2016 APHL ALL-HAZARDS LABORATORY PREPAREDNESS SURVEY

January 2017

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

Introduction

APHL fielded the Tenth 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 2016, the survey covered a 12 month period from July 1, 2015 to June 30, 2016 representing the CDC Public Health Emergency Preparedness (PHEP) Cooperative Agreement Fiscal Year 2015, also known as Budget Period 4. APHL received a 96% (52/54 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 Deborah Kim, Institutional Research Director at 240.485.2742 or deborah.kim@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:

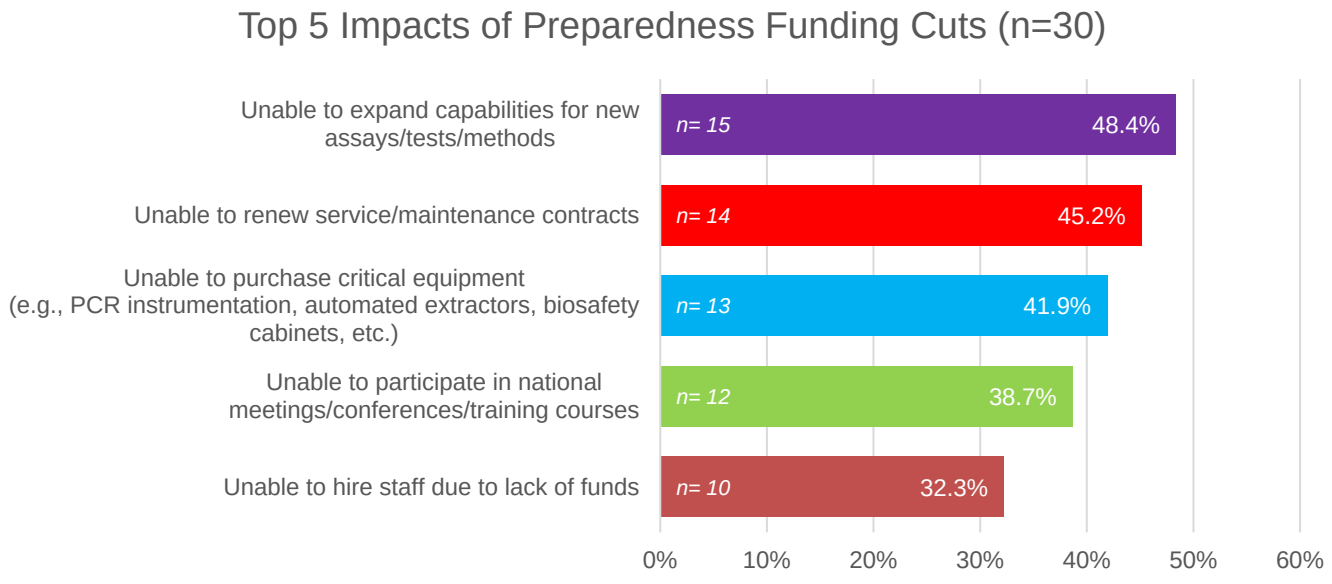
Section 2: Funding & Workforce

1. From July 1, 2015 to June 30, 2016, did your PHL experience any funding cuts?

	Response	%
Yes (Please go to Question 1a)	31	59.6%
No (Please go to Question 2)	21	40.4%
Total	52	100.0%

1a. Please choose the *top five* impacts of any preparedness funding cuts your PHL experienced from July 1, 2015 to June 30, 2016.

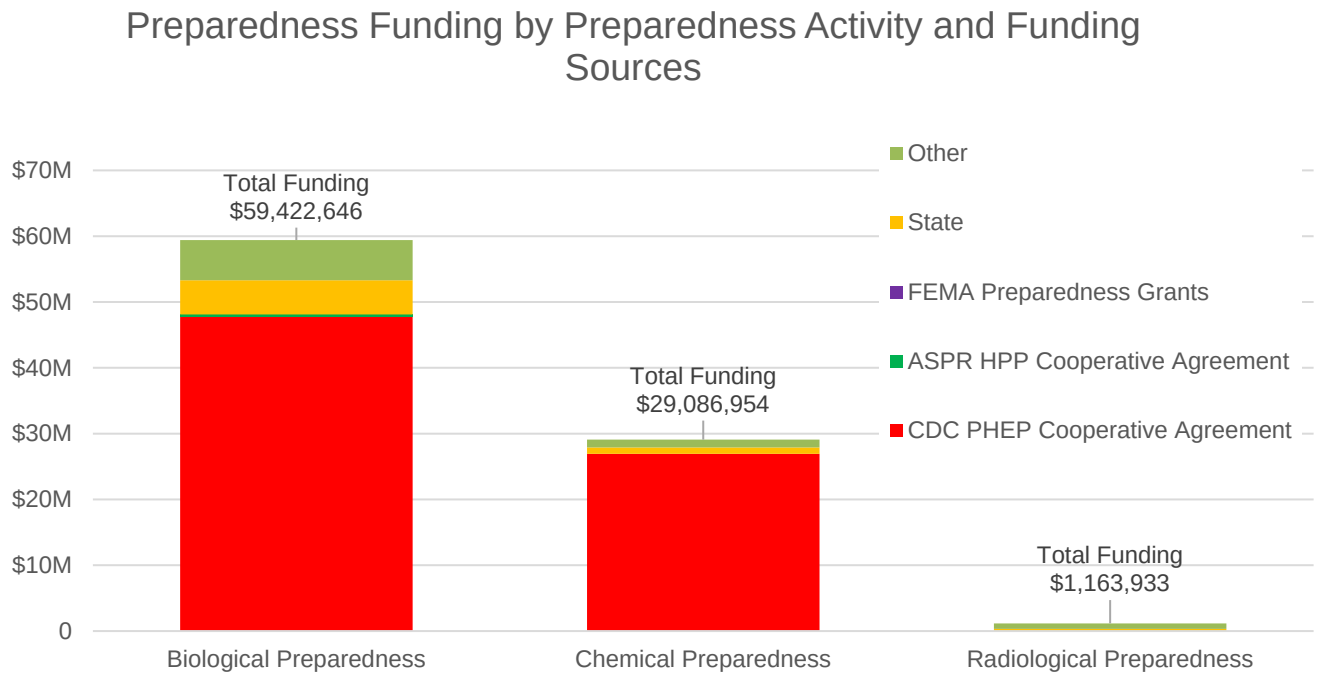
	Response	%
Unable to expand capabilities for new assays/tests/methods	15	48.4%
Unable to renew service/maintenance contracts	14	45.2%
Unable to purchase critical equipment (e.g., PCR instrumentation, automated extractors, biosafety cabinets, etc.)	13	41.9%
Unable to participate in national meetings/conferences/training courses	12	38.7%
Unable to hire staff due to lack of funds	10	32.3%
Unable to provide or reduced the number of training courses and outreach activities	10	32.3%
Increased staff turnover	9	29.0%
Combined staff positions	8	25.8%
Unable to purchase reagents and supplies or materials	8	25.8%
Lost full-time position(s)	8	25.8%
Other-please specify	5	16.1%
Unable to purchase and/or upgrade Laboratory Information Management System (LIMS)	3	9.7%
Increased sample/specimen turnaround time	3	9.7%
Reduced 24/7 capability	2	6.5%
Unable to participate in exercises	1	3.2%
Reduced state courier services	1	3.2%
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%
Other specified responses can be found in the data files.		



