Radiological Preparedness Activities

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National Center for Animal Health Emergency Management
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Safeguarding Animal Health
NCAHEM Radiological Preparedness

• USDA Responsibilities in Radiological Emergencies.

• NCAHEM, Radiological Program Analyst Position Description.

• Radiological Emergency Preparedness in the Animal Sector.

• **Fukushima** Emergency Response Issues, NCAHEM Involvement in Japan’s Agricultural Recovery, and Lessons Learned.

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USDA Responsibilities: Nuke-RAD Incident Annex to the NRF:

- **Assists** in the planning and collection of agricultural samples
- **Assesses** damage to crops, soil, livestock, poultry, and processing facilities
- Inspects and **assists** in the disposition of agricultural animals and monitors the production, processing and storage of their products
- Provides **support** and **advice** on screening and decontamination of contaminated animals

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USDA Responsibilities: Nuke-RAD Incident Annex to the NRF:

- Provides support and advice on screening and decontamination of pets, companion animals and livestock
- Assists in the planning for, and disposition of, animal carcasses

Safeguarding Animal Health
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USDA Responsibilities: Nuke-RAD Incident Annex to the NRF:

“This document describes the general Federal roles and responsibilities for decontamination and disposal in response to animal, crop, and food incidents.”

“Radiological incidents are not addressed.”*

- **Assists** in the planning for, and disposition of, animal carcasses

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USDA’s Preparedness Challenges

- 104 Nuclear Power Reactors
- Many in concentrated agricultural production zones
- Location avoids the New Madrid liquefaction zone
USDA’s Preparedness Challenges

- Radiological surveillance for contaminated or irradiated animals/crops/feeds
- Radiological decontamination for livestock/poultry/pets/zoo animals/wildlife
- Therapeutic countermeasures to mitigate the effects of radionuclide contaminants ingested by animals/Euthanasia strategies if necessitated
- Remediation strategies for soils and crops contaminated by radionuclides
Radiological Program Analyst

• Position created by National Center for Animal Health Emergency Management to meet USDA Radiological Preparedness and Response Challenges

POSITION DESCRIPTION: To develop robust and practicable strategies for maintaining agricultural production and a safe food supply following a purposeful or accidental nuclear or radiological release.
Radiological Program Analyst

- Develops Radiological surveillance strategies and capabilities for contaminated or irradiated animals/crops/feeds
Radiological Program Analyst

- Collaborates with Animal Care on tactics for decontamination of livestock, poultry, pets, service animals, zoo animals, and wildlife
- Researches Therapeutic countermeasures to mitigate contaminants ingested by animals
Radiological Program Analyst

- Develops *remediation strategies* for animals, crops and soils contaminated by radionuclides
- Collaborates with relevant agencies on strategies for *euthanasia and carcass disposal* for injured, abandoned or excessively contaminated animals
- Advises of development of *disposal strategies* for radiologically contaminated feeds/crops/FSIS regulated products
Radiological Program Analyst

- Provides **Subject Matter Expertise**, support, and Protective Action Recommendations to federal, state, local, and tribal emergency responders during radiological response exercises and real events (DOE/NRC/FEMA IPX, IFAW mission)
- Maintains communication, liaison with, and membership in, national and international radiological emergency preparedness and response organizations (IAEA, HPS, EDEN)
Radiological Program Analyst

• Participates in, and provides guidance for, the development of radiological exercises to enhance radiological emergency preparedness in the agricultural sector.
Radiological Program Analyst

- Maintains membership in the Radiological Advisory Team for Environment Food and Health, the active arm of the FRPCC Subcommittee on Environment Food and Health.
Advisory Team Duties Overview

The Advisory Team works with the Department of Energy Federal Radiological Monitoring and Assessment Center to provide recommendations concerning:

- Environmental assessments
- Protective Action Guides and their application
- Protective Action Recommendations
- Use of radioprotective substances (K-I)
- Recommendations for minimizing losses of agricultural resources
- Based on coordinated technical and scientific advice, and best practices

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Advisory Team Duties Overview

