

Division of Clinical Microbiology

Adenovirus ^{1, 2}	
Methods:	Real-time PCR
Normal Value:	Container: Viral transport medium
Specimen Type: Nasal or throat swab	Storage: 2 to 8 °C
Specimen Amount: ≥ 5 mL	Transport: 2 to 8 °C

Arbovirus ^{1, 2}	
Method:	Real-time PCR
Normal Value:	Container: 5 mL vial
Specimen Type: Cerebral spinal fluid	Storage: 2 to 8 °C, - 20 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C, < 0 °C
Note:	The Bureau of Laboratories detects the arboviruses Dengue, Chikungunya and Zika virus using Real-time PCR. Specimens to be tested for other arboviruses such as WNV, Yellow Fever, Powassan, etc., should be sent to the Bureau of Laboratories for forwarding to the CDC. Contact 484-870-6289 to arrange testing. Approval from the Pennsylvania Department of Health Bureau of Epidemiology is required before arbovirus PCR and Culture testing is performed on human specimens. Please contact an epidemiologist at 717-787-3350 to arrange testing.

Arbovirus Immunoassay ^{1, 2}	
Method:	IgG and IgM ELISA for Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE), St. Louis Encephalitis (SLE), and La Crosse Encephalitis (LAC)
Normal Value:	Container: 5 mL vial
Specimen Type: Serum or plasma	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Specimens to be tested for the arboviruses listed above and others, such as Dengue, Chikungunya, Yellow Fever, Powassan, etc., should be sent to the Bureau of Laboratories for forwarding to the CDC. Contact 484-870-6289 to arrange testing.

¹ Nationally notifiable condition

² Pennsylvania reportable disease

Arbovirus Environmental Monitoring	
Method:	Real-time PCR
Normal Value:	Container: See note
Specimen Type: Mosquitoes, bird swabs, or horse tissue	Storage: 2 to 8 °C
Specimen Amount: See note	Transport: 2 to 8 °C
Note:	Environmental monitoring for the following arboviruses: West Nile, Eastern Equine encephalitis, Lacrosse and St. Louis Encephalitis is conducted in conjunction with the Pennsylvania Departments of Agriculture and Environmental Protection. Specimens are only accepted from those commonwealth agencies. To report dead birds for West Nile testing please call 1-877-PAHEALTH (1-877-724-3258).

Bacterial Isolate Identification	
Normal Value:	Media: TSA slant
Specimen Type: Bacterial isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature

Bacterial pathogens – Food Testing	
Methods:	Real-time PCR and culture for <i>Salmonella</i> , <i>Shigella</i> , <i>Campylobacter</i> , Shiga Toxin and <i>E. coli</i> O157
Normal Value:	Container: Any
Specimen Type: Food or beverage	Storage: 2 to 8 °C
Specimen Amount: 25 grams or 1 ounce	Transport: 2 to 8 °C
Note:	Special requests for <i>Campylobacter</i> , <i>Vibrio</i> , <i>Listeria</i> , and <i>Yersinia</i> .

Bioterrorism Agents – Clinical, Environmental, Food, Reference Culture ^{1, 2}	
Method:	Real-time PCR and culture for <i>Bacillus anthracis</i> , <i>Brucella</i> sp., <i>Burkholderia mallei</i> and <i>Burkholderia pseudomallei</i> , <i>Francisella tularensis</i> , <i>Yersinia pestis</i>
Normal Value:	Container: Various
Specimen Type: Variable	Storage: Specimen dependent
Specimen Amount: Variable	Transport: Courier
Note:	Before shipping specimens, call 484-870-6398 to arrange testing.

¹ Nationally notifiable condition

² Pennsylvania reportable disease

Bioterrorism agents - Potable Water	
Method:	Ultrafiltration, Real-time PCR and culture
Normal Value:	Container: Carboys- Lab will supply
Specimen Type: Water from reservoir or tank (municipal)	Storage: Ambient Temperature
Specimen Amount: 20 - 100 liters	Transport: 2 to 8 °C
Note:	Municipal drinking water - call 484-870-6398 for collection and shipping instructions.

Bordetella Detection	
Method:	Conventional culture and Real-time PCR for <i>Bordetella pertussis</i> , <i>Bordetella parapertussis</i> , and <i>Bordetella holmesii</i>
Normal Value:	Media: Regan-Lowe
Specimen Type: Bacterial isolate or NP swab or wash	Storage: 2 to 8 °C
Specimen Amount: Not applicable	Transport: 2 to 8 °C
Note:	Suspected <i>Bordetella</i> specimens should be submitted using the collection kits provided by the Bureau of Laboratories. For <i>Bordetella</i> collection supplies call 484-870-6432.

