



# Overview of the Laboratory Response Network



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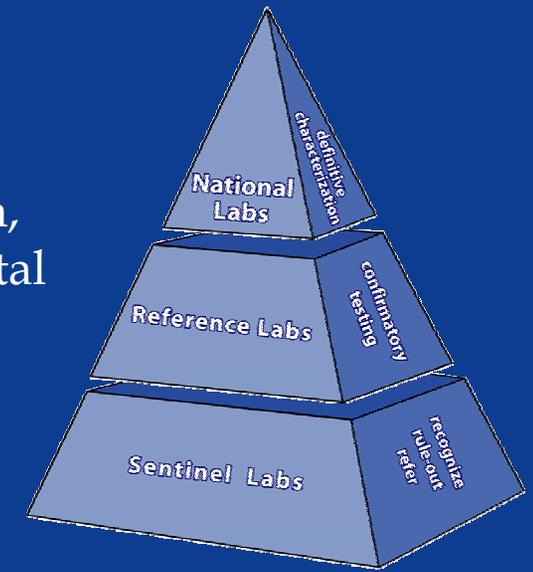
# What Is the LRN?

## A Diverse Laboratory Network

National network of local, state and federal public health, hospital-based, food testing, veterinary and environmental testing laboratories that provide laboratory diagnostics and the capacity to respond to biological and chemical terrorism and other public health emergencies.

## Multi-agency collaboration

The LRN is a partnership involving key stakeholders in the preparation and response to biological and chemical terrorism. The Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI), and the Association of Public Health Laboratories are its founding partners.



LRN Structure for Bioterrorism



# LRN Mission

The LRN and its partners will maintain an integrated national and international network of laboratories that can respond quickly to acts of chemical or biological terrorism, emerging infectious diseases and other public health threats and emergencies.

## Our Mission in Action

### **Bioterrorism Preparedness**

- Timely detection of *Bacillus anthracis* during anthrax attacks in 2001
- BioWatch

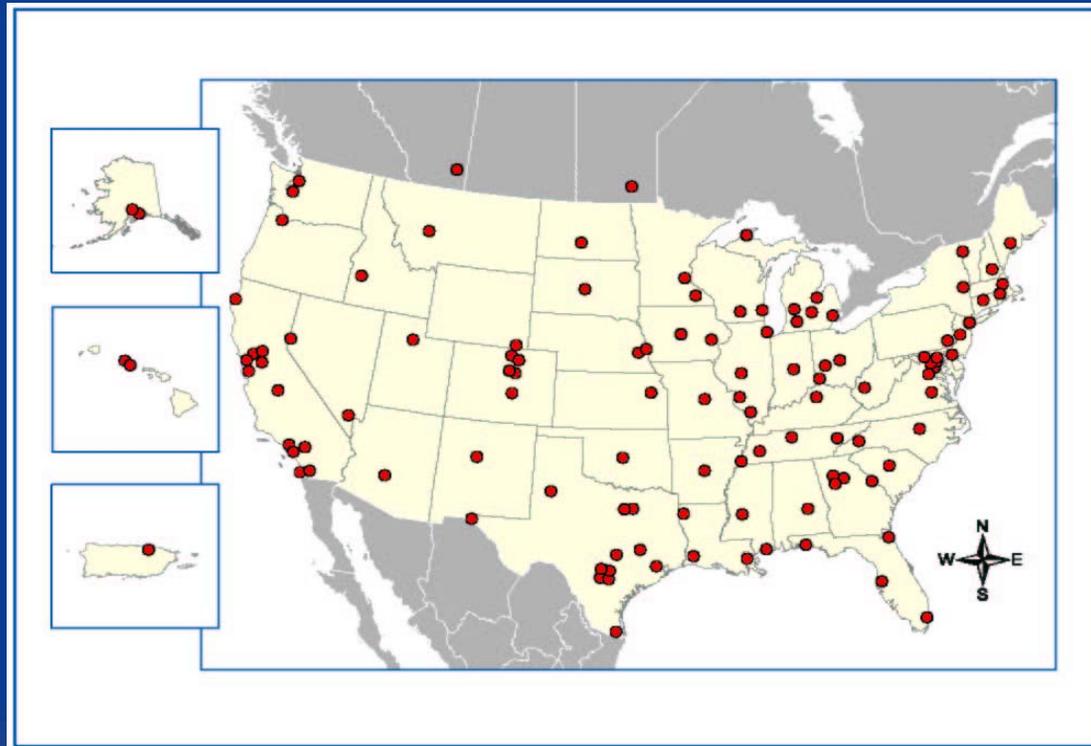
### **Public Health Emergency Response**

