

**HOUSTON DEPARTMENT OF HEALTH AND HUMAN SERVICES
BUREAU OF LABORATORY SERVICES**

**2250 Holcombe Blvd
Houston, Texas 77030**

HANDBOOK FOR SPECIMEN COLLECTION AND SUBMISSION

For All Clients of Laboratory Services



Revised February 2014

Our laboratory facilities are well equipped and fully staffed to provide all users with the highest caliber of support. However, the laboratory must be properly utilized if we are to achieve the quantity and quality of support you require. It is important for all of us to understand that the laboratory is a finite resource. Unnecessary or improperly submitted requests inevitably slow the response time to the possible detriment of patients or the public, and wastes resources which could be used more productively. This manual will enable you to obtain maximum support from your laboratory.

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Introduction

The Bureau of Laboratory Services of the City of Houston Department of Health and Human Services (HDHHS) is dedicated to providing high quality clinical and environmental laboratory support. This manual is designed to assist those using the laboratory in obtaining this support. It is therefore in the best interest of the public that careful attention be given to the information in this manual.

The Bureau of Laboratory Services is staffed with approximately 60 personnel. It operates from the Central Laboratory at 2250 and 2252 Holcombe Blvd and Health Center Stat Labs. Besides supporting Houston's Public Health programs, the Bureau also serves as a regional laboratory for a 17 county region in Texas Public Health Region 6/5 South and is a reference laboratory for over 90 area medical facilities.

A wide variety of tests and services are available within the Bureau of Laboratory Services. However, if a needed procedure is not described in this manual, contact the appropriate laboratory section or Laboratory Manager for assistance.

Tests are made available to Public Health agencies, area medical facilities, veterinarians, and in some cases (potable water testing) to private individuals. For other than HDHHS facilities, a fee is normally charged to cover the cost of providing the test. To receive a fee schedule, please call (832) 393-3900.

General Information

A. The Bureau of Laboratory Services is divided into two services

1. Clinical Laboratory Service which includes Medical Microbiology, Virology/Serology, Health Center Support Labs, Molecular Diagnostics and Laboratory Support sections.
2. Environmental Laboratory Service which includes Water and Air Pollution Chemistry, Trace Organics, Environmental Microbiology, and Drinking Water.

B. the Central Laboratory is located at 2250-52 Holcombe Blvd.

C. Telephone number (832) 393-3900

Please call the number above and follow the prompts to reach the required section of the laboratory.

D. Laboratory hours and staffing

1. Routine hours are 8:00 a.m. - 5:00 p.m. Monday through Friday.
2. A skeleton staff works some hours on weekends, holidays and some evenings for the purpose of doing required testing procedures. However, specimens will not be accepted during these hours except on an emergency basis.

E. Laboratory requests. All specimens/samples must be accompanied by a completed request form. All laboratory requests must contain the following minimum information:

1. Date of Collection (and time of collection if required)
2. Specimen Source
3. Patient Name and Sex (Clinical Samples)
4. Date of Birth and/or SSN (Clinical Samples)
5. Name of Submitter
6. Name of Submitting Location
7. Test Required
8. Medical Record Number (Clinical Samples)

This is both a requirement for laboratory certification and an essential practice to minimize errors and aid in interpretation. Likewise, samples must be legibly labeled with two identifiers (preferably patient name and SSN or medical record number) if a clinical specimen or, in the case of environmental specimens, with the specimen identification.

F. General Specimen Rejection Criteria:

Observation of any of the conditions below, upon receipt of the specimen will result in the rejection of the specimen and the submitting entity will be informed:

1. Incomplete patient request form
2. No return address
3. Incomplete/Unlabeled/Mismatched label on specimen and patient request form
4. Leaking specimens/Broken tubes
5. Inappropriate test requested for specimen type submitted
6. Specimens held beyond recommended transport time
7. Specimens transported and stored at inappropriate temperature or conditions
8. Insufficient quantity of specimen for testing
9. Specimen received in expired collection device or transport medium
10. Specimen received in inappropriate collection device or transport medium
11. Inadequate centrifugation or specimen not centrifuged

G. Request categories

Tests may be requested in three categories: STAT, ASAP, and Routine.

1. STAT- Stat tests are requested during a serious crisis or a situation demanding performance on the test before all others. If the submitter has fax equipment, the results will be faxed if the fax number is on the request slip. Otherwise, results will be telephoned. Mark both lab slip and specimen/sample with STAT labels. STAT tests to be performed during other than routine hours must be coordinated with the Laboratory Director, a Laboratory Manager, or the Supervisor of the laboratory section performing the test.