Botulism toxin detection - Infant (< 1yr old) ^{1, 2}	
Method:	Mouse bioassay for <i>Clostridium botulinum</i> toxin
Normal Value:	Container: Sterile container
Specimen Type: Stool	Storage: 2 to 8 °C
Specimen Amount: 10 mL or 10 grams	Transport: 2 to 8 °C
Note:	Rectal swabs are accepted if stool is not able to be obtained.

Botulism Toxin Detection – Adult ^{1, 2}	
Method:	Mouse bioassay for <i>Clostridium botulinum</i> toxin
Normal Value:	Container: Serum tube
Specimen Type: Serum	Storage: 2 to 8 °C
Specimen Amount: 7 mL	Transport: 2 to 8 °C

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² Pennsylvania reportable disease

<i>Campylobacter</i> Species Identification ^{1, 2}			
Method:	Conventional biochemical tests		
Normal Value:		Media:	Blood, chocolate, or Carey-Blair media
Specimen Type:	Bacterial isolate	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature

Carbapenemase Detection			
Method:	Beta lactamase: KPC, NDM, OXA-48-like, VIM, and <i>mcr-1</i> and <i>mcr-2</i> by Real-time PCR, and mCIM		
Normal Value:		Media:	Slant
Specimen Type:	Bacterial isolate	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature
Note:	Testing is performed for surveillance and public health response only. Approval is required for testing. Contact your local public health department.		

<i>Chlamydia trachomatis</i> Detection ^{1, 2}			
Method:	Fluorescent probe following nucleic acid amplification		
Normal Value:		Container:	Swab transport tube or urine transport tube
Specimen Type:	Endocervical, urethral swab or urine	Storage:	2 to 8 °C
Specimen Amount:	1 swab or > 35mL voided urine	Transport:	Ambient temperature
Note:	Transfer approximately 3 mL of urine to the black line on the fill window located on the transport tube label. Urine should be transferred to the transport tube within eight hours of collection. The Bureau of Laboratories provides collection kits for Chlamydia specimens. Please call 484-870-6432 to obtain kits. All Chlamydia specimens must be received within six days of collection. Testing must be approved by the DOH STD program.		

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Coxiella burnetii detection ¹	
Method:	Real-time PCR
Normal Value:	Container: EDTA tube
Specimen Type: Whole blood	Storage: 2 to 8 °C
Specimen Amount: At least 1 ml	Transport: 2 to 8 °C
Note:	Before shipping specimens, call 484-870-6398 to arrange testing. Environmental swabs, powders and liquids are also accepted.

Enteric Pathogens ^{1, 2}	
Method:	Culture and Real-time PCR for <i>Salmonella</i> , <i>Shigella</i> , <i>E. coli</i> O157 and Shiga-like toxin producers
Normal Value:	Media: Carey-Blair transport medium
Specimen Type: Stool sample	Storage: 2 to 8 °C
Specimen Amount: Add specimen to fill line on Cary-Blair	Transport: 2 to 8 °C
Note:	Specimens can be tested for <i>Campylobacter</i> , <i>Vibrio</i> , <i>Listeria</i> , <i>Aeromonas</i> , <i>Yersinia</i> and <i>Plesiomonas</i> upon special request.

Enterovirus Identification	
Method:	Culture, Real-time PCR, or Serology
Normal Value:	Container: Viral transport medium, 5 mL vial, or clean stool kit
Specimen Type: Nasal or throat swab, tissue culture fluid, or stool	Storage: - 20 °C
Specimen Amount: 1 swab, ≥ 0.5 mL fluid, or 25 g stool	Transport: < 0 °C
Note:	Specimens to be tested for Enterovirus should be sent to the Bureau of Laboratories for forwarding to the CDC for testing. Contact 484-870-6289 to arrange testing.

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<i>Escherichia coli</i> O157 Identification ^{1, 2}	
Method:	Conventional biochemical tests, serology and Pulsed Field Gel Electrophoresis (PFGE)
Normal Value:	Media: TSA slant
Specimen Type: Bacterial isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature

<i>Haemophilus influenzae</i> Identification ^{1, 2}	
Method:	Conventional biochemical tests and serotyping
Normal Value:	Media: Chocolate slant
Specimen Type: Bacterial isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Note:	Pennsylvania regulations require the submission of all <i>H. influenzae</i> isolates from sterile sites.