- Developed rapid tests for detection of Severe Acute Respiratory Syndrome
- Monkeypox

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# The Laboratory Network



- 126 federal, state and local labs in 50 states and abroad
- National labs – CDC, military – perform definitive testing.
- Reference labs – BSL-3 labs capable of confirmatory testing for agents such as *B. anthracis*, and *C. botulinum* toxin.

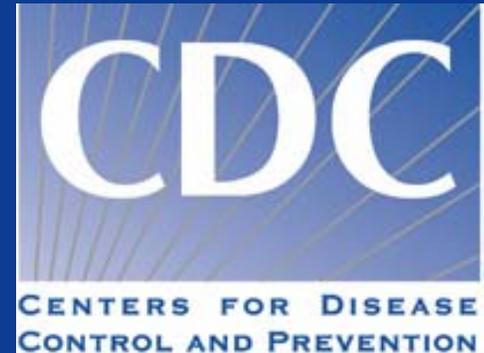


# Partnerships



## Founding Partners

- CDC
- Association of Public Health Laboratories
- The Federal Bureau of Investigation



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# Partnerships Shape the Scope of the LRN

- **International Laboratories** – LRN membership includes labs in Australia and Canada;
- **Environmental** – LRN is working with EPA to build testing capacity for measuring biological and chemical agents in environmental samples.
- **Food and Water** – LRN includes food and water testing labs to guard against contamination
- **Veterinary labs** – The National Animal Health Laboratory Network through USDA's Animal and Plant Health Inspection Service (APHIS), and the American Association of Veterinary Laboratory Diagnosticians



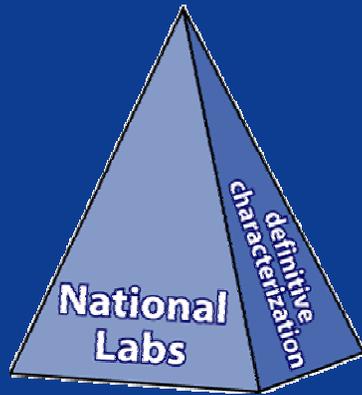
# Structure for Bioterrorism Response



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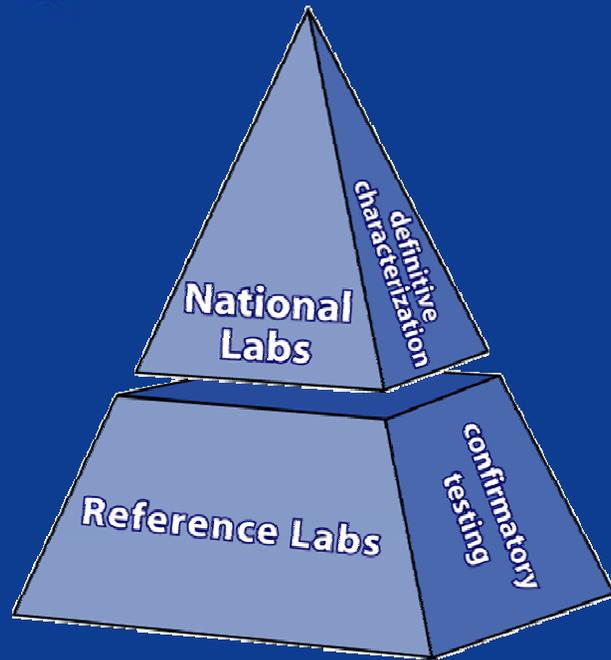
# National Laboratories



National laboratories, including those operated by the CDC and the US Army Medical Research Institute of Infectious Diseases (USAMRIID), are responsible for specialized strain characterizations, bioforensics, select agent activity, and handling highly infectious biological agents and toxic chemicals.



