

2024 All-hazards Laboratory Preparedness Survey

Summary Data Report

Via its annual All-hazards Laboratory Preparedness Survey, the Association of Public Health Laboratories (APHL) surveys state and large local public health laboratories to collect information on their ability to prepare for and respond to biological, chemical, radiological and other emerging public health threats.

In the fall of 2024, APHL fielded the sixteenth annual All-hazards Laboratory Preparedness Survey, which covered a 12-month period from July 1, 2023 to June 30, 2024, representing Fiscal Year 2023 or Budget Period 5 of the US Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) Cooperative Agreement. APHL received a 100% response rate from public health laboratories in 50 states, Puerto Rico, the District of Columbia, Los Angeles County and New York City. The total of 54 respondents was used as the basis for analysis of the aggregate survey data, however the analysis for several data points is based on a smaller sample size as a result of specific responses to questions or because some participants only submitted partial data.

This summary data report provides aggregate responses for all survey questions included in the 2024 APHL All-Hazards Laboratory Preparedness Survey. APHL will also summarize key data points in publications which will be shared with respondents, collaborators and other public health partners as well as posted on the APHL website. The summary data report and publications serve as educational tools that can assist in educating policy makers, public health partners and the public on the importance of public health laboratories in preparedness and response.

For questions on the data or survey methodologies, please contact Lorelei Kurimski, senior director, Quality Systems and Analytics at lorelei.kurimski@aphl.org. For questions pertaining to APHL's preparedness and response activities, please contact Tyler Wolford, senior program manager, Public Health Preparedness and Response at tyler.wolford@aphl.org.

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Association of Public Health Laboratories

APHL works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.

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Acronym Glossary

APHL	Association of Public Health Laboratories	HHS	US Department of Health and Human Services
ASM	American Society for Microbiology	HPP	Hospital Preparedness Program
ASPR	US Administration for Strategic Preparedness and Response	ISO	International Organization for Standardization
BT	Bioterrorism or Biological Threat	LFFM	Laboratory Flexible Funding Model
BSO	Biological Safety Officer	LIMS	Laboratory Information Management System
BSL	Biological Safety Level	LPX	Laboratory Preparedness Exercise
CAP	College of American Pathologists	LRN	Laboratory Response Network
CDC	US Centers for Disease Control and Prevention	LRN-B	Laboratory Response Network for Biological Threats Preparedness
CLIA	Clinical Laboratory Improvement Amendments	LRN-C	Laboratory Response Network for Chemical Threats Preparedness
COOP	Continuity of Operations Plan	NCEH	National Center for Environmental Health
CST	Civil Support Team	NIMS	National Incident Management System
CT	Chemical Terrorism or Chemical Threat	NHSPI	National Health Security Preparedness Index
DEA	US Drug Enforcement Administration	PCR	Polymerase Chain Reaction
DHS	US Department of Homeland Security	PHEP	Public Health Emergency Preparedness
DoD	US Department of Defense	PHL	Public Health Laboratory
DSLRL	Division of State and Local Readiness	P&S	Packaging and Shipping
ELC	Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases	RT	Radiological Terrorism or Radiological Threat
EPA	US Environmental Protection Agency	TFAH	Trust for America's Health
ERLN	Environmental Response Laboratory Network	UASI	Urban Areas Security Initiative
FBI	Federal Bureau of Investigation	USDA	US Department of Agriculture
FDA	US Food and Drug Administration	WLA	Water Laboratory Alliance
FEMA	Federal Emergency Management Agency	WSLHPT ..	Wisconsin State Laboratory of Hygiene Proficiency Testing
FERN	Food Emergency Response Network		
FSIS	Food Safety and Inspection Service		
HAN	Health Alert Network		
HAZMAT ..	Hazardous Materials		

Section 1: Demographics

Please provide the following information for your laboratory’s contacts.

Individual laboratory contact information is on file with APHL.

Section 2: Funding & Workforce

1. From July 1, 2023 – June 30, 2024, did your PHL experience any funding cuts and/or level funding that impacted preparedness activities?

Funding cuts to preparedness activities?	%	#
No	54%	29
Yes	46%	25

n=54

1a. From the list below, please select the top five preparedness activities impacted by funding cuts or level funding:

Impacts of preparedness funding cuts or level funding	%	#
Unable to expand capabilities for new assays/tests/methods	48%	12
Increased staff turnover	48%	12
Unable to purchase critical equipment e.g., PCR instrumentation, auto-mated extractors, biosafety cabinets, etc.	40%	10
Unable to renew service/maintenance contracts	40%	10
Unable to provide or reduced the number of training courses and outreach activities	36%	9
Lost position(s)	32%	8
Unable to purchase reagents and supplies or materials	28%	7
Consolidated staff positions	28%	7
Unable to purchase and/or upgrade Laboratory Information Management System (LIMS)	20%	5
Unable to participate in national meetings/conferences/training courses	20%	5
Increased sample/specimen turnaround time	12%	3
Unable to participate in exercises	12%	3
Reduced state courier services	12%	3
Experienced no change in laboratory operations	4%	1
Reduced 24/7 capability	4%	1
Other	4%	1

n=25. Other specified response on file with APHL.

