2019 APHL ALL-HAZARDS LABORATORY PREPAREDNESS SURVEY

Summary Data Report

February 2020

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES®

ABOUT THE ALL-HAZARDS LABORATORY PREPAREDNESS SURVEY

APHL fielded the eleventh Annual All-Hazards Laboratory Preparedness Survey to assess state public health laboratories' capability and capacity to respond to biological, chemical, radiological and other threats, such as pandemic influenza. Administered in the fall of 2019, the survey covered a 12-month period from July 1, 2018 to June 30, 2019 representing the US Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) Cooperative Agreement Fiscal Year 2018, also known as Budget Period 1. APHL received a 100% (54/54 public health laboratories) response rate from public health laboratories in 50 states, Puerto Rico, the District of Columbia, Los Angeles and New York City.

This white paper provides aggregate responses for all questions. Additionally, APHL will summarize key points in issue briefs that will be distributed at various meetings and conferences. The white paper and issue briefs serve as educational tools that can assist in educating policy makers, public health partners and the public on the important role laboratories play in public health preparedness and response. Electronic copies of both documents are available at www.aphl.org.

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CONTACT

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SECTION 1: DEMOGRAPHICS

Please provide the following information for your laboratory's contacts.
Individual laboratory contact information can be found in the data file.

SECTION 2: FUNDING & WORKFORCE

1. From July 1, 2017 to June 30, 2018, did your PHL experience any funding cuts to preparedness activities?

Funding cuts to preparedness activities?	%	Count
Yes	48.1%	26
No	51.9%	28

n=54

1a. Please choose the top five impacts of any preparedness funding cuts your PHL experienced from July 1, 2018, to June 30, 2019.

Impacts of preparedness funding cuts	%	Count
Unable to provide or reduced the number of training courses and outreach activities	46.2%	12
Unable to renew service/maintenance contracts	46.2%	12
Unable to expand capabilities for new assays/tests/methods	38.5%	10
Unable to participate in national meetings/conferences/training courses	34.6%	9
Unable to hire staff due to lack of funds	34.6%	9
Unable to purchase reagents and supplies or materials	34.6%	9
Unable to purchase and/or upgrade Laboratory Information Management System (LIMS)	30.8%	8
Unable to purchase critical equipment (e.g., PCR instrumentation, automated extractors, biosafety cabinets, etc.)	26.9%	7
Lost full-time position(s)	26.9%	7
Consolidated staff positions	23.1%	6
Other – please specify	15.4%	4
Increased staff turnover	11.5%	3
Unable to participate in exercises	11.5%	3
Reduced state courier services	7.7%	2
Experienced no change in laboratory operations	7.7%	2
Lost part-time position(s)	3.8%	1
Reduced 24/7 capability	3.8%	1
Increased sample/specimen turnaround time	0.0%	0
Unable to respond to an event	0.0%	0

n=26. Other specified responses can be found in the data files.

1b. What factors affected your PHL's ability to carry out preparedness activities from July 1, 2018, to June 30, 2019? Please check all that apply.

Barriers to preparedness activities	%	Count
Insufficient funding	65.4%	17
Non-competitive salaries	38.5%	10
Other – please specify	34.6%	9
Hiring freezes	15.4%	4
No difficulties experienced	15.4%	4
Lay-offs	3.8%	1
Furloughs	3.8%	1

n=26. Other specified responses include issues with finding qualified laboratory professionals and the inability to travel to out of state trainings. Individual responses are on file with APHL.

2. From July 1, 2018, to June 30, 2019, how much preparedness funding did your PHL receive? Please enter "0" if none.

Funding Source	Biological Preparedness	Chemical Preparedness	Radiological Preparedness
CDC: PHEP Cooperative Agreement	$47,610,167	$33,847,576	-
CDC: DSLR Crisis Response Notice of Funding Opportunity	$1,122,979	$3,189,034	-
ASPR: HPP Cooperative Agreement	$236,282	-	-
DHS/FEMA Preparedness Grants (e.g., UASI, State Homeland Security Grant)	-	$300,000	$596,920
DHS/BioWatch Funding	$3,127,684	-	-
EPA: ERLN	-	-	-
EPA: Water Lab Alliance	-	-	-
FDA: FERN	$1,391,461	$1,844,960	$751,662
USDA (FSIS): FERN	$961,395	$406,754	$80,000
State	$6,402,444	$1,161,328	$318,774
Other	$1,342,265	$674,924	$605,404

n=54. Other specified responses include CDC Epidemiology and Laboratory Capacity Cooperative Agreement funding, USDA Food Protection Rapid Response Team funding and state nuclear safety funding. Individual responses are on file with APHL.

3. From July 1, 2018 to June 30, 2019, how much from each funding source was allocated to the following activities? Do not include funds received for carryover from previous years. Please enter "0" if none.

