2017 APHL ALL-HAZARDS LABORATORY PREPAREDNESS SURVEY

SUMMARY DATA REPORT

May 2018

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

Introduction

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 between October and November 2017, the survey covered a 12 month period from July 1, 2016 to June 30, 2017 representing the CDC Public Health Emergency Preparedness (PHEP) Cooperative Agreement Fiscal Year 2016, also known as Budget Period 5. APHL received a 98% (53/54 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. Both 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.

For questions on the data or APHL survey methodologies, please contact Lorelei Kurimski, director, Institutional Research, at 240.485.2703 or lorelei.kurimski@aphl.org.

For questions pertaining to APHL's preparedness and response activities, please contact Samuel Abrams, MPH at 240.485.2731 or samuel.abrams@aphl.org.

Section 1: Demographics

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

BT Coordinator Name:
Phone:
Email:

CT Coordinator Name:
Phone:
Email:

State Training Coordinator Name:
Phone:
Email:

24/7 Contact Information:
Phone:

Section 2: Funding & Workforce

1. From July 1, 2016 to June 30, 2017, did your PHL experience any funding cuts to preparedness activities?

Answer	%	Response
Yes	35.8%	19
No	64.2%	34
Total	**100%**	**53**

1a. Please choose the top five impacts of any preparedness funding cuts your PHL experienced from July 1, 2016 to June 30, 2017.

Answer	%	Response
Unable to purchase critical equipment (e.g., PCR instrumentation, automated extractors, biosafety cabinets, etc.)	52.6%	10
Unable to renew service/maintenance contracts	52.6%	10
Unable to expand capabilities for new assays/tests/methods	47.4%	9
Unable to hire staff due to lack of funds	47.4%	9
Unable to provide or reduced the number of training courses and outreach activities	42.1%	8
Combined staff positions	26.3%	5
Unable to participate in national meetings/conferences/training courses	21.1%	4
Unable to purchase reagents and supplies or materials	21.1%	4
Lost full-time position(s)	21.1%	4
Unable to purchase and/or upgrade Laboratory Information Management System (LIMS)	15.8%	3
Increased staff turnover	15.8%	3
Reduced state courier services	10.5%	2
Other-please specify	10.5%	2
Increased sample/specimen turnaround time	5.3%	1
Reduced 24/7 capability	5.3%	1
Unable to participate in exercises	5.3%	1
Lost part-time position(s)	0.0%	0
Unable to respond to an event	0.0%	0
Experienced no change in laboratory operations	0.0%	0
Total	100%	19

Other specified responses include reduced size of annual sentinel laboratory conference and unable to attend conferences and meetings. Individual responses are on file with APHL.

2. From July 1, 2016 to June 30, 2017, how much preparedness funding did your PHL receive? *Please enter "0" if none. Total amounts for Biological Preparedness must be same across Questions 2, 3 and 4. Total amounts for Chemical Preparedness must be same across Questions 2, 3 and 4.*

	Biological Preparedness	Chemical Preparedness	Radiological Preparedness
	Amount	Amount	Amount
CDC PHEP Cooperative Agreement	$54,833,914 (53/53)	$32,959,541 (51/53)	$0 (0/53)
ASPR HPP Cooperative Agreement	$1,075,288 (7/53)	$0 (0/53)	$0 (0/53)
DHS/FEMA Preparedness Grants (e.g., UASI, State Homeland Security Grant)	$0 (0/53)	$0 (0/53)	$225,347 (1/53)
DHS/BioWatch Funding	$2,380,754 (13/53)	$0 (0/53)	$0 (0/53)
State	$5,701,608 (9/53)	$1,162,603 (8/53)	$373,218 (2/53)
Other	$4,469,263 (11/53)	$2,490,378 (8/53)	$1,118,354 (7/53)
TOTAL	**$68,460,827 (53/53)**	**$36,612,522 (51/53)**	**$1,716,919 (8/53)**

Other specified responses include Food Emergency Response Network (FERN), Public Health Emergency Preparedness (PHEP) Ebola Supplemental Funding and Department of Homeland Security (DHS) BioWatch program. Individual responses are on file with APHL.

3. From July 1, 2016 to June 30, 2017, how much of your PHL's CDC PHEP Cooperative Agreement funding did you receive to maintain and enhance chemical threat activities? Please enter "0" if none.

Reported data has been removed due to issues found in the data verification process. The reported funding for all LRN-C activities is reported in question 5, totaling $32,959,541.