2. From July 1, 2015 to June 30, 2016, how much preparedness funding did your PHL receive? *Please enter "0" if none.*

	Biological Preparedness Amount	Chemical Preparedness Amount	Radiological Preparedness Amount
CDC PHEP Cooperative Agreement	$47,780,481 (52/52)*	$26,935,738 (48/52)	$0 (0/52)
ASPR HPP Cooperative Agreement	$338,227 (5/52)	$0 (0/52)	$0 (0/52)
FEMA Preparedness Grants (e.g., UASI, State Homeland Security Grant)	$0 (0/52)	$0 (0/52)	$0 (0/52)
State	$5,181,542 (10/52)	$960,330 (8/52)	$323,917 (2/52)
Other	$6,122,396 (12/52)	$1,190,886 (6/52)	$840,016 (5/52)
Total	**$59,422,646 (52/52)**	**$29,086,954 (48/52)**	**$1,163,933 (6/52)**

*The numerator is the number of labs that provided a dollar amount other than zero dollars and the denominator is the number of total labs that answered this question.



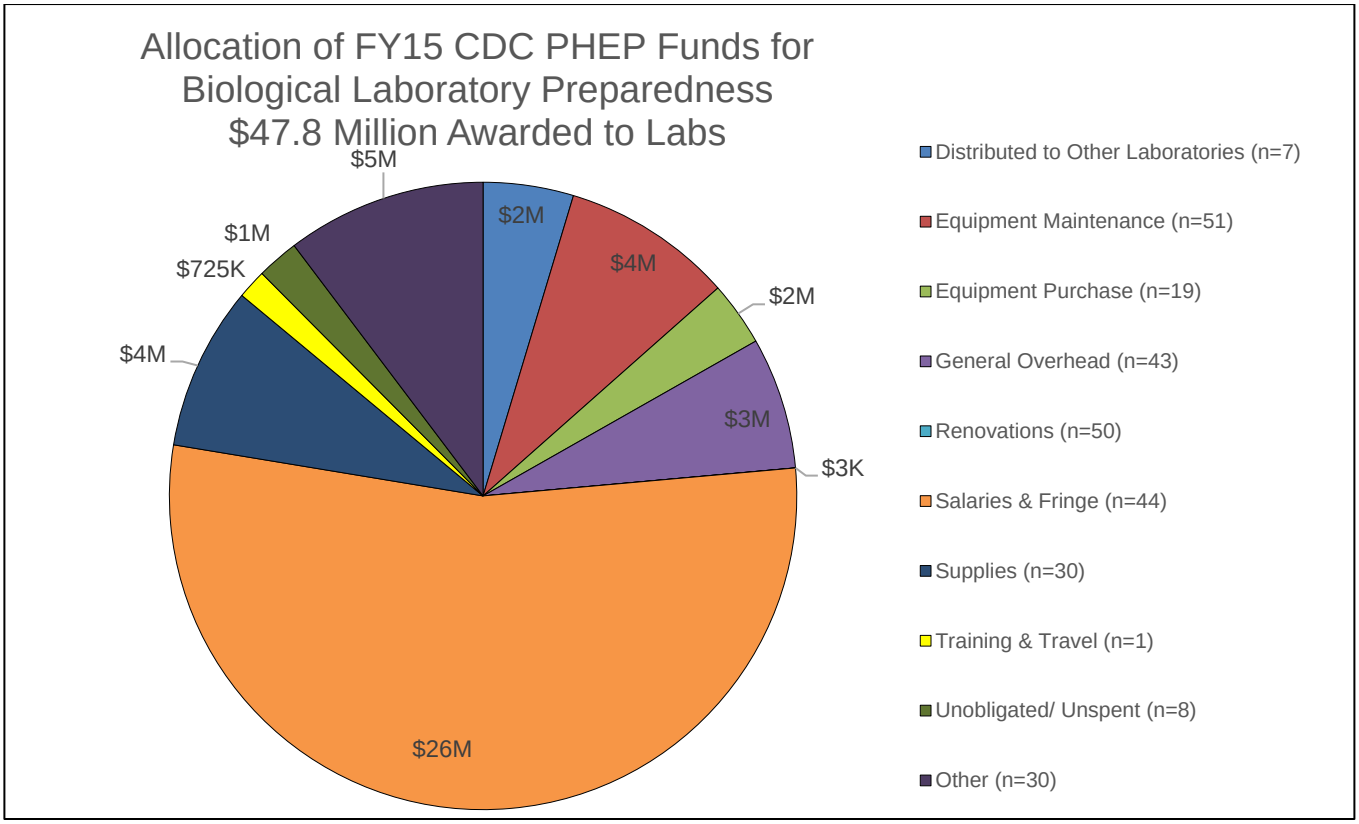
Other specified funding sources

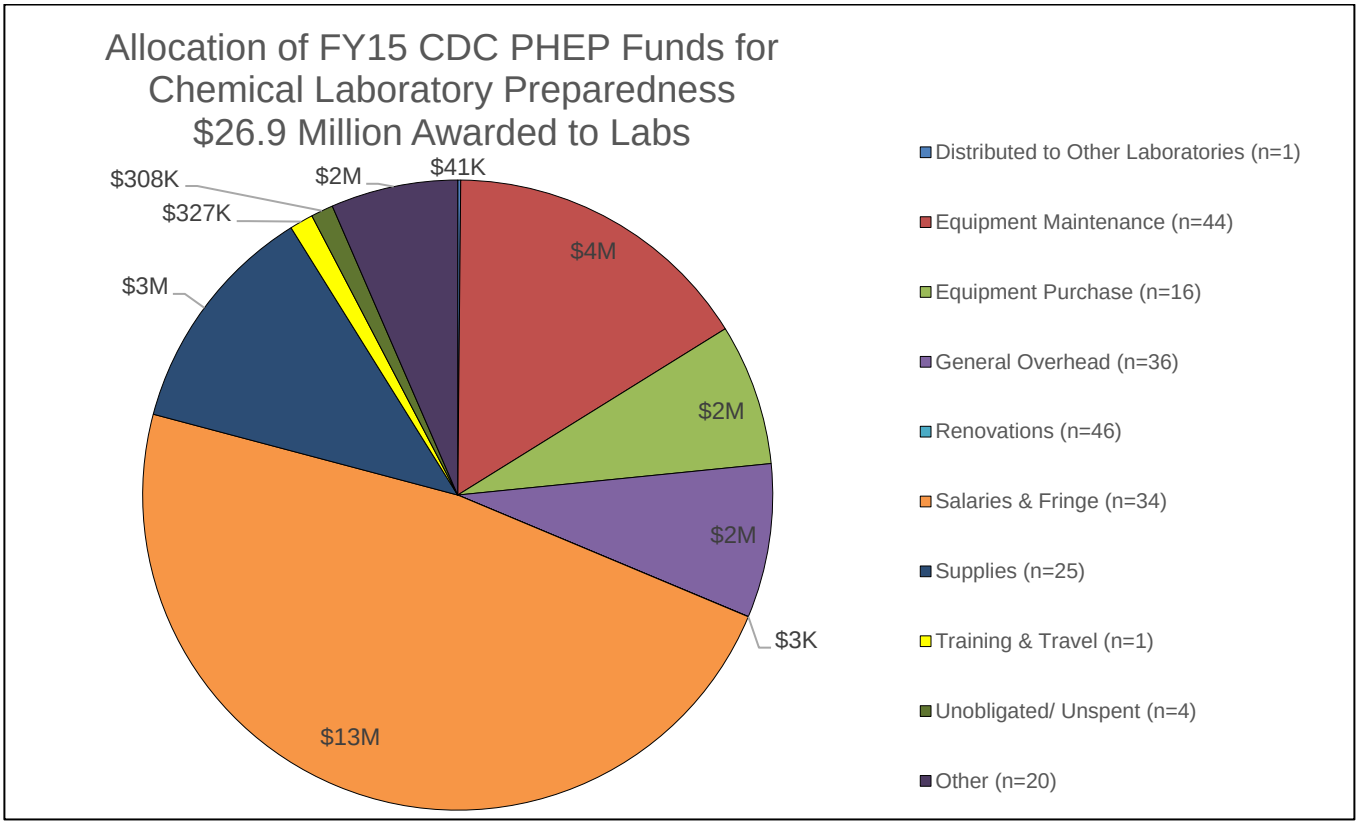
3. From July 1, 2015 to June 30, 2016, how much of your PHL's CDC PHEP Cooperative Agreement funding did you receive to maintain and enhance chemical threat activities? *Please enter "0" if none.*