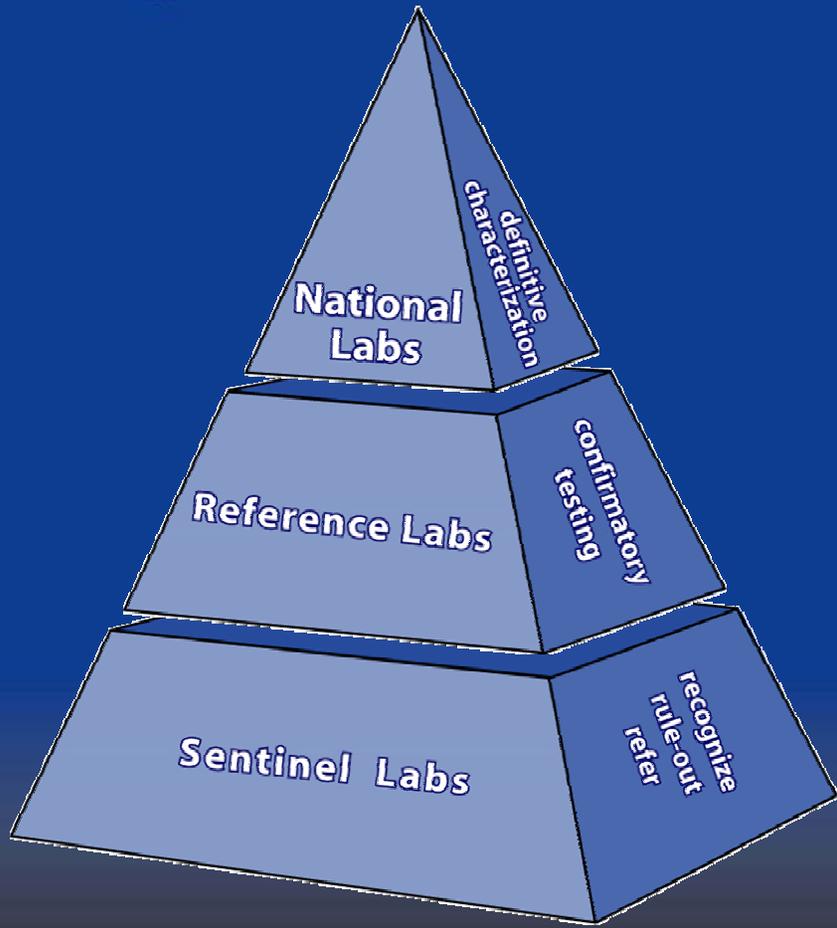
# Reference Labs



Reference laboratories - responsible for investigation and/or referral of specimens --are made up of more than 100 state and local public health, military, federal, and international laboratories. Lab types include veterinary, agriculture, food and water testing laboratories. In addition to laboratories located in the U.S., facilities located in Australia, Canada, and the United Kingdom serve as reference laboratories abroad.