2. ASAP- Expedite test, results available as soon as possible. When possible, ordering of ASAP rather than STAT testing is encouraged, as it allows laboratory workers to batch tests and thus perform much more efficiently.

3. Routine- General guidelines cannot be set for this category as many of the tests require extended periods of time for performance. In general, most tests are performed daily but some tests only biweekly or weekly. Detailed information on each test and expected routine turnaround time are available elsewhere in this manual.

4. Specimens delivered to the Central laboratory must arrive no later than 5:00 p.m. Monday through Thursday and 5:30 p.m. on Friday to receive proper handling. If a situation arises which causes a delay in transport, please call (832) 393-3900 and we will arrange for someone to receive the specimens until 6:00

p.m. at the latest. If these instructions are not followed, specimens arriving after 5:00 p.m. may not receive attention until the next morning, by which time they may have deteriorated to an unsatisfactory state.

5. Please contact the Laboratory Director when any special investigation is planned or when you have any questions about laboratory services or interpretation of results. Section supervisors will be happy to answer questions about proper submission of specimens.

H. Some laboratory tests not available here may be available at the Texas Department of State Health Services Laboratory or at a Centers for Disease Control and Prevention laboratory. On request, the Bureau of Laboratory Services will arrange for the testing to be done at one of these laboratories. All requests for testing not addressed in this manual must be individually coordinated with the Clinical Laboratory Manager, the Environmental laboratory Manager, or the Laboratory Director. This ensures the correct administrative processing and handling of specimens/samples.

I. The laboratory will consider and evaluate requests for expanded laboratory support from HDHHS programs. However such requests must be balanced against the needs of the entire department for laboratory support and the finite personnel and financial resources available for the total laboratory effort at the Department of Health and Human Services. Please include laboratory funding and personnel needs in all planning for new or expanded programs requiring laboratory support.

J. Quality Control. The Bureau of Laboratory Services is committed to a vigorous, meticulous, ongoing program of quality control in all areas of the laboratory. Rigorous quality control and documentation is performed on every test, instrument, reagent and material used. Every area of the laboratory devotes considerable time and effort daily in an attempt to assure reliability of data produced.

K. Inspection and Certification. The laboratory is certified by the Texas Department of State Health Services, the Texas Air Control Board, Food and Drug Administration, National Environmental Laboratory Accreditation Program, American Industrial Hygiene Association, Centers for Medicare and Medicaid Services, College of American Pathologists and Texas Commission on Environmental Quality.

L. If a negative incident occurs that you would like to bring to our attention, please fill out an incident report form (located at the back of this manual) and send it to us.

Clinical Laboratory Services

**Main Lab- 2250 Holcombe Blvd
And
Stat Labs in Health Centers**

Medical Microbiology- ALL SPECIMENS MUST BE SUBMITTED IN LEAK PROOF CONTAINERS

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
<i>Bordetella pertussis</i> direct immunofluorescence antibody (DFA) and/or culture	87265 87077	Nasopharyngeal swab Nasal wash Nasal aspirate Prepared slide Culture	1 swab 1-5 ml 1 swab for DFA or 1 prepared slide 1 slide 1 slant or sealed plate	1 calcium alginate or Dacron fiber tip swab in appropriate media or prepared slide. Flush specimen into a sterile leak-proof container with 1-1.5ml of sterile saline. Inoculate culture at bedside for maximum recovery. Use sterile leak proof container without fixative or preservative. Use Amies transport medium or similar (charcoal agar) for transport of swab. Submit within 24 hours of collection at room temperature. If shipping is delayed, incubate at 35°C for 48 hours before shipping. Submit clinical isolates on appropriate media such as Regan-Lowe. Ship in a biohazard bag and in a U.N. certified shipping container.	Mon-Fri	No <i>Bordetella pertussis</i> isolated DFA Negative for <i>Bordetella pertussis</i>
<i>Legionella</i> direct immunofluorescence antibody (DFA) and/or culture	87278 87077	Sputum, Bronchial washes, Aspirates (nasotracheal, transtracheal, ercutaneous lung, or endobronchial), Bronchoscopy, Biopsy, Fluid (CSF, Pericardial, peritoneal, pleural) Tissue Culture	2ml 1 slant or sealed plate	All clinical specimens may be fresh or fresh-frozen. For respiratory samples collect any dense gray or reddish consolidated areas. Use sterile leak-proof container without fixative or preservative. Collect washings using sterile water. Saline is inhibitory to <i>Legionella</i> species. Store at 2-8°C. Submit clinical isolate on appropriate media such as buffered charcoal yeast extract (BCYE) agar to insure viability. Transport to laboratory in a biohazard bag on ice packs and in a UN certified shipping container	Mon-Fri	DFA negative for <i>Legionella pneumophila</i> No <i>Legionella pneumophila</i> isolated

