

A Tiered Approach to All-Hazards Laboratory Testing of Unknown Environmental Samples

Paul Moyer, MS

CT Response Coordinator

Minnesota Department of Health

Public Health Laboratory Division

Introduction

- ★ Why Is Unknown Sample Testing Important?
 - “Credible” Threats Exist
 - Surveillance

- ★ Why Is Testing at PHL Important?
 - Public Health Events
 - LRN Laboratories

Objectives

- ★ Describe a process for applying standardized procedures to non-standard events
- ★ Illustrate the significance of notification and threat assessment pieces (“Focus Areas” working together)
- ★ Discuss the advantages of a Bio/Chem/Rad tiered step analysis

Background

★ Anthrax 2001

- Specific Protocol
- Letters

★ Evolution to “All-Hazards” Approach

- Specific Guidelines
- Letters
- Leaking Packages
- Tainted Food/Water

Background

★ What the MDH plan “IS”

- A Starting Point – Guidance
- SOPs, Checklists, & Forms
- Safety First

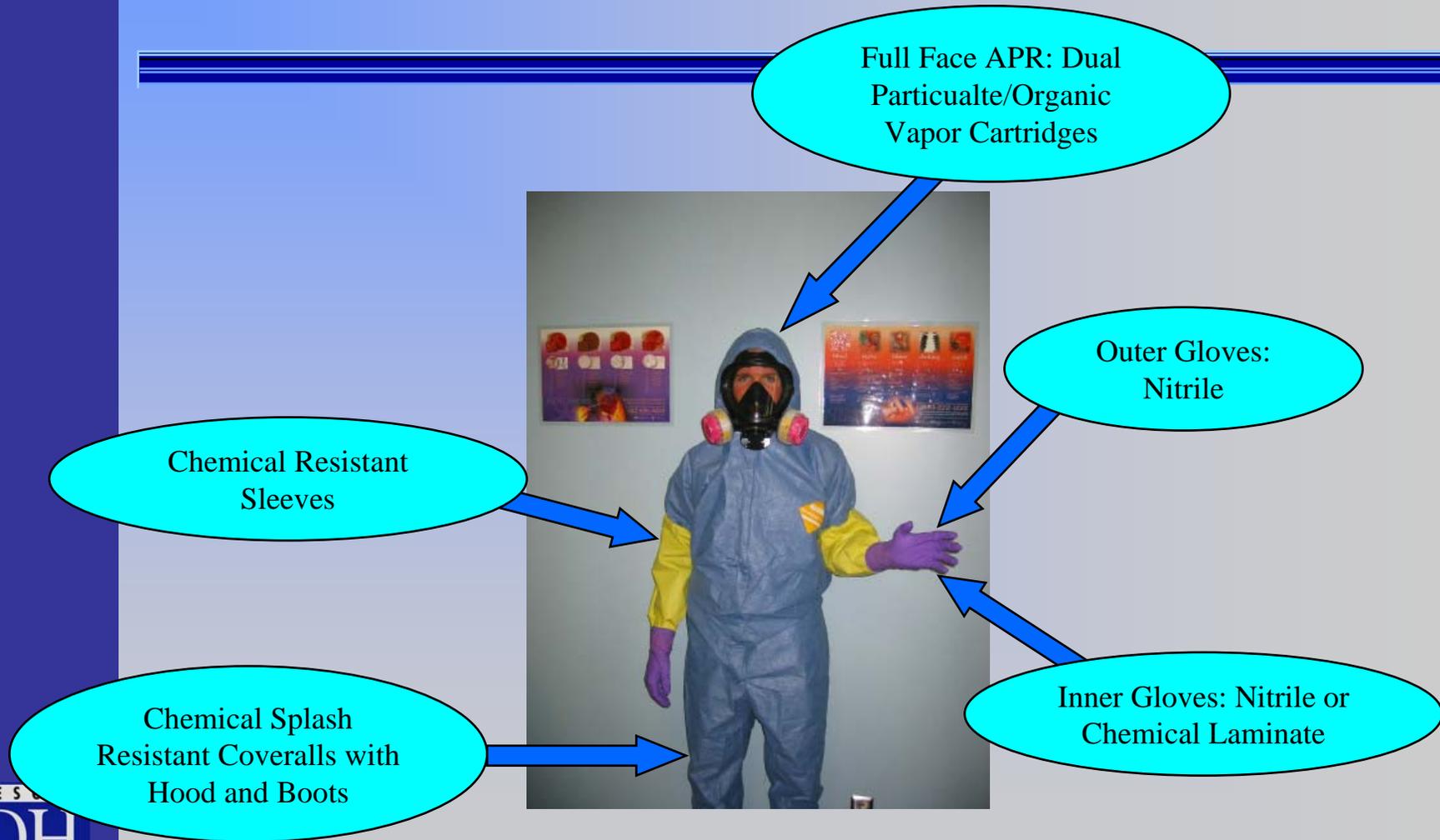
★ What the MDH plan “IS NOT”