# Sentinel Laboratories

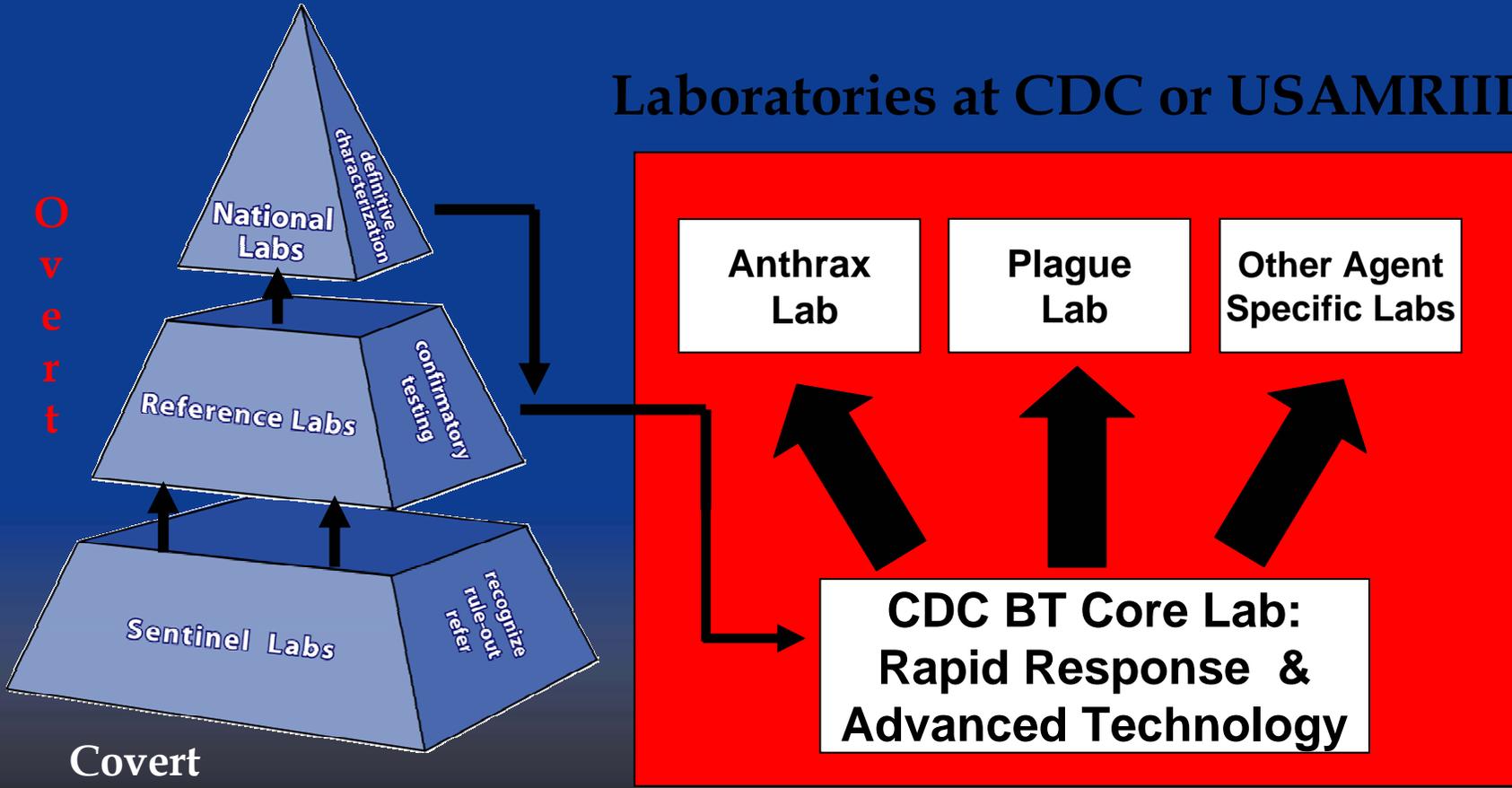


Sentinel laboratories provide routine diagnostic services, rule-out and referral steps in the identification process. Although these laboratories may not be equipped to perform the same tests as LRN reference laboratories, they can test samples to determine whether those samples should be shipped to reference or national laboratories for further testing.