Medical Microbiology (Continued)

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
Stool Culture (aerobic isolation)	87045	stool	Cary Blair transport medium to filled arrow	Collect stools before antibiotic treatment is initiated for greatest chance of isolation of enteric pathogens. Transfer stools immediately to enteric transport medium such as Cary Blair. Store at 2-8°C. Ship stools in Cary Blair transport medium, on ice packs, in a biohazard bag, and in a UN certified shipping container. Specimen must be received within 3 days of collection.	Mon-Fri	No enteric pathogens isolated
EHEC Shiga-Toxin assay	87427	stool	10 ml GN Broth or Cary Blair transport medium filled to arrow	Submit stool in Cary Blair or GN broth. Store at 2-8°C. Ship stool specimens and broths on ice packs or frozen in a UN certified shipping container. Specimen must be received within 7 days of collection.	Mon-Fri	No shiga like toxin detected
Reference Culture identification: <i>E. coli</i> O157:H7	87147	Pure culture on sorbitol, MacConkey, blood agar plate or agar slant.	1 slant or sealed plate	Specimen should be submitted when suspected <i>E. coli</i> O157:H7 has been isolated from a patient. Transport sealed plate or slant in a biohazard bag and in a UN certified shipping container	Mon-Fri	No <i>E. coli</i> O157:H7 isolated
<i>Salmonella</i> species serotyping including <i>Salmonella typhi</i>	87077	Pure culture on HIA slant or similar media	1 slant or plate	Specimen should be submitted when <i>Salmonella</i> species has been isolated from a patient. Transport sealed plate or slant in biohazard bag and UN approved shipping container	Mon-Fri	Serotype reported
<i>Shigella</i> serotyping	87077	Pure culture on chocolate agar slant or plate	1 slant or sealed plate	Specimen should be submitted when <i>Shigella</i> species has been isolated from a patient. Transport sealed plate in biohazard bag and UN approved shipping container.	Mon-Fri	Serotype reported

Medical Microbiology (Continued)

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
<i>Neisseria meningitidis</i> serotyping	87147	Pure culture on chocolate slant/plate	1 slant or sealed plate	Culture must be collected from a sterile body site such as blood or CSF for serotyping. Transport in inoculated chocolate slant (preferred) in biohazard bag and in UN approved shipping container.	Mon-Fri	Serotype reported
Reference culture identification: <i>Campylobacter</i> species	87077	Pure Culture	1 slant or plate in microaerophilic container	Maintain culture on Campylobacter blood agar media in microaerophilic environment. Culture must be submitted under microaerophilic conditions and in a UN approved shipping container.	Mon-Fri	Reported to species level
Reference culture identification: <i>Vibrio</i> species	87077	Pure Culture	1 slant or sealed plate	Specimen should be isolated onto HIA, BHIA, or TSA. Specimen must be submitted in a biohazard bag and transported in a UN certified shipping container.	Mon-Fri	Reported to species level
Reference culture identification: <i>Listeria</i> species	87077	Pure Culture	1 slant or sealed plate	Specimen should be isolated onto HIA, BHIA, or TSA. Specimen must be submitted in a biohazard bag and transported in a UN certified shipping container.	Mon-Fri	Report to species level
<i>Haemophilus influenzae</i> typing	87077	Pure Culture	1 chocolate plate or sealed slant	Culture must be collected from a sterile body site such as blood or CSF for serotyping. Transport in inoculated chocolate slant (preferred) or plate in biohazard bag and in a UN certified shipping container.	Mon-Fri	Serotype reported
<i>Clostridium botulinum</i> toxin detection, typing, isolation	87077	Stool, serum	10g stool 10ml serum	Requires pre-approval by the Texas Department of State Health Services. Call state epidemiologist at 512-776-6352 or 512-776-6648. Store at 2-8°C. Transport in a sterile container on ice packs. Specimen must be submitted in a biohazard bag and shipped in a UN certified shipping container.	Mon-Fri	No <i>Clostridium botulinum</i> isolated

