USDA Response to FMD

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Foot & Mouth Disease

- Background
- FMD Characteristics
- Threat
- Detection
- Prevention
- Response
- Disposal Techniques
- Other Threats
- Questions?

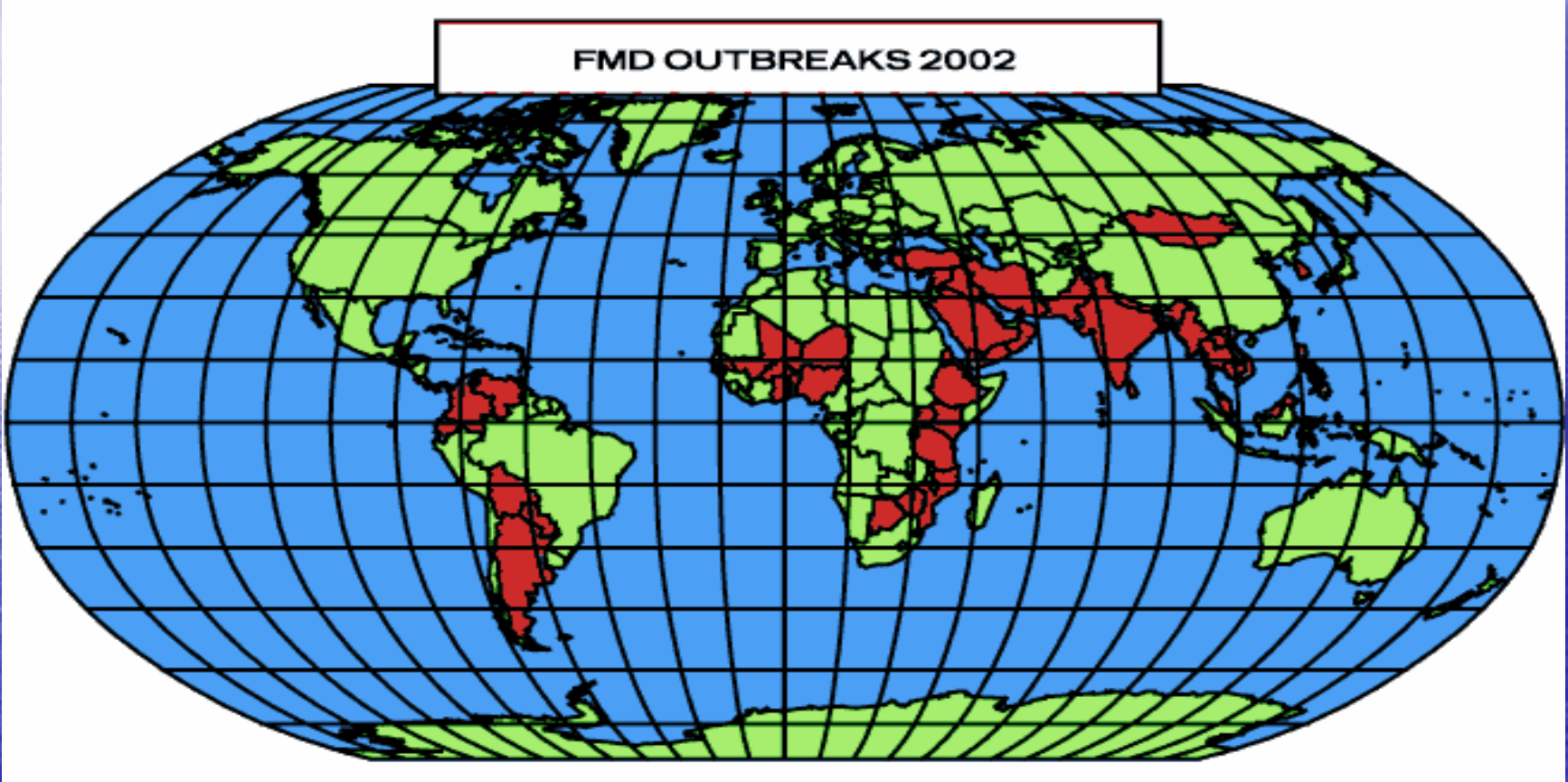
What is FMD

- Synonymous with Hoof & Mouth Disease
- Prevalent in cows, pigs, sheep
- Also effects goats, deer, cloven-hoofed ruminants (cud chewers)
- Highly contagious viral infection 100% morbidity -- 1% mortality
- Not considered zoonotic (animal to human transmission)
- Ulcerous