4. Did you receive any PHEP Supplemental funding in October 2016?

Answer	%	Count
Yes - How much = $10,597,996	45.3%	24
No	54.7%	29
Total	100%	53

5. From July 1, 2016 to June 30, 2017, 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.*

	PHEP Funds for Bio		PHEP Funds for Chem		PHEP Funds for Rad	
	n	$	n	$	n	$
Distributed to Other Laboratories	7	$6,380,136	1	$41,000	0	$0
Salaries & Fringe	52	$27,122,067	47	$13,742,402	0	$0
Equipment Purchase	22	$2,748,211	26	$6,319,895	0	$0
Equipment Maintenance	43	$4,835,889	40	$5,291,033	0	$0
Supplies	51	$4,414,357	47	$3,295,292	0	$0
Training & Travel	47	$1,182,116	36	$281,526	0	$0
General Overhead	29	$3,555,794	27	$2,679,168	0	$0
Renovations	1	$50,000	0	$0	0	$0
Unobligated/ Unspent	5	$529,164	6	$425,949	0	$0
Other	37	$4,016,180	26	$883,276	0	$0

6. What factors affected your PHL's ability to carry out preparedness activities from July 1, 2016 to June 30, 2017? Please check all that apply.

Answer	%	Count
Lack of qualified applicants	45.3%	24
Non-competitive salaries	41.5%	22
No difficulties experienced	24.5%	13
Lack of funding	22.6%	12
Other - please specify	20.8%	11
Hiring freezes	15.1%	8
Lay-offs	3.8%	2
Furloughs	1.9%	1
Total	100%	53

Other specified responses included training difficulties, loss of personnel and lack of funding for maintenance contracts. Individual responses are on file with APHL.

Section 3: Planning & Response

7. Does your PHL have a cross-border contact with Canada or Mexico?

Answer	%	Count
Yes	20.8%	11
No	79.2%	42
Total	100%	53

7a. Please provide the following information regarding your cross-border contact.

Individual responses are on file with APHL.

8. In which of the following laboratory networks is your PHL a member? Please check all that apply and provide funding amounts.

Answer	%	Count
LRN-B	98.1%	52
FERN	83.0%	44
LRN-C: Level 2	66.0%	35
ERLN - WLA	39.6%	21
ERLN	37.7%	20
LRN-C: Level 3	30.2%	16
LRN-C: Level 1	18.9%	10
Other - please specify	11.3%	6
ERLN for Chemical Warfare Agents (CWAs)	7.5%	4
NAHLN	1.9%	1
NPDN	0.0%	0
Vet-LIRN	0.0%	0
Total	100%	53

Other specified responses included PulseNET and CaliciNET. Individual responses are on file with APHL.

9. Which of the following agencies does your PHL collaborate with on sample/specimen submission and testing? Please check all that apply.

Answer	%	Count
Sentinel Clinical Laboratory	100.0%	53
Civil Support Teams (CSTs)	100.0%	53
Epidemiologists	98.1%	52

Federal Bureau of Investigation (FBI)	98.1%	52
U.S. Postal Inspection Service	90.6%	48
State or Local Law Enforcement	90.6%	48
Local Hazardous Materials (HAZMAT) Teams	84.9%	45
Physician/Medical Providers	81.1%	43
Veterinary Laboratory	73.6%	39
Fire Department	71.7%	38
State HAZMAT Teams	67.9%	36
Food Laboratory	62.3%	33
Poison Control Centers	54.7%	29
Agriculture Laboratory	54.7%	29
Local/Branch Public Health Laboratory	45.3%	24
Department of Homeland Security (DHS)/BioWatch	45.3%	24
University Research Laboratory	45.3%	24
Paramedics/Emergency Medical Technicians (EMTs)	37.7%	20
Department of Defense Laboratories (Military)	26.4%	14
Other - please specify	24.5%	13
None of the above	0.0%	0
Total	100%	53

Other specified responses included CDC, U.S. Marshal's Office and U.S. Secret Service. Individual responses are on file with APHL.

10. (NHSPI) 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?

Answer	%	Count
Yes	88.7%	47
No	11.3%	6
Total	100%	53

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

Answer	%	Count
Yes, a state agency or department-wide COOP that includes the laboratory	49.1%	26
Yes, a laboratory specific COOP	45.3%	24
No, but the laboratory or state is developing a COOP	5.7%	3
No	0.0%	0
Total	100%	53

11a. 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.