Funded Activities	CDC PHEP Funds for:		
	Biological Preparedness	Chemical Preparedness	Radiological Preparedness
Distributed to other laboratories – please specify which labs	$1,903,391	$487,436	-
Salaries and fringe	$27,941,745	$14,123,354	-
Equipment purchase	$1,110,652	$6,269,232	-
Equipment maintenance	$4,152,734	$4,752,092	-

Funded Activities	CDC PHEP Funds for:		
	Biological Preparedness	Chemical Preparedness	Radiological Preparedness
Supplies	$2,967,871	$3,102,752	-
Training and travel	$661,348	$363,447	-
General overhead	$3,592,327	$3,199,564	-
Renovations	$65,200	-	-
Unobligated/unspent	$1,106,243	$397,895	-
Other	$4,108,658	$1,151,803	-

n=54. Other specified responses include courier service fees and exercise materials for other laboratories. Individual responses are on file with APHL. Totals may differ slightly due to rounding.

4. In addition to your BT Coordinator, CT Coordinator and BSO, do you have a position responsible for outreach to clinical laboratories?

Position responsible for clinical lab outreach?	%	Count
Yes	57.4%	31
No	42.6%	23

n=54

5. 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?	%	Count
Yes	35.2%	19
No	46.3%	25
Planning in future	18.5%	10

n=54

5a. How often are meetings held?

Advisory meeting regularity	%	Count
Quarterly	10	52.6
Semi-annually	6	31.6
Annually	1	5.3
Other – please specify	2	10.5

n=19. Other specified responses are on file with APHL.

5b. What topics are discussed? Please check all that apply.

Discussion topics	%	Count
Recommendations for improving collaboration and communication	89.5%	17
New lab tests or technologies	84.2%	16
Laboratory system improvement	73.7%	14
Other - please specify	47.4%	9

n=19. Other specified topics include emergency preparedness exercises and sample transport challenges. Individual responses are on file with APHL.

SECTION 3: PLANNING & RESPONSE

6. (NHSPI & TFAH) Does your PHL have a 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?	%	Count
Yes	96.3%	52
No	3.7%	2

n=54

8. What are the triggers for activation of your surge capacity plan?

Specific responses include activation of state emergency operations center, an increase in seasonal testing volume, and an outbreak response. Individual responses are on file with APHL.

9. Please select the elements which are included in your surge capacity plan. Check all that apply.

Surge capacity plan elements	%	Count
Procedures to secure and deploy surge personnel, equipment and facility resources for short-term (days) and long-term (weeks to months) response efforts	76.6%	36
Prioritization of testing based upon sample type	83.0%	39
Prioritization of testing based upon risk or threat assessment	72.3%	34
Procedures for triage and management of surge testing, which may include referral of samples to other LRN reference and national laboratories within or outside the jurisdiction	80.9%	38
Procedures for referral to LRN sentinel clinical laboratories	31.9%	15
Procedures for referral to commercial laboratories	36.2%	17

n=47

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

Formal agreement?	%	Count
Yes, agreement with other public health laboratory (ies) outside of the state	50.0%	27
No	27.8%	15
Other, please specify	25.9%	14
Yes, agreement with commercial laboratory (ies) for other agents	14.8%	8
Yes, agreement with other state laboratory (e.g. agricultural lab) within state	14.8%	8
Yes, agreement with commercial laboratory (ies) for biological agents	11.1%	6
Yes, agreement with local public health laboratory (ies) within the state	9.3%	5
Yes, agreement with other state public health laboratory within the state	5.6%	3

n=54. Other specified responses include agreements with Civil Support Team military laboratories and regional laboratory consortium. Individual responses are on file with APHL.

11. What are the barriers to entering into formal agreements with other entities for surge capacity testing needs?

Specified responses include challenges receiving approval of agreements by state legal departments and state laws preventing entering agreements with external laboratories. Individual response are on file with APHL.

12. Does your laboratory conduct and/or participate in surge capacity exercises?

Surge capacity exercises?	%	Count
Yes, annually	42.6%	23
Yes, biennially	13.0%	7
No	44.4%	24

n=54

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

PHL COOP in place?	%	Count
Yes, a laboratory-specific COOP	37.0%	20
Yes, a state agency or department-wide COOP that includes the laboratory	59.3%	32
No, but the laboratory or state is developing a COOP	3.7%	2
No	0.0%	0

n=54

13a. Does your laboratory review and update COOP?

COOP review and updates?	%	Count
Yes, annually	75.0%	39
Yes, biennially	23.0%	12
No	2.0%	1

n=52

13b. 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? Please check all that apply.