2. Other than funding, what factors affected your PHL’s ability to carry out preparedness activities?
Please check all that apply.

Barriers to preparedness activities	%	#
Recruitment and/or retention of qualified personnel	87%	47
Non-competitive salaries	65%	35
Lack of training opportunities	31%	17
Laboratory facility is unavailable e.g., building undergoing repairs, moving to new facility, etc.	22%	12
Response activities e.g., COVID-19, mpox, flooding, fires, etc.	20%	11
Supply chain shortages	17%	9
Hiring caps	17%	9
Laboratory facility is unavailable e.g., building undergoing repairs, moving to new facility, etc.	11%	6
Hiring freezes	9%	5
Other	9%	5

n=54. Other specified responses include procurement challenges and delays, limited information technology (IT) resources to meet LIMS integration requirements, new FDA regulations for Laboratory Developed Tests and phase out of enforcement discretion, competing priorities and not being able to create new positions dedicated to preparedness activities. Individual responses are on file with APHL.

3. Please rank the following gaps in preparedness and response for your laboratory
(1 being the most urgent).

Laboratory preparedness and response gaps	Rank
Availability of qualified personnel i.e., limited recruitment pipeline	1
Funding	2
Limited number of positions i.e., personnel cap	3
Training	4
Equipment	5
Supplies	6

n=54.

4. From July 1, 2023 – June 30, 2024, how much funding did your PHL receive? Enter “0” if none.

Funding Source	Biological Preparedness	Chemical Preparedness	Radiological Preparedness	Received at the end of FY2023
ASPR: HPP Cooperative Agreement	\$130,488	\$286,790	-	-
CDC: DSLR Crisis Response Cooperative Agreement	\$1,895,020	-	-	\$114,199
CDC: ELC Strengthening Public Health Laboratory Preparedness	\$5,132,086	-	-	\$2,142,819
CDC: PHEP Cooperative Agreement	\$52,986,483	\$39,516,893	-	\$10,093,789
DHS: BioWatch Funding	\$5,567,149	-	-	\$200,100
FDA: LFFM e.g., FERN	\$3,831,519	\$3,021,924	\$1,905,895	\$1,308,429
State	\$14,028,061	\$2,348,153	\$152,960	\$10,000
USDA (FSIS): FERN	\$795,359	\$409,201	\$340,583	\$108,000
Other	\$2,009,190	-	\$700,635	\$361,200

n=54. Specified responses for other funding sources are on file with APHL.

4a. If your PHL received funding from any other source(s) for emergency preparedness.

Other specified sources of funding are on file with APHL.

5. From July 1, 2023 – June 30, 2024, how much of the CDC PHEP Cooperative Agreement funds were allocated to the following activities? Enter “0” if none.

CDC PHEP Funded Activities	Biological Preparedness	Chemical Preparedness	Radiological Preparedness
Distributed to other laboratories	\$4,088,158	-	-
Equipment maintenance and service agreements	\$6,062,327	\$8,192,177	-
Equipment purchases	\$1,162,093	\$4,065,184	-
General overhead	\$4,466,358	\$3,574,312	-
Renovations	\$217,059	\$134,563	-
Salaries and fringe	\$28,911,942	\$17,229,756	-
Supplies	\$3,331,670	\$4,699,248	-
Training and travel	\$522,382	\$293,645	-
Other	\$2,365,454	\$417,576	-
Unobligated/Unspent	\$1,743,040	\$910,432	-
Total	\$52,986,483	\$39,516,893	\$0

n=54. Specified responses for funding distributed to other laboratories are on file with APHL.

6. Please specify the “Other” activities for each type of PHEP funding.

Specified responses for other funded activities include purchase of the College of American Pathologists (CAP) LPX proficiency testing for LRN-B Sentinel Laboratories, courier contracts for specimen delivery and emergency testing, LIMS support, contractual staff for Select Agent testing and LIMS, annual certifications, infectious waste disposal, facility costs, communications and notification systems. Individual responses are on file with APHL.

7. How have your PHL's COVID-19 funds been used to strengthen laboratory preparedness? Select all that apply.

Use of COVID-19 funds	%	#
Procurement of additional testing equipment, reagents and/or PPE	94%	51
Enhancements to informatics/LIMS capabilities	91%	49
Procurement of maintenance contracts and/or service contracts	89%	48
Implementation of new diagnostic methods	67%	36
Hired temporary staff	63%	34
Renovated laboratory facilities	56%	30
Hired permanent staff	56%	30
Conducted additional outreach or training to clinical laboratories and other partners	43%	23
Constructed new laboratory	19%	10
Other	7%	4

n=54. Other specified responses included the development of new airborne pathogen risk reduction protocols, expanded couriers, testing contracts with clinical laboratories, an automated frozen specimen/sample repository, an electronic training management system, and inventory management systems. Individual responses are on file with APHL.

