



## Diagnostic Sampling

Collection, Packaging, Shipping Overview



# SAMPLE COLLECTION

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## Before You Begin

- Test specifications from laboratory
  - Samples needed, any special media
  - Temperature
- Gather all supplies
  - Pre-label specimen containers
- Gather PPE
  - Coveralls, footwear, gloves
  - Respirators, face shields

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## Labeling

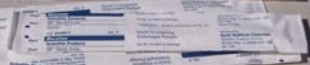

- Pencil, waterproof ink
  - Clear, legible
- Ability to trace sample
  - Animal, group, or premise identification
  - Sample type
    - Swab location
    - Tissue or organ
  - Date



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## Sample Types


- Whole blood or serum
  - Blood tube type
- Swabs
  - Culture
  - PCR
- Skin samples
- Tissues
  - Formalin
  - Refrigerated



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## Sample Collection & Handling


- From individual animals, not groups
- Prevent sample degradation
  - Selective or transport media
  - Ice packs or dry ice
  - Formalin
    - At least 1:10 ratio of sample:formalin



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### Sample Collection & Handling

- Prevent contamination
  - PPE
    - Disposable gloves
  - Disposable equipment
    - Needles, syringes, blades
  - Biosecurity
    - Disinfection



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### SAMPLE PACKAGING


### Prior to Shipping

- Samples must be packaged to withstand:
  - Shocks and vibrations
  - Pressure changes
  - Other conditions encountered during transport
    - Weather
    - Temperature
    - Rough handling

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### Packaging Basics

- Prevent breakage
  - Pad and protect from rough handling
- Prevent spills/leaks
  - Double waterproof barriers
  - Absorbent material
- Temperature
- Labeling
  - Potentially hazardous materials



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### Preventing Breakage and Spills

- Plastic versus glass containers
- Pad primary sample container(s)
- Primary watertight barrier
- Absorbent material
- Secondary watertight material
- Rigid outer material (box)
- Do not pack formalin in same box with non-formalin samples

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### Packaging



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## Temperature Requirements



- Whole blood: on ice
- Serum: ice or dry ice
- Swabs
  - Culture: ice
  - PCR: ambient
- Tissue samples
  - Fresh: ice or dry ice
  - Formalin fixed: ambient
- Maintain the cold chain



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## Ice, Dry Ice, and Formalin

- Ice
  - Arrival within 24 hours
  - Ice packs only
  - Protect samples from direct contact
- Dry ice
  - “Dry ice” label on box
  - Category A shipments
- Submission form in separate plastic bag

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## Sample Shipping



## Diagnostic Sample Shipping

- DOT hazardous material definition:
  - Any material that is capable of causing risk to health, safety, and property during transportation
- Includes infectious substances
- Regulated by DOT Hazardous Materials Regulations (HMR)
  - Section 49 Code of Federal Regulations

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## Sample Shipping

- Shipping category
  - Category A: Infectious substances,
    - Affecting animals only: UN 2900
      - African swine fever virus, Foot and mouth disease virus
    - Affecting humans: UN 2814
      - *Bacillus anthracis*, *Brucella melitensis*
    - Declaration of dangerous goods
  - Category B: Biological Material
    - UN 3373