Answer	%	Count
LRN testing (e.g., biological and chemical threat agents)	98.1%	52
Infectious diseases (e.g., reference and specialized testing) – please specify the critical tests	90.6%	48
Newborn screening	60.4%	32
Environmental health (e.g., water testing, lead testing)	56.6%	30
Food safety	47.2%	25
Other - please specify	30.2%	16
Total	100%	53

11b. From July 1, 2016 to June 30, 2017, did your PHL evaluate the functionality of your COOP via a real event or an exercise?

Answer	%	Count
Yes	50.9%	27
No	49.1%	26
Total	100%	53

11c. From July 1, 2016 to June 30, 2017, did you activate your laboratory COOP?

Answer	%	Count
Yes - please provide any additional information on the steps and outcomes.	24.5%	13
No	75.5%	40
Total	100%	53

Additional information on the steps and outcomes is available in the individual date files.

12. (NHSPI) Please indicate the number of preparedness exercises your PHL conducted or participated in from July 1, 2016 to June 30, 2017. Do not include your responses to real events and proficiency tests. Please enter "0" if none.

	Tabletop Exercises	Drills	Functional Exercises	Full-Scale Exercises
Biological Threats	38	76	40	10
Chemical Threats	11	25	68	15
Radiological Threats	4	13	5	4
Multi-Hazards	12	14	16	6
Pandemic Influenza	2	0	0	0
COOP	3	9	4	0
Other	7	17	11	5

13. From July 1, 2016 to June 30, 2017, please enter the total number of LRN samples and specimens you accepted and tested. Do not include proficiency tests or exercises. Please enter “0” if none.

	Total Number Accepted	BT Agents Tested	CT Agents Tested	RT Agents Tested	Other Analyses
Clinical	8,458	3,314	3,727	0	10,673
Environmental	77,264	949	252	771	608
BioWatch	171,642	189,138	0	0	0
TOTAL	**257,364**	**193,401**	**3,979**	**771**	**11,281**

13a. How many of your PHL’s environmental samples were from the following categories? Do not include clinical or BioWatch specimens/samples. Please enter "0" if none.

Type	Number
Letter/package with unknown powder	369

Food/beverage	74,436
USPS sample (e.g., clean-up, BDS, etc.)	14
Other	2,445
TOTAL	**77,264**

14. (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.)

Answer	%	Count
Yes	100.0%	53
No	0.0%	0
Total	100%	53

15. (TFAH) Has your laboratory implemented a molecular (e.g. real-time PCR) or serological assay for human clinical specimen testing (e.g. IgM ELISA) to detect Zika virus? Please check all that apply.

Answer	%	Count
Yes, implemented molecular assay	77.4%	41
Yes, Implemented serological assay	69.8%	37
Yes, implemented molecular and serological assays and assures access to Zika diagnostic testing via another laboratory (e.g., other public health laboratory, commercial lab)	43.4%	23
No, did not implement molecular or serological assay	0.0%	0
Total	100%	53

16. Do you have a chemical response plan to collect patient specimens following a chemical terrorism event or large-scale chemical accident (e.g., industrial or environmental)? Please check all that apply.

Answer	%	Count
Yes	73.6%	39
No	26.4%	14
Total	100%	53

16a. Is your chemical response plan integrated into a larger laboratory or state-specific response plan?

Answer	%	Count
Yes	69.2%	27
No	30.8%	12
Total	100%	39

17. Which of the following stakeholders does your chemical response plan include input from? Please check all that apply.

Answer	%	Count
Hospitals	52.8%	28
First responders	50.9%	27
National Guard Bureau/Civil Support Teams	50.9%	27
Local public health department	41.5%	22
Poison centers	41.5%	22
Emergency preparedness coalitions	39.6%	21
None	24.5%	13
Regional coalitions	20.8%	11
Other - please specify	17.0%	9
Total	100%	53

Other specified responses included FBI, HAZMAT and US Postal Inspection Service. Individual responses are on file with APHL.

18. Within your chemical response plan have you designated an individual who is responsible for requesting patient specimens be collected?

Answer	%	Count
Yes - Please provide the individual's job title	41.5%	22
No	58.5%	31
Total	100%	53

Individual responses are on file with APHL.

19. Have you exercised your chemical response plan?

Answer	%	Count
Yes	32.1%	17
No	67.9%	36
Total	100%	53

19a. What are the reasons why you have not exercised the chemical response plan? Please check all that apply.