	Number of PHLs	Amount
Level 1 Activities	9	$9,791,654
Level 2 Activities	35	$16,168,428
Level 3 Activities	15	$975,656

4. From July 1, 2015 to June 30, 2016, 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	$2,235,298	1	$41,000	0	$0
Salaries & Fringe	51	$25,949,333	44	$12,879,968	0	$0
Equipment Purchase	19	$1,592,812	16	$1,954,266	0	$0
Equipment Maintenance	43	$4,232,362	36	$4,309,066	0	$0
Supplies	50	$4,048,722	46	$3,231,072	0	$0
Training & Travel	44	$725,383	34	$333,103	0	$0
General Overhead	30	$3,260,901	25	$2,461,526	0	$0
Renovations	1	$2,500	1	$2,500	0	$0
Unobligated/ Unspent	8	$1,039,287	4	$307,866	0	$0
Other	30	$4,693,883	20	$1,415,371	0	$0

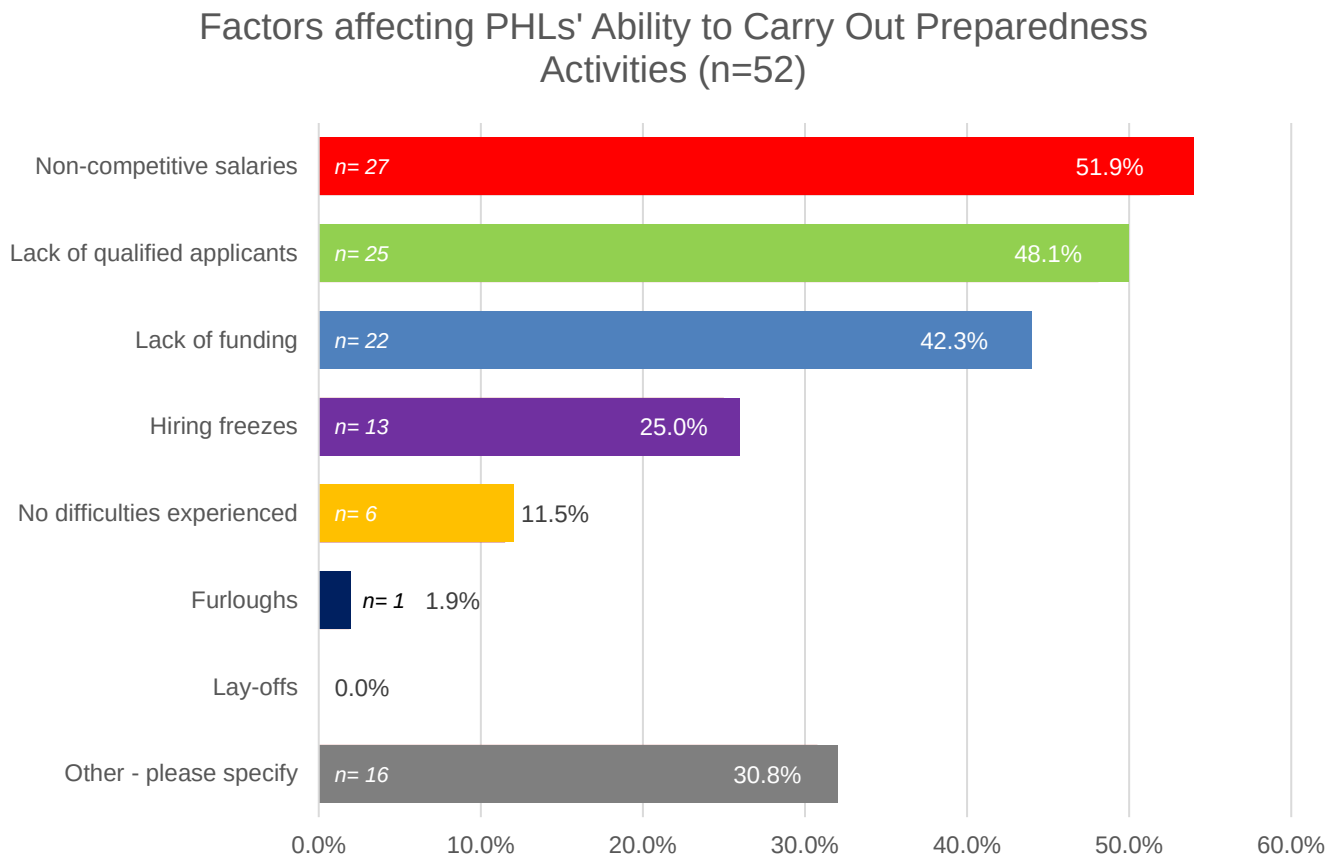




Other specified responses are in the individual data files. Most of these costs covered packaging and shipping/courier services

5. What factors affected your PHL's ability to carry out preparedness activities from July 1, 2015 to June 30, 2016? *Please check all that apply.*

	Response	%
Non-competitive salaries	27	51.9%
Lack of qualified applicants	25	48.1%
Lack of funding	22	42.3%
Other - please specify	16	30.8%
Hiring freezes	13	25.0%
No difficulties experienced	6	11.5%
Furloughs	1	1.9%
Lay-offs	0	0.0%



Section 3: Planning & Response

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

	Response	%
Yes (Please go to Question 6a)	12	23.1%
No (Please go to Question 7)	40	76.9%
Total	52	100.0%

6a. Please provide the following information regarding your cross-border contact.

