

UNFAMILIAR TERRITORY:

Assessing the Volume and Types of Unknown Samples Received by the Nation's State Public Health Laboratories

Association of Public Health Laboratories

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Traditionally, state public health laboratories (SPHLs) were responsible for testing of clinical (human) specimens. Increasingly, however, SPHLs are being called upon to respond to crises beyond their traditional areas of clinical expertise. In 2001, SPHLs across the country accepted unidentified powders, letters and countless other environmental samples suspected of possible anthrax contamination. Today, SPHLs have been tapped as frontline players in what is known as all-hazards response. These laboratories are responsible for accepting, screening and testing unknown samples that may contain anything from weaponized select agents to chemical warfare agents, or a mixture of these agents. An Association of Public Health Laboratories (APHL) survey reveals that 175 of the non-clinical samples analyzed nationwide contained chemical agents. Risks are associated with bringing unknown samples into the laboratory prior to proper screening, triage and rule-out of potential hazards.

Survey Purpose/Background

In the May 2006 Public Health Laboratories Issues in Brief: Bioterrorism Capacity, APHL reported that only 23 of 51 SPHLs have a designated screening or triage area for receiving unknown samples, and 38 of 51 SPHLs reported a need for a separate triage area to safely receive and process unknown hazard samples.¹

Suspicious materials are often collected and transported directly to the laboratory without having been properly screened for the presence of hazardous materials. Incidents of this nature have precipitated requests for an All Hazards Receipt (AHR) Facility where unknown materials can be received and screened for categories of risk agents such as biologicals, chemicals and radiologicals. Federal partners, including the Environmental Protection Agency, Depart-

ment of Homeland Security, Department of Defense and Federal Bureau of Investigation (FBI), are working in coordination towards the development, construction and implementation of AHR Facilities. The purpose of AHR Facilities will be to prescreen unknown and potentially hazardous samples collected under unusual or suspicious circumstances.

The main impetus for conducting this survey was to provide baseline data to further support the need for the implementation of AHR Facilities in the state public health laboratory setting. Capturing data on the number and types of unknown samples being received in state public health laboratories nationwide will enhance the ability of APHL to educate policymakers regarding the need for proper triage facilities, protocols and instrumentation.



Public Health Laboratory Issues in Brief

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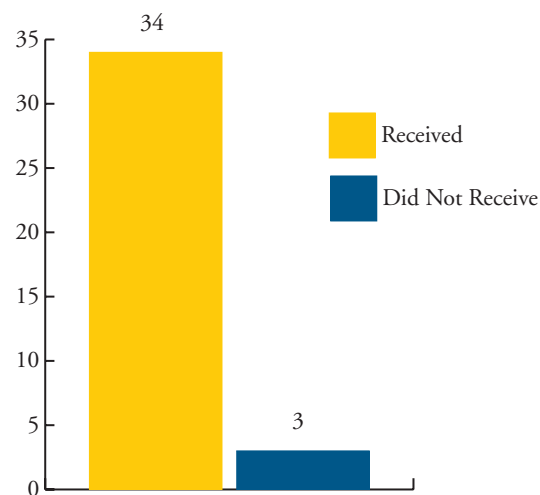
APHL fielded a six-question online survey to state public health laboratories to better assess the number and types of unknown samples received by the laboratories over the course of Fiscal Year 2005 (FY05). For the purposes of this survey, FY05 was defined as the time period beginning September 1, 2005, and ending August 31, 2006. Since the states were surveyed in July, data for half of July and August could not be included in this survey. The survey was conducted using Zoomerang™, an online survey instrument.

The survey was launched on July 7, 2006, and closed on July 21, 2006. Of the 50 state public health laboratories surveyed, 37 responded. Data were analyzed using Microsoft Excel™, and descriptive statistics were prepared for all variables. Unless otherwise noted, numbers and percentages were calculated using n=37 as the sample size. For the purposes of this report, the term “states” or “state public health laboratory” will be used to refer to all respondents. A summary of the key data points pertaining to each question can be seen below.