Human Metapneumovirus	
Method:	Real-time PCR
Normal Value:	Container: Viral transport medium
Specimen Type: Nasal or throat swab	Storage: 2 to 8 °C
Specimen Amount: 1 swab	Transport: 2 to 8 °C

Human Rhinovirus	
Method:	Real-time PCR
Normal Value:	Container: Viral transport medium
Specimen Type: Nasal or throat swab	Storage: 2 to 8 °C
Specimen Amount: 1 swab	Transport: 2 to 8 °C

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² Pennsylvania reportable disease

Influenza Detection ^{1, 2}	
Method:	Real-time PCR
Normal Value:	
Specimen Type:	Nasal or throat swab
Specimen Amount:	1 swab
Container:	Viral transport medium
Storage:	2 to 8 °C
Transport:	2 to 8 °C
Note:	Influenza-associated pediatric deaths and novel Influenza A virus infections are nationally notifiable. Laboratory-confirmed cases of Influenza are reportable in Pennsylvania.

<i>Legionella spp. and pneumophila</i> Culture and Identification ^{1, 2}	
Methods:	Conventional biochemical tests, DFA, culture and Real-time PCR
Normal Value:	
Specimen Type:	Bacterial isolate
Specimen Amount:	Not applicable
Media:	BYCE slant
Storage:	Ambient temperature
Transport:	Ambient temperature

<i>Legionella</i> from Water	
Methods:	Real-time PCR and culture for <i>Legionella spp.</i> and <i>L. pneumophila</i>
Normal Value:	
Specimen Type:	Water
Specimen Amount:	1 liter
Container:	Polypropylene screw cap
Storage:	Ambient Temperature
Transport:	Ambient Temperature

<i>Listeria monocytogenes</i> Identification ^{1, 2}	
Method:	Conventional biochemical tests, Whole genome sequencing (WGS) for outbreak surveillance
Normal Value:	
Specimen Type:	Bacterial isolate
Specimen Amount:	Not applicable
Media:	Blood, chocolate, or TSA slant
Storage:	Ambient temperature
Transport:	Ambient temperature

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Lyme Disease Immunoassay – <i>Borrelia burgdorferi</i> ^{1, 2}			
Method:	Screening: ELISA C6 Peptide; Confirmation: IgG and IgM Western blot		
Normal Value:		Container:	Red-topped blood collection tube
Specimen Type:	Serum or plasma	Storage:	2 to 8 °C
Specimen Amount:	≥ 1 mL	Transport:	2 to 8 °C

Malaria and Babesia Confirmation ^{1, 2}			
Method:	Microscopy and Real-time PCR		
Normal Value:		Container:	Slide mailer, EDTA blood tube
Specimen Type:	Stained slides, blood	Storage:	Ambient temperature, 2 to 8 °C
Specimen Amount:	Not applicable	Transport:	Ambient temperature, 2 to 8 °C
Note:	Slide images are electronically sent to the CDC for confirmation. www.dpd.cdc.gov PCR is done only at the discretion of the CDC's parasitology laboratory.		

Molecular Subtyping – Cluster Detection ²			
Method:	Pulsed-field gel electrophoresis (PFGE)		
Normal Value:		Container:	Pure culture
Specimen Type:	Enterobacteriaceae and <i>Listeria</i>	Storage:	Ambient temperature
Specimen Amount:	See note	Transport:	Ambient temperature
Note:	PFGE subtyping is conducted on Shiga toxin-producing <i>E. coli</i> (STEC), <i>Salmonella</i> and <i>Shigella spp.</i> bacterial isolates submitted to the BOL as part of the surveillance program mandated by Pennsylvania Code (Title 28, Chapter 27). PFGE testing is also conducted on <i>Listeria monocytogenes</i> and <i>Vibrio parahaemolyticus</i> . PFGE testing may be requested to aid in an infection control investigation on a limited number of bacterial isolates. Contact Lisa Dettinger, Director of Clinical Microbiology, for approval at 484-870-6416.		

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Mumps Virus Immunoassay ^{1, 2}	
Method:	ELISA IgG and IgM
Normal Value:	Container: 5 mL vial
Specimen Type: Serum	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Testing performed at CDC. Send buccal swab and urine for PCR testing along with serology to the Bureau of Laboratories for forwarding to the CDC.