The Advisory Team works with the Department of Energy Federal Radiological Monitoring and Assessment Center to provide recommendations concerning:

- Minimizing radiation exposure from deposition and through the ingestion pathway
- Regarding the disposition of contaminated livestock, pets, poultry, and foods
The Great Tohoku Earthquake and Fukushima Dai-ichi Nuclear Power Plant Disaster

Safeguarding Animal Health
Fukushima Dai-ichi Nuclear Power Plant Disaster

The 2011 off the Pacific coast of Tohoku Earthquake and the seismic damage to the NPPs

Kazuo SAKAI (National Institute of Radiological Sciences)  
And  
Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan  
CRPPH-69 (17th – 19th May, 2011)

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Fukushima Dai-ichi Nuclear Power Plant Disaster

- Occurred 14:46 March 11, 2011
- Magnitude: 9.0 Mw
- Epicenter location: 38° 6” N and 142° 51” E, and 24km in depth
- It is said that the height of tsunami attacked Fukushima Dai-ichi was more than 14m

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Fukushima Dai-ichi Nuclear Power Plant Disaster

Note:
- All operating units when earthquake occurred were automatically shut down safely.
- Emergency D/Gs have worked properly until the Tsunami attack.

① Loss of offsite power due to the earthquake

Tsunami (estimated more than 10m)

Seawater level

Seawater Pump

Elevation: about 10m

D/G

Grid Line

Turbine Building

Reactor Building

D/G Inoperable due to Tsunami flood

Station Black Out

All Motor Operated pumps (including ECCS pumps) became inoperable

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Fukushima Dai-ichi Nuclear Power Plant Disaster

- 47 foot tsunami overwhelms the protective barrier
- Emergency Diesel Generators flooded
- Reactors and spent fuel pools now have inadequate coolant (water supply)
- Cores begin to heat.
- Zirconium fuel cladding overheats giving off hydrogen.
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Fukushima Dai-ichi Nuclear Power Plant Disaster

Situation Report: Animals abandoned in the 20 Kilometer Exclusion Zone:
120 Farms:
• 870 Dairy Cattle
• 2,500 Beef Cattle (¥1,000,000 @) : Iitate-gyu and Fukushima-gyu
• 30,000 Swine
• 630,000 Chickens
Fukushima Dai-ichi Nuclear Power Plant Disaster

Safeguarding Animal Health
International Fund for Animal Welfare Mission

- Ministry of Environment
- Wildlife Rehabilitation
- Academia
- Agriculture
- Animal Welfare
- Toxicology
- Radiology
- Civil Defense

Safeguarding Animal Health
Government of Japan launches animal evacuation operation in Fukushima

13 May 2011

(Yarmouth Port, MA) - A day after receiving a detailed report that included protocols to safely monitor, evacuate and treat animals contaminated by radiation, the Government of Japan launched an operation to remove abandoned animals from inside the 20km evacuation zone in Fukushima Prefecture. The report was the result of an International Fund for Animal Welfare (IFAW- http://www.ifaw.org/) led summit that convened subject matter experts in Tokyo earlier this month to find ways to rescue the animals that were left behind. The Japanese Ministry of Environment and Ministry of Agriculture, Forestry and Fisheries (MAFF) participated in the summit as observers.
I.F.A.W. Mission

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I.F.A.W. Mission

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Fukushima Dai-ichi Nuclear Power Plant Disaster

National Diet of Japan, Report of the Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) 7/5/2012:

- Government had no response measures for a severe accident in place
- Power company did not have emergency response plan and had no manual or training regimens
Japan Moves Forward

Emergency Symposium on Crisis Management in Japan: Adopting Incident Command System

• Organized by Rhisso University in cooperation with members of the Government of Japan, House of Representatives
Japan Moves Forward

The International Science Symposium on Combating Radionuclide Contamination in Agro-soil Environment:

• Post-Chernobyl radioecology researchers from Ukraine, Belarus, Russia, Kazakhstan and Germany

• Japanese researchers and technologists developing procedures for decontaminating soils and agricultural products
QUESTIONS?

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