Individual laboratory cross border contact information can be found in the data file

7. In which of the following laboratory networks is your PHL a member? *Please check all that apply*.

	Response	%
LRN-B	52	100.0%
FERN	48	92.3%
LRN-C: Level 2	33	63.5%
ERLN - WLA	23	44.2%
ERLN	22	42.3%
LRN-C: Level 1	10	19.2%
LRN-C: Level 3	9	17.3%
Other - please specify	6	11.5%
ERLN for Chemical Warfare Agents (CWAs)	4	7.7%
NAHLN	2	3.8%
NPDN	0	0.0%
Vet-LIRN	0	0.0%

Other specified responses
BioWatch
CaliciNET, PulseNET, Respiratory laboratory network, WHO Influenza surveillance, CDC ELITE Legionella
CDC Biomonitoring
NARMS, PulseNet, DPDx, CaliciNet
NLTN

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

	Response	%
Federal Bureau of Investigation (FBI)	52	100.0%
Sentinel Clinical Laboratory	52	100.0%
Civil Support Teams (CSTs)	51	98.1%
U.S. Postal Inspection Service	47	90.4%
Local Hazardous Materials (HAZMAT) Teams	47	90.4%
Local Police	45	86.5%
State Police	42	80.8%
Fire Department	41	78.8%
Veterinary Laboratory	37	71.2%
State HAZMAT Teams	37	71.2%
Food Laboratory	33	63.5%
Poison Control Centers	31	59.6%
Agriculture Laboratory	28	53.8%
Local/Branch Public Health Laboratory	27	51.9%
Department of Homeland Security (DHS)/BioWatch	25	48.1%
University Research Laboratory	20	38.5%
Other - please specify	18	34.6%
Paramedics/Emergency Medical Technicians (EMTs)	17	32.7%
Department of Defense Laboratories (Military)	11	21.2%
None of the above	0	0.0%

9. 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? (NHSPI)

	Response	%
Yes	49	94.2%
No	3	5.8%
Total	52	100.0%

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

	Response	%
Yes, a state agency or department-wide COOP that includes the laboratory (Go to question 10a – 10c)	25	48.1%
Yes, a laboratory specific COOP (Go to question 10a – 10c)	24	46.2%
No, but the laboratory or state is developing a COOP (Go to question 10a – 10c)	3	5.8%
No	0	0.0%

10a. 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.*

	Response	%
LRN testing (e.g., biological and chemical threat agents)	51	98.1%
Infectious diseases (e.g., reference and specialized testing) - please specify the critical tests	48	92.3%
Newborn screening	33	63.5%
Environmental health (e.g., water testing)	31	59.6%
Food safety	28	53.8%
Other - please specify	17	32.7%

10b**.** From July 1, 2015 to June 30, 2016, did your PHL evaluate the functionality of your COOP via a real event or an exercise?

	Response	%
Yes	29	55.8%
No	23	44.2%
Total	52	100.0%

10c. From July 1, 2016 to June 30, 2016, did you activate your laboratory COOP?

	Response	%
Yes - please provide any additional information on the steps and outcomes.	17	32.7%
No	35	67.3%
Total	52	100.0%

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

11. Please indicate the number of preparedness exercises your PHL conducted or participated in from July 1, 2015 to June 30, 2016. Do not include your responses to real events and proficiency tests. *Please enter "0" if none. (NHSPI)*

	Tabletop Exercises	Drills	Functional Exercises	Full-Scale Exercises
Biological Threats	50	70	48	25
Chemical Threats	18	25	45	10
Radiological Threats	5	5	15	3
Multi-Hazards (e.g., any combo of bio, chem, and rad threats)	2	18	11	7
Pandemic Influenza	2	0	0	0
COOP	7	6	9	8
Other	7	33	1	1

12. From July 1, 2015 to June 30, 2016, 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.*

Sample/Specimen Type	Total Number Accepted	BT Agents Tested	CT Agents Tested	RT Agents Tested	Other Analyses
Clinical	5,424	3,991	336	0	1,329
Environmental (e.g., powder, food, water, etc.)	1,208	1,380	273	647	19,000
BioWatch	130,821	257,728	0	0	0
Total	**137,453**	**263,099**	**609**	**647**	**20,329**

12a. How many of your PHL's environmental samples were from the following categories? Do not include clinical or BioWatch specimens/samples.

Sample Type	Number of Samples
Letter/package with unknown powder	311
Food/beverage	347
USPS sample (e.g., clean-up, BDS, etc.)	7
Other – Please specify:	543
Total	**1,208**

Other specified responses are available in the individual data files.

13. 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.) (NHSPI)

	Response	%
Yes	51	98.1%
No	1	1.9%
Total	52	100.0%

Please note questions 14 through 18 are new to the 2016 survey.

14. (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.

	Response	%
Implemented molecular assay	50	96.2%
Implemented serological assay	44	84.6%
Did not implement molecular or serological assay – Please describe why your laboratory has not implemented an assay to detect Zika.	2	3.8%

15. 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.

	Response	%
LRN-C specific response plan (go to 15a to 15c)	23	44.2%
Laboratory-developed chemical response plan (go to 15a to 15c)	17	32.7%
State chemical response plan (go to 15a & 15b)	10	19.2%
Other plan - please specify (go to 15a to 15c)	1	1.9%
None (skip to question 18b)	13	25.0%

Other specified responses
This information is included in SOPs and other general laboratory plans.

15a. What year was your chemical response plan last updated?

Individual laboratory information can be found in the data file.

15b. Does this plan have a chemical surge component?

	Yes		No	
	n	%	n	%
LRN-C specific reponse plan	19	82.6%	4	17.4%
Laboratory-developed chemical response plan	12	70.6%	5	29.4%
State chemical response plan	5	50.0%	5	50.0%
Other plan	1	100.0%	0	0.0%

15c. Is your chemical response plan integrated into a larger laboratory or state-specific response plan?

	Yes		No	
	n	%	n	%
Laboratory-developed chemical response plan	11	64.7%	6	35.3%
LRN-C specific reponse plan	13	56.5%	10	43.5%
Other plan	1	100.0%	0	0.0%

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

	Response	%
Hospital	21	53.8%
National Guard Bureau/Civil Support Teams	20	51.3%
Poison centers	20	51.3%
First responders	18	46.2%
Emergency preparedness coalitions	17	43.6%
Local public health department	17	43.6%
Other - please specify	6	15.4%
Regional coalitions	5	12.8%
None	4	10.3%

Other specified responses
Within the public health agency
FBI
State veterinary laboratories,Department of Agriculture and Commerce, State Chemical Laboratory, Department of Environmental quality, Radiological Health
Law enforcement agencies, FBI
Epidemiology
Department of the Environment, Air and Radiation Department

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

	Response	%
Yes – Please provide the individual's job title	19	48.7%
No	20	51.3%
Total	39	100.0%

Individual laboratory information can be found in the data file

18. Have you exercised your chemical response plan?

	Response	%
Yes	23	59.0%
No (go to 18a)	16	41.0%
Total	39	100.0%

18a. What are the reasons why you have not exercised the chemical response plan?
Please check all that apply.

	Response	%
Lack of funding	7	43.8%
Other - please specify	6	37.5%
Lack of partner participation	5	31.3%
Lack of qualified applicants	3	18.8%
No difficulties experienced	2	12.5%
Hiring freezes	1	6.3%
Furloughs	0	0.0%
Lay-offs	0	0.0%

Other specified responses
lack of staff time to plan, coordinate and execute
significant workforce constraints
The exercising of the chemical response plan had to be prioritized behind other testing that was more urgent to patient care and public safety
Time needed to pull together an exercise
Planned for fall of 2016
Lack of staff in the local LRN-C laboratory

18b. What are the barriers for why you do not have a chemical response plan?
Please check all that apply.