# LRN Structure for Agent Testing & Sample Flow

Laboratories at CDC or USAMRIID



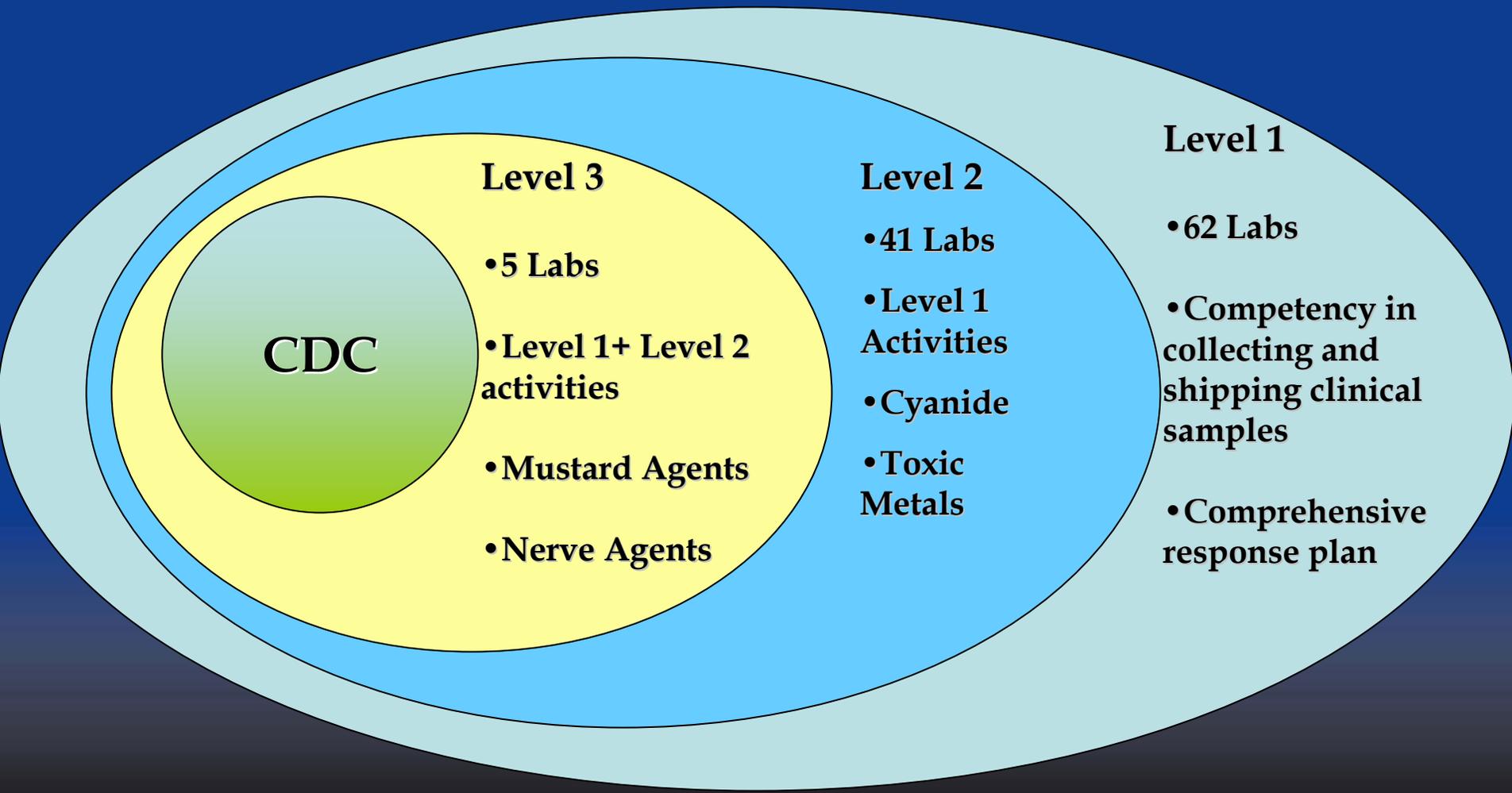


# Structure for Chemical Terrorism Response

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# Chemical Testing Capacity





# LRN Structure – Chemical Terrorism



- Currently, 62 state, territorial, and metropolitan public health laboratories participate in the chemical portion of the LRN. A designation of Level 1, 2, or 3 defines member network participation, and each level builds upon the preceding level.
- Every network member participates in Level 1 activities. These **Level 1** laboratories work with hospitals in clinical specimen collection, storage, and shipment. They also work to develop a coordinated response plan for their state and geographical regions.