Laboratory-critical tests	%	Count
LRN Biological Testing	96.3%	52
Infectious diseases (e.g., reference and specialized testing), please specify	92.6%	50
LRN Chemical Testing	75.9%	41
Environmental health (e.g., water testing, lead testing)	59.3%	32
Newborn screening	59.3%	32
Food safety	42.6%	23
Other, please specify	29.6%	16
No critical tests identified	0.0%	0

n=54. Other specified responses include emerging pathogens, BioWatch and radiochemistry testing. Individual responses are on file with APHL.

13c. From July 1, 2018, to June 30, 2019, did your PHL evaluate the functionality of your COOP via a real event or an exercise?

COOP evaluated?	%	Count
Yes	55.6%	30
No	44.4%	24

n=54

13d. From From July 1, 2018, to June 30, 2019, did you activate your laboratory COOP?

COOP activated this year?	%	Count
Yes - please provide any additional information on the steps and outcomes	27.8%	15
No	72.2%	39

n=54. Individual responses are on file with APHL.

13e. Please specify state, local and/or other jurisdictional requirements that may impact a response. For example, some states have licensure requirements and laboratorians without a license are not permitted to work in that state. Please enter N/A for none.

28 respondents replied with "N/A." Other responses include both federal and state clinical licensure requirements. Individual responses are on file with APHL.

14. Does your state have any legal and/or jurisdictional requirements that could complicate testing being performed by another state or prevent additional staff from coming on-site to perform testing (e.g. state licensure requirements)?

Legal/jurisdictional requirements	%	Count
Yes, requirements prevent another state from assisting with testing	16.7%	9
Yes, requirements prevent additional staff from coming on-site	27.8%	15
No	55.6%	30

n=54.

15. (TFAH) Has your PHL implemented a laboratory management system (LIMS) to receive and report laboratory information electronically (e.g., electronic test order and report with hospitals and clinical labs, surveillance data from public health laboratory to epidemiology).

LIMS implementation status and functionality	%	Count
Yes; bidirectional capability to receive and report	57.4%	31
Report only	38.9%	21
Receive only	0%	0
No electronic messaging capability at this time	3.7%	2

n=54

15a. Do you have dedicated IT support for your LIMS?

Dedicated IT LIMS support?	%	Count
Yes, the laboratory has personnel dedicated to LIMS	67.3%	35
Other *	13.5%	7
No, the laboratory relies on external contractors (e.g. LIMS vendor)	9.6%	5
No, the laboratory receives IT personnel support from the state/local government for LIMS	9.6%	5
No	0.0%	0

n=52. Other specified responses include laboratory personnel who manage LIMS as a secondary duty, and a combination of state personnel supported with LIMS vendor assistance. Individual responses are on file with APHL.

16. (NHSPI) Please indicate the number of preparedness exercises your PHL conducted or participated in from July 1 2018 to June 30, 2019. Do not include your responses to real events and proficiency tests. Enter "0" if none.

	Tabletop Exercises	Drills	Functional Exercises	Full-Scale Exercises
Biological threats	33	73	37	14
Chemical threats	7	31	50	7
Radiological threats	3	4	4	6
Multi-Hazards (e.g., any combo of bio, chem and rad threats)	10	26	4	4
Pandemic influezna	8	0	1	0
COOP	16	9	3	1
Other	5	21	9	4
Total	82	164	108	36

n=54. Other specified response were not captured.

17. From July 1, 2018, to June 30, 2019, please enter the total number of samples and specimens you accepted and tested. Do not include proficiency tests or exercises as part of your preparedness and response system. Enter "0" if none.

	Total Number Accepted	BT Agents Tested	CT Agents Tested	RT Agents Tested	Other Analyses
Clinical	397,697	3,438	261	0	4,017
Environmental (e.g., food, water, unknown substances)	5,215	1,434	1,757	1,656	368
BioWatch	158,103	162,516	0	0	0

n=54. Some samples were tested for multiple agents.

18. (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? (This system can encompass a state operated courier, FedEx, contract courier service, etc.)

Timely sample/specimen transport to LRN Reference Laboratory?	%	Count
Yes	96.3%	52
No	3.7%	2

n=54

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

After-hours sample receipt plan?	%	Count
Yes	100.0%	54
No	0.0%	0

n=54

20. From July 1, 2018, to June 30, 2019, did your LRN-C capability increase, decrease or was it maintained?

LRN-C capability changes	%	Count
Increased	31.5%	17
Decreased	3.7%	2
Maintained	64.8%	35

n=54

20a. How did your capability increase? Please check all that apply.

Factors for LRN-C capability increase	%	Count
Added CT equipment	70.6%	12
Added one LRN-C method	52.9%	9
Added CT personnel	23.5%	4
Added two LRN-C methods	11.8%	2
Other *	11.8%	2
Added more than two LRN-C methods	5.9%	1
Increased CT level	0.0%	0

n=17. Other specified responses include employing a new test in response to an exposure outbreak.