Answer	%	Count
Other - please specify	35.1%	20
Lack of funding	22.8%	13
Lack of partner participation	21.1%	12
Hiring freezes	7.0%	4
Lack of qualified applicants	7.0%	4
No difficulties experienced	3.5%	2
Furloughs	1.8%	1
Lay-offs	1.8%	1
Total	100%	57

Other specified responses included staffing challenges and not currently have a chemical response plan. Individual responses are on file with APHL

Section 4: Biological Threats

20. 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 revised Sentinel Clinical Laboratories Definition?

Answer	%	Count
Yes, for the entire state	94.3%	50
Yes, for my jurisdiction only (may not be the entire state)	5.7%	3
No	0.0%	0
Total	100%	53

20a. How many active sentinel clinical laboratories are in your database?

Total Number of Laboratories			
3,928			
Min	Max	Median	Mean
7	422	50	74

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

Answer	%	Count
Use APHL, CDC LRN, and ASM definition	86.8%	46
Use other definition - please specify	15.1%	8
We do not identify sentinel clinical laboratories	0.0%	0
Total	100%	53

Other definitions included all laboratories capable of performing blood and Cerebrospinal Fluid Cultures, and laboratories that have a microbiology unit capable of performing LRN rule-out testing. Individual responses are on file with APHL.

21a. Please provide any additional information on the criteria your laboratory used to identify a sentinel clinical laboratory. Click here if you have no comment.

Individual responses are on file with APHL .

22. Has your PHL awarded a certificate of recognition to sentinel clinical laboratories in your state? Please check all that apply.

Answer	%	Count
Yes, awarded the LRN Joint Leadership Committee (JLC) approved certificate	20.8%	11
Yes, awarded a state developed certificate	22.6%	12
No	60.4%	32
Total	100%	53

22a. How many sentinel clinical laboratories received a certificate? Please enter "0" if none.

LRN JLC Certificate	251

State Certificate	432

23. 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.

Answer	%	Count
College of American Pathologists (CAP) Laboratory Preparedness Exercise (LPX)	88.7%	47
State developed	17.0%	9
Other - please specify	7.5%	4
Wisconsin State Laboratory of Hygiene Proficiency Testing (WSLHPT)/Challenge Set for Sentinel Laboratories	5.7%	3
None of the above	5.7%	3
Total	100%	53

Other: For the entire list of documented items, please see the 2017 APHL All-Hazards Laboratory Preparedness Survey Summary Data Report.

23a. Do these competency assessments impact the renewal status of sentinel clinical laboratories?

Answer	%	Count
Yes	8.0%	4
No	92.0%	46
Total	100%	50

23b. How do you utilize the CAP LPX in your state? Please check all that apply.

Answer	%	Count
Track which sentinel clinical laboratories contact the LRN Reference PHL	93.6%	44
Provide training and outreach to the sentinel clinical laboratories that do not provide the intended responses for the LPX organisms	85.1%	40
Test competency of LRN-B staff at your state PHL (e.g., your PHL actively participates in the testing of the LPX organisms)	70.2%	33
Test the ability of sentinel clinical laboratories to package and ship specimens to the LRN Reference PHL	53.2%	25
Other - please specify	8.5%	4
Total	100%	47

Other specified responses included sending mock shipper's declaration and requiring the use of STATPak telecommunication process. Individual responses are on file with APHL.

24. (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.

Answer	%	Count
Routine updates	84.9%	45
Training events, such as providing a training calendar	84.9%	45
Outbreaks	73.6%	39
Other - please specify	45.3%	24
Have not used it	0.0%	0
Total	100%	53

Other specified responses included CDC Alerts, electronic surveys and LIMS updates. Individual responses are on file with APHL

24a. Pease provide any additional information on the type of outbreak and the steps and outcomes.

Individual responses are on file with APHL

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

Answer	%	Count
Yes	100.0%	53
No	0.0%	0
Total	100%	53

26. From July 1, 2016 to June 30, 2017, 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.)

Answer	%	Count
Yes	81.1%	43
No	18.9%	10
Total	100%	53

27. From July 1, 2016 to June 30, 2017, did your PHL sponsor any sentinel clinical laboratory trainings?

Answer	%	Count
Yes	84.9%	45
No	15.1%	8
Total	100%	53

27a. Please indicate how many classes were provided and how many facilities were trained. Please enter "0" if none.

	Rule-out Testing Only	Packaging and Shippling (P&S) Only	Any Combo of Categories	Other	TOTAL
Number of classes	67	177	36	159	439
Number of facilities that received training	347	1,224	188	546	2,305
Number of laboratorians that received training	797	3,028	447	1,184	5,456

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

Answer	%	Count
Yes	56.6%	30
No	43.4%	23
Total	100%	53

28a. What type of outreach is conducted? Please check all that apply.