Mumps Virus ^{1, 2}	
Method:	Real-time PCR
Normal Value:	Container: Viral transport medium, 5 mL vial, or 50 mL conical tube
Specimen Type: Buccal swab, tissue culture fluid, or urine and serum	Storage: 2 to 8 °C; - 20 °C
Specimen Amount: 1 swab, ≥ 0.5 mL fluid, 35 mL urine	Transport: 2 to 8 °C; < 0 °C

Mycobacteria Culture ^{1, 2}	
Method:	Fluorescent microscopy, MGIT 960 broth culture, and Middlebrook agar
Normal Value:	Container: 50 mL conical tube
Specimen Type: Sputum	Storage: Ambient temperature
Specimen Amount: ≥ 5 mL	Transport: Ambient temperature
Note:	Collection is done through the State and County Health Centers.

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Mycobacteria Identification ^{1, 2}	
Method:	Microscopy, DNA probes and mycolic acid analysis by High Performance Liquid Chromatography (HPLC)
Normal Value:	Media: Middlebrook, LJ or positive broth culture
Specimen Type: Mycobacteria culture	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature

Mycobacterium tuberculosis Drug Susceptibility ²	
Method:	Primary drugs: MGIT 960 broth culture Secondary drugs: Agar proportion
Normal Value: Susceptible	Media: Middlebrook, LJ or positive broth culture
Specimen Type: <i>M. tuberculosis</i> culture	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Primary Drugs:	Ethambutol, isoniazid, pyrazinamide, and rifampin
Secondary Drugs:	Amikacin, capreomycin, cycloserine, ethambutol, ethionamide, isoniazid, kanamycin, ofloxacin, rifampin and streptomycin

Mycobacterium tuberculosis Genotyping	
Method:	Real-time PCR-based genotyping and spoligotyping and MIRU
Normal Value:	Media: Middlebrook or LJ
Specimen Type: <i>M. tuberculosis</i> complex isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Note:	Isolates are sent to the Michigan Department of Health laboratories for testing.

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² Pennsylvania reportable disease

<i>Mycobacterium tuberculosis</i> complex – Nucleic Acid Amplification ^{1, 2}			
Method:	Real-time PCR		
Normal Value:		Container:	50 mL conical tube
Specimen Type:	Clinical respiratory - unprocessed	Storage:	2 to 8 °C
Specimen Amount:	≥ 5 mL	Transport:	2 to 8 °C

Mycology Identification			
Method:	See note		
Normal Value:		Container:	Fungal medium
Specimen Type:	Culture	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature
Note:	Pure fungal cultures can be sent to the CDC for identification.		

<i>Neisseria gonorrhoeae</i> Culture and Identification ^{1, 2}			
Method:	Conventional biochemical tests		
Normal Value:		Media:	Chocolate media with antibiotics
Specimen Type:	Bacterial isolate or clinical specimen	Storage:	Incubate at 35-37°C in CO ₂
Specimen Amount:	Not applicable	Transport:	Ambient temperature in CO ₂ bag

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² Pennsylvania reportable disease

<i>Neisseria gonorrhoeae</i> Drug Susceptibility ^{1, 2}			
Method:	Disc diffusion and MIC		
Normal Value:	Susceptible	Media:	Chocolate media with antibiotics
Specimen Type:	Bacterial isolate or clinical specimen	Storage:	Incubate at 35 to 37 °C in CO ₂
Specimen Amount:	Not applicable	Transport:	Ambient temperature in CO ₂ bag
Disc Diffusion Drugs:	Azithromycin (15 µg), cefixime (5 µg), ceftriaxone (30 µg), ciprofloxacin (5 µg), penicillin (10 U), spectinomycin (100 µg) and tetracycline (30 µg)		
MIC Drugs:	Azithromycin, ceftriaxone and ciprofloxacin		

<i>Neisseria meningitidis</i> Identification ^{1, 2}			
Method:	Conventional biochemical tests and serotyping		
Normal Value:		Media:	Slant
Specimen Type:	Bacterial isolate	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature
Note:	Pennsylvania regulations require the submission of all <i>N. meningitidis</i> isolates from sterile sites.		