Survey respondents were asked to provide information on whether or not their state public health laboratories received any non-clinical samples of unknown nature in FY05. For the purposes of the questionnaire, unknown sample was defined as “a sample that may or may not contain biological, chemical or radiological materials/components or some combination of the three.” In response to this inquiry, states reported the following:

- 34 states (92% of respondents) reported having received non-clinical samples of unknown nature for submission to their laboratory in FY05.
- 3 states (8% of respondents) reported NOT receiving any non-clinical samples of unknown nature for submission to their laboratory in FY05.

Figure 1 Number of States That Received/Did Not Receive Non-clinical Samples of Unknown Nature During FY05



Of the 34 states that received non-clinical samples of unknown nature in FY05, a total of 1,751 were received. On average, each state received 52 samples, ranging from 1 sample/state to 1,151 samples/state. The median number of samples received per state public health laboratory was 8.

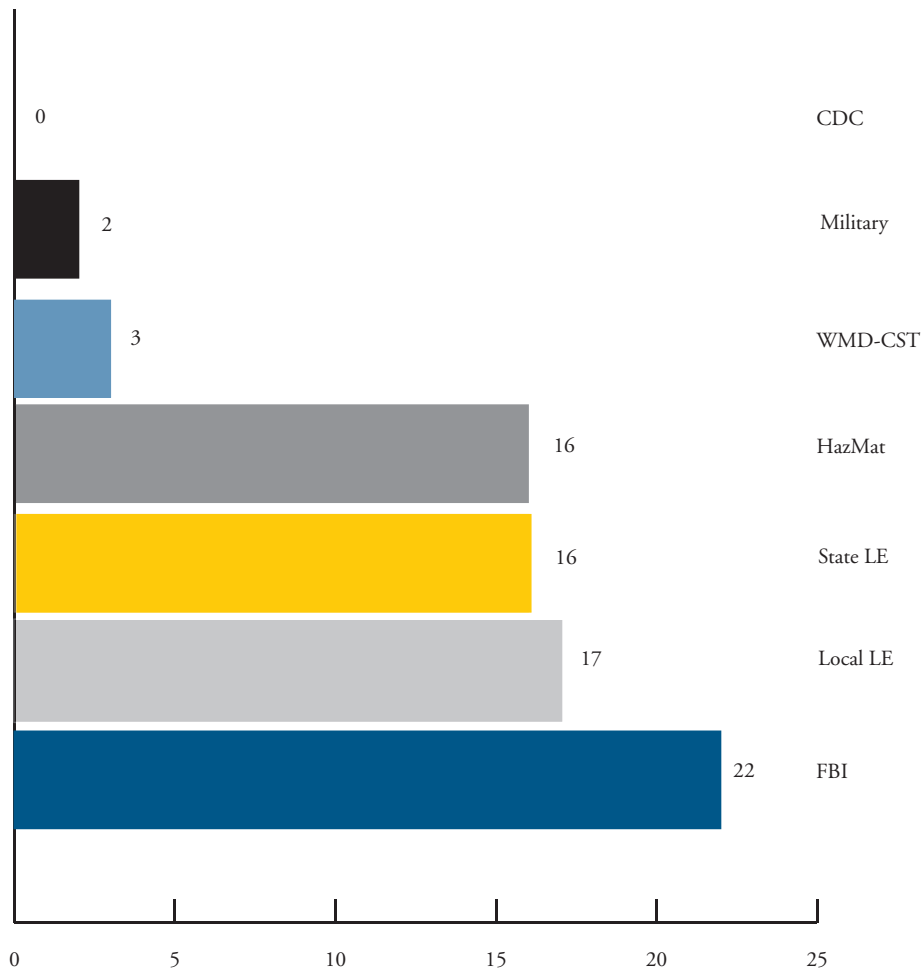
Upon receipt of an unknown sample, states must make the decision whether to perform confirmatory testing to positively identify the presence of biological, chemical and/or radiological components within the sample in question. Of the 1,751 non-clinical samples of unknown nature received by states in FY05, a total of 622 of them were analyzed for potential biological, chemical and radiological materials/components. An average of 18 samples/state were analyzed, ranging from 0 analyses performed per state to 176 analyses performed per state. The median number of analyses performed per state was 7.