- A “Rote” Protocol – Thinking IS Required
- A Lab Only Effort – Partners Crucial
- Rigid

Safety

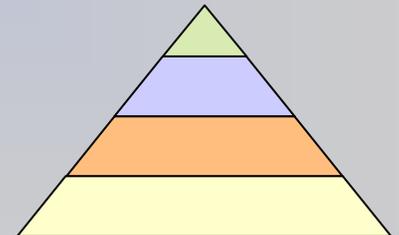
- ★ Lab Safety Officer – IH
- ★ BSL 3 Facility
- ★ Limited Quantities
- ★ Buddy + 1 System
- ★ PPE

Safety



What does “Tiered” Mean

- ★ Expandable System
- ★ Begins with Field Information/“Tests”
- ★ Minimum Testing – Tier 1
- ★ Can Include:
 - Scenario/Submitter Directed Testing
 - Tier 2 Testing
 - Minimum Plus Testing



Resource Management

- ★ Anthrax Only Testing – “Too Cold?”



- ★ All-Agent Testing – “Too Hot?”



- ★ Tiered Testing – “Just Right”?



Plan Strategy

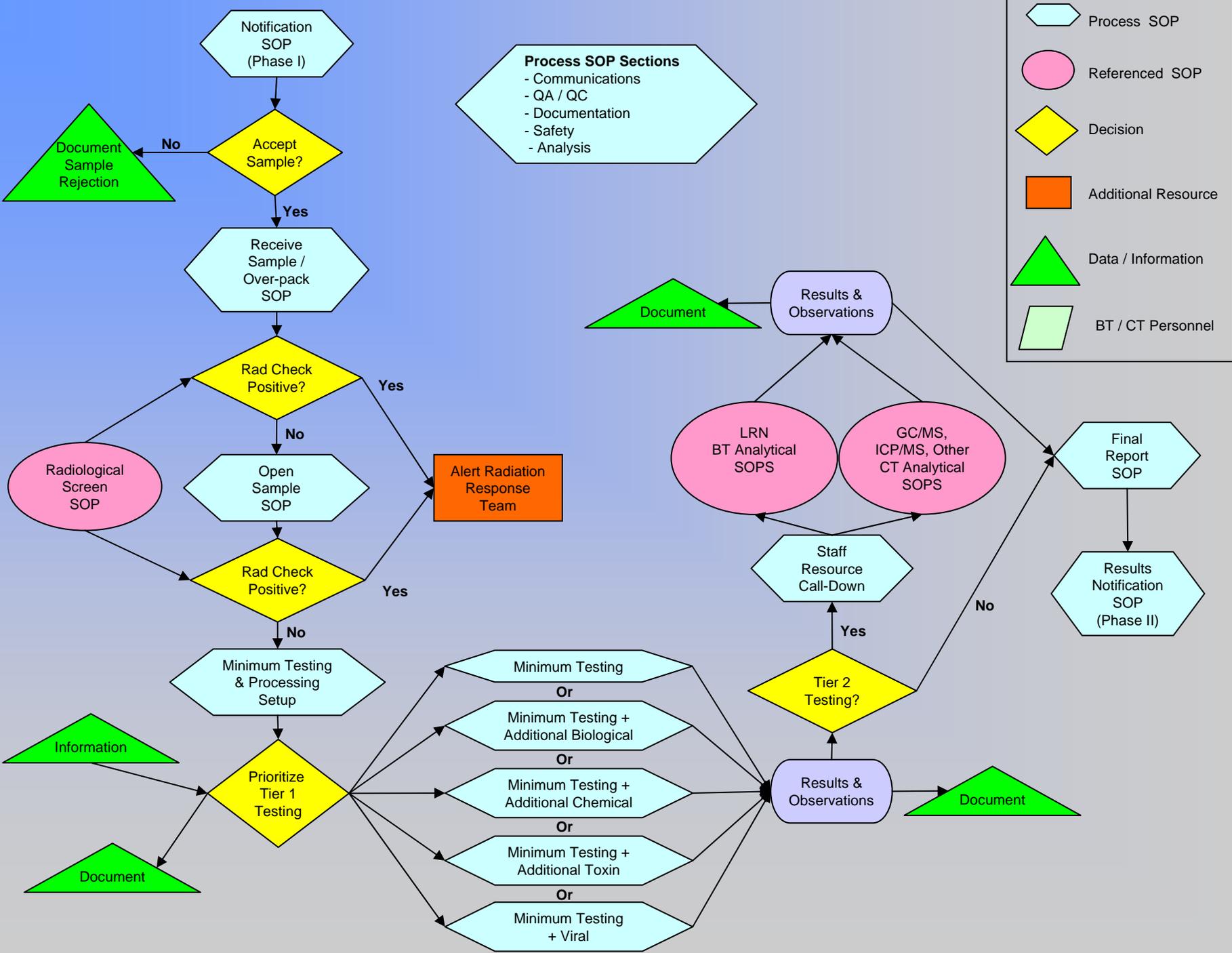
★ SOPs vs. SOGs

★ “Menu” of Tests/Procedures

★ Judgment – “What makes sense”

★ Here’s the “Road Map”





Plan Strategy

- ★ BT, CT & REP* Teams
- ★ On-Call Pairs (BT, CT-Rad)
- ★ Cross - Trained on:
 - Threat Assessment
 - Sample Receiving – Chain-of-Custody
 - Sample Opening – Processing
 - Communications

*Radiological Emergency Program

Screening: Chemical vs. Biological

★ Serial Analysis:

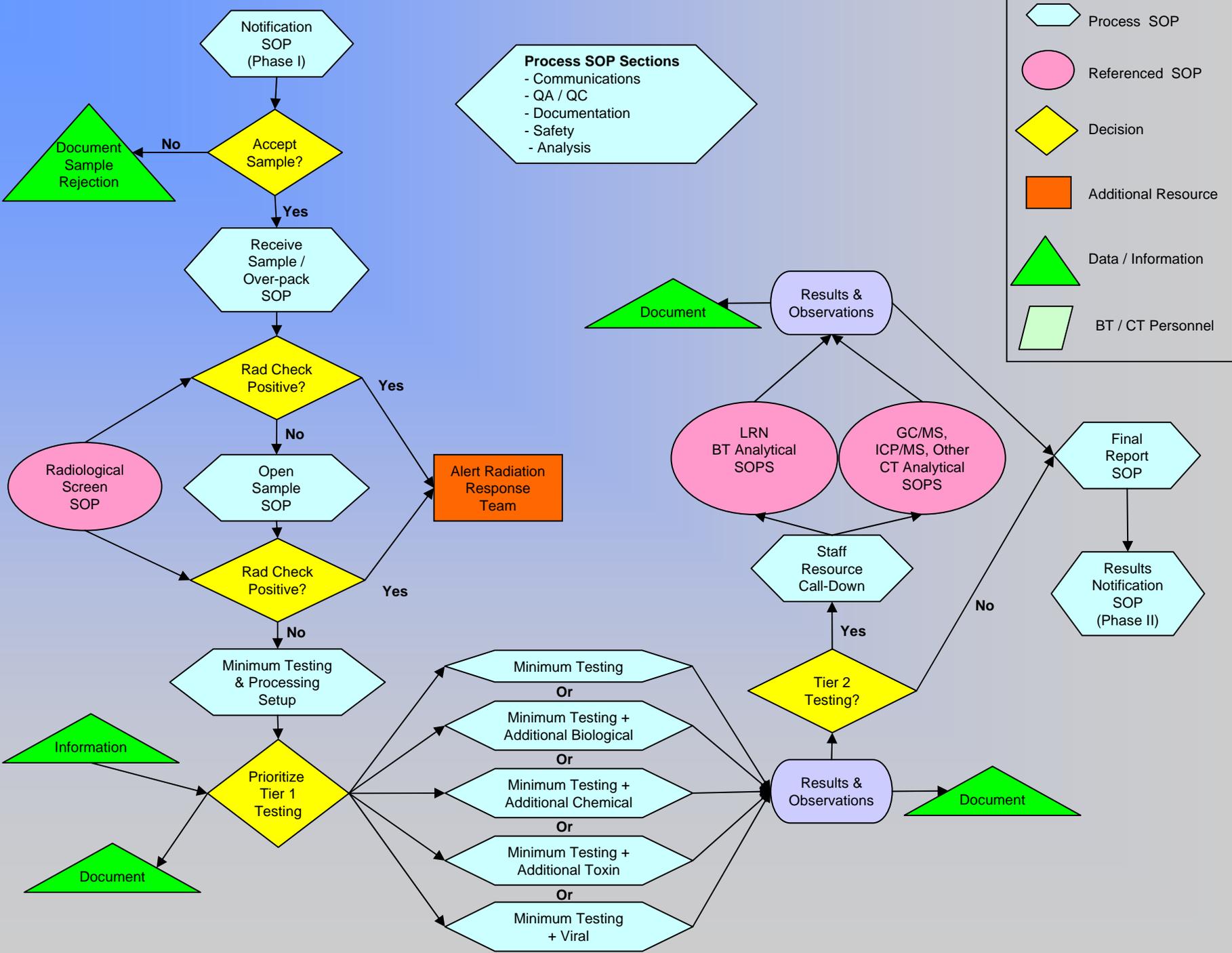
- Rule Out Chemical Agents
 - What about the Bio-Hazard?
- Rule Out Biological Agents
 - What about the Chemical Hazard?

