Soap - dish soap; Prell®
- Dog Shampoo - reestablish coat
- Mineral Oil - dissolve petroleum-based
- Spray bottle - easier min oil application

## K9 Decontamination Supplies

- Scrub brushes - BD E-X Scrub 160
- Eye rinse - saline, purified water
- Moist towelettes - baby wipes
- Large absorbent towels



## Canine Supplies

- Leashes - disposable, double for collar
- Fans - drying, prevent/treat heat stress
- Dryer - drying, prevent hypothermia
- Emergency blanket
- Scissors - use with caution
- Muzzles - nylon, basket



## References



- [www.usarveterinarygroup.org](http://www.usarveterinarygroup.org)
- [www.avma.org/avmacollections/disaster](http://www.avma.org/avmacollections/disaster)
- [www.aspca.org](http://www.aspca.org)
- Protection, Decontamination, and Medical Aid for K9 Teams (EAI Corp)
- US&R WMD Enhanced Ops (FEMA)

## Thank You



A dog can make you better  
Than you've ever been before  
You ask them for their all  
and then  
They give you so much more