	Response	%
Other - please specify	10	76.9%
Lack of funding	2	15.4%
Not a priority for leadership	2	15.4%
Hiring freezes	1	7.7%
Not part of LRN-C	1	7.7%
Furloughs	0	0.0%
Lay-offs	0	0.0%

Other specified responses are available in the individual data files.

Section 4: Biological Threats

19. 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?

	Response	%
Yes, for the entire state (go to 19a)	47	90.4%
Yes, for my jurisdiction only (may not be the entire state) (go to 19a)	5	9.6%
No (go to 20)	0	0.0%
Total	52	100.0%

19a. How many active sentinel clinical laboratories are in your database?

Total Number of Laboratories			
3,781			
Min	**Max**	**Median**	**Mean**
7	422	52	73

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

Answer	Response	%
Use APHL, CDC LRN, and ASM definition (*Please go to Question 20a*)	47	90.4%
Use other definition - Please specify (*Please go to Question 20a*)	6	11.5%
We do not identify sentinel clinical laboratories	0	0.0%

Other specified definitions
Capable of performing blood and CSF Cultures
Laboratories that hold a NYS CLEP permit in the categories Bacterial or Virology Comprehensive.
We use our own definition in addition to the above definition. We currently have 400+ labs in our database, but only 80 of them do microbiology and fit the LRN definition of a Sentinel Laboratory.
hospital and independent clinical laboratories perfroming bacterial cultures, and hospital laboratories that don't perform bacterial cultures but may see emergent patients
ELC Expanded Sentinel Clinical Laboratory definition
state-developed criteria

20a. Please provide any additional information on the criteria your laboratory used to identify a sentinel clinical laboratory.

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

Answer	Response	%
Yes, awarded the LRN Joint Leadership Committee (JLC) approved certificate *(Please go to Question 21a)*	14	26.9%
Yes, awarded a state developed certificate *(Please go to Question 21a)*	7	13.5%
No	32	61.5%

21a. How many sentinel clinical laboratories received a certificate? *Please enter "0" if none.*

	LRN JLC Certificate	State Certificate
Number of Sentinel Clinical Laboratories Receiving Certificate	499	384

22. 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.*

	Response	%
College of American Pathologists (CAP) Laboratory Preparedness Exercise (LPX) (go to 22a & 22b)	49	94.2%
State developed (go to 22a)	11	21.2%
Other - please specify (go to 22a)	7	13.5%
Wisconsin State Laboratory of Hygiene Proficiency Testing (WSLHPT)/Challenge Set for Sentinel Laboratories (go to 22a)	3	5.8%
None of the above (go to 23)	1	1.9%

Other specified responses
Exercise
MN Challenge, P&S exercise
NYS CLEP Regulatory/Proficienty Program
Real events
BT Rule-Out Trainings
BT virtual assessment
Shipping and Packaging exercise

22a. Do these competency assessments impact the renewal status of sentinel clinical laboratories?

	Response	%
Yes	7	13.7%
No	44	86.3%
Total	51	100.0%

22b. How do you utilize the CAP LPX in your state? *Please check all that apply.*

	Responses	%
Track which sentinel clinical laboratories contact the LRN Reference PHL	48	98.0%
Provide training and outreach to the sentinel clinical laboratories that do not provide the intended responses for the LPX organisms	41	83.7%
Test competency of LRN-B staff at your state PHL (e.g., your PHL actively participates in the testing of the LPX organisms)	37	75.5%
Test the ability of sentinel clinical laboratories to package and ship specimens to the LRN Reference PHL	28	57.1%
Other - please specify	5	10.2%

Other specified responses
Assess our laboratory's call notification system
Send mock shipper declaration
We inquire about their abilities and capabilities to ship a Category A sample and courier plans.
Required to use STATPack telecommunications.
Packaging and Shipping of Infectious Material- Category A

23. 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.(NHSPI)*

Answer	Response	%
Routine updates	48	92.3%
Training events, such as providing a training calendar	45	86.5%
Outbreaks (*Please go to 23a*)	42	80.8%
Testing communications systems	13	25.0%
Drills and exercises	8	15.4%
Other - please specify	8	15.4%
Have not used it	1	1.9%

Other specified responses include testing communications systems, conducting drills and exercises.
States ALERT system for state emergencies.
CDC Health Advisory
Notification of Laboratory Holiday Schedule; Submission of Carbapenem-Resistant Enterobacteriaceae (CRE) Isolates for supplemental testing; Submitting Sputa for Tuberculosis Testing; Infection Control – Biological Safety Cabinets; and Guidance for Clinical Laboratories Managing Specimens for Zika Virus Disease investigation and subsequent updates.
Ebola and Zika updates
Zika virus testing announcements, updates of seasonal influenza surveillance activities
we have administered about 60 alerts on a variety of topics
Updated sentinel contact list
send out CDC HAN messages, ASM protocol updates,

23a. Pease provide any additional information on the type of outbreak and the steps and outcomes.

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

	Response	%
Yes	51	98.1%
No	1	1.9%
Total	52	100.0%

25. From July 1, 2015 to June 30, 2016, 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.)*

	Response	%
Yes	48	92.3%
No	4	7.7%
Total	52	100.0%

26. From July 1, 2015 to June 30, 2016, did your PHL sponsor any sentinel clinical laboratory trainings?

	Response	%
Yes (go to 26a)	42	80.8%
No	10	19.2%
Total	52	100.0%

26a. Please indicate how many classes were provided and how many facilities were trained. *Please enter "0" if none.*

	Rule-Out Testing Only	Packaging and Shipping (P&S) Only	Any Combo of Categories (Rule-Out, P&S)	Other	Total
Number of classes	67	157	52	119	395
Number of facilities that received training	406	1,254	330	379	2,369
Number of laboratorians that received training	799	2,956	766	841	5,362

Please note questions 27 and 28 are new to the 2016 survey.

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

	Response	%
Yes (go to 27a)	35	67.3%
No	17	32.7%
Total	52	100.0%

27a. What type of outreach is conducted?
Please check all that apply.

	Response	%
Training	32	91.4%
Reporting requirements and referral for laboratory testing for notifiable conditions	23	65.7%
Improving public relations (PR) from PHL to community	21	60.0%
Chemical terrorism response/coordination	14	40.0%
Other - please specify	12	34.3%
Marketing PHL services for revenue	1	2.9%

28. 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?

	Response	%
Yes (go to 28a & 28b)	22	42.3%
No	23	44.2%
Planning in future	7	13.5%
Total	52	100.0%

28a. How often are meetings held?

	Response	%
Quarterly	8	36.4%
Semi-annually	8	36.4%
Annually	2	9.1%
Other - please specify	4	18.2%
Total	22	100.0%

Other specified responses include monthly and use of a listserv for communications.

28b. What topics are discussed?
Please check all that apply.