20b. How did your capability decrease? Please check all that apply.

Factors for LRN-C capability decrease	%	Count
Lost CT personnel	100.0%	2
Other	0%	0
Lost CT equipment	0%	0
Unable to purchase new equipment required to add methods	0%	0
Unable to maintain service agreement(s) on current equipment	0%	0
Dropped a CT level	0%	0
Reduced support from the broader system	0%	0
Lack of connection to those responding (i.e., first responders, communities, epidemiologists, etc.), please specify the barrier	0%	0

n=2

SECTION 4: BIOLOGICAL THREATS

21. 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?	%	Count
Yes, for the entire state	92.6%	50
Yes, for my jurisdiction only (may not be the entire state)	3.7%	2
No	3.7%	2

n=54

21a. How many active sentinel clinical laboratories are in your database?

	Minimum reported	Maximum reported	Average reported	Total
Active sentinel clinical laboratories in PHL databases	7	401	59	3,064

22. How do you identify sentinel clinical laboratories? Please check all that apply.

Definition of sentinel clinical laboratories	%	Count
Use APHL, CDC LRN, and ASM definition	90.7%	49
Use other definition *	11.1%	6
We do not identify sentinel clinical laboratories	0.0%	0

n=54.

22a. Please provide any additional information on the criteria your laboratory used to identify a sentinel clinical laboratory.

30 respondents replied with "N/A". Other specified responses include state-based designation and microbiology capabilities of laboratory. Individual responses are on file with APHL.

23. From July 1, 2018 to June 30, 2019, did your PHL award a certificate of recognition to sentinel clinical laboratories in your state? Please check all that apply.

Recognition given to sentinel clinical laboratory?	%	Count
Yes, awarded the LRN Joint Leadership Committee (JLC) approved certificate	9.3%	5
Yes, awarded a state developed certificate	5.6%	3
No	85.2%	46

n=54

23a. How many sentinel clinical laboratories received a certificate? Please enter "0" if none.

Eight PHLs responded, indicating that a total of 196 sentinel clinical laboratories received certificates.

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

Competency assessment of sentinel clinical laboratories	%	Count
College of American Pathologists (CAP) Laboratory Preparedness Exercise (LPX)	90.7%	49
State developed	20.4%	11
Wisconsin State Laboratory of Hygiene Proficiency Testing (WSLHPT)/ Challenge Set for Sentinel Laboratories	9.3%	5
Other	5.6%	3
None of the above	3.7%	2

n=54. Other specified responses include virtual training for biothreat agents and compliance with ASM Rule-Out and Refer procedures during routine specimen submission. Individual responses are on file with APHL.

24a. Do these competency assessments impact the renewal status of sentinel clinical laboratories?

Competency assessments impact renewal status of sentinel clinical laboratories?	%	Count
Yes	7.7%	4
No	92.3%	48

n=52

24b. How do you utilize the CAP LPX in your state? Please check all that apply.

Utilization of CAP LAX	%	Count
Track which sentinel clinical laboratories contact the LRN Reference PHL	95.9%	47
Provide training and outreach to the sentinel clinical laboratories that do not provide the intended responses for the LPX organisms	77.6%	38
Test competency of LRN-B staff at your state PHL (e.g., your PHL actively participates in the testing of the LPX organisms)	69.4%	34
Test the ability of sentinel clinical laboratories to package and ship specimens to the LRN Reference PHL	44.9%	22
Other *	4.1%	2

n=49. Other specified responses include providing individual feedback to participating laboratories and using CAP LPX as a notification exercise between public health stakeholders. Individual responses are on file with APHL.

25. From July 1, 2018, to June 30, 2019, 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? (You may factor requests to sentinel clinical laboratories to contact you during the CAP LPX in your response.)

Evaluation of sentinel clinical laboratory response time?	%	Count
Yes	92.6%	50
No	7.4%	4

n=54

25a. How is the information gathered from this exercise or event used?

Specified responses include improving communication with sentinel clinical laboratories and ensuring timely contact with all sentinel clinical laboratories. Individual responses are on file with APHL.

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

Rapid communication event	%	Count
Routine updates	83.3%	45
Training events, such as providing a training calendar	81.5%	44
Outbreaks	70.4%	38
Other *	48.1%	26
Have not used it	3.7%	2

n=54. Other specified responses include communication drills and exercises. Individual responses are on file with APHL.

26a. Please provide any additional information on the type of outbreak and the steps and outcomes.

Individual responses are on file with APHL.

27. From July 1, 2018 to June 30, 2019, did your PHL sponsor any sentinel clinical laboratory trainings for biological threat agents? If no, please proceed to question 28.