8. In addition to your BT Coordinator, CT Coordinator and BSO who may have outreach duties, do you have a position dedicated to outreach to clinical laboratories?

Position dedicated for clinical lab outreach	%	#
No	50%	27
Yes	50%	27

n=54

9. Do you have a Laboratory Advisory Council or similar group where members of the clinical laboratory community are involved in communicating with or advising the PHL?

Laboratory advisory group	%	#
No	43%	23
Yes	39%	21
Planning in future	19%	10

n=54

9a. How often are meetings held?

Frequency of laboratory advisory group meetings	%	#
Semi-annually	33%	7
Quarterly	33%	7
Annually	14%	3
Monthly	14%	3
Biweekly	5%	1

n=21

10. What resources or tools are needed to support your laboratory with outreach to clinical laboratories? Check all that apply.

Clinical laboratory outreach needs	%	#
Funding	81%	44
Training resources e.g., facilitator guides, guidance for in-person vs. virtual training, etc.	74%	40
Dedicated staff	70%	38
Guidance materials e.g., SOPs	57%	31
Other	6%	3

n=54. Other specified responses include travel support and personal costs in line with the number of jurisdictional clinical laboratories, online teaching tools and buy-in from clinical laboratories. Individual responses are on file with APHL.

11. Does your PHL have a sufficient number of staff to sustain routine testing services during a sudden surge of samples?

Sufficient staff to sustain routine testing during surge	%	#
Yes	72%	39
No	28%	15

n=54

12. What percentage of staff are cross-trained at your PHL?

Percentage of cross-trained staff	%	#
0-20%	31%	17
21-40%	19%	10
41-60%	19%	10
61-80%	13%	7
81-100%	19%	10

n=54

Section 3: Planning & Response

13. (NHSPi & TFAH) Does your PHL have a written plan to handle a significant surge in testing over a six- to eight-week period in response to an outbreak or other public health event?

Surge testing plan in place	%	#
Yes	93%	50
No	7%	4

n=54

13a. If no, what is your PHL’s timeline for developing one?

Timeline for development of surge testing plan	%	#
< 6 months	0%	0
6-12 months	50%	2
> 1 year	50%	2

n=4

14. Identify the elements included in your surge capacity plan. Select all that apply.

Surge capacity plan elements	%	#
Procedures for sample triage and prioritization of testing e.g., criteria for acceptable specimen types, risk or threat assessments, guidance for packaging and shipping, etc.	86%	43
Designation of IT personnel to provide LIMS support and assist with any IT related issues during a surge event	70%	35
Procedures for referral to external laboratories e.g., LRN-B National, LRN-B Reference, LRN-B Sentinel, LRN-C Level 1, LRN-C Level 2, LRN-C Level 3, other private clinical, commercial, academic, etc.	70%	35
Procedures to secure, deploy and train additional personnel for short-term (days) and long-term (weeks to months) response efforts	68%	34
Procedures for performing risk assessment(s) on assays and following standard BSL protocols	61%	33
Updating of contact information lists for all laboratory partners e.g., sentinel clinical laboratories, epidemiology, CDC, APHL, relevant commercial laboratories, etc.	59%	32
Requirements for data management and results reporting	54%	29
Procedures to secure and deploy facility resources for short-term (days) and long-term (weeks to months) response efforts e.g., repurposing of or securing additional laboratory space for surge testing	54%	29
Procedures to secure and deploy additional equipment and/or supplies for short-term (days) and long-term (weeks to months) response efforts	54%	29
Procedures for development of a quality assurance (QA) plan to meet new/updated requirements for testing and reporting	42%	21
An incident response manual that includes resources for vaccinations (if available) and prophylaxis treatments	36%	18
Other	16%	8

n=50. Other specified responses include employee call down, a list of partner agencies, criteria for stand up and demobilization, staff incident command structure roles and responsibilities, procedures to activate partners to transport staff and samples to lab in hazardous weather, verbal agreements for some tests in the newborn screening panel and COVID-19 testing with clinical diagnostic labs. Individual responses are on file with APHL.

15. Between July 1, 2023 – June 30, 2024, did your PHL test your surge plan via a real-life event or exercise?

Surge plan tested	%	#
No	72%	36
Yes	28%	14

n=50

15a. What elements of your PHL's surge plan were exercised and how?

Individual responses are on file with APHL.

16. Does your laboratory have a formal agreement (e.g., contract, memorandum of agreement) in place with other laboratories to handle surge capacity? Check all that apply.

Formal agreement with another laboratory	%	#
Yes, agreement with other public health laboratory(ies) outside of the state	61%	33
Yes, agreement with commercial laboratory(ies) for biological agents	22%	12
Yes, agreement with other state laboratory within state e.g., agricultural lab	19%	10
Yes, agreement with commercial laboratory(ies) for other agents	16%	9
Yes, agreement with clinical laboratory(ies) within the state	13%	7
Yes, agreement with local public health laboratory(ies) within the state	11%	6
Yes, agreement with other state public health laboratory within the state	9%	5
Other	24%	13
No	7%	4

n=54. Other specified responses include agreements with private laboratories, academic medical center laboratories and CDC as well as informal agreements with other public health laboratories within the US Regional Consortia. Individual responses are on file with APHL.