★ Parallel Analysis:

- BT and CT-Rad Working Together
- Broader Perspective / Depth of Knowledge
- Use the Threat Assessment/Field Information

Testing: Is It Hazardous? (...and If Not, What Is It?)

- ★ ID and Confirm
- ★ Rule Out Hazardous:
 - Radioactivity
 - Chemicals
 - Biological Agents
- ★ What's Left?
- ★ Back to the “Map”



Key Pieces

- ★ Notification
- ★ Threat/Hazard Assessment
- ★ Action Plan – Scenario Specific
- ★ Minimum Testing – Tier 1
 - Radiological
 - Chemical
 - Biological
- ★ Advanced/LRN Testing – Tier 2

Notification

★ Incoming Request for Lab Analysis

★ Internal Notification(s)

– Hazard Assessment

- Response Coordinators (Focus Areas C & D)
- Unit Leaders

– Management FYI

- Director
- Section Managers



Notification

★ External Notification(s)

– Hazard Assessment

- MDH Epidemiology (Focus Area B)
- MDH Environmental Health Rep (Focus Area A)
- FBI WMD Coordinator
- CST



– Management FYI

- MDH Health Protection Division Directors (All Focus Areas)



★ Decision to Accept/Reject Sample

Threat/Hazard Assessment

- ★ Credible Threat?

- ★ Excessive Hazard?
 - Fatalities
 - Explosives

- ★ Suitable Request?
 - Public Health Threat?
 - Forensics?

Event Action Plan – Scenario Specific

★ Decisions By:

- One Person
- On-Call Pair
- Group

★ Decide To:

- Test or Not Test
- Test At What Level – “Order Off the Menu”
- Assign Duties and Responsibilities

Minimum Testing – Tier 1

- ★ Radiological Screen
- ★ Chemical Characterization
- ★ Biological Testing

Minimum Testing – Tier 1

★ Radiological Screen

- Inner Package / Sample
- Geiger-Muller Counter (CPM)
 - Alpha
 - Beta
 - Gamma

★ Over-pack Previously Screened at Loading Dock

Minimum Testing – Tier 1

★ Chemical Characterization

- Papers: pH, M8, Oxidizer
- Solubility: Water, Methylene Chloride
- FTIR: HazmatID
- Head Space Vial Aliquot (GC/MS)

Minimum Testing – Tier 1

★ Biological Testing

- Slides: Wet Mount, Gram Stain
- RT-PCR
- TRF
- Cultures: BAP, Chocolate, Thio Broth

Advanced/LRN Testing – Tier 2

★ Chemical

- GC/MS – SVOC
- ICP/MS – Metals
- General/Bench Chemistry – Inorganic

★ Biological

- LRN Level B/C Agent Specific Protocols

References

- ★ *Guidance on Initial Responses to a Suspicious Letter / Container With a Potential Biological Threat*, FBI – DHS – HHS/CDC, 2004
- ★ *Assessment of Methods for Handling Mixed-Threat Environmental Samples*, NCEH – Battelle, 2004
- ★ *Assessment of Protocols Involving Unknown Samples*, NCEH – Battelle, 2004
- ★ Proposed Draft DHS Screening Protocol, 2005 (to augment/standardize existing assessments and field screening techniques)

Contact Information

Paul Moyer, MS

Chemical Terrorism Response Coordinator

612-676-5245

Paul.moyer@health.state.mn.us

Questions