Medical Microbiology (Continued)

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
Fluorochrome Smear and AFB Culture	87026	Abscess, exudates	Tissue or fluid preferred	<p>Hold all specimens for fluorochrome smear and AFB culture at 2-8°C and ship in a cooler with ice packs within 24 hours of collection. Exceptions are blood and bone marrow specimens which should be maintained at room temperature during storage and transport.</p> <p>Collect fluid/ abscess material with syringe and/or remove tissue aseptically. A swab is discouraged unless it is the only specimen available. Submit swabs in 2-3 ml saline.</p>	Mon-Fri	<p>No acid fast bacilli seen on direct smear</p> <p>No growth of AFB at 6 weeks</p>
		Sputum, expectorated	1 ml minimum, 5-10ml preferred, specimens collected on three consecutive days, early morning specimens preferred	<p>Collect specimen under direct supervision of nurse/healthcare worker. Have patient rinse with water to remove excess bacteria. Instruct patient to cough deeply to produce a lower respiratory specimen</p>		
		Sputum, induced	1ml minimum, 5-10ml preferred. Specimens collected on 3 consecutive days.	<p>Collect specimen under direct supervision of nurse/healthcare worker. Have patient rinse with water to remove excess bacteria. With aid of nebulizer have patient inhale approximately 25ml of 3-10% sterile saline.</p>		
		Fluids: abdominal, amniotic, bile, joint, paracentesis, pericardial, peritoneal, pleural, synovial, thoracentesis	1ml minimum, 5-15ml preferred.	<p>Obtain specimen via percutaneous needle aspiration or surgery; submit as much fluid as possible. Swabs dipped in fluid are not acceptable.</p>		

Medical Microbiology (Continued)

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
Fluorochrome Smear and AFB Culture		Tissue/lymph node	1g if available	Add 2-3ml of 0.85% sterile saline to tissue for transport		
		Gastric lavage	5-10ml minimum, specimens collected on 3 consecutive days	Collect in early morning before patients eat. Introduce nasogastric tube into stomach. Perform wash with 25-50 ml chilled, sterile water. Recover sample and place in 50ml conical tube. Neutralize pH with 100mg sodium carbonate within 4 hrs of collection.		
		Bronchial lavage or brush, Endotracheal aspirate, lower BAL	2-4ml minimum	Collect washing or aspirate in sputum trap, place brush in 5ml saline.		
		CSF	1-5ml minimum			
		Blood , Bone Marrow	1ml minimum	Direct smears not performed on blood. Do not refrigerate. 10ml SPS yellow top collection tube. SPS is preferred but heparinized blood is also acceptable.		
		Stool	1g if available	Pass specimen directly into container. Do not use transport medium. Rectal swabs are not acceptable.		
<i>Mycobacteria</i> culture identification	87143	Pure Culture	1 slant, plate, or broth	Specimen should be isolated on Lowenstein-Jensen slant, sealed 7H10/11 Middlebrook plate, slant, or broth. Culture must be submitted in a biohazard bag and transported in a UN certified shipping container.	Mon-Fri	Reported to species level

Medical Microbiology (Continued)

Test	CPT Codes	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
MTB or <i>M. kansasii</i> primary drug susceptibility test (Isoniazid, Rifampin, Ethambutol, Pyrazinamide)	87188 87190	Pure culture	1 slant, plate, or broth	Specimen should be isolated on Lowenstein-Jensen slant, sealed 7H10 Middlebrook plate, or broth. Culture must be submitted in a biohazard bag and transported in a UN certified shipping container.	Mon-Fri	Primary Drug susceptibility results reported
MTB secondary drug susceptibility test	87190	Pure culture	1 slant broth or plate	Specimen should be isolated on Lowenstein-Jensen slant, sealed 7H10 Middlebrook plate, or broth. Culture must be submitted in a biohazard bag and transported in a UN certified shipping container.	Upon request	Secondary drug susceptibility results reported
QuantiFERON® TB Gold In Tube	86480	Quiagen QuantiFERON® TB Gold in Tube collection tubes (Nil, TB antigen, mitogen)	1 ml whole blood in each of the three tubes	Immediately following collection, each specimen tube must be mixed firmly by shaking the tube up and down 10 times. Ensure that the entire inner surface of the tube is coated with blood. After mixing, incubate tubes upright at 37°C for 16-24 hours (within 16 hours of collection). Transport tubes at 2-27°C within 72 hours. Do not refrigerate non-incubated tubes transport at 17-27°C within 16 hours of collection.	Daily	Negative: No TB antigen responsiveness detected
TB nucleic Acid Amplification Test (TB NAAT)	87566	Sputum, bronchial lavage, tracheal aspirate (unprocessed)	1-3ml	Specimens must be submitted within 3 days of collection. Patient must have received TB drug therapy for less than 7 days, completed therapy in the last 12 months, or received no therapy. Contact mycobacteriology lab for pre-approval: 832-393-3903 or 832-393-3901	Upon request	No MTB complex rRNA detected
Molecular Detection of Drug Resistance (<i>M. tuberculosis</i>)		Pure culture, Concentrated sediment from patient with positive acid fast smear	1 slant, plate, or broth 1 ml sediment	Contact mycobacteriology supervisor for pre-approval: 832-393-3901 Sent to Centers for Disease Control and Prevention	Upon request	No molecular drug resistance detected