16a. What are the barriers to entering into formal agreements with other entities?

Check all that apply.

Barriers to entering formal agreements	%	#
Legal requirements	88%	8
Contracting requirements and procedures	88%	8
Reimbursement mechanisms	78%	7
Compatibility of laboratory infrastructure for results reporting	44%	4
Licensure requirements	22%	2
Funding	22%	2

n=9. One laboratory specified lack of responsiveness from an entity in another state as a barrier to entering formal agreements.

17. (NHSPi) Does your PHL have a Continuity of Operations Plan (COOP) consistent with National Incident Management System (NIMS) guidelines?

PHL COOP in place?	%	#
Yes, a laboratory specific COOP	48%	26
Yes, a state agency or department-wide COOP that includes the laboratory	46%	25
No, but the laboratory or state is developing a COOP	6%	3

n=54

17a. Does your laboratory review and update COOP?

COOP review and updates?	%	#
Yes, annually	73%	37
Yes, biennially	8%	4
Yes, semi-annually	4%	2
Other	12%	6
No	4%	2

n=51. Other specified responses include COOP review and updates on a quarterly basis and as needed or requested. Individual responses are on file with APHL.

17b. If your PHL shuts down and only a portion of staff were available to work, in terms of COOP, which test(s) are critical for your laboratory? Check all that apply.

Laboratory-critical tests	%	#
LRN Biological Testing	98%	50
Infectious diseases e.g., reference and specialized testing	92%	47
LRN Chemical Testing	75%	38
Newborn screening	59%	32
Environmental health e.g., water testing, lead testing	55%	28
Food safety	47%	24
Other	24%	12

n=51. Other specified responses include BioWatch, toxicology testing for blood and urine, influenza, cannabis, molluscan growing water and meat samples for environmental microbiology, rabies, tuberculosis, PulseNet, Candida auris and Legionella. Individual responses are on file with APHL.

17c. From July 1, 2023 – June 30, 2024, did your PHL evaluate the functionality of your COOP via a real event or an exercise?

COOP evaluated	%	#
Yes	57%	29
No	43%	22

n=51

17d. From July 1, 2023 – June 30, 2024, did you activate your laboratory COOP?

COOP activated?	%	#
No	67%	34
Yes, please provide any additional information on the steps and outcomes below.	33%	17

n=51. Individual responses are on file with APHL.

17e. Does your laboratory's COOP account for IT outages?

IT outages included in laboratory COOP	%	#
Yes	59%	31
No	41%	20

n=51. Individual responses are on file with APHL.

18. (TFAH) Has your PHL implemented a LIMS to receive and report laboratory information electronically?

LIMS implementation status and functionality	%	#
Yes, bidirectional capability to receive and report	81%	44
Receive only	0%	0
Report only	15%	8
No electronic messaging capability at this time	4%	2

n=54

18a. Do you have dedicated IT support for your LIMS?

Dedicated IT support for LIMS	%	#
Yes, the laboratory has personnel dedicated to LIMS	69%	36
Other	17%	9
No, the laboratory relies on external contractors e.g., LIMS vendor	8%	4
No, the laboratory receives IT personnel support from the state/local government for LIMS	4%	2
No	2%	1

n=52. Other specified responses include a combination of IT support from external contractors and state/local government. Individual responses are on file with APHL.

19. (NHSP) Please indicate the number of preparedness exercises your PHL conducted or participated in from July 1, 2023 – June 30, 2024.

Preparedness exercises	Tabletop Exercises	Drills	Full-scale Exercises	Functional Exercises	Other
Biological Threats (BT)	35	57	17	38	9
Chemical Threats (CT)	25	19	18	44	1
COOP	13	1	0	1	3
Multi-hazards e.g., any combo of BT, CT and RT	14	2	3	2	0
Pandemic Influenza	4	0	0	0	0
Radiological Threats (RT)	3	5	5	7	0
Other	6	14	5	4	0
Total	100	98	48	96	13

n=54

19a. Please describe the “Other” type of exercise your laboratory conducted or participated in between July 1, 2023 and June 30, 2024.

Specified responses for “Other” exercises conducted by laboratories include packaging and shipping, laboratory evacuation, safety and security, flood response, tornado response, human smuggling intervention, chain of custody, suspicious person and fire drill exercises. Individual responses are on file with APHL.

19b. Did your laboratory experience any barriers to conducting or participating in exercises?

COOP activated?	%	#
No	63%	34
Yes	37%	20

n=54. Specified responses include competing priorities, scheduling conflicts, lack of available staff, laboratory construction, repairs and renovations, funding, lack of participation from locals and partners, lack of funding, lack of laboratory engagement in jurisdictional exercises and turnover in leadership. Individual responses are on file with APHL.

20. From July 1, 2023 – June 30, 2024, please enter the total number of samples and specimens you accepted and tested in your preparedness and response system (e.g., using LRN methods).