Lab-sponsored BT sentinel clinical laboratory trainings?	%	Count
Yes	81.5%	44
No	18.5%	10

n=54

27a. Please indicate how many classes were provided and how many facilities were trained.

	Rule-Out testing only	Packaging and shipping (P&S) only	Any combo of categories (Rule-Out, P&S)	Biosafety	Other
Number of classes	63	174	64	72	47
Percentage of facilities in jurisdiction that received training	12.5%	37.4%	3.7%	10.0%	7.3%
Number of laboratorians that received training	572	2,325	572	990	1,000

n=44. Individual responses about course content are on file with APHL.

28. From July 1, 2018, to June 30, 2019, approximately how many sentinel clinical laboratories did your BT coordinator and/or BSO physically visit?

Number of sentinel clinical laboratories visited	%	Count
0	37.0%	20
1	3.7%	2
2	5.6%	3
3	7.4%	4
4	3.7%	2
5	7.4%	4
6	5.6%	3
8	1.9%	1

Number of sentinel clinical laboratories visited	%	Count
12	5.6%	3
13	3.7%	2
16	1.9%	1
19	1.9%	1
20	1.9%	1
23	1.9%	1
24	1.9%	1
29	1.9%	1
32	1.9%	1
33	1.9%	1

n=54

29. Did you experience any barriers to providing biosafety training to sentinel clinical laboratories?

Training barriers?	%	Count
Yes	74.1%	40
No - proceed to question 30	25.9%	14

29a. What were the barriers to providing training to sentinel clinical laboratories? Please check all that apply.

Training barriers	%	Count
Other	50.0%	20
No funding	47.5%	19
Lack of interest from the sentinel clinical labs	45.0%	18
Issues with coordination or access to sentinel clinical laboratories	35.0%	14
Lack of BSO at the public health laboratory	25.0%	10
Information technology compatibility issues (e.g., different platforms for web based training)	5.0%	2

n=40. Other specified responses include difficulty traveling to remote laboratory locations and BSO workload management challenges. Individual responses are on file with APHL.

30. 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, 2018 to June 30, 2019. In addition to your stories, we encourage you to share best practices. Please note an APHL staff member will contact you to follow-up on these stories and also to solicit photos of your laboratorians in action responding to public health threats. Stories with pictures will be more likely featured in next year's All-Hazards Laboratory Preparedness issue briefs or other publications, such as Lab Matters, eUpdate or APHL's blog.

Individual responses are on file with APHL.

37. Does your laboratory have a biosafety officer?

Biosafety officer?	%	Count
Yes, full-time staff designated to biosafety	55.6%	30
Yes, part-time staff	29.6%	16
No - please explain why there is no staff	14.8%	8

n=54. Specified responses include a lack of funding and having a current vacancy for the position. Individual responses are on file with APHL.

37a. Please indicate the percentage of time breakdown for the BSO duties and include what other assignments they take.

Activities	Min.	Max.	Mean	Count
Internal biosafety/biosecurity	0%	100%	52.5%	46
External clinical lab outreach	0%	50%	15.7%	46
Other	0%	90%	31.9%	46

n=46. Other specified responses include duties for Quality Assurance and serving as a biothreat response team member. Individual responses are on file with APHL.

38. Has your staff received training under the following topics?

Training	Yes		No		Additional Training Needed		Total
	%	Count	%	Count	%	Count	
BSL-2 standard and special practices (fundamentals of biological materials safety practices, excluding bloodborne pathogen training)	96.3%	52	0.0%	0	3.7%	2	54
Biological Risk Assessment	87.0%	47	7.4%	4	5.6%	3	54
Personal Protective Equipment	100.0%	54	0.0%	0	0.0%	0	54
Biological Safety Cabinets (BSCs) and other Engineering Controls	96.3%	52	0.0%	0	3.7%	2	54
Bloodborne Pathogens	100.0%	54	0.0%	0	0.0%	0	54
Chemical Fume Hoods	90.6%	48	5.7%	3	3.8%	2	53
Glove Boxes	37.7%	20	56.6%	30	5.7%	3	53
Naloxone	38.9%	21	51.9%	28	9.3%	5	54
Spill Prevention, Control, and Response Plan	98.1%	53	0.0%	0	1.9%	1	54
Sharps Hazard	98.1%	53	1.9%	1	0.0%	0	54
Safe Handling and Use of Cryogenic Liquids	56.6%	30	39.6%	21	3.8%	2	53
Chemical Hazards	92.5%	49	3.8%	2	3.8%	2	53
Decontamination	92.6%	50	3.7%	2	3.7%	2	54
Regulated Waste Management	85.2%	46	11.1%	6	3.7%	2	54
Emergency Management and Response	90.7%	49	3.7%	2	5.6%	3	54

Training	Yes		No		Additional Training Needed		Total
	%	Count	%	Count	%	Count	
Certification in packaging and shipping of Division 6.2 infectious substances (including Category A)	98.1%	53	0.0%	0	1.9%	1	54
Biosecurity Plan	96.2%	51	1.9%	1	1.9%	1	53
Select Agent Regulations	92.5%	49	3.8%	2	3.8%	2	53
BSL-3 standard and special practices	94.3%	50	1.9%	1	3.8%	2	53
Continuous Quality Improvement (review, improvement, and implementation)	77.4%	41	15.1%	8	7.5%	4	53

38a. Which training format(s) do you prefer?