Serology and Virology

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
RPR	Serum, Plasma	1.0ml		Daily	Nonreactive
Serodia-TP-PA	Plasma, Serum	1.0ml		Tuesday/Thursday	Nonreactive
Rubella-IgG EIA	Serum	1.0ml	Single serum to determine the immune status	Daily	Those specimens with an absorbance value \geq a cutoff value are positive for Rubella antibodies and indicate past infection or vaccination.
Rubella-IgM EIA	Serum	1.0ml	A specimen taken very early during the acute stage or late after the convalescent stage of infection may not contain detectable levels of Rubella IgM antibodies.	Referred to Texas Department of State Health Services Upon Request	Those specimens positive before or after RF neutralization are positive for IgM class antibodies to Rubella virus
Mumps EIA	Serum	1.0ml	Single serum to determine the immune status. A positive test result indicates a current or previous infection with Mumps virus or prior vaccination.	Weekly	Specimens with absorbance values \geq a cutoff value are positive.
Rubeola IgM EIA	Serum	1.0ml	Referred to Texas Department of State Health Services	Upon Request	
Rubeola IgG EIA	Serum	1.0ml	Single specimen to determine the immune status. A positive test result indicates a current or previous infection with measles virus. Acute and convalescent sera collected 5-7 days apart for serological diagnosis. If the first sample is negative and the second sample is positive, the patient is considered to have a primary measles infection.	Weekly	Specimens with absorbance values \geq a cutoff value are positive. First specimen has an absorbance value \leq a cutoff value and second specimen has absorbance value \geq a cutoff value indicative of a primary measles infection
VZ IgG EIA	Serum	1.0ml	Single serum to determine immune status. A positive test indicates previous exposure to VZ virus by infection or vaccination.	Weekly	Specimens with absorbance value \geq a cutoff value are positive.

Serology and Virology (Continued)

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
Arbovirus MIA	Serum, CSF	1.0ml	Single specimen to detect presence of IgM antibodies to WNV and SLE. A positive result indicates current or recent infection.	Weekly during season or as volume dictates	Specimens with high mean fluorescent index (MFI) are considered positive for the indicated antibody.
HAVAB-IgM EIA	Serum	1.0ml	Single serum	As required	Specimens with absorbance values repeatedly \geq a cutoff value are considered positive.
HAVAB-IgG EIA	Serum	1.0ml	Single serum	As required	Specimens with absorbance values repeatedly \geq a cutoff value are considered positive
HBsAg EIA	Serum	1.0ml	Single serum	Twice weekly as specimen load indicates	Specimens with absorbance values repeatedly \geq a cutoff value are considered positive. Repeatedly reactive specimen should be tested by a licensed neutralizing confirmatory test
HBsAg Confirmatory EIA	serum	1.0ml	Used to confirm the presence of HBsAg in specimens found to be repeatedly reactive in HBsAg EIA	Weekly	A specimen is confirmed as positive if the reduction in signal of the neutralized specimen is at least 50% and the non-neutralized control generates a signal \geq the assay cutoff.
Anti-HBs EIA	Serum	1.0ml	Single serum	Weekly	Specimens with absorbance values \geq a cutoff value are positive
Anti-HBc EIA	Serum	1.0ml	Single serum	Weekly	Specimens with absorbance values \geq a cutoff value are positive
Anti-HBc IgM EIA	Serum	1.0ml	Single serum. Positive specimen is indicative of acute or recent (usually 6 months or less) Hepatitis B infection.	As required	Specimens with absorbance values \geq a cutoff value are positive