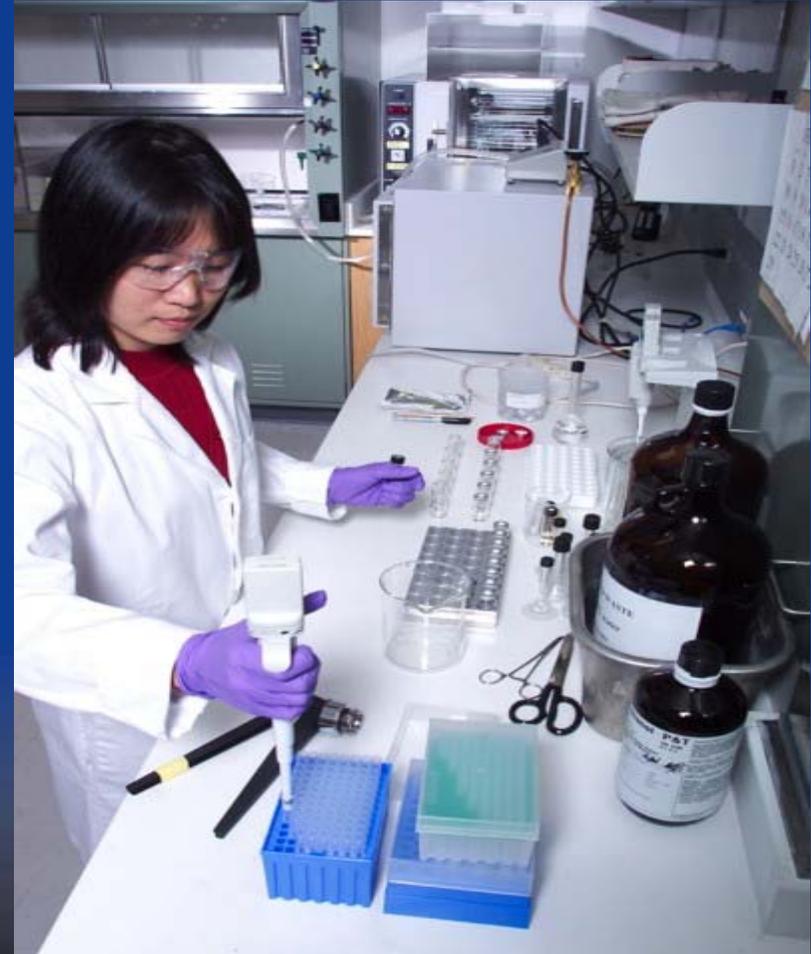




# LRN Structure – Chemical Terrorism



- Forty-one labs also participate in **Level 2 activities**; they are trained to detect exposure to a limited number of toxic chemical agents. Detection of toxic chemicals, such as cyanide or toxic metals, present in human specimens is an example of Level 2 laboratory analysis.
- Five laboratories participate in **Level 3 activities**, and these laboratories are trained to detect exposure to an expanded number of chemicals including all Level 2 laboratory analyses plus analyses that indicate exposure to mustard agents, nerve agents, and ricin.





# Preparing to Respond to a Chemical Event



CDC is assisting LRN Labs by

- Purchasing instrumentation
- Developing training curricula
- Transferring analytical methods
- Implementing a quality assurance program



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# Rapid Toxic Screen



At the onset of an event, a state may request CDC's assistance. CDC will deploy a Rapid Response Team to the affected state to assist with specimen collection, packaging, storage, and shipment. The first 40 samples from people with symptoms are sent to CDC for analysis through the **Rapid Toxic Screen**, which can analyze people's blood and urine for a large number of chemical agents likely to be used by terrorists. Data produced from the Rapid Toxic Screen analysis will be communicated in a secure, electronic manner to the affected state or states.