Norovirus Detection			
Method:	Real-time PCR		
Normal Value:		Container:	Sterile container or Cary-Blair
Specimen Type:	stool	Storage:	2 to 8 °C
Specimen Amount:	Add specimen to fill line on Cary Blair	Transport:	2 to 8 °C

Parainfluenza Virus 1, 2, 3			
Method:	Real-time PCR		
Normal Value:		Container:	Viral transport medium
Specimen Type:	Nasal or throat swab	Storage:	2 to 8 °C
Specimen Amount:	1 swab	Transport:	2 to 8 °C

¹ Nationally notifiable condition

² Pennsylvania reportable disease

Parasite Immunoassay	
Method:	See Centers for Disease Control and Prevention's (CDC) website, www.dpd.cdc.gov/dpdx/ for a complete listing of immunoassays for parasitic diseases
Normal Value:	Container: 5 mL vial
Specimen Type: Serum	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Include the CDC specimen submission form that can be found on the Bureau of Laboratories' website, www.health.pa.gov/labs , when submitting specimens. Be sure to complete the section on patient travel history.

Rabies ^{1, 2}	
Method:	DFA
Normal Value:	Container: Leak proof with cold pack
Specimen Type: Brain tissue – Animal head or small animal	Storage: 2 to 8 °C
Specimen Amount: Animal head or small animal	Transport: 2 to 8 °C
Note:	The Rabies Human Exposure Questionnaire must be submitted along with the specimen. It can be found on the Rabies page of the Bureau of Laboratories' website, www.health.pa.gov/labs . Call (484) 870-6289 with questions.

Ricin – Environmental and Food	
Method:	Time-resolved Fluorescence (TRF) immunoassay
Normal Value:	Container: Leak proof container
Specimen Type: Variable	Storage: Specimen dependent, call (484) 870-6398
Specimen Amount: Variable	Transport: Courier

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² Pennsylvania reportable disease

Rubella Immunoassay ^{1, 2}	
Method:	ELISA IgG and IgM
Normal Value:	Container: 5 mL vial
Specimen Type: Serum or Plasma	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Specimens submitted for IgM testing are sent to the CDC.

Rubeola Immunoassay – Measles ^{1, 2}	
Method:	ELISA IgG and IgM
Normal Value:	Container: 5 mL vial
Specimen Type: Serum or Plasma	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Specimens with positive IgM results are sent to the CDC for confirmatory testing.

Rubeola Virus – Measles ^{1, 2}	
Method:	Real-time PCR
Normal Value:	Container: Viral transport medium, 5 mL vial, or 50 mL conical tube
Specimen Type: See note below	Storage: 2 to 8 °C
Specimen Amount: 1 swab, ≥ 0.5 mL fluid, 35 mL urine	Transport: 2 to 8 °C
Note:	Respiratory specimens (nasopharyngeal (NP) aspirate, NP swab, or oropharyngeal swab) should be collected within four days of the onset of symptoms. For improved virus detection, a urine specimen should be submitted with a respiratory specimen. Urine specimens collected less than four days from the onset of symptoms may not yield positive results.

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Salmonella Identification ^{1, 2}			
Method:	Conventional biochemical tests, serology, and Pulsed Field Gel Electrophoresis (PFGE)		
Normal Value:		Media:	TSA slant
Specimen Type:	Bacterial isolate	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature

Shigella Identification ^{1, 2}			
Method:	Conventional biochemical tests, serology, and Pulsed Field Gel Electrophoresis (PFGE)		
Normal Value:		Media:	TSA slant
Specimen Type:	Bacterial isolate	Storage:	Ambient temperature
Specimen Amount:	Not applicable	Transport:	Ambient temperature

Shiga-like Toxin Detection ^{1, 2}			
Method:	Real-time PCR for Shiga-like Toxin 1 and 2		
Normal Value:		Media:	Slant or GN broth
Specimen Type:	Bacterial isolate or broth culture	Storage:	Ambient temperature
Specimen Amount:	≥ 1 mL broth	Transport:	Ambient temperature
Note:	Serotyping and Pulsed Field Gel Electrophoresis (PFGE) are performed on all Shiga-like Toxin producing <i>E. coli</i> upon isolation of the organism.		

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<i>Staphylococcus aureus</i> Drug Resistance Confirmation ²	
Method:	Antimicrobial Susceptibilities by Microbroth dilution
Normal Value:	Media: Slant
Specimen Type: Bacterial isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Note:	Isolates with the MIC larger than eight can be sent to the Centers for Disease Control and Prevention (CDC) for antimicrobial susceptibility testing. Include the CDC specimen submission form that can be found on the Bureau of Laboratories' website, www.health.pa.gov/labs , when submitting specimens.