	Response	%
How to improve collaboration and communication	20	90.9%
New lab tests or technology	19	86.4%
Laboratory system improvement	14	63.6%
Other - please specify	13	59.1%

Other specified responses
Reimbursements, CPT codes, bills & legislation impacting labs
Logistics and Funding
Risk assessments, infection control, containment, and infectious agents.
Biosafety
Review of outbreaks, laboratory-based surveillance data, emerging infectious disease concerns, incorporation of new technologies in the clinical laboratory, culture independent testing, surveillance for antibiotic resistance, biosafety, and laboratory preparedness for threat agent identification.
Reportable Disease Information, Outbreaks, and other Public Health topics are discussed in conjunction with Epidemiology and other state partners.
Emerging Infectious Diseases
Biosafety, clinical lab training needs and workforce development issues
AST, CIDT, Biosafety, emerging infections
Emerging diseases
Training, outbreaks and other current public health events related to clinical laboratory testing
Regulatory matters
Biosafety, FBI trainings, Ebola, Zika and flu response

29. **(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	Response	%
Yes, provided training (Please go to 29a and 29c – 29e)	27	51.9%
Yes, provided information about training opportunities	26	50.0%
No (Please go to 29b)	8	15.4%

29a. What percentage of sentinel clinical laboratories participated in biosafety training courses?

Average	Median	Minimum	Maximum
34.3%	30.0%	2.6%	100.0%

29b. What were the barriers to providing biosafety training?

	Response	%
Lack of biosafety staff at the PHL	5	62.5%
No funding	3	37.5%
Other - please specify	3	37.5%
Lack of interest from the sentinel clinical laboratories	0	0.0%
Information technology compatibility issues (e.g. different platforms for web based training)	0	0.0%

29c. Please indicate how many biosafety courses were offered and how many sentinel clinical laboratories participated.

# of biosafety courses	# of participating sentinel clinical laboratories	#of participating sentinel clinical laboratorians
179	495	1,119

29d. What was the format of your biosafety courses? Please select all that apply.

	Response	%
Hands-on/On-site	22	81.5%
Other - please specify	7	25.9%
Online	5	18.5%
Telephone	3	11.1%

29e. Briefly note what areas were covered in your biosafety courses below.

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

	Response	%
Yes (go to 30a & 30b)	48	92.3%
No	4	7.7%
Total	52	100.0%

30a. What percentage of their time is dedicated to this function at your laboratory?

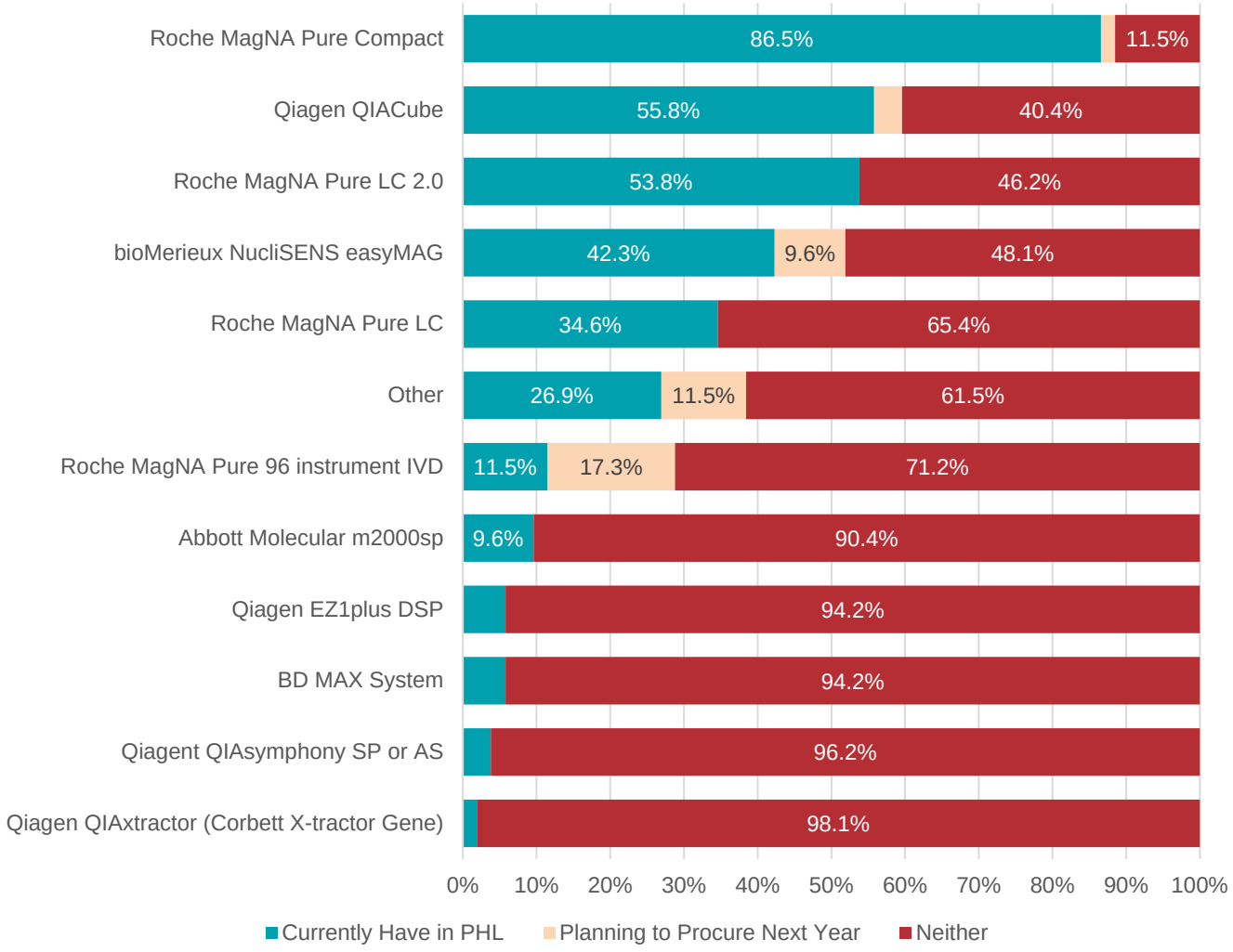
Average	Median	Minimum	Maximum
74.9%	100.0%	10.0%	100.0%

30b. What are the duties of the biosafety professional? Please check all that apply.

	Response	%
Institutional oversight for biosafety including providing guidance to staff	47	97.9%
Outreach to sentinel clinical laboratories	40	83.3%
Site visits to sentinel clinical laboratories	37	77.1%
Other - please specify	15	31.3%

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

	Currently Have in PHL		Planning to Procure Next Year		Neither	
	n	%	n	%	n	%
Abbott Molecular m2000sp	5	9.6%	0	0.0%	47	90.4%
BD MAX System	3	5.8%	0	0.0%	49	94.2%
bioMerieux NucliSENS easyMAG	22	42.3%	5	9.6%	25	48.1%
Qiagen EZ1plus DSP	3	5.8%	0	0.0%	49	94.2%
Qiagen QIACube	29	55.8%	2	3.8%	21	40.4%
Qiagent QIAsymphony SP or AS	2	3.8%	0	0.0%	50	96.2%
Qiagen QIAxtractor (Corbett X-tractor Gene)	1	1.9%	0	0.0%	51	98.1%
Roche MagNA Pure Compact	45	86.5%	1	1.9%	6	11.5%
Roche MagNA Pure LC	18	34.6%	0	0.0%	34	65.4%
Roche MagNA Pure LC 2.0	28	53.8%	0	0.0%	24	46.2%
Roche MagNA Pure 96 instrument IVD	6	11.5%	9	17.3%	37	71.2%
Other	14	26.9%	6	11.5%	32	61.5%



32. 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, 2015 to June 30, 2016. 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.