Training	Online/live webinar		Online/archived webinar		Virtual course		In-person / classroom		Telephone (no web component)	
	%	Count	%	Count	%	Count	%	Count	%	Count
BSL-2 safe practices (fund. of biological materials safety practices, exclud-ing bloodborne pathogen training)	45.3%	24	50.9%	27	34.0%	18	71.7%	38	0.0%	0
Biological Risk Assessment	45.3%	24	49.1%	26	28.3%	15	71.7%	38	1.9%	1
Personal Protective Equipment	35.8%	19	41.5%	22	32.1%	17	79.2%	42	0.0%	0
Biosafety Cabinets and other Engineering Controls	45.3%	24	50.9%	27	37.7%	20	58.5%	31	0.0%	0
Bloodborne Pathogens	43.4%	23	54.7%	29	43.4%	23	43.4%	23	0.0%	0
Spill Prevention, Control, and Response Plan	37.7%	20	49.1%	26	35.8%	19	67.9%	36	0.0%	0
Sharps Hazard	43.4%	23	56.6%	30	39.6%	21	41.5%	22	0.0%	0
Safe Handling and Use of Cryogenic Liquids	45.3%	24	52.8%	28	34.0%	18	34.0%	18	0.0%	0
Chemical Hazards	43.4%	23	50.9%	27	35.8%	19	56.6%	30	0.0%	0
Decontamination	41.5%	22	47.2%	25	37.7%	20	69.8%	37	0.0%	0
Regulated Waste Management	43.4%	23	54.7%	29	35.8%	19	45.3%	24	0.0%	0
Emergency Management and Response	47.2%	25	56.6%	30	39.6%	21	56.6%	30	0.0%	0
Certification in packaging/ shipping of IATA Division 6.2 infectious substances (Category A)	32.1%	17	39.6%	21	39.6%	21	81.1%	43	0.0%	0
Biosecurity Plan	43.4%	23	45.3%	24	35.8%	19	66.0%	35	0.0%	0
Select Agent Regulations	41.5%	22	47.2%	25	30.2%	16	69.8%	37	1.9%	1

Training	Online/live webinar		Online/archived webinar		Virtual course		In-person / classroom		Telephone (no web component)	
	%	Count	%	Count	%	Count	%	Count	%	Count
BSL-3 safety practices	35.8%	19	41.5%	22	30.2%	16	86.8%	46	0.0%	0
Continuous Quality Improvement (review, improvement, and implementation)	45.3%	24	54.7%	29	32.1%	17	64.2%	34	0.0%	0
Other - please specify	11.3%	6	11.3%	6	7.5%	4	3.8%	2	1.9%	1

n=53. Other responses are on file with APHL.

SECTION 5: CHEMICAL THREATS

31. From July 1, 2018 to June 30, 2019, did your PHL utilize your CT capabilities to respond to any of the following? Please check all that apply.

CT capabilities utilized?	%	Count
No	48.1%	26
Biomonitoring investigations	27.8%	15
Chemical threat – non-clinical sample	24.1%	13
Community concern (e.g., Exposure to a potentially toxic chemical) – non-clinical sample	18.5%	10
Chemical threat – clinical sample	14.8%	8
Community concern (e.g., Exposure to a potentially toxic chemical) – clinical sample	11.1%	6
Other, please specify	7.4%	4
Chemical spill or other emergency incident – non-clinical sample	3.7%	2
Chemical spill or other emergency incident – clinical sample	1.9%	1

n=54. Other specified responses include lead exposure programs and opioid crisis response efforts. Individual responses are on file with APHL.

31a. Which LRN-C resources are you utilizing for your laboratory's biomonitoring efforts? Please check all that apply.

LRN-C resources utilized for biomonitoring	%	Count
Instruments/equipment	100.0%	15
Personnel	93.3%	14
Analytical methods	80.0%	12
Technical training	40.0%	6
Relationships with clinical community, other relationships	40.0%	6

n=15

31b. What other funding sources are you utilizing for biomonitoring? Please check all that apply.

Biomonitoring funding sources	%	Count
Other federal, please explain	71.4%	10
State, please explain	50.0%	7
Other, please explain	14.3%	2

n=14. Other specified responses include CDC bio-monitoring funding and consortium funding. Individual responses are on file with APHL.