Answer	%	Count
Training	86.7%	26
Reporting requirements and referral for laboratory testing for notifiable conditions	66.7%	20
Improving public relations (PR) from PHL to community	63.3%	19
Chemical terrorism response/coordination	53.3%	16
Other - please specify	36.7%	11
Marketing PHL services for revenue	13.3%	4

Total	100%	30

Other specified responses included biosafety training, risk assessment training and chain of custody training. Individual responses are on file with APHL.

29. 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?

Answer	%	Count
Yes	47.2%	25
No	41.5%	22
Planning in future	11.3%	6
Total	100%	53

29a. How often are meetings held?

Answer	%	Count
Quarterly	44.0%	11
Semi-annually	28.0%	7
Annually	4.0%	1
Other - please specify	24.0%	6
Total	100%	25

Other specified responses included monthly face to face and as needed via email or conference call. Individual responses are on file with APHL.

29b. What topics are discussed? Please check all that apply.

Answer	%	Count
How to improve collaboration and communication	88.0%	22
New lab tests or technology	88.0%	22
Laboratory system improvement	72.0%	18
Other - please specify	52.0%	13
Total	100%	25

Other specified responses included training events, emerging infectious diseases and infection control strategies. Individual responses are on file with APHL.

30. (TFAH) From July 1, 2015 to June 30, 2016, did your laboratory provide biosafety training and or provide information about biosafety training courses for sentinel clinical laboratories in your jurisdiction? Please check all that apply.

Answer	%	Count
Yes, provided training	75.5%	40
Yes, provided information about training opportunities	54.7%	29
No	7.5%	4
Total	100%	53

30a. What percentage of sentinel clinical labs participated in biosafety training courses? Range is 0 to 100%.

Average	Median	Minimum	Maximum
44.5%	39.5%	2.0%	100.0%

30b. What were the barriers to providing training? Please check all that apply.

Answer	%	Count
Other - please specify	100.0%	4
Lack of biosafety staff at the public health laboratory	50.0%	2
No funding	25.0%	1
Lack of interest from the sentinel clinical labs	0.0%	0
Information technology compatibility issues (e.g., different platforms for web based training)	0.0%	0
Total	100%	4

Other specified responses included lack of personnel and training being conducted by local public health laboratories. Individual responses are on file with APHL.

30c. Please respond to the following topics below

Number of participating sentinel clinical laboratories	1,025
Number of participating sentinel clinical laboratorians	2,798

31. (TFAH) Does your laboratory have a biosafety professional?

Answer	%	Count
Yes	94.3%	50
No	5.7%	3
Total	100%	53

31b. What are/what would be the duties of the Biosafety Professional? Please check all that apply.

Answer	%	Count
Institutional oversight for Biosafety including providing guidance to staff	96.0%	48
Outreach to sentinel clinical labs	94.0%	47
Site visits to sentinel clinical labs	86.0%	43
Other - please specify	30.0%	15
Total	100%	50

Other specified responses included trainings, serving as Alternate Responsible Official and maintaining the general health and safety of the facility. Individual responses are on file with APHL.

32. Which automated nucleic acid extraction instruments does your PHL currently have and which do you plan to procure in the next year?

Question	Currently Have in PHL		Planning to Procure Next Year		Neither	
Roche MagNA Pure Compact	86.8%	46	0.0%	0	13.2%	7
Qiagen QIACube	67.9%	36	0.0%	0	32.1%	17
Roche MagNA Pure LC 2.0	52.8%	28	0.0%	0	47.2%	25
bioMerieux NucliSENS easyMAG	47.2%	25	0.0%	0	52.8%	28
Roche MagNA Pure 96 instrument IVD	24.5%	13	5.7%	3	69.8%	37
Roche MagNA Pure LC	24.5%	13	0.0%	0	75.5%	40
Other	22.6%	12	1.9%	1	75.5%	40
BD MAX System	5.7%	3	1.9%	1	92.5%	49
Qiagent QIAsymphony SP or AS	5.7%	3	1.9%	1	92.5%	49
Roche MagNA Pure 24 instrument	5.7%	3	17.0%	9	77.4%	41
Abbott Molecular m2000sp	3.8%	2	0.0%	0	96.2%	51
Qiagen QIAxtractor (Corbett X-tractor Gene)	1.9%	1	0.0%	0	98.1%	52

Qiagen EZ1 Advanced XL IVD	1.9%	1	0.0%	0	98.1%	52
Qiagen EZ1 Advanced IVD	1.9%	1	0.0%	0	98.1%	52
Qiagen EZ1plus DSP	1.9%	1	0.0%	0	98.1%	52

33. Which Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometer (MS) instrument does your PHL currently have and which do you plan to procure in the next year?

