



**Biological
Crime Scene Examination**

Crime Scene Investigation

Learning Objectives

- Recognize stages of crime scene response
- Demonstrate collection of evidence potentially containing, or contaminated with, biological material
- Identify where law enforcement and public health may need to interact
- Identify challenges associated with processing a contaminated crime scene

Overt vs. Covert Attack Considerations

Overt Attack

- ✓ Discovered by first responder or public
- ✓ Immediately initiates a police investigation
- ✓ Requires Public Health notification through pre-established contacts
- ✓ Requires response by CBRN trained personnel
- ✓ Police investigation initiates Crisis Management

Covert Attack

- ✓ Unannounced threat
- ✓ Identified through Public Health Network via victims
- ✓ Public Health notification initiates police investigation
- ✓ Public Health initiates Consequence Management
- ✓ Requires response by CBRN trained personnel
- ✓ Police investigation has epidemiological focus

Initial Procedures for Response

- Seek specialist assessment and advice if necessary
- Establish cordon at safe distance from incident site
- Secure the area prevent entry of unauthorised and unprotected people
- Establish the Hot, Warm and Cold zones
- Shut off the Air-conditioning systems- internal release
- Shut windows and doors
- Isolate all potentially exposed individuals to an area outside
- Decontaminate individuals using soap and water
- Record details of individuals exposed or present at time of incident

Establish appropriate staging area



Select Personal Protective Equipment



Level C

Level B

Types of Evidence

- Direct Evidence

- Documents, records, physical evidence, notes, computer data, videotapes, or other types of information that directly relate to the case.

- Trace Evidence

- Minute particles of matter that can be examined microscopically, physically and/or chemically

Evidence Collection Team

- Four person evidence collection team
 - Sampler (person who collects samples)
 - Assistant (person assisting the sampler)
 - Scribe / Photographer
 - Safety Officer
- Team should contain a minimum of 2 people

The same format can be used for crime scenes involving chemical and radiological contamination

Sample Collection

Scribe

- Photograph item in situ; document sample location
- Document sample

Sampler and assistant

- Can also perform the above tasks
- Collect samples in order of priority
- Over pack samples
- Collect other samples as necessary; avoid cross-contamination
- Carry samples out through decon
- Release appropriately, maintaining chain of custody





- Minimize time in the hot zone
- Avoid contact with liquids and powders
- Continually monitor the area
- Observe any other materials
- Always look for hazards and changes in conditions within the hot zone

Sampling Plan

- Gather information from the Recon Team
- Obtain specialists advice where needed
- Assign sampling team tasks
- Identify location for each sample on site map
- Select and identify method of collection and supplies
 - Laminated note sheets
 - Water proof camera
 - Carry basket
- Document process
- Time / outline elements of the entry plan



Establish clean area in the scene;
avoid walking through the clean
area

Screen for toxic chemicals and
radiological materials prior to
collection

Collect samples:

Solid

Liquid

Trace

Intelligence



Considerations for where to collect samples



- Obvious liquids, powders, trace evidence
- Air conditioning vents, filters, stains
- Horizontal surfaces where particles can settle

Examples of Sample Collection Devices



Scoops



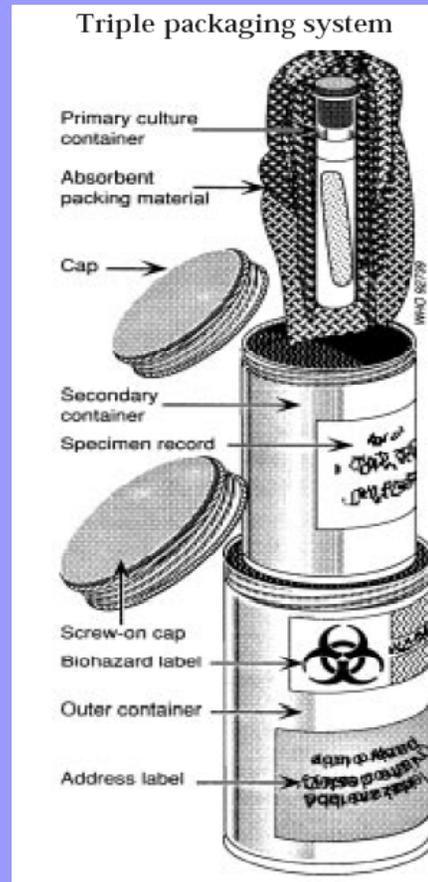
Over-packed centrifuge tube



swabs



Packaging and Transport



- All packages treated as “Dangerous Goods”
- Primary and secondary packaging must be leak proof and unbreakable
- Place over-packed items in a 5 L drum recommended
- Label with appropriate signage
- Regulations
 - IATA- Air transport
 - Dangerous Goods Code-Road



Over pack should be no bigger than 10L drum

Sample Decontamination

- Samples from potentially contaminated crime scene must be decontaminated
- The decontamination process requires personnel wearing the appropriate level of PPE
- Wash the exterior of the packaging with soap and water and place into a clean dry container for transport
- Transfer chain of custody to the appropriate personnel
 - Consider separate over packs if samples are to go to different laboratories for testing

Chain of Custody

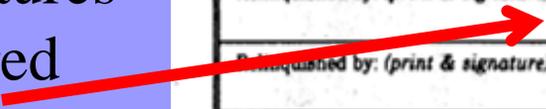
- The documentation that tracks the movement and location of evidence from collection to the time it is presented in court.
- Any unrecorded break in the chain of custody may cause the admission of the evidence to be denied or challenged.