Sample/Specimen type	Total Accepted	Tests for BT Agents	Tests for CT Agents	Tests for RT Agents
BioWatch	126,148	455,343	-	-
Clinical	9,789	9,970	1,693	-
Environmental e.g., food, water, unknown substance	2,184	581	927	1,459

n=54

20a. Does your laboratory accept samples suspected of containing fentanyl or other drugs of abuse?

Acceptance of samples suspected of containing drugs of abuse	%	#
No	52%	28
Yes	48%	26

n=54

20b. Does your lab test these samples for any of the following? Please check all that apply.

Type(s) of agents tested	%	#
Chemical threat agents	44%	16
Biological threat agents	39%	14
Other	17%	6

n=26. Other specified responses for types of agents tested include drugs of abuse. Individual responses on file with APHL.

21. (NHSPi) Does your PHL assure the timely transportation (pick-up and delivery) of specimens/samples 24/7/365 days to the appropriate public health LRN Reference Laboratory?

Timely sample/specimen transport to LRN Reference Laboratory	%	#
Yes	96%	52
No	4%	2

n=54

22. (NHSPi) Does your PHL have a plan to receive samples from a sentinel laboratory during non-business hours?

Plan to receive samples from a sentinel laboratory during non-business hours	%	#
Yes	98%	53
No	2%	1

n=54

23. Does your PHL provide field screening collection kits to first responders?

Field screening collection kits provided to first responders	%	#
No	67%	36
Yes	33%	18

n=54. Descriptions of materials included in field screening collection kits on file with APHL.

Section 4: Safety

24. Does your laboratory have a biosafety officer?

Biosafety officer	%	#
Yes, full-time staff designated to biosafety	68%	37
Yes, part-time staff	30%	16
No, please explain why there is no staff	2%	1

n=54. One laboratory indicated not having a biosafety officer at the time of the survey because it was a newly created position and the lab was currently interviewing candidates.

25. What types of laboratory safety trainings are currently needed for your staff?

n=54. Specified responses include trainings needed for BSL-2 and BSL-3 standard and special practices, risk assessments, pathogen-specific biosafety, handling of bloodborne pathogens, waste management, biological and chemical spill response and prevention, evidence management and handling, PPE donning and doffing, decontamination, chemical hygiene, radiation safety, biological safety cabinets, chemical fume hoods, gas cylinders, glove boxes, respirators, autoclaves, handling compressed gas, fire extinguishers, first aid CPR and AED, emergency management and incident response, laboratory security and active shooter, man-down in containment, hands-on safety training for new employees, safety and security training for moving laboratory facilities, development of new safety protocols, packaging and shipping of infectious substances, Narcan training, select agent regulations, quality improvement, training on handling FBI powder samples and the threat of fentanyl. Individual responses are on file with APHL.

Section 5: Biological Threats

26. Does your PHL maintain a database of active sentinel clinical laboratories with the required elements (e.g., CLIA number, address, primary contact, 24/7 emergency contact) listed in the current [Sentinel Clinical Laboratories Definition](#)?

Database of active sentinel clinical laboratories	%	#
Yes, for the entire state	92%	50
Yes, for my jurisdiction only (may not be the entire state)	4%	2
No	4%	2

n=54

26a. How many active sentinel clinical laboratories are in your database?

	Minimum Reported	Maximum Reported	Average Reported	Total Reported
Number of active sentinel clinical laboratories in PHL databases	3	500	65.40	3,401

n=52

26b. Does your PHL utilize a commercial software to manage your database of sentinel clinical laboratories?

Commercial software manages database of sentinel clinical laboratories?	%	#
No	67%	35
Yes	33%	17

n=52. Specified responses for commercial software utilized are on file with APHL.

27. How does your PHL identify sentinel clinical laboratories?

Definition of sentinel clinical laboratories	%	#
Use Sentinel Clinical Laboratories Definition	85%	46
Use other definition	15%	8
We do not identify sentinel clinical laboratories	0%	0

n=54. Other specified responses include jurisdictions that have their own definition. Individual responses are on file with APHL.

28. From July 1, 2023 – June 30, 2024, did your PHL award a certificate of recognition to sentinel clinical laboratories in your state?

Recognition given to sentinel clinical laboratory	%	#
No	91%	49
Yes, awarded the LRN Joint Leadership Committee (JLC) approved certificate	7%	4
Yes, awarded a state developed certificate	2%	1

n=54

28a. How many sentinel clinical laboratories received a certificate?

Type of certificate awarded	#
LRN JLC Certificate	66
State or Local Certificate	1

29. Which of the following do you use to assess the competency of sentinel clinical laboratories to rule-out and refer BT agents? Check all that apply.