Serology and Virology (Continued)

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
HBe/Anti-HBe EIA	Serum	1.0ml	Single serum	As required	Specimens with absorbance values \geq a cutoff value are positive for HBeAg. Specimens with absorbance values \geq a cutoff value are positive for Anti-HBe.
Hepatitis C Virus EIA	Serum	1.0ml	Single serum	Weekly or as required	Specimens with absorbance values \geq a cutoff value are positive
HIV-1/HIV-2 Combo Ag/Ab	Serum Plasma	1.0ml	Single serum	Daily	Specimen with absorbance values \geq cutoff value are considered initially reactive (IR). IR specimens are repeated in duplicate. Repeatedly reactive (RR) specimens are confirmed by Western Blot
Western Blot	Serum Plasma	0.5ml	Available on repeatedly reactive specimens. Test requires 1-2 days.	Weekly or as specimen load dictates	Specimens containing no bands are negative for HIV-1 antibody. Specimens containing at least two of the three viral bands: p24, gp41, or gp120/160 are reported as positive for the presence of HIV-1 antibody. Specimens containing bands not meeting the criteria for a positive are reported as indeterminate.
Aptima HIV-1 RNA Qualitative Assay	Serum Plasma	1.0-3.0ml	Single Specimen. Reactive result is indicative of acute or current infection with HIV-1.	Weekly or as specimen load dictates	Specimens with a valid internal control (IC), $IC \geq$ cutoff and with a S/CO less than 1.0 are considered nonreactive for HIV-1
HIV 1/2 Multispot	Serum Plasma	1ml	Single specimen. Analyte specific reaction to differentiate confirmation of HIV-1/HIV-2 infection	As required	Specimens that do not promote color change in the analyte specific cartridge position are considered non-reactive.

Serology and Virology (Continued)

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
CMV Culture	Urine, Throat swab or washing; Bronchoalveolar lavage; Biopsy tissue	1-2ml 1-2g	Isolation. Identification (FA). Specimens must be sent on ice pack.	As required. Cultures held 20 days before reporting out.	Specimens lacking specific fluorescence are reported as negative.
Enteroviruses Coxsackie-viruses Echoviruses Polio viruses	Isolates Feces Throat Swabs Spinal Fluids	1.0ml 30-50mg 1.0ml	Isolation, Identification, typing specimens must be sent frozen or on ice.	As required. Cultures held until typing completed. Turnaround time 2-3 weeks	Absence of viruses reported as no viruses isolated.
Herpes simplex	Viral Culturette/ swab from lesion	N/A	Isolation, Identification, (FA). Specimens must be kept cold. (Refrigerate)	Daily. Turnaround time 1-7 days	Absence of virus reported as negative.
Mumps Culture	Spinal Fluid Urine Saliva	1.0ml	Isolation, Identification (FA)	As required. Cultures held 10 days before reporting out.	Absence of virus reported as no virus isolated.
Rabies	Animal head	N/A	Identification (FA). No whole carcasses (with the exception of bats) are accepted. Heads must not be frozen. It is required by law that the lab be notified at the shipping of a head. (832) 393 3917	Daily. All results (positive or negative) are reported by phone daily.	Specimens lacking specific fluorescence reported as negative.
Rubeola Culture	Throat Swab Urine	1.0ml	Isolation Identification (FA)	As required	Specimens lacking specific fluorescence reported as no virus isolated
Varicella Culture	Exudate Swab	N/A	Isolation. Identification (FA)	As required	Specimens lacking specific fluorescence reported as no virus isolated.
Viral Screen	Swab in viral transport medium, isolate, washes, aspirates, other	1.0ml	Isolation by culture, Identification (FA)	As required	Specimens lacking specific fluorescence reported as no virus isolated.

Serology and Virology (Continued)

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
Adenovirus	Throat Swab Conjunctival Swab Feces Urine	30-50mg 1-2ml	Isolation, Identification (FA)	As required. Cultures held 10 days before reporting out.	Absence of virus is reported as no virus isolated.
Chlamydia	Cervical Swab Urethral Swab		Isolation, Identification (FA). All cultures are subcultured once before reporting as positive or negative.	Weekly or as specimen load dictates	Specimens lacking specific fluorescence are reported as negative.
rRT-PCR Seasonal Influenza	Upper Respiratory Swab, N/P wash or aspirate	1-2 ml	Specimen must be transported on ice packs and received within 4 days of collection	As required.	Specimens with Ct values above 38 are considered undetectable for viral presence.
rRT-PCR Dengue Virus	Whole blood Plasma Serum	1-2 ml	Specimens may be transported on ice packs within two hours of collection. Serum and plasma that exceed two hours of collection must be transported/received frozen		Specimens with Ct values above 37 are considered undetectable for viral presence.