Unknown samples can arrive at the state public health laboratory from a variety of different sources, including law enforcement and the military. In response to the survey questionnaire, the primary sources of unknown samples reported by states included the following:

- 22 states reported receiving unknown samples from the FBI.
- 17 states reported receiving unknown samples from local law enforcement.
- 16 states reported receiving unknown samples from state law enforcement.
- 16 states reported receiving unknown samples from HazMat Teams.
- 3 states reported receiving unknown samples from Weapons of Mass Destruction Civil Support Teams (WMD-CDST)
- 2 states reported receiving unknown samples from the military (National Guard, etc.).
- 0 states reported receiving unknown samples from the Centers for Disease Control and Prevention (CDC).

Other notable sources of unknown samples received by states included the United States Postal Service, local public health departments, federal contract laboratories, other state agencies and community clinics.

Figure 2 Sources of Unknown Samples as Submitted to State Public Health Laboratories

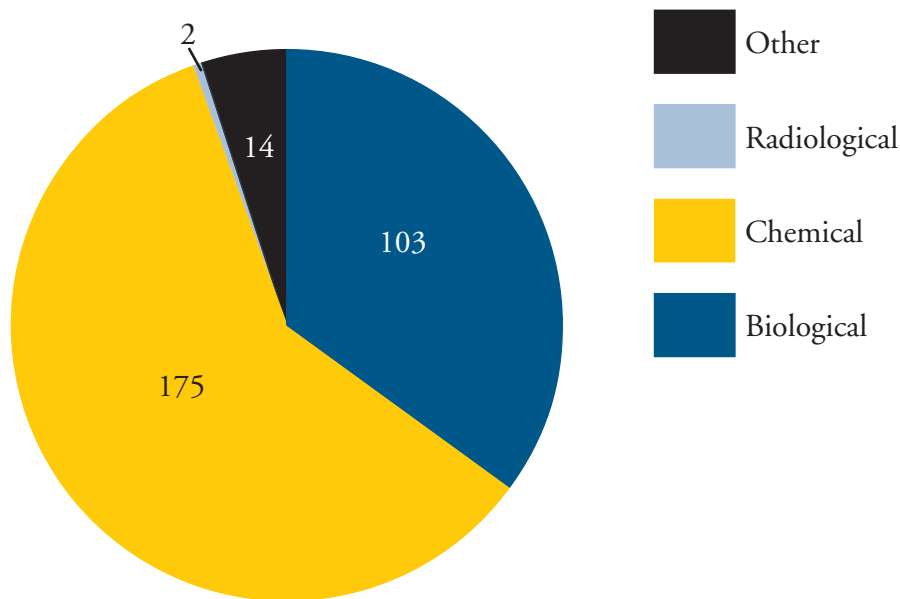


Of the 622 samples analyzed nationwide for the presence of biological, chemical and/or radiological components/materials, states reported the following:

- 2 samples confirmed as radiological.
- 14 samples confirmed as other.

- 103 samples confirmed as biological.
- 175 samples confirmed as chemical.

Figure 3 Number of Unknown Non-clinical Samples Received and Classified as Biological, Chemical, Radiological or Other



State public health laboratories play a critical role in all-hazards preparedness and response. The laboratories provide timely response and accurate test results to support ongoing law enforcement investigations. It is essential that the federal, state and local governments provide resources to support the preparedness infrastructure.

The data obtained through this survey demonstrate the need for AHR Facilities in many states, and this need is

best determined on a state-by-state basis. The fact that 175 of the non-clinical samples analyzed nationwide contained chemical agents reveals that risks are associated with bringing unknown samples into the laboratory prior to proper screening, triage and rule-out of potential hazards. Designated triage or all-hazards receipt facilities are vital to providing safe and secure facilities for laboratory workers and as such, to maintaining the preparedness infrastructure.

1. APHL: Public Health Laboratory Issues in Brief: Bioterrorism Capacity, May 2006, available at https://www.aphl.org/docs/2006_bioterrorism_capacity_final.pdf, accessed September 25, 2006.