Section 5: Chemical Threats

33. From July 1, 2015 to June 30, 2016, was your LRN-C capability increased, decreased, or maintained?

Answer	Response	%
Increased ***(Please go to Question 33a)***	15	28.8%
Decreased ***(Please go to Question 33b)***	5	9.6%
Maintained ***(Please go to Question 34)***	32	61.5%
Total	52	100.0%

33a. How did your capability increase? *Please check all that apply.*

	Response	%
Added one LRN-C method	10	66.7%
Added CT equipment	10	66.7%
Added CT personnel	4	26.7%
Added two LRN-C methods	2	13.3%
Added more than two LRN-C methods	1	6.7%
Other - please specify	1	6.7%

Other specified responses
added nitrogen generator for LC-MS/MS

33b. How did your capability decrease? *Please check all that apply*.

	Response	%
Lost CT personnel	4	80.0%
Other - please specify	2	40.0%
Dropped one LRN-C method	2	40.0%
Reduced support from the broader system	1	20.0%
Unable to maintain service agreement(s) on current equipment	1	20.0%
Lost CT equipment	0	0.0%
Unable to purchase new equipment required to add methods	0	0.0%
Dropped two LRN-C methods	0	0.0%
Dropped a CT Level	0	0.0%
Lack of connection to those responding (i.e., first responders, communities, epidemiologists, etc.) - please specify the barrier	0	0.0%
Dropped more than two LRN-C methods	0	0.0%

Other specified responses
Overall budget situation of the state.
One method (MTP) dropped by the network. Our lab dropped it a few months ahead.

34. From July 1, 2015 to June 30, 2016, did your PHL utilize your CT capabilities to respond to any of the following? *Please check all that apply.*

	Response	%
No	22	42.3%
Community concern (e.g., exposure to a potentially toxic chemical)	18	34.6%
Biomonitoring inquiries â€“ please elaborate on how you utilized your CT capabilities	14	26.9%
Other - please specify	14	26.9%
Chemical spill or other emergency incident	8	15.4%
Chemical terrorism event	1	1.9%

Elaboration on biomonitoring inquiries and CT capabilities
Toxic algae
Clinical metals testing for a county in a neighboring state for people living near an industrial waste site.
Developed a method for PFC in serum; developed and started testing for microcystins in water
Responded to inquiries.
We received samples from the Medical examiner that were related to poisoning and were able to characterize the poison as arsenic
Tested approx. 2400 human specimens for various public health research projects
The LRN-C lab responded to community concern and biomonitoring inquiries for local residents due to water supply contamination by PFOA. CT capabilities were also utilized to assist states of Vermont and New Hampshire in their assessment and/or response to environmental PFC contamination.
The Minnesota public health laboratory continues to be involved in many biomonitoring studies. Some of these studies have utilized existing LRN-C methods such as the Blood Metals and Cyanide methods. LRN-C staff and equipment have also been utilized for these projects.
For areas where lead was found in school water fixtures or for areas designated as superfund site.
Performed water sample testing during the Las Animas River contamination by an accidental mine wastewater release
Mercury in hair biomonitoring project
CT also participated in CDC Four Corners States Biomonitoring Program
LRN-C methods: Cyanide and heavy methals utilized for analyzing Biomonitoring samples; LRN-C staff developed methods for perchlorate and PAHs.
AZ was awarded a Biomonitoring grant from CDC as part of the 4-Corners State Biomonitoring Consortium. Having arsenic speciation capability was important

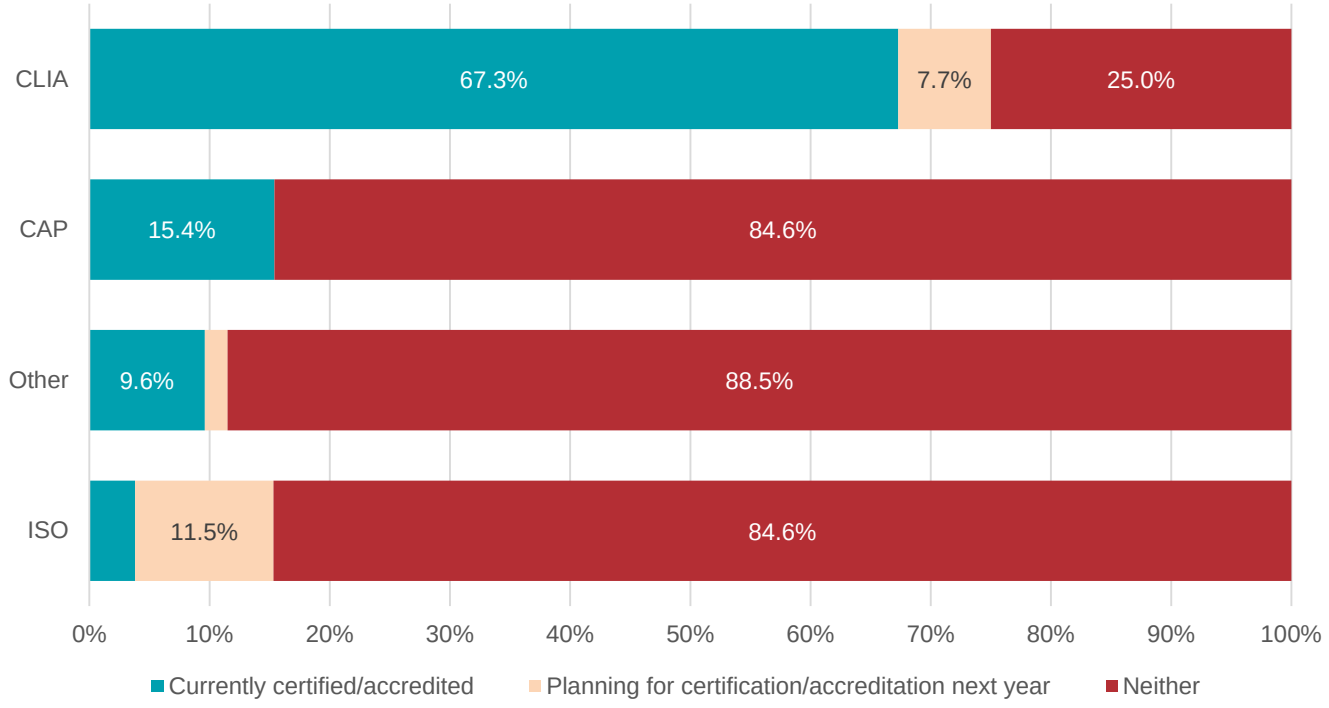
Other specified responses
Child lead; Drug evaluation of endangered children; Poison control
Food testing
Used level 3 capability to package and ship specimens to CDC for blood analysis for PERC & TCE
CDC exercise
Package wth white powder
Screening before BT testing
Suspicious substances
Forensic toxicology testing, environmental research testing
Credible Threat Samples
tampering cases, Pease Tradeport PFCs testing in collaboration with CDC
We use our CT capabilities to analyze powder letters and environmental unknowns.
Powder threat letters submitted by the FBI; chemical analysis of food and urine specimens of a suicide victim who claimed the production and use of ricin toxin
Characterize threat samples
Food Safety investigations

35. As of June 30, 2016, your CT laboratory qualified for which proficiency tests administered by CDC/NCEH? *Please check all that apply.*