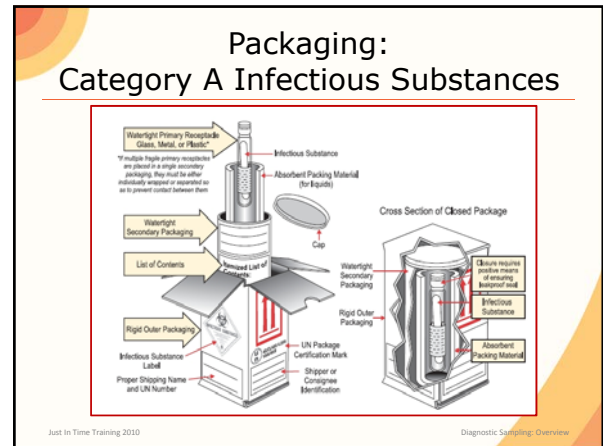
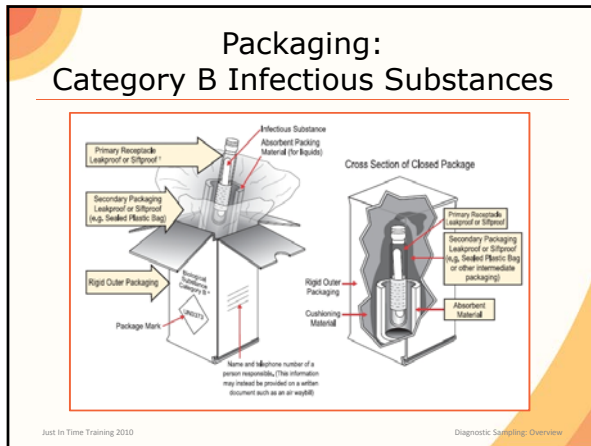
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## UN Package Certification Mark





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### Quantity Limitations

	Passenger aircraft/rail	Cargo aircraft
Category A Infectious substances, affecting humans (UN 2814) or animals (UN 2900)	50 ml or 50 g	4 L or 4 kg
Category B	4 L or 4 kg	4 L or 4 kg

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### USDA-APHIS NVSL

**NVSL-Ames**

- USDA-APHIS-NVSL  
1920 Dayton  
Avenue  
Ames, IA 50010
- 515-337-7266

**NVSL-FADDL-NY  
Plum Island**

- USDA-APHIS-FADDL  
40550 Route 25  
Orient, NY 11957
- 631-323-3256

[www.aphis.usda.gov/animal\\_health\\_lab\\_info\\_services/](http://www.aphis.usda.gov/animal_health_lab_info_services/)

National Animal Health Laboratory Network (NAHLN) and  
USDA-APHIS approved laboratories

[http://www.aphis.usda.gov/animal\\_health/nahln/labs.shtml](http://www.aphis.usda.gov/animal_health/nahln/labs.shtml)

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- ### USDA-APHIS NVSL Diagnostic Sample Prioritization
- Priority 1: High Suspicion
    - Highly likely a FAD or EDI
    - Call before submitting
  - Priority 2: Intermediate Suspicion
    - Possible
  - Priority 3: Low Suspicion
    - Unlikely
  - Priority A: Animals in commerce being held pending results
    - Call before submitting
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- ### Carriers
- Not all carriers will ship biological materials
    - Carriers must have security plan when shipping certain agents
      - Subpart I of Part 172 of the HMR
    - Chose carrier that allows tracking
    - Ensure proper equipment/vehicles
  - Prompt and reliable delivery is key
    - Security
    - Sample viability
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## Resources

- USDA-APHIS
  - USDA-APHIS National Veterinary Services Laboratories
    - [http://www.aphis.usda.gov/animal\\_health/lab\\_info\\_services/](http://www.aphis.usda.gov/animal_health/lab_info_services/)
  - USDA-APHIS VS Memorandum No. 580.4: Procedures for the Investigation of Potential Foreign Animal Disease/Emerging Disease Incidents(FAD/EDI)
    - [http://www.aphis.usda.gov/animal\\_health/lab\\_info\\_services/downloads/VS\\_Memo580\\_4.pdf](http://www.aphis.usda.gov/animal_health/lab_info_services/downloads/VS_Memo580_4.pdf)
- Department of Transportation
  - 49 CFR 172: Pipeline and Hazardous Materials Safety Administration, Department of Transportation – Hazardous Materials Regulations.
    - [http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfr172\\_main\\_02.tpl](http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title49/49cfr172_main_02.tpl)
  - Transporting Infectious Substances Safely
    - [http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Transporting\\_Infectious\\_Substances\\_brochure.pdf](http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Transporting_Infectious_Substances_brochure.pdf)

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