<i>Streptococcus pneumoniae</i> Typing	
Method:	Not performed at the Bureau of Laboratories; See note below.
Normal Value:	Media: Slant
Specimen Type: Bacterial isolate	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Note:	<i>Streptococcus pneumoniae</i> serotyping is available for patient 15 years of age or younger. Testing is performed at the Vaccine Preventable Disease reference laboratory.

Tick Identification	
Method:	Microscopy
Normal Value:	Container: No crushable container
Specimen Type: Suspected tick	Storage: Ambient temperature
Specimen Amount: Not applicable	Transport: Ambient temperature
Note:	The Bureau of Laboratories will identify ticks, but it does not offer <i>Borrelia sp.</i> testing on ticks. Consult a reference laboratory.

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Toxin Testing	
Method:	ELISA
Normal Value:	Container: Leak proof container
Specimen Type: Food or beverage	Storage: 2 to 8 °C
Specimen Amount: 25 grams or 1 ounce	Transport: 2 to 8 °C
Note:	Histamine, Bacterial toxins: <i>Staphylococcus Enterotoxin</i> , <i>Bacillus cereus</i> , Shiga toxin, <i>Staphylococcus aureus</i> toxins: Toxic Shock toxin (TST) and Panton-Valentine leukocidin toxin (PVL) testing is performed at Centers for Disease Control and Prevention (CDC). Include the CDC specimen submission form that can be found on the Bureau of Laboratories' website, www.health.pa.gov/labs , when submitting specimens.

Vaccinia Virus	
Method:	Real-time PCR
Normal Value:	Container: Sterile container
Specimen Type: Fluid or skin from vesicle or pustule, punch biopsy, ocular impressions or swab	Storage: 2 to 8 °C
Specimen Amount: 1 swab or 1 tissue specimen	Transport: 2 to 8 °C
Note:	Collection instructions: (1) Sanitize skin with alcohol wipe and allow to completely dry (2) Open and remove the top of the lesion using a sterile scalpel or polyester or rayon-tipped swab (3) Break off swab and place in a sterile transport container. Do not use viral transport medium Contact the laboratory at 484-870-6398 before shipping specimens.

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Varicella Zoster Virus ^{1, 2}	
Method:	Real-time PCR
Normal Value:	Container: Sterile container
Specimen Type:	Fluid or skin from vesicle or pustule, punch biopsy, ocular impressions or swab Storage: 2 to 8 °C
Specimen Amount:	1 swab or 1 tissue specimen Transport: 2 to 8 °C
Note:	Collection instructions: (1) Sanitize skin with alcohol wipe and allow to completely dry (2) Open and remove the top of the lesion using a sterile scalpel or polyester or rayon-tipped swab (3) Break off swab and place in a sterile transport container . Do not use viral transport medium. Contact the laboratory at 484-870-6398 before shipping specimens.

Vibrio Species Identification ²	
Method:	Conventional biochemical tests and serology
Normal Value:	Media: Blood, chocolate, or TSA slant
Specimen Type:	Bacterial isolate Storage: Ambient temperature
Specimen Amount:	Not applicable Transport: Ambient temperature

West Nile Virus Immunoassay ^{1, 2}	
Method:	ELISA for IgG and IgM
Normal Value:	Container: 5 mL vial
Specimen Type:	Serum, plasma, or cerebral spinal fluid Storage: 2 to 8 °C
Specimen Amount:	≥ 1 mL Transport: 2 to 8 °C

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Zika Virus Immunoassay ^{1, 2}	
Method:	ELISA for IgM
Normal Value:	Container: 5 mL vial
Specimen Type: Serum, plasma, or cerebral spinal fluid	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	Testing is performed at CDC.

Zika Virus Detection ^{1, 2}	
Method:	Real-time PCR
Normal Value:	Container: 5 mL vial
Specimen Type: Serum, plasma, or cerebral spinal fluid	Storage: 2 to 8 °C
Specimen Amount: ≥ 1 mL	Transport: 2 to 8 °C
Note:	See website for Zika virus collection and submission forms

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Division of Chemistry & Toxicology

Abrine and Ricinine	
Method:	Liquid chromatography – tandem mass spectrometry
Normal Value:	0 ng/mL
Specimen Type:	Urine
Specimen Amount:	≥ 5 mL
Container:	Urine collection cup
Storage:	- 20 °C
Transport:	- 20 °C
Note:	You must contact Greg DeLongat 484-870-6279 before submitting specimens. Specimens should be collected and submitted as soon as possible once exposure is suspected. The ideal specimen volume is 50 mL.