Question	Currently have in PHL		Planning to procure next year		Neither	
Bruker Biotyper CA (Microflex with Biotyper software, FDA Approved, Catalog # 8603464)	47.2%	25	5.7%	3	47.2%	25
Bruker Biotyper CM (Microflex with Biotyper software, RUO, Catalog # 8604562	26.4%	14	1.9%	1	71.7%	38
bioMérieux VITEK® MS	9.4%	5	0.0%	0	90.6%	48
Bruker Microflex LT/SH (no Biotyper software, Catalog # 8269956)	7.5%	4	1.9%	1	90.6%	48
bioMérieux VITEK® MS Plus	7.5%	4	0.0%	0	92.5%	49

34. Does your laboratory have the KingFisher Flex Purification System with 96 Deep-well Head?

Answer	%	Count
Yes	24.5%	13
No	73.6%	39
No, but planning to procure within the year	1.9%	1
Total	100%	53

35. Does your laboratory have capability to perform whole genome sequencing for biological threats?

Answer	%	Count
Yes – please describe the platform in use	56.6%	30
No	43.4%	23
Total	100%	53

Specified responses included Illumina MiSeq and PacBio sequencer. Individual responses are on file with APHL.

36. 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, 2016 to June 30, 2017. 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*, E-Update, or APHL's blog. Click here if you have no comment.

Individual responses are on file with APHL

Section 5: Chemical Threats

37. From July 1, 2016 to June 30, 2017, was your LRN-C capability increased, decreased or maintained?

Answer	%	Count
Increased	32.1%	17
Decreased	7.5%	4
Maintained	60.4%	32
Total	100%	53

37a. How did your capability increase? Please check all that apply.

Answer	%	Count
Added one LRN-C method	52.9%	9
Added CT equipment	52.9%	9
Added CT personnel	17.6%	3
Other - please specify	5.9%	1
Added two LRN-C methods	0.0%	0
Added more than two LRN-C methods	0.0%	0
Total	100%	17

Other specified response was increased analytical turnaround time.

37b. How did your capability decrease? Please check all that apply.

Answer	%	Count
Other - please specify	50.0%	2
Lost CT personnel	50.0%	2
Dropped more than two LRN-C methods	25.0%	1
Unable to maintain service agreement(s) on current equipment	25.0%	1

Unable to purchase new equipment required to add methods	25.0%	1
Dropped two LRN-C methods	0.0%	0
Lost CT equipment	0.0%	0
Dropped a CT Level	0.0%	0
Reduced support from the broader system	0.0%	0
Lack of connection to those responding (i.e., first responders, communities, epidemiologists, etc.) – please specify the barrier	0.0%	0
Dropped one LRN-C method	0.0%	0
Total	100%	4

Other specified responses were lost capability to test and report cyanide in whole blood, and eliminated on-call funding for 24/7 response.

38. July 1, 2016 to June 30, 2017, did your PHL utilize your CT capabilities to respond to any of the following? Please check all that apply.

Answer	%	Count
No	41.5%	22
Community concern (e.g., exposure to a potentially toxic chemical)	37.7%	20
Biomonitoring investigations – please elaborate on how you utilized your CT capabilities	26.4%	14
Chemical threat	18.9%	10
Chemical spill or other emergency incident	17.0%	9
Other - please specify	13.2%	7
Total	100%	53

Other specified responses included blood lead testing and monitoring pesticide movement. Individual responses are on file with APHL

39. As of June 30, 2017, your CT laboratory qualified for which proficiency tests administered by CDC/NCEH? Please check all that apply.

Answer	%	Count
Qualified for Sample Collection, Packing, and Shipping (SCPaS)	90.6%	48
Cyanide in blood by GC-MS	81.1%	43
Ricinine/Abrine in urine by LC-MS/MS	81.1%	43
VOCs in blood by GC-MS	81.1%	43

Nerve agent metabolites in urine by LC-MS/MS	79.2%	42
Tetramine in urine by GC-MS	79.2%	42
Cd/Hg/Pb in blood by ICP-MS	77.4%	41
Nerve agent metabolites in serum	77.4%	41
Trace metals panel in urine by ICP-MS	77.4%	41
As/Se in urine by ICP-MS	71.7%	38
Tetranitromethane biomarker in urine by LC-MS/MS	41.5%	22
Metabolic toxins by LC-MS/MS	35.8%	19
Lewisite metabolite in urine by LC-ICP-MS	32.1%	17
Sulfur mustard metabolite in urine by LC-MS/MS	24.5%	13
Nitrogen mustard metabolite in urine by LC-MS/MS	18.9%	10
Not qualified	5.7%	3
Total	100%	53

40. (NHSPI) Please provide your CT laboratory's certification/accreditation status with the following. Please check all that apply.