	Response	%
Qualified for Sample Collection, Packing, and Shipping (SCPaS)	50	96.2%
Ricinine/Abrine in urine by LC-MS/MS	42	80.8%
Nerve agent metabolites in urine by LC-MS/MS	42	80.8%
VOCs in blood by GC-MS	41	78.8%
Trace metals panel in urine by ICP-MS	41	78.8%
Cd/Hg/Pb in blood by ICP-MS	41	78.8%
Cyanide in blood by GC-MS	41	78.8%
Tetramine in urine by GC-MS	40	76.9%
As/Se in urine by ICP-MS	40	76.9%
Metabolic toxins by LC-MS/MS	35	67.3%
Tetranitromethane biomarker in urine by LC-MS/MS	24	46.2%
Lewisite metabolite in urine by LC-ICP-MS	16	30.8%
Sulfur mustard metabolite in urine by LC-MS/MS	12	23.1%
Nitrogen mustard metabolite in urine by LC-MS/MS	9	17.3%
Not qualified	1	1.9%

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

	Currently certified/accredited		Planning for certification/accreditation next year		Neither	
	n	%	n	%	n	%
CLIA	35	67.3%	4	7.7%	13	25.0%
CAP	8	15.4%	0	0.0%	44	84.6%
Other - Please specify	5	9.6%	1	1.9%	46	88.5%
ISO	2	3.8%	6	11.5%	44	84.6%



Other specified responses
Lab is working toward Federal CLIA and CA state laboraotry licensure for Clinical Testing
AIHA
NYS DOH
NELAC
EPA / FDA
ASCLAD-LAB, AHIA

37. Does your PHL plan to replace the following LRN-C instruments?

	Response	%
ICP/MS (used for metals)	24	46.2%
LC/MS/MS (used for Organo Phosphate Nerve Agents (OPNA), abrin/ricinine, MTP3, other organic chemicals)	19	36.5%
None of the above (skip to 38)	17	32.7%
GC/MS (MPS) (to test for VOCs, cyanide, other organic chemicals)	8	15.4%
Other (used for solid phase extraction) - please specify	8	15.4%
GC/MS (used for tetramine and other organic chemicals)	3	5.8%

Other specified responses
Tom Tec
Gilson SPE used for OPNAs
SPE
Zephyr
additional LC/MS
SPE Automated Liquid Handler
96 Well-plate solid phase extractor
GILSON SPE 215

If you checked any of the above instruments, please answer questions 37a - 37c.

37a. When do you plan to replace the instrument(s)?

	Within 1 year		1 to 3 years		3 or more years		I don't know	
	n	%	n	%	n	%	n	%
ICP/MS (used for metals)	18	75.0%	3	12.5%	0	0.0%	3	12.5%
LC/MS (used for Organo Phosphate Nerve Agents (OPNA), abrin/ricinine, MTP3, other organic chemicals)	7	36.8%	2	10.5%	4	21.1%	6	31.6%
GC/MS (MPS) (to test for VOCs, cyanide, other organic chemicals)	6	75.0%	0	0.0%	0	0.0%	2	25.0%
Other (used for solid phase extraction) - please specify	1	12.5%	3	37.5%	0	0.0%	4	50.0%
GC/MS (used for tetramine and other organic chemicals)	1	33.3%	0	0.0%	0	0.0%	2	66.7%

37b. How much would it cost to replace the instrument(s)?

	Average	Median	Minimum	Maximum
ICP/MS	$261,917	$235,000	$123,000	$600,000
GC/MS	$163,333	$165,000	$100,000	$225,000
GC/MS (MPS)	$167,925	$150,000	$80,000	$350,000
LC/MS	$304,750	$320,000	$65,000	$600,000
Other	$94,900	$52,500	$40,000	$300,000

37c. Is the instrument(s) used for programs other than CT?

	Yes		No	
	n	%	n	%
ICP/MS	16	66.7%	8	33.3%
LC/MS	9	47.4%	10	52.6%
GC/MS (MPS)	2	25.0%	6	75.0%
Other	3	37.5%	5	62.5%
GC/MS	1	33.3%	2	66.7%

38. Does your PHL plan to purchase a service contract for the following LRN-C instruments?.

	Response	%
ICP/MS	43	82.7%
LC/MS	42	80.8%
GC/MS (MPS)	38	73.1%
GC/MS	36	69.2%
Other - please specify	27	51.9%
None of the above (go to 38c)	9	17.3%

Other specified responses
rad detector, Advion nanomate, Zephyr SPE system, Mercury vapor detector, Steris VHP unit, Thermo Niton XRF
Solid Phase Extraction (SPE)
Tom Tec
Equipment used for Solid Phase Extraction
Biotage
solid phase extraction instrument, FTIR instrument
Zephyr, Gilson
SPE
nitrogen generator
Zephyr - SPE Robot, Raman, and FTIR
Liquid handler
Janus-sample preparation instrument
(1) Raman, (1) FTIR, (2) Nitrogen Generators and (2) Zephry Sample Prep Station
Automated solid phase extraction instrument
Gilson GX247
Gerstel Autosampler and Prepstation
Zephyr
96 well plate extraction system and peak nitrogen generator
Zephyr, GC/MS/MS
Q-Trap, solid-phase extractor
Zephyr SPE workstation, nitrogen generators, air compressors
Zephyr automated sample prep system
Automated liquid handling system
LC/MS/MS
Zepher Liquid handling workstation
Solid Phase Extractor and LC for ICP/MS
sample prep unit, FTIR

If you checked any of the above instruments, please answer questions 38a – 38b.

38a. How much would the service contract cost?

	Average	Median	Minimum	Maximum
ICP/MS	$33,670	$25,828	$987	$148,000
GC/MS	$22,753	$13,088	$5,268	$148,000
GC/MS (MPS)	$24,369	$15,000	$4,000	$127,000
LC/MS	$54,628	$37,655	$2,500	$410,000
Other	$16,321	$12,500	$5,000	$52,960

38b. How many years will the service contract cover?

	Average	Minimum	Maximum
ICP/MS	1	1	5
GC/MS	1	1	5
GC/MS (MPS)	1	0	5
LC/MS	1	1	5
Other	1	1	1

38c. What is the source of funding for service contracts for CT instruments? Please check all that apply.

	Response	%
CDC PHEP Cooperative Agreement	43	82.7%
Other - please specify	10	19.2%
State Funding	8	15.4%
Other Federal - please specify	5	9.6%
Local Funding	2	3.8%

Other Federal funding
Any place we can find some funding
FERN
Four Corners State Biomonitoring Consortium
CDC BioMonitoring
FDA/FERN, FDA/ISO, USDA/FERN

Other specified responses
NA
Fees
Laboratory Fees
We currently do not do Chemical screens on blood and urine.
NA-Level 3 CT program
APHL Grant for one year
None
Fee for service testing done with the instruments
N/A
no funding we dropped to level 3

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, 2015 to June 30, 2016**. 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.

Section 6: Radiological Threats

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

	Clinical samples		Food samples		Environmental samples		None	
	n	%	n	%	n	%	n	%
Routine testing	0	0.0%	10	19.2%	24	46.2%	28	53.8%
Emergency testing	1	1.9%	19	36.5%	22	42.3%	27	51.9%

41. 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, 2015 to June 30, 2016**. 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.

2016 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