Blood Lead ^{1, 2}	
Method:	Atomic absorption spectroscopy
Normal Value:	≤ 5 µg/dL
Specimen Type:	Blood
Specimen Amount:	≥ 500 µL
Container:	Lavender-topped (EDTA) tube
Storage:	2 to 8 °C
Transport:	Ambient temperature

Cyanide	
Method:	Gas chromatography – mass spectrometry
Normal Value:	10 to 100 ng/mL
Specimen Type:	Blood
Specimen Amount:	≥ 1 mL
Container:	Lavender-topped (EDTA) tube
Storage:	4 to 8 °C (DO NOT FREEZE)
Transport:	4 to 8 °C (DO NOT FREEZE)
Note:	Contact Greg DeLong at 484-870-6279 before submitting specimens. Collect and submit specimens as soon as possible once exposure is suspected. If possible, submit two blood collection tubes. Fill the tubes as completely as possible. Minimizing the vacant space in the tubes increases the accuracy of the analysis.

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4-Hydroxy-3-Nitrophenylacetic Acid (HNPA)			
Method:	Liquid chromatography – tandem mass spectrometry		
Normal Value:	0 ng/mL	Container:	Urine collection cup
Specimen Type:	Urine	Storage:	-20 °C
Specimen Amount:	≥ 5 mL	Transport:	-20 °C
Note:	Contact Greg DeLong at 484-870-6279 before submitting specimens. Collect and submit specimens as soon as possible once exposure is suspected. The ideal specimen volume is 50 mL.		

Organophosphate Nerve Agent Metabolites			
Method:	Liquid chromatography – tandem mass spectrometry		
Normal Value:	0 ng/mL	Container:	Urine collection cup
Specimen Type:	Urine	Storage:	-20 °C
Specimen Amount:	≥ 5 mL	Transport:	-20 °C
Note:	Contact Greg DeLong at 484-870-6279 before submitting specimens. Collect and submit specimens as soon as possible once exposure is suspected. The ideal specimen volume is 50 mL.		

Post-mortem Blood Alcohol			
Method:	Headspace gas chromatography		
Normal Value:	0 mg/dL	Container:	Grey-topped (sodium oxalate and potassium fluoride) tube
Specimen Type:	Blood	Storage:	2 to 8 °C
Specimen Amount:	10 mL	Transport:	Ambient temperature
Note:	Submit two grey-topped tubes for each deceased individual.		

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Post-mortem Drugs of Abuse			
Method:	Gas chromatography – mass spectrometry		
Normal Value:	0 ng/mL	Container:	Grey-topped (sodium fluoride/potassium oxalate) tube
Specimen Type:	Blood	Storage:	2 to 8 °C
Specimen Amount:	10 mL	Transport:	Ambient temperature
Note:	Submit two grey-topped tubes for each deceased individual.		

Tetramine			
Method:	Gas chromatography – mass spectrometry		
Normal Value:	0 ng/mL	Container:	Urine collection cup
Specimen Type:	Urine	Storage:	-20 °C
Specimen Amount:	≥ 5 mL	Transport:	-20 °C
Note:	Contact Greg DeLong at 484-870-6279 before submitting specimens. Collect and submit specimens as soon as possible once exposure is suspected. The ideal specimen volume is 50 mL.		

Volatile Organic Compounds			
Method:	Gas chromatography – mass spectrometry		
Normal Value:	0 ng/mL	Container:	Vacuum-fill, non-gel, grey-topped (sodium fluoride/potassium oxalate) or green-topped (heparin) tubes
Specimen Type:	Blood	Storage:	2 to 8 °C (DO NOT FREEZE)
Specimen Amount:	≥ 5 mL	Transport:	2 to 8 °C (DO NOT FREEZE)
Note:	Contact Greg DeLong at 484-870-6279 before submitting specimens. Collect and submit specimens as soon as possible once exposure is suspected. If possible, submit two blood collection tubes. Submit two additional blood collection tubes as blanks.		

¹ Nationally notifiable condition

² Pennsylvania reportable disease