Question	Currently certified/accredited		Planning for certification/accreditation next year		Neither	
CLIA (toxicology subspecialty)	64.2%	34	5.7%	3	30.2%	16
CAP	17.0%	9	0.0%	0	83.0%	44
Other	15.1%	8	0.0%	0	84.9%	45
ISO	7.5%	4	9.4%	5	83.0%	44

Please specify the other certifications/accreditations of your CT laboratory.

Other specified responses included CLIA, EPA and FDA. Individual responses are on file with APHL

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

Answer	%	Count
LC/MS or LC/MS/MS (used for Organo Phosphate Nerve Agents (OPNA), abrine/ricinine, MTP, other organic chemicals)	47.2%	25
None of the above	35.8%	19
ICP/MS (used for metals)	24.5%	13
GC/MS with Multi-Purpose Sampler (MPS) (to test for VOCs, cyanide, other organic chemicals)	9.4%	5
GC/MS (used for tetramine and other organic chemicals)	7.5%	4

Other (used for solid phase extraction) - please specify	7.5%	4
Total	100%	53

Other specified responses included solid phase extractors. Individual responses are on file with APHL.

41a. How many of each instrument do you plan to replace?

Individual responses are on file with APHL

41b. When do you plan to replace the instrument(s)?

Question	Within 1 year		1 to 3 years		3 or more years		I don't know	
LC/MS or LC/MS/MS (used for Organo Phosphate Nerve Agents (OPNA), abrine/ricinine, MTP, other organic chemicals)	44.0%	11	48.0%	12	0.0%	0	8.0%	2
ICP/MS (used for metals)	76.9%	10	15.4%	2	0.0%	0	7.7%	1
GC/MS with Multi-Purpose Sampler (MPS) (to test for VOCs, cyanide, other organic chemicals)	60.0%	3	20.0%	1	0.0%	0	20.0%	1
GC/MS (used for tetramine and other organic chemicals)	50.0%	2	25.0%	1	0.0%	0	25.0%	1
Other (used for solid phase extraction) - please specify	50.0%	2	50.0%	2	0.0%	0	0.0%	0

Individual responses are on file with APHL

41c. How much would it cost to replace the instrument(s)?

Individual responses are on file with APHL

41d. Is the instrument(s) used for programs other than CT?

Question	Yes		No	
LC/MS or LC/MS/MS (used for Organo Phosphate Nerve Agents (OPNA), abrine/ricinine, MTP3, other organic chemicals)	36.0%	9	64.0%	16
ICP/MS (used for metals)	61.5%	8	38.5%	5
GC/MS with Multi-Purpose Sampler (MPS) (to test for VOCs, cyanide, other organic chemicals)	20.0%	1	80.0%	4
GC/MS (used for tetramine and other organic chemicals)	0.0%	0	100.0%	4
Other (used for solid phase extraction) - please specify	0.0%	0	100.0%	4

Individual responses are on file with APHL

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

Answer	%	Count
LC/MS	83.0%	44
ICP/MS	75.5%	40
GC/MS	67.9%	36
GC/MS (MPS)	62.3%	33
Other - please specify	39.6%	21
None of the above	15.1%	8
Total	100%	53

Other specified responses included automated liquid handling systems, Zephyr SPE Workstation and mercury vapor detectors. Individual responses are on file with APHL.

42a. How much would the service contract cost?

Individual responses are on file with APHL.

42b. How many years will the service contract cover?

Individual responses are on file with APHL.

42c. What is the source of funding for service contracts for CT instruments? Please check all that apply.

Answer	%	Count
CDC PHEP Cooperative Agreement	83.0%	44
State Funding	18.9%	10
Other - please specify	17.0%	9
Other Federal - please specify	5.7%	3
Local Funding	0.0%	0
Total	100%	53

Other specified responses included not having any CT instruments and not receiving any CT funding. Individual responses are on file with APHL.