Health Center Support Labs

Test	Acceptable Specimens	Required Amount	Special Instructions	Test Frequency	Normal Values
RPR	Serum in red top tube Plasma in lavender top Vacutainer® tube (EDTA)	1.0ml minimum serum 1.0ml minimum plasma	Allow to clot for 60 minutes. Centrifuge within 2 hours of collection at ≤ 1300 RCF (g) for 10 minutes Gently invert tube 8-10 times slowly when drawn to mix anticoagulant. Centrifuge for 10min. at 1000-1300 RCF(g)	On receipt	Non-Reactive
Wet Mount	Vaginal secretion	Swab in 1ml sterile saline	Collect vaginal sample on swab, inoculate saline tube.	On receipt	Only epithelial cells and PMNs present
Gram Stain	Urethral Secretion	Thin layer on microscope slide	Clean outside of urethral area well before collecting sample. Sample should be fresh secretion	On receipt	PMNs absent or present, no significant microorganisms seen
Dark Field	Exudate from Lesion	Very thin inoculum mixed with 1 drop saline on microscope slide	Coverslip should not float on slide.	On receipt	No organisms resembling <i>T. pallidum</i> found.
Rapid HIV	Lavender Top Vacutainer® tube (EDTA)	Minimum 1.0ml	Gently invert tube 8-10 times slowly when drawn to mix coagulant.	On Receipt	Negative
Amplified nucleic acid test for the detection of <i>C. trachomatis</i> and <i>N. gonorrhoeae</i>	Endocervical, Vaginal, Urethral (male), first voided urine (male or female)	1 unisex swab or urine	Collect one endocervical, vaginal, or male urethral swab. Urine must be first voided. Only use collection devices contained in the APTIMA® combo 2 specimen collection kits. Refer to manufacturer's package insert for complete details on specimen collection. Patients must not have urinated one hour prior to specimen collection. Transport sample at room temperature within 48-72 hours of collection in a biohazard bag. Do not allow collection devices to contact one another	Mon-Fri	Negative for GC Negative for CT

Health Center Support Labs (Continued)

Gonorrhea Culture (isolation)	Cervical, urethral, rectal, throat, or vaginal swab	1 Thayer-Martin or Martin-Lewis bottle or plate with CO ₂ atmosphere	Collect specimens with Dacron® or rayon swabs. Cotton swabs may be used but some cotton contains fatty acids that are inhibitory to gonococci. Obtain a swab from the cervix, urethra, rectum, or throat and inoculate transport medium immediately. Transport plate with a CO ₂ atmosphere at room temperature in a biohazard bag and in a UN certified shipping container. If commercial media are not available, modified Thayer-Martin plates must be transported at room temperature in candle extinction can with a moist piece of cotton or paper towel. Do not refrigerate.	Mon-Fri	GC Not Isolated
Gonorrhea Culture Identification	Pure culture on chocolate slant/plate	1 slant or plate	Maintain on media such as Thayer-Martin or chocolate agar. Keep in a 3-6% CO ₂ atmosphere. Transport clinical isolate at room temperature with a CO ₂ atmosphere.	Mon-Fri	GC Isolated
Rapid HCV	Lavender top Vacutainer® tube (EDTA)	Minimum 1.0 ml	Gently invert tube 8-10 times when drawn to mix anticoagulant	On receipt	Nonreactive
Rapid TPPA	Lavender top Vacutainer® tube (EDTA)	Minimum 1.0 ml	Gently invert tube 8-10 times when drawn to mix anticoagulant	On receipt	Negative
HPV Assay, Amplified Nucleic Acid test for the detection of Human papillomavirus	Aptima® Specimen Transfer Kit for use with PreservCyt Liquid Pap specimens	1 specimen transfer tube	Avoid cross-contamination during specimen handling. Do not allow collection devices to contact one another	Mon-Fri	Negative

Molecular Diagnostics Section

Laboratory Testing Protocol for the Surveillance of Influenza Virus

Guidelines subject to change depending on the situation and state/federal updates

This document is for clinicians within the seventeen-county region serviced by the Houston Department of Health and Human Services (HDHHS) Laboratory Response Network (LRN) Reference Laboratory in accordance with local practices, and state and CDC guidelines.