Symptoms

- Painful mouth, nose, hoof/foot ulcers/erosions
- Lethargy, drooling, lactation reduction
- Not life threatening
- 1-8 incubation/usually 3 days
- Persists up to a month in the environment
- Persists in carcasses until rigor sets in
- pH sensitive outside of range 6.5-11
- Deactivated above 122° F

Prevalence



Threat

- Impacts Agricultural Production
- Multi-billion dollar in loss and disposal costs
- Economic impact
- Estimate of 10% loss on US Agriculture if outbreak here
- Last US outbreak 1929

Economic Losses

- Culling populations that are infected
- Culling for economic/humane reasons
- Ring population control – culling adjacent herds
- Quarantines
- Embargoes
- Consumer reaction

Transmission

- Airborne transmission – Inhalation pathway of droplets
- Domestic livestock susceptible due to close living conditions
- Human carrier to animals from infected herds on clothing, shoes, equipment, by-products
- Can persist in the environment for short periods of time up to 3 months in the right conditions

Sources of Virus

- Incubating/clinically infected animals
- Breath, body fluids,
- Meat, meat by-products where pH has remained above 6.0
- Infected populations that survived outbreak

Detection

- USDA Animal & Plant Health Inspection Service
- Veterinary Services
- National Animal Health Surveillance System
- National Animal Health Emergency Management System
- Emergency Management Response System
- ICS based responses

Detection

- Surveillance domestic/foreign
- Reporting of outbreaks
- Monitoring

Methodology

- Standard viral protocols
- Laboratory Tests
  - Initial diagnosis
    - Virus isolation and identification
  - Antigen or nucleic acid detection
  - Complement fixation
  - ELISA and virus neutralization

Prevention

- Detection
- Protection of FMD-free zones
- Quarantine
- Decontamination/disinfection
- Depopulation
- Carcass/contaminated material Disposal

Response

- Similar to CERCLA/NCP thought process
- Preference for on-site treatment and disposal
- Follows established protocols
- Collaborative decision making process