Competency assessment of sentinel clinical laboratories	%	#
College of American Pathologists (CAP) Laboratory Preparedness Exercise (LPX)	91%	49
State-developed	17%	9
Other—please specify	7%	4
Wisconsin State Laboratory of Hygiene Proficiency Testing (WSLHPT)/ Challenge Set for Sentinel Laboratories	4%	2
None of the above	2%	1

n=54. Other specified responses include gram stain challenge sets, two-way communications and preparedness drills, MediaLab Primary ID of Primary Agents of Bioterrorism, and compliance with Rule-Out submission accuracy and completeness procedures. Individual responses are on file with APHL.

29a. Do these competency assessments impact the renewal status of sentinel clinical laboratories?

Competency assessments impact renewal status of sentinel clinical laboratories?	%	#
No	89%	47
Yes	11%	6

n=53

29b. How do you utilize the CAP LPX in your state? Please check all that apply.

Utilization of CAP LPX	%	#
Track which sentinel clinical laboratories contact the LRN Reference PHL	91%	49
Provide training and outreach to the sentinel clinical laboratories that do not provide the intended responses for the LPX organisms	81%	44
Test competency of LRN-B staff at your state PHL e.g., your PHL actively participates in the testing of the LPX organisms	72%	39
Test the ability of sentinel clinical laboratories to package and ship specimens to the LRN Reference PHL	37%	20
Other	4%	2

n=53. Other specified responses include improvements to future proficiency testing and testing the ability of sentinel laboratories to utilize rule out/refer.

29c. Which of the following resources do you utilize for training sentinel clinical laboratories? Check all that apply.

Resources utilized for training sentinel clinical laboratories	%	#
APHL Biothreat Identification Bench Cards and Poster	98%	52
Sentinel Level Clinical Laboratory Guidelines for Suspected Agents of Bioterrorism and Emerging Infectious Diseases	87%	46
Clinical Laboratory Preparedness and Response Guide	67%	35
PHL Specific Training Resources	47%	25
Other	15%	8

n=53. Other specified responses included packaging and shipping resources and training modules from APHL, CDC and Saf-T-Pak, bioterrorism preparedness workshops, Title 49 of the Code of Federal Regulations (eCFR.org), the Biosafety in Microbiological and Biomedical Laboratories (BMBL), the CDC Morbidity and Mortality Weekly Report (MMWR), resources from the Federal Select Agent Program (FSAP) and resources from Journal of Clinical Medicine (JCM), CDC One Lab, Pro-Med, Infectious Diseases Society of America (IDSA), American Society for Microbiology (ASM), and ClinMicroNow. Individual responses are on file with APHL.

30. From July 1, 2023 – June 30, 2024, did your PHL conduct an exercise or utilize a real event to evaluate the time for sentinel clinical laboratories to acknowledge receipt of an urgent message from your laboratory?

Evaluation of sentinel clinical laboratory response time	%	#
Yes	78%	42
No	22%	12

n=54

31. (NHSPi) For which of the following have you utilized a rapid method of communication (HAN, blast email, or fax) for your sentinel clinical laboratories and other partners? Check all that apply.

Rapid communication event	%	#
Routine updates	81%	44
Outbreaks	80%	43
Training events, such as providing a training calendar	72%	39
Other	28%	15
Have not used it	2%	1

n=54. Other specified responses include communication drills and exercises, CAP LPX updates and results, laboratory relocations and closures, guidance for emergency response, severe weather events, courier issues, changes to testing services, distribution of surveys and newsletters, recalls or supply shortages of commonly used reagents, products and testing supplies, guidance for specimen collection and submission as well as packaging and shipping, CDC Health Alert Network (HAN) and Laboratory Outreach Communication System (LOCS) updates and updates/alerts from other partners such as American Society for Microbiology (ASM) and American Society for Clinical Pathology (ASCP). Individual responses are on file with APHL.

32. From July 1, 2023 – June 30, 2024, did your PHL sponsor any sentinel clinical laboratory trainings for BT threat agents?

Lab-sponsored BT sentinel clinical laboratory trainings	%	#
Yes	65%	35
No	35%	19

n=54

32a. For each category below, indicate how many trainings were provided, the total number of sentinel clinical laboratory facilities within your jurisdiction that received training and the total number of laboratorians that participated.

Trainings	Rule-out Testing Only	Packaging & Shipping Only	Any Combo of Categories	Biosafety	Other
Number of training classes	65	418	25	36	7
Number of sentinel clinical laboratory facilities within your jurisdiction that received training	131	450	137	82	0
Number of laboratorians that participated in trainings	496	1,936	407	260	30

n=35

32b. For each training category, specify the format(s) used and provide a short description of the content covered.

Training Format	Rule-out Testing Only	Packaging & Shipping Only	Any Combo of Categories	Biosafety	Other
Online	4	25	6	4	2
Telephone	4	3	0	2	0
In-person	15	18	11	14	3

n=35. Individual responses about training content are on file with APHL.

33. From July 1, 2023 – June 30, 2024, approximately how many sentinel clinical laboratories did your staff visit?

Visit type	# Sites Visited	# of Visits
Physical (On-site)	28	222
Virtual (Phone and/or Video)	22	341

n=54

34. Did your laboratory experience any of the following barriers to providing training to sentinel clinical laboratories? Check all that apply.

