Animal Monitoring and Decontamination
FEMA Radiological Emergency Preparedness Program
USDA Animal and Plant Health Inspection Service

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Why Is FEMA Concerned with Radiologically Contaminated Animals?
Some Recent History

Pets Evacuation and Transportation Act of 2006.
American Veterinary Medical Association Letter to the FEMA Administrator and the Administrator’s Response, 2014.
Federal Radiological Preparedness Coordinating Committee (FRPCC) Subcommittee on Animal Monitoring and Decontamination.
Radiological Emergency Plans Must Include Animal Monitoring and Decontamination

Service animals and pets must be monitored and decontaminated if necessary:

- Americans with Disabilities Act required provisions for service animals.
- The Pets Evacuation and Transportation Standards Act of 2006 requires FEMA to assure that plans take household pets and service animals into account.
- People will show up at monitoring, registration, and/or reception centers with pets and service animals, regardless of instructions and messaging.
Livestock and pet evacuation from the Fukushima Dai-ichi Exclusion Zone:

- Cattle permitted evacuation and/or slaughter if below 100,000 CPM.
- Pets required 10 times further reduction: 10,000 CPM.
- Hitachi Aloka TGS: 146 beta/gamma.
PETS ACT and Radiological Preparedness

The Problem:
PETS ACT and Radiological Preparedness

What Is a Pet?
PETS ACT and Radiological Preparedness

PETS:

- Domesticated animals such as dogs, cats, birds, rabbits, rodents, or turtles kept for companionship/pleasure (not commercial purposes) that can travel in commercial carriers and be housed in temporary facilities.

- Does not include reptiles (except turtles), amphibians, fish, insects/arachnids, farm animals, horses, and animals kept for racing or avian athletes.
PETS ACT and Radiological Preparedness

AVMA has requested pet, service, and working animals be included in the FEMA REP Program Manual. AVMA, DHS, FEMA, USDA, and HHS NDMS sponsor R&D programs for evacuation, decontamination, and sheltering of these animals.

Public Health Emergency Medical Countermeasure Enterprise (PHEMCE) Implementation Plan 2012 has been approached for sponsorship.
Radiological Emergency Plans Must Include Animal Monitoring and Decontamination.

In his response to the AVMA, the FEMA Administrator committed the REP Program to include guidance for household pets in upcoming revisions to the REP Program Manual and NUREG-0654/FEMA-REP-1.
Radiological Emergency Plans Must Include Animal Monitoring and Decontamination.

Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1) and the REP Program Manual now include additional language reinforcing the requirement to include consideration of service animals and household pets in radiological emergency plans.
Monitoring

FEMA is concerned with public protection. Monitoring standards for service animals and pets are assumed to be the same as that for members of the public for public protection.

Animals that cannot be monitored should be isolated to prevent contact with members of the public.

Animals found to be contaminated must be decontaminated or isolated to prevent contact with members of the public.
Through the FRPCC, the FEMA REP Program Has Turned to USDA APHIS

FRPCC Strategic Action Plan for Calendar Year (CY) 2015:

- Initiative #6: Increasing Capabilities in Animal Monitoring and Decontamination.
- Subcommittee Chaired by USDA APHIS VS Office of Science and Interagency Coordination.
FRPCC Subcommittee for Monitoring and Decontamination of Animals

Goals and Objectives:

- Establish scientifically validated methodologies for the internal and external radiological decontamination of animals.
- Develop appropriate training for the response community in evacuation and decontamination of animals.
- Develop radioisotope surrogates for external decontamination training.
Pet Evacuation: How Many Pets ??

National average: For every 1000 households.
2600 people.
1559 household pets: 1378 (AVMA) 1671 (APPA).
All figures vary with community demographics.
Quick method: Number of people x 0.6.
Pet Evacuation

Follow instructions from Joint Information Center (Via EAS, police, or Extension Agent, from IC).
Follow prescribed routes.
Bring photographs of you and your pets.
Pet Evacuation

Bring sufficient food and water for at least 1 week.
Bring all medications, records, contact info for veterinarian, and pet-friendly shelters.
Bring cages, muzzles, leashes, and other restraints as necessary.
Pet Decontamination
Mass EVAC: IND/RDD

Estimate 1,000 people per hour through Reception Centers.
Estimate 650 pets per hour for monitoring and decontamination.
Pet Decontamination

What’s wrong with this picture?  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC372253/

Not enough veterinary resources for anesthesia and subsequent antidote.  
Cats kept in carriers.  
Dried en masse with industrial heaters.
Monitoring

Decontamination: Dependent on characteristics of the deposition.

How clean is clean enough?

Advisory Team PAR would likely be a "One Health" statement:

10 CFR 20.1301: "Dose in any unrestricted area from external sources does not exceed 0.02 mSv (0.002 rem) in any one hour."

With ALARA Recommendations.
Therapeutic Countermeasures

Food and Drug Administration (FDA) regulates veterinary medicines through their Center for Veterinary medicines (CVM).

FDA CVM will not authorize the use of radiotherapeutic interventions (such as Prussian Blue) for animals. Public perceives that livestock might be treated and returned to service.
Therapeutic Countermeasures

CVM allows veterinarians to prescribe human pharmaceuticals for animals: limited supply, expensive, and dose rates unknown.

CVM can “wave a wand” and authorize the use of radioprotective products for animals, but dose rates are unknown.
Therapeutic Countermeasures

CBRN Nonclinical Studies/BARDA Animal Models Program are all irradiation studies except one: pediatric Radiogardase. Minipigs, ingestion, but still farm animals: multitude of IAEA/FAO post-Chernobyl studies. One rat ingestion study.
Current Proposals: External Decontamination: Texas A & M Proposal for product (*Environmental 1*) efficacy proof of concept:

- Hydro and lipo-philicity.
- EPA Environmental Friendly list.
- Removes Bakkan crude oil, but “may cause a rash” on skin in concentration.
- Test with a array of anticipated nuclides with differing physiochemical characteristics.
- Comparative study with Dawn dish soap.
FRPCC Subcommittee on Monitoring and Decontamination of Animals

Current Proposals: External Decontamination: University of Florida for decontamination methodologies efficacy proof of concept:

- Tc 99m, 100% gamma emitter with very short half-life.
- Test an array of methodologies: dry tape roller, wet/dry vacuum, deluge water, spot removal with “Dawn” and intense scrubbing, and clippers.
- Previous work with cadavers.
- All permits in place for use of live animals.
FRPCC Subcommittee on Monitoring and Decontamination of Animals

Current Proposals: Internal Decontamination: Oregon State University: Develop radiological screening and internal decontamination procedure for pets, service, and working animals:

- Decontamination and/or decorporation strategies.
- Uptake, retention, biokinetics, and bioelimination of selected radionuclides.
- Detection methods, detection limits, and associated body burdens.
- Dose rates to humans from animals with internal contamination and their effluent.
Current Proposals: Internal Decontamination: Dose rates to humans from animals with internal contamination and their effluent:

- Unlikely to be sufficiently internally contaminated to be a persistent threat to owners, clients, or handlers.
- Owners/clients/handlers may refuse repatriation until animal is “clean.”
- NRSC/APHIS Animal Care estimate sheltering cost of $125/animal/day.
- 10 CFR 20.1301 Scientifically validated acceptable level, national standard, deterrent to litigation.
Next Steps

Next Steps

Questions?

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