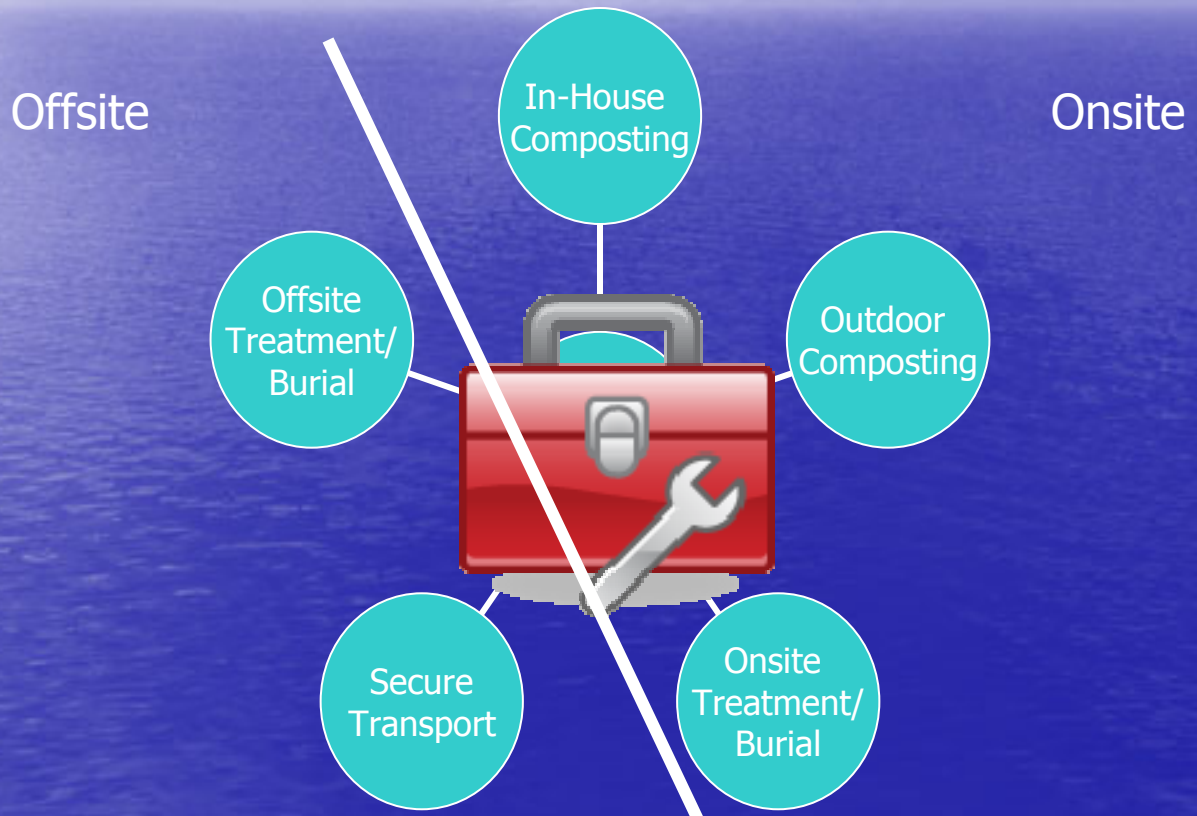
Process

- Confirmation of outbreak (APHIS/EM & VS)
- Notification of APHIS Emergency OpCenter – Riverdale MD
- Incident Command Group
- Carcass Disposal Working Group

Decision Tree

- Control outbreak spread
- Minimize adverse environmental impacts
- Applicable to various locations
- Minimize need for resources (funding, labor, chemicals, utilities, fuel)
- Minimize economic consequences

Tool Box Approach



Disposal Options

Disposal Option	Controls Spread of Pathogen	Applicable to Various Locations	Minimizes Inputs (capital, labor, energy, chemicals)	Minimizes Environmental Impacts
On-Site Burial	Yes	Yes	Yes	No
Landfill	Yes	Yes	No	Somewhat
Incineration	Yes	Yes	No	No
Composting	Yes	Yes	Yes	Yes
Lactic Acid Fermentation	Yes	No	No	Potentially
Alkaline Hydrolysis	Yes	Yes	No	Somewhat
Anaerobic Digestion	Yes	No	No	Potentially
Preprocess Onsite and Transport	Potentially	Yes	Somewhat	Potentially

Onsite vs. Offsite

- Confines outbreak
- Protects neighboring farms
- Economical
- Less decontamination
- Protects infection due to transportation through FMD-free zones
- Common Agricultural practice

Tools

- EPA Disaster Debris Management & Disposal Decision Support Tools
  - Agricultural Biomass Disposal Guidance
- NRCS Web Soil Survey – landfill siting
- USDA Training Modules

Toolbox Training Modules (HPAI)

- In-House Composting training module (available)
- Outdoor Composting training module (available)
- Secure Transport training module (available)
- Off-site Treatment/Disposal training module (under review)

Toolbox (cont.)

- On-site Treatment/Disposal training module (in progress)
- Cleaning and Disinfection training module (in progress)
- Depopulation training module (future)
- On-line Disposal Support Tool (available/in progress)
- Health and Safety Plan Template (available)
- HPAI Worker Protection Guidance (available)

Other Threats

- Exotic New Castle
- Brucellosis
- Bovine Spongiform Encephalopathy (BSE)
- High Path H5N1 Avian Flu
- Anthrax
- Plant diseases

Contact Information

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Questions?