Barriers to training sentinel clinical laboratories	%	#
Lack of training staff at the public health laboratory	28%	35
Lack of available staff at the sentinel clinical laboratories	22%	27
Issues with coordination or access to sentinel clinical laboratories	16%	19
Response to threats e.g., COVID-19, mpox, etc.	12%	15
No funding	7%	10
Travel restrictions	2%	2
Information technology compatibility issues e.g., different platforms for web-based training	1%	1
Other	10%	12
No barriers	2%	2

n=54. Other specified responses include lack of interest or participation from sentinel clinical laboratories, lack of physical training space, staff turnover and time constraints. Individual responses are on file with APHL.

35. Please share any major successes and challenges your laboratory encountered regarding biological threats preparedness (e.g., response to an event, development of new tests, etc.) during the time period of July 1, 2023 – June 30, 2024.

Individual responses are on file with APHL.

Section 6: Chemical Threats

36. From July 1, 2023 – June 30, 2024, did your LRN-C capability (testing capabilities to specific test agents or analytes) increase, decrease or was it maintained?

LRN-C capability	%	#
Maintained	68%	37
Increased	26%	14
Decreased	6%	3

n=54

36a. How did your capability increase? Check all that apply.

Increased LRN-C capabilities	%	#
Added CT equipment	93%	13
Added CT personnel	50%	7
Increased CT level	7%	1
Added more than two LRN-C methods	7%	1
Other	50%	7

n=14. Other specified responses include personnel training on two more LRN-C methods and the addition of surveillance methods for drugs of abuse. Individual responses are on file with APHL.

36b. How did your capability decrease? Please check all that apply.

Decreased LRN-C capabilities	%	#
Decrease in CT personnel	100%	3
Lack of connection to those responding i.e., first responders, communities, epidemiologists, etc.	67%	2
Unable to maintain service agreement(s) on current equipment	67%	2
Unable to purchase new equipment required to add methods	33%	1
Other	100%	3

n=3. Other specified responses include a lapse in relationship with CST following a change in command, insufficient LRN-C staff to continuous conduct outreach and LRN-C testing having to be taken offline temporarily due to construction, relocation and validation. Individual responses are on file with APHL.

37. From July 1, 2023 – June 30, 2024, did your PHL utilize your CT capabilities to respond to any of the following? Please check all that apply.

CT capabilities utilized	%	#
Biomonitoring investigations	24%	13
Chemical threat – non-clinical sample	24%	13
Biosurveillance e.g., drugs of misuse such as Opioids	22%	12
Chemical threat – clinical specimen	20%	11
Community concern – clinical specimen e.g., exposure to a potentially toxic chemical	13%	7
Community concern – non-clinical sample e.g., exposure to a potentially toxic chemical	13%	7
Chemical spill or other emergency incident – non-clinical sample	5%	3
Chemical spill or other emergency incident – clinical specimen	2%	1
Other	7%	4
None	43%	23

n=54. Other specified responses include cross-trained staff provided testing capacity for BT rule outs and powders, state lead exposure programs, opioid epidemic response efforts, screening for unknown substances, shipping of suspect drug samples and participation in LRN exercises. Individual responses are on file with APHL.

37a. Which LRN-C resources are you utilizing for your laboratory’s biomonitoring efforts? Check all that apply.

LRN-C resources utilized for biomonitoring	%	#
Personnel	100%	13
Instruments/equipment	92%	12
Technical training	69%	9
Relationships with clinical community, other relationships	54%	7

n=13

37b. What other funding sources are you utilizing for biomonitoring? Check all that apply.

Biomonitoring funding sources	%	#
Other Federal	69%	9
State	54%	7
Other	31%	4

n=13. Specified responses for other sources of federal funding include the CDC Biomonitoring grant, the CDC Overdose Data to Action (OD2A) grant, the CDC PHEP grant, the CDC National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) program, the US Department of Transportation (DOT) and the National Institute of Environmental Health Sciences (NIEHS) Human Health Exposure Analysis Resource (HHEAR) grant. Specified responses for other non-federal funding sources include a research stakeholder grant and partnerships with university grants. Individual responses are on file with APHL.

38. (NHSPI) Please provide the certification/accreditation status of your LRN-C laboratory. Check all that apply.

Certification or Accreditation	Currently certified/ accredited		Planning for certification/ accreditation next year		Neither	
	%	#	%	#	%	#
CAP	15%	8	0%	0	85%	46
CLIA (toxicology subspecialty)	65%	35	9%	5	30%	16
ISO	13%	7	6%	3	81%	44
Other	7%	4	2%	1	91%	49

n=54. Other specified responses include certification/accreditation with the EPA, FDA, DEA, DEP and state-based certification/accreditation programs. Individual responses are on file with APHL.

39. What is the source of funding for service contracts for LRN-C instruments? Check all that apply.

Funding sources for LRN-C instrument service contracts	%	#
CDC PHEP cooperative agreement	83%	45
State funding	20%	11
Other	11%	6
Other federal funding	4%	2

n=54. Specified responses for other sources of federal funding include the CDC Overdose Data to Action (OD2A) grant and the FDA Laboratory Flexible Funding Model (LFFM) cooperative agreement. Individual responses are on file with APHL.