# Responding to a Chemical Event



**Incident**

**CDC Sends Results to State**

**LRN Members Perform Level-Specific Duties and Report Results Back to CDC**

**State Requests CDC Assistance**

**Rapid Response Team Deploys**

**CDC Conducts Rapid Toxic Screen**

**CDC Sends Results to State**

**CDC Contacts LRN Members**



# Provided to Each LRN Lab

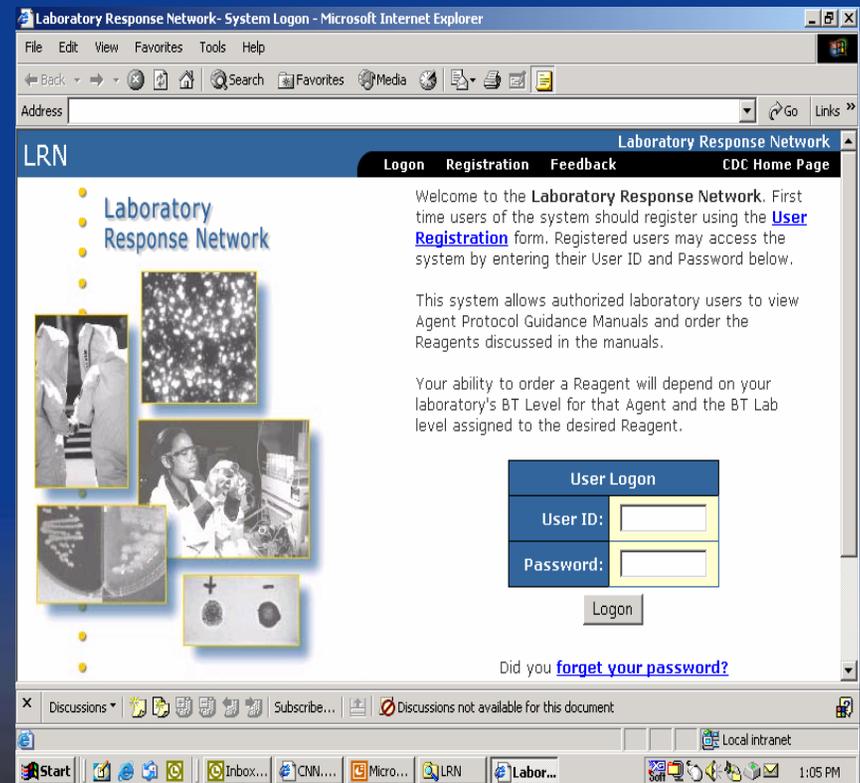
- Standardized Reagents & Controls
- Agent-Specific Protocols
- Lab Referral Directory
- Secure Communications
- Electronic Laboratory Reporting
- Training & Technology Transfer
- Proficiency Testing
- Appropriate Vaccinations for Lab Workers

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# Information Technology Support

- Provides secure access for more than 1,000 LRN Lab workers
- Secure communications on emerging and emergency issues
- Order reagents
- View protocols for PCR and TRF assays
- Report and review proficiency tests
- Receive periodic updates regarding reagent availability, etc.





# Partners in All Facets of Biological & Chemical Terrorism Preparedness and Response

- The American Association of Veterinary Laboratory Diagnosticians
- The American Society for Microbiology
- The Environmental Protection Agency
- U.S. Department of Agriculture
- U.S. Department of Defense
- U.S. Department of Energy
- U.S. Food and Drug Administration
- The Department of Homeland Security

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# Ready to Respond

In the event of a terrorist act or other public health emergency, the LRN is poised to:

- Test thousands of clinical specimens and environmental samples using its multi-level network of state, food testing, clinical, veterinary, military, and federal labs.
- Coordinate laboratory response of CDC.
- Assist law enforcement agencies, public health, and others.
- Accept and transfer specimens to appropriate facilities, including the CDC where definitive testing can be done.
- Assure a rapid laboratory response to any public health emergency.

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# LRN Formula for Success

- Unified operational plan
- Standardized protocols and tests
- Secure communications
- Molecular diagnostics
- Rapid response and reporting
- Safe, secure laboratories
- Trained laboratorians
- Coverage for human, animal, food, environmental specimens
- CDC coordinated support and oversight
- Quality laboratory results