43. 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, 2016 to June 30, 2017. 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*, E-Update, or APHL's blog. Click here if you have no comment.

Individual responses are on file with APHL.

Section 6: Radiological Threats

44. Is your PHL responsible for radiological testing? Please check all that apply.

Question	Clinical Samples		Food Samples		Environmental Samples		None	
Routine testing	3.8%	2	26.4%	14	43.4%	23	54.7%	29
Emergency testing	5.7%	3	32.1%	17	41.5%	22	52.8%	28

45. (TFAH) Does your laboratory have the ability to perform radiological testing in...

Question	Yes		No	
Environmental samples	47.2%	25	52.8%	28
Food samples	39.6%	21	60.4%	32
Clinical (bioassay) samples	11.3%	6	88.7%	47

45a. Is your laboratory interested in developing the capability to test for radionuclides to measure human radiation contamination and become CLIA compliant for clinical samples?

Answer	%	Count
Yes	34.0%	16
No	66.0%	31
Total	100%	47

45b. 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)

Individual responses are on file with APHL

46. 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, 2016 to June 30, 2017. 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, E-Update, or APHL's blog. Click here if you have no comment.

Individual responses are on file with APHL

2017 All-Hazards Laboratory Preparedness Survey Glossary

- **Branch state public health laboratory:** A laboratory that is part of a group of laboratories reporting to a central state laboratory. An example of a branch system is Florida.

- **Drill:** A coordinated, supervised activity usually employed to test a single specific operation or function within a single entity (e.g., a fire department conducts a decontamination drill).

- **Full-Scale Exercises (FSE):** A multi-agency, multi-jurisdictional, multi-discipline exercise involving functional (e.g., joint field office, emergency operation centers, etc.) and “boots on the ground” response (e.g., firefighters decontaminating mock victims).

- **Functional Exercise (FE).**Examines and/or validates the coordination, command, and control between various multi-agency coordination centers (e.g., emergency operation center, joint field office, etc.). A functional exercise does not involve any "boots on the ground" (i.e., first responders or emergency officials responding to an incident in real time).

- **Tabletop Exercise (TTX):** Exercise involving key personnel discussing simulated scenarios in an informal setting. TTXs can be used to assess plans, policies and procedures.

List of Acronyms

APHL	Association of Public Health Laboratories
ASM	American Society for Microbiology
ASPR	Assistant Secretary for Preparedness and Response
BDS	Biohazard Detection System
BT	Bioterrorism or Biological Threat
CAP	College of American Pathologists
CDC	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
CWA	Chemical Warfare Agent
DHS	U.S. Department of Homeland Security
DoD	U.S. Department of Defense
EMT	Emergency Medical Technician
EPA	U.S. Environmental Protection Agency
ERLN	Environmental Response Laboratory Network
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FERN	Food Emergency Response Network
FTIR	Fourier-Transform Infrared Spectroscopy
GC-MS	Gas Chromatography-Mass Spectrometry
HAN	Health Alert Network
HAZMAT	Hazardous Materials
HHS	U.S. Department of Health and Human Services
HPP	Hospital Preparedness Program
HSEEP	Homeland Security Exercise and Evaluation Program
ICP-MS	Inductively Coupled Plasma-Mass Spectrometry
ISO	International Organization for Standardization
JLC	Joint Leadership Committee
LC-MS/MS	Liquid Chromatography-Tandem Mass Spectrometry
LIMS	Laboratory Information Management System
LPX	Laboratory Preparedness Exercise
LPHL	Local Public Health Laboratory
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
NIMS	National Incident Management System
NHSIP	National Health Security Preparedness Index
NPDN	National Plant Diagnostic Network
NRC	Nuclear Regulatory Commission
PCR	Polymerase Chain Reaction
PHEP	Public Health Emergency Preparedness
PHL	Public Health Laboratory
P&S	Packaging and Shipping
RT	Radiological Terrorism or Radiological Threat
SCPaS	Sample Collection, Packing, and Shipping
SPHL	State Public Health Laboratory
TFAH	Trust for America's Health
UASI	Urban Areas Security Initiative
USPS	U.S. Postal Service
Vet-LIRN	Veterinary Laboratory Investigation and Response Network
WLA	Water Laboratory Alliance
WSLHPT	Wisconsin State Laboratory of Hygiene Proficiency Testing

Association of Public Health Laboratories

The 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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8515 Georgia Avenue, Suite 700
Silver Spring, MD 20910
Phone: 240.485.2745
Fax: 240.485.2700
www.aphl.org