40. Does your laboratory have any unmet funding needs for response chemical threats?

Funding needed for response chemical threats	%	#
Yes	52%	28
No	48%	26

n=54. Specified responses for unmet funding needs for response to chemical threats include replacement of obsolete and discontinued instrumentation, facility improvements, testing supplies, lab developed test procedures, service agreements and maintenance contracts for new and existing equipment and instrumentation, increased staff salaries, information technology support, LIMS and updated collection kits for HAZMAT. Individual responses are on file with APHL.

41. Please share any major successes and challenges your laboratory encountered regarding chemical threats preparedness (e.g., response to an event, development of new tests, etc.) during the time period of July 1, 2023 – June 30, 2024.

Individual responses are on file with APHL.

Section 7: Radiological Threats

42. Does your laboratory have responsibility for radiological surveillance and response (e.g., testing environmental, food or clinical samples)?

Responsible for radiological preparedness	%	#
No—please specify which agency within your jurisdiction has this responsibility.	56%	30
Yes	44%	24

n=54. Specified agencies responsible for radiological surveillance and response are on file with APHL.

42a. Does your laboratory have responsibility for radiological surveillance and response (e.g., testing environmental, food or clinical samples)?

Accepted sample types	%	#
Environmental samples	88%	21
Food	71%	17
Clinical Samples	13%	3
Other	13%	3

n=24. Other specified sample types include drinking water, wipes and objects. Individual responses are on file with APHL.

43. Is your laboratory interested in developing the capability to measure human radiation contamination and become CLIA compliant for radiobioassay in clinical samples?

Interested in developing human radiation test capability?	%	#
No—please specify why not	55%	30
Yes	42%	22
Already have capability	4%	2

n=54. Specified responses include lack of staff and expertise, lack of equipment and building infrastructure, lack of funding and limited space. Individual responses are on file with APHL.

43a. Is your laboratory interested in developing the capability to measure human radiation contamination and become CLIA compliant for radiobioassay in clinical samples?

Interested in developing human radiation test capability?	%	#
Training	91%	20
Funding	82%	18
Methods	77%	17
Personnel	73%	16
Standards	59%	13
Instrumentation	59%	13
Specimens	55%	12
Preparation equipment	41%	9
Laboratory Space	36%	8
Other	5%	1

n=22. Other specified need to bring on testing are service agreements for instrumentation.

44. Please provide the current number of college/university or in-house-trained scientists that perform nuclear chemistry and/or radiochemistry measurements in your laboratory as well as the number of additional trained scientists that are needed to meet your laboratory's surveillance and emergency response needs. If no staff, enter "0".

Scientists performing nuclear chemistry and/or radiochemistry procedures	#
Current number of scientists	113.5
Number of additional scientists needed	37
Total	150.5

n=54

- 44a. If your laboratory needs additional scientists that perform nuclear chemistry and/or radiochemistry measurements in your laboratory, are your program partners aware of capacity gap?

Awareness of nuclear chemistry and/or radiochemistry capacity gaps	%	#
Yes	45%	24
No	21%	12
No gap in capacity	34%	18

n=54

- 44b. In how many years are your currently staffed scientists expected to retire?

Staff retiring within...	#
0-2 years	21
3-5 years	15
6-10 years	15
11+ years	62.5

n=54

45. What challenges does your laboratory face specifically for radiological surveillance and response? Please select all that apply.

Radiological surveillance and response challenges	%	#
Availability of funding	70%	38
Lack of available laboratory staff to perform testing	52%	28
Instrument-specific training	52%	28
Lack of training opportunities for laboratory staff	48%	26
Replacement of instrumentation	39%	21
Software	28%	15
Obtaining standards for calibration	28%	15
Other	41%	22

n=54. Other specified responses include recruitment of qualified personnel, IT support, administrative support, lack of space and instrumentation, procedure writing for methods, safety and quality, waste management and travel support for training opportunities. Individual responses are on file with APHL.

46. What are your laboratory’s surveillance and emergency response needs for nuclear chemistry and/or radiochemistry? Please check all that apply.

Emergency response needs for nuclear chemistry and/or radiochemistry	%	#
Method development	22%	12
Emergency Response Outreach e.g., specimen collection, packaging and shipping, etc.	20%	11
Instrumentation/equipment-specific training	20%	11
Waste Management	15%	8
Safety and Regulatory Requirements	15%	8
Analysis	15%	8
Mentoring	11%	6
Results Reporting	9%	5
All of the above	39%	21

n=54

46a. To better tailor training opportunities, please provide examples or ideas for the areas selected above (open-ended).

Individual responses are on file with APHL.

47. Please share any major successes and challenges your laboratory encountered regarding radiological threats preparedness (e.g., response to an event, development of new tests, etc.) during the time period of July 1, 2023 – June 30, 2024.

Individual responses are on file with APHL.