32. As of June 30, 2019, for which proficiency tests administered by CDC/NCEH did your lab qualify? Please check all that apply.

Laboratory qualified for __ proficiency tests	%	Count
Qualified for sample collection, packing, and shipping (SCPaS)	96.3%	52
Cd/Hg/Pb in blood by ICP-MS	81.5%	44
Cyanide in blood by GC-MS	79.6%	43
Nerve agent metabolites in blood by LC-MS/MS	77.8%	42
Tetramine in urine by GC-MS	77.8%	42
Nerve agent metabolites in urine by LC-MS/MS	77.8%	42
Trace metals panel in urine by ICP-MS	75.9%	41
Ricinine/Abrine in urine by LC-MS/MS	75.9%	41
VOCs in blood by GC-MS	74.1%	40
As/Se in urine by ICP-MS	64.8%	35
Tetranitromethane biomarker in urine by LC-MS/MS	44.4%	24
Lewisite metabolite in urine by LC-ICP-MS	29.6%	16
Sulfur mustard metabolite in urine by LC-MS/MS	24.1%	13
Nitrogen mustard metabolite in urine by LC-MS/MS	20.4%	11
Not qualified	1.9%	1

n=54

33. Do you use your LRN-C instrumentation for biosurveillance for drugs of abuse, such as opioids?

Biosurveillance for drugs of abuse?	%	Count
Yes	35.2%	19
No	64.8%	35

n=54

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

Question	Currently certified / accredited		Planning for certification / accreditation next year		Not certified / not planning		Total
	%	Count	%	Count	%	Count	
CLIA (toxicology subspeciality)	55.6%	30	7.4%	4	38.9%	21	54
CAP	13.0%	7	0.0%	0	87.0%	47	54
ISO	5.6%	3	11.1%	6	83.3%	45	54
Other	13.0%	7	3.7%	2	87.0%	47	54

n=54

35. Does your PHL plan to replace the following LRN-C instruments? Please check all that apply.

LRN-C instrument replacements	%	Count
LC/MS or LC/MS/MS (used for Organophosphate Nerve Agents (OPNA), abrin/ricinine, MTP3, other organic chemicals)	38.9%	21
None of the above	20.4%	11
ICP/MS (used for metals)	18.5%	10
Equipment already in place; replacements not needed	18.5%	10
GC/MS with Multi-Purpose Sampler (MPS) (to test for VOCs, cyanide, other organic chemicals)	16.7%	9
Other (used for solid phase extraction)	14.8%	8
GC/MS (used for tetramine and other organic chemicals)	9.3%	5

n=54. Other specified responses include automated extractors and liquid handlers. Individual responses are on file with APHL.

35a. How many of each instrument do you plan to replace?

Individual responses are on file with APHL.

35b. When do you plan to replace the instrument(s)?

Individual responses are on file with APHL.

35c. How much would it cost to replace the instrument(s)?

Individual responses are on file with APHL.

35d. Is the instrument(s) used for programs other than CT?

Question	Yes		No or N/A		Total
	%	Count	%	Count	
LC/MS or LC/MS/MS (used for Organophosphate Nerve Agents (OPNA), abrin/ricinine, MTP3, other organic chemicals)	47.6%	10	52.4%	11	21
ICP/MS (used for metals)	30.0%	3	70.0%	7	10
GC/MS with Multi-Purpose Sampler (MPS) (to test for VOCs, cyanide, other organic chemicals)	11.1%	1	88.9%	8	9

Question	Yes		No or N/A		Total
	%	Count	%	Count	
Other (used for solid phase extraction), please specify	62.5%	5	37.5%	3	8
GC/MS (used for tetramine and other organic chemicals)	0.0%	0	100.0%	5	5

n=54. Other responses are on file with APHL.

36. Does your PHL plan to purchase a service contract for the following LRN-C instruments? Please check all that apply.

Plan to purchase service contract for LRN-C instruments?	%	Count
ICP/MS	79.6%	43
LC/MS	72.2%	39
GC/MS (MPS)	70.4%	38
GC/MS	64.8%	35
Other, please specify	44.4%	24
None of the above	16.7%	9

n=54. Other specified responses include solid phase extraction and liquid handler units. Individual responses are on file with APHL.

36a. How much would the service contract cost?

Individual responses are on file with APHL.

36b. How many years will the service contract cover?

Individual responses are on file with APHL.

36c. What is the source of funding for service contracts for CT instruments? Please check all that apply.

Source funding for CT instrument service contracts	%	Count
CDC PHEP Cooperative Agreement	79.6%	43
State Funding	22.2%	12
Other, please specify *	14.8%	8
Other Federal, please specify **	9.3%	5
Local Funding	3.7%	2

n=54. Other specified responses include instruments still covered under original warranty and no direct funding for instrument service contracts. Individual responses are on file with APHL.

