Agenda

• Introductions
• Background
• Objectives
• Swab Collection Procedure
• Sponge Collection Procedure
• Sample Decontamination
• Sample Shipment
• Exercise
• Debrief
• Evaluation
• Adjournment
Why Do Anthrax Surface Sampling?

• Confirm or identify contamination
• Assess extent of contamination
• Determine risk for human exposure
• Inform medical treatment
• Guide decontamination
These sampling procedures were prepared by the Centers for Disease Control and Prevention (CDC) to

- Standardize collection procedures
- Ensure samples can be analyzed
- Obtain comparable results
Background

These procedures are meant to be used on smooth, nonporous surfaces:

- Stainless steel
- Painted wallboard
- Floor tiles
- Wood laminate
Sampling Plan

• Collection should be part of a sampling plan including
  – Objectives
  – Approach
  – Analytical and laboratory coordination
  – Handling, packaging, and transport
  – Interpretation of results
Health and Safety Plan

• Follow a health and safety plan for protection during sampling:
  – Personal protective equipment (PPE)
  – Medical countermeasures (antibiotics and vaccinations)
  – Decontamination procedures for both responders and samples
Health and Safety Plan

- Recommendations on protecting yourself from getting sick can be found on the NIOSH website at [www.cdc.gov/niosh/topics/anthrax/workers.html](http://www.cdc.gov/niosh/topics/anthrax/workers.html)
Sampling Team

• At least 2 people
• At least 1 sampler and 1 assistant
• Minimizes chance of cross-contamination
Sampling Team

• Decide who will sample, who will assist
• *Do not change roles during sampling*
• Assistant handles all supplies
• Sampler touches supplies only as assistant hands them over
• Minimize contact with potentially contaminated surfaces
Sampling Team

• Remember that all surfaces in the sampling area could be contaminated
• Bring a clean working surface such as
  – Disposable towel
  – Portable cart
  – 5-gallon buckets
• Take only the supplies that you need
Training Outcomes

You will...

• Observe macrofoam swab and cellulose sponge sampling
• Observe decontamination of samples
• Learn what material is required for sampling and decontamination
• Access sampling and decontamination procedures, as well as dangerous-goods regulations
• Demonstrate knowledge of sample collection, decontamination, and methods to limiting cross-contamination
HOW TO SAMPLE WITH
Macrofoam Swab
ON NONPOROUS SURFACES
Appropriate Circumstances

Small surfaces equal to or less than 4 square inches

- Supply air diffusers
- Air-return grills
- Keyboards/computer fans
- Hard-to-reach places
- Crevices
- Corners
Supplies Needed, in Addition to PPE

- Gloves
- Template
- Disposable Ruler
- Tape
- Macrofoam Swab
- Buffer
- Screw-cap tube
- Paraffin film
- Resealable Plastic Bag
- Permanent Marker

See [www.cdc.gov/niosh/topics/emres/surface-sampling-bacillus-anthracis.html](http://www.cdc.gov/niosh/topics/emres/surface-sampling-bacillus-anthracis.html) for specifications.
Step 1

• Sampler and assistant put on new gloves

• Gloves go on top of normal PPE to prevent contamination of sample
Step 1, continued

- Sampler puts 2 x 2-inch template over sampling area
- Or measures out an area 4 square inches or less
Step 2

- The assistant opens the swab package without touching the swab or its handle.
- The sampler removes the swab from the package by grasping only the swab handle.
- When handling the swab, do not touch below the thumb stop.
Step 2, continued

- Sampler dips swab (if not premoistened) into tube of neutralizing buffer solution
- Assistant opens and holds tube for sampler
- Sampler presses swab against inside of container to remove excess
- Throw away any leftover buffer and tube; do not use for next sample
Steps 3, 4, and 5

• Sampler makes 3 passes over sampling surface: horizontal, vertical, and diagonal

• A rolling motion will maximize swab contact with surface
Step 3: Horizontal Pass

- Place side of swab on surface with gentle but firm pressure to ensure direct contact.
- Use an overlapping ‘S’ pattern to cover entire surface with horizontal strokes.
Step 4: Vertical Pass

- Rotate swab and cover area again, with *vertical* ‘S’ strokes
- Strokes will be at 90° angle to first ones
Step 5: Diagonal Pass

- Rotate swab once more and cover area again, with diagonal ‘S’ strokes
- Strokes will be at 45° angle to first ones
Step 6

- Place swab into screw-cap tube
  - Assistant opens and holds tube
  - Sampler breaks off head of swab by bending handle at scoring
  - Do not insert handle beyond thumb stop
Step 6, continued

- **Assistant** caps and labels tube:
  - unique identifier
  - sample location
  - initials of collector
  - date and time
Step 6, continued

- Assistant wraps tube with paraffin film to prevent leakage during shipment
Step 7