CHAIN OF CUSTODY FORM

Investigator <i>(name, address, ph & fax nos.)</i> Contact person:					Sample matrix					Sample preservation				Analysis						
Site					WATER	SOIL	SLUDGE	OTHER (SPECIFY)	COMPOSITE	ICE	HNO ₃ /HCl	UNPRESERVED	OTHER (SPECIFY)							
Laboratory <i>(name, address, ph & fax nos.)</i> Contact person:																				
Courier <i>(name, address, ph & fax nos.)</i> Contact person:																				
Sample ID	Laboratory ID	Container	Sampling																	
			Date	Time																
Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.										Sampler name: <i>(print & signature)</i>					<i>(Date)</i>					
Relinquished by: <i>(print & signature)</i>				Date	Time	Received by: <i>(print & signature)</i>				Date	Time									
Relinquished by: <i>(print & signature)</i>				Date	Time	Received by: <i>(print & signature)</i>				Date	Time									
Relinquished by: <i>(print & signature)</i>				Date	Time	Received by: <i>(print & signature)</i>				Date	Time									

Example Chain of Custody Form

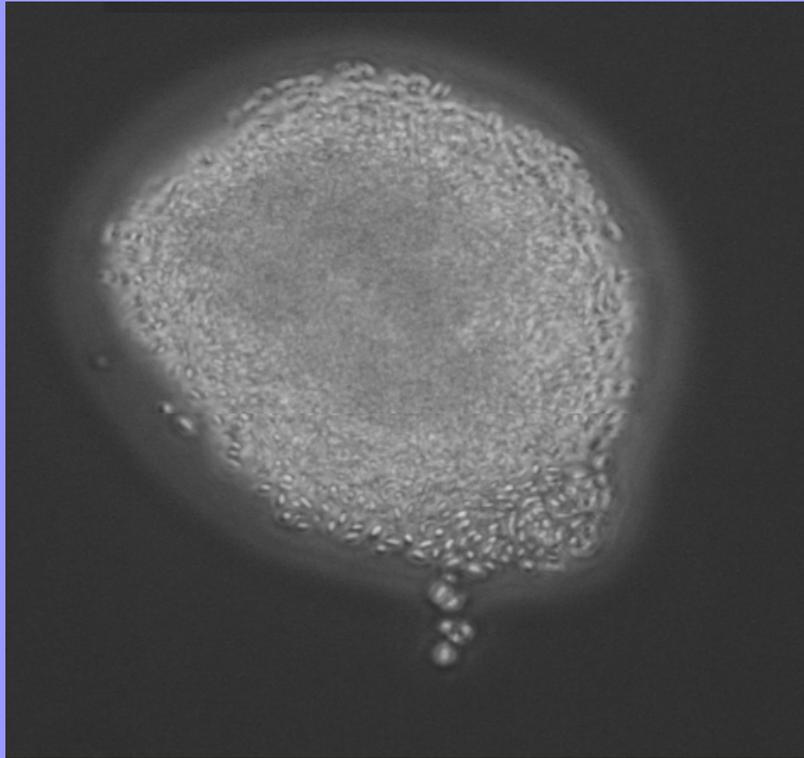
Signatures required



Considerations for Evidence Transfer

- A sample has been collected where does it go?
 - Determine the type of testing required
 - Identify the appropriate laboratory
 - Some labs can only do basic testing while others can conduct a full identification
 - Contact the laboratory prior to transport
 - Consider laboratory requirements to receive contaminated samples

Considerations for Investigation



Bacillus anthracis spore clump

- Agent
 - What is the agent?
 - From where could it have been obtained?
- Culture preparation
 - Level of expertise?
- Culture media and additives
 - Type of media
 - Flow agents
 - Dyes
 - Where would these be purchased?

Who are the players?

In your jurisdiction.....

- Who can provide advise on biological agents?
 - Public Health, military specialists, scientific?
- Who provides environmental screening for CBR materials?
 - Fire brigade, forensics, scientific staff , other?
- Who collects the samples for testing?
 - Forensics or scientific staff, fire brigade?
 - Are they properly trained to collect forensic samples?
- Who provides decontamination and safe packaging?