37-38. Results are located on pages 14-16 in the Biological Preparedness section.

39. 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, 2018 to June 30, 2019. APHL staff will contact you to follow-up on these stories and to solicit photos. Stories may be featured in issue briefs or other APHL publications, such as Lab Matters, eUpdate or APHL's blog.

Individual responses are on file with APHL.

SECTION 6: RADIOLOGICAL THREATS

40. Does your laboratory have the ability to perform radiological testing in the following matrices? Please check all that apply.

Question	Yes		No		Total
	%	Count	%	Count	
Human clinical (bioassay) samples	5.6%	3	94.4%	51	54
Environmental samples	42.6%	23	57.4%	31	54
Food samples	29.6%	16	70.4%	38	54

40a. Is your laboratory interested in developing the capability to test for radionuclides to measure human radiation contamination and become CLIA compliant for clinical samples?

Interest in developing human radiation testing capability?	%	Count
Yes	45.1%	23
No, please specify why not *	54.9%	28

n=51. Specified responses include lack of infrastructure and lack of staff. Individual responses are on file with APHL.

40b. If another laboratory in your state performs clinical bioassay testing, please list the laboratory's name and briefly describe their capability (e.g., radionuclides tested and throughput per week). Please write N/A if not applicable.

5 laboratories provided individual responses, which are on file with APHL.

41. Does your PHL require first responders and law enforcement to screen for the following prior to submission of unknown samples for testing?

Screening requirements	%	Count
Radiological	90.7%	49
Explosive	87.0%	47
Other (please specify)	51.9%	28
None	1.9%	1

n=54

42. Are you aware of the National Alliance for Radiation Readiness (NARR)?

Aware of NARR?	%	Count
Yes	48.1%	26
No	51.9%	28

n=54

43. Does your laboratory have responsibility for radiological preparedness? (e.g. testing environmental, food or clinical samples)

Responsible for radiological preparedness?	%	Count
Yes, please describe	50.0%	27
No	50.0%	27

n=54. Specified responses include environmental sample testing and supporting FDA FERN laboratory needs. Individual responses are on file with APHL.

44. Does your state have a nuclear power plant?

Nuclear power plant?	%	Count
Yes	63.0%	34
No - proceed to question 45	37.0%	20

n=54

44a. Does your laboratory conduct baseline environmental monitoring near a nuclear power plant?

Baseline environmental monitoring of nuclear power plant?	%	Count
Yes	61.8%	21
No	38.2%	13

n=34

45. 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, 2018 to June 30, 2019. APHL staff will contact you to follow-up on these stories and to solicit photos. Stories may be featured in issue briefs or other APHL publications, such as Lab Matters, eUpdate, or APHL's blog.

Individual responses are on file with APHL.

ACRONYM GLOSSARY

APHL ..... Association of Public Health Laboratories

ASM ..... American Society for Microbiology

ASPR ..... Assistant Secretary for Preparedness and Response

BT ..... Bioterrorism or Biological Threat

CAP ..... College of American Pathologists

CDC..... US Centers for Disease Control and Prevention

CLIA..... Clinical Laboratory Improvement Amendments

COOP..... Continuity of Operations Plan

CST ..... Civil Support Team

CT ..... Chemical Terrorism or Chemical Threat

DHS..... US Department of Homeland Security

EPA..... US Environmental Protection Agency

FBI..... US Federal Bureau of Investigation

FEMA..... US Federal Emergency Management Agency

FERN ..... Food Emergency Response Network

FTIR..... Fourier-Transform Infrared Spectroscopy

GC-MS..... Gas Chromatography-Mass Spectrometry

HHS..... US Department of Health and Human Services

HPP ..... Hospital Preparedness Program

ICP-MS ..... Inductively Coupled Plasma-Mass Spectrometry

ISO..... International Organization for Standardization

LC-MS/MS. Liquid Chromatography-Tandem Mass Spectrome-try

LIMS..... Laboratory Information Management System

LPX..... Laboratory Preparedness Exercise

LRN ..... Laboratory Response Network

LRN-B..... Laboratory Response Network for Biological Threat Preparedness

LRN-C..... Laboratory Response Network for Chemical Threat Preparedness

NAHLN..... National Animal Health Laboratory Network

NHSPI ..... National Health Security Preparedness Index

PCR ..... Polymerase Chain Reaction

PHEP ..... Public Health Emergency Preparedness

PHL ..... Public Health Laboratory

P&S ..... Packaging and Shipping

RT..... Radiological Terrorism or Radiological Threat

SPHL ..... State Public Health Laboratory

TFAH..... Trust for America's Health

UASI ..... Urban Areas Security Initiative

USPS ..... US Postal Service