• Assistant places sample into resealable bag
• Assistant seals and labels the bag with same information as on tube
• Check that the bag is watertight for decontamination
Steps 8

• Leave template in place after sampling
• Sampler and assistant remove outer gloves and discard
• Use new template and gloves for each sample
HOW TO SAMPLE WITH Cellulose Sponge ON NONPOROUS SURFACES
Appropriate Circumstances

Areas of 100 square inches or less

- Countertops or tabletops
- Floor tiles
- Walls
Supplies Needed, in Addition to PPE

- Gloves
- Template
- Disposable Ruler
- Tape
- Cellulose Sponge
- Buffer
- Screw-cap Specimen Container
- Paraffin Film
- Resealable Plastic Bag
- Permanent Marker

See [www.cdc.gov/niosh/topics/emres/surface-sampling-bacillus-anthracis.html](http://www.cdc.gov/niosh/topics/emres/surface-sampling-bacillus-anthracis.html) for specifications.
Step 1

• Sampler and assistant put on new gloves
• Gloves go on top of normal PPE to prevent contamination of sample
Step 1, continued

- Sampler puts 10 x 10-inch template over sampling area
- Or measures out an area 100 square inches or less
Step 2

- Assistant opens sponge package without touching sponge or handle
- Sampler removes sponge by grasping only handle
- Never touch below thumb stop
Step 2, continued

- Sampler holds sponge by handle, and assistant pours neutralizing buffer solution over it (if not premoistened)
- All 10 mL must be absorbed by sponge
- Discard solution container
Steps 3, 4, 5, and 6

• Sampler makes 4 passes over sampling surface: horizontal, vertical, diagonal, and perimeter of template
Step 3: Horizontal Pass

- Place sponge flat on surface with gentle but firm pressure to ensure full, direct contact.
- Using overlapping ‘S’ pattern, cover entire surface with *horizontal* strokes.
Step 4: Vertical Pass

- Turn sponge over and use wide part to wipe area again, with *vertical* ‘S’ strokes
- Strokes will be at 90° angle to first ones
Step 5: Diagonal Pass

- Using narrow side of sponge, wipe once more, with *diagonal ‘S’* strokes
- Strokes will be at 45° angle to first ones
Step 6: Perimeter Pass

- Using full width of sponge tip, wipe perimeter of sampling area once
Step 7

Place sponge into specimen container:

• Assistant opens and holds container
• Sampler breaks off head of sponge by bending handle at scoring
Step 7, continued

- Assistant caps and labels container:
  - unique identifier
  - sample location
  - initials of collector
  - date and time
Step 7, continued

- Assistant wraps container with paraffin film to prevent leakage during shipment
Step 8

- Assistant places sample into resealable bag
- Assistant seals and labels the bag with same information as on container
- Ensures bag is watertight for decontamination
Step 9

• Leave template in place after sampling
• Sampler and assistant remove outer gloves and discard
• Use new template and gloves for each sample
Bagging and Handling of Samples

Double-bag and seal

- For a group of samples: put into a second, larger resealable bag
- For a single sample: put into a second bag of same size
- Remove as much air as possible for shipping; bags cannot be opened once decontaminated
Decontamination Supplies

Household bleach, white vinegar, water, measuring device, container, and disposable paper towels
Step 1

Mix 1 part bleach with 5 parts water.
Step 2

Add 1 part white vinegar.
Step 3

Add 3 parts of additional water.
4. Submerge item to be decontaminated in the solution for 10 minutes.
5. Thoroughly dry the outside of the item.
HOW TO
Ship/Transport
SAMPLES
How to Ship Samples

• Coordinate shipment with the local Laboratory Response Network (LRN) lab
• Transport all samples to processing laboratory on ice or cold packs
• Samples should be processed within 48 hours of collection
Shipping Dangerous Goods

• Prepare and ship containers and documentation according to appropriate regulations (Division 6.2, Infectious substance)

• See these sources for regulations:
  – U.S. Department of Transportation
  – International Airline Transportation

• Adherence to current, appropriate regulations is your responsibility
Chain of Custody

• Follow chain-of-custody guidelines set by law enforcement and laboratory

• Place the chain-of-custody forms between the outer packaging and inner packaging

• Do not put chain-of-custody forms inside the inner packaging
Exercise
Exercise

• Demonstrate comprehensive application of anthrax surface sampling by macrofoam swab and cellulose sponge methods

• Use the checklists provided to assist you
Additional Resources

NIOSH has additional resources on anthrax, available at [www.cdc.gov/niosh/topics/anthrax/]:

- Overview of anthrax
- Recommendations for protecting workers
- Environmental sampling
- Past responses and investigations
- Other resources
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DHHS (NIOSH) Publication No. 2015-187

May 2015