Influenza virus testing conducted at the HDHHS laboratory is for surveillance purposes. The primary goals for this testing are to:

- detect the distribution and spread of the virus
- detect new variants of the virus
- assist in outbreak investigations

Lab testing for clinical disease management purposes in individual patients is not a primary function of public health laboratory testing. Such diagnostic testing, if desired, should be performed by commercial laboratories.

Specimen Collection Guidelines

Samples should be collected as soon as possible after the onset of illness.

Acceptable specimens include upper respiratory tract clinical specimens and lower respiratory tract specimens.

Upper respiratory tract clinical specimens:

1. nasopharyngeal swabs [NPS]
2. nasal swabs [NS]
3. throat swabs [TS]
4. nasal aspirates [NA]
5. nasal washes [NW]
6. dual nasopharyngeal/throat swabs [NPS/TS]

Lower respiratory tract specimens:

1. bronchoalveolar lavage [BAL]
2. bronchial wash [BW]
3. tracheal aspirate [TA]
4. sputum
5. lung tissue

Specimen Collection, Handling, and Storage

Inadequate or inappropriate specimen collection, storage, and transport are likely to yield false negative results. Training in specimen collection is highly recommended due to the importance of specimen quality.

Collecting the specimen:

- Follow specimen collection devices manufacturer instructions for proper collection methods.
- Swab specimens should be collected using only swabs with a synthetic tip, such as nylon or Dacron, and an aluminum or plastic shaft. **Calcium alginate swabs are unacceptable and cotton swabs with wooden shafts are not recommended.**

Transporting specimen:

- When transporting human respiratory specimens, all applicable regulations for the transport of etiologic agents must be met. Human respiratory specimens, to be tested within 72 hours post-collection, should be transported refrigerated at 2-8°C. Alternatively, specimens may be frozen and transported for testing.
- Respiratory specimens should be collected and placed into viral transport media (VTM) as described by CDC and WHO “Guidelines for the collection of clinical specimens during field investigation of outbreaks”,
- <http://www.who.int/csr/resources/publications/surveillance/whocdscsredc2004.pdf>, and/or www.cdc.gov/h1n1flu/specimencollection.htm

Specimen Rejection Criteria

- Swabs with calcium alginate or cotton tips and wooden shafts
- Specimens not transported on ice
- Frozen specimens not transported on dry ice
- Swabs not transported in viral transport media
- Specimens submitted in expired viral transport media
- Refrigerated specimens more than 72 hours old
- Specimens accompanied by incorrect, improperly completed or incomplete requisition forms
- Specimen source, collection date and time not specified on requisition form
- Inappropriate specimen types (any other than those listed as acceptable specimens above)

References

Instructions for Use Package Insert: CDC Human Influenza Virus Real-time RT-PCR Diagnostic Panel (CDC Flu rRT-PCR Dx Panel), catalog #FluIVD03

Specimen Collection and Packaging for Norovirus Testing

Timing of Collection

Stool or vomitus specimens should be collected during the acute phase of illness (i.e., within 48-72 hours after onset). In specific cases, specimens may be collected later in the illness (i.e., 7-10 days after symptom onset), if testing is necessary for either determining the etiology of the outbreak or for epidemiological purposes (e.g., a specimen obtained from an ill food handler who might be the source of the infection).

Quantity

Ideally, stool or vomitus specimens from at least 7-10 ill persons should be obtained during the acute phase of the illness for testing. Depending on the outbreak or cooperation of the patients involved, it may be difficult to collect the ideal number of samples. If this is the case, the number of samples collected will be determined by Epidemiology. 10-50 mL of stool or vomitus should be collected and placed in a tightly capped (leak-proof) stool or urine sample cup.

Storage and Transport

Stool or vomitus specimens should be kept refrigerated at 4°C. This temperature allows for the specimens to be stored without compromising diagnostic yield for 2-3 weeks from collection. Freezing can destroy the characteristic viral morphology and may preclude a preliminary diagnosis by electron microscopy (EM). Specimens can be frozen for PCR testing if the test cannot be done within 2-3 weeks. Prior to being shipped, specimen cups should be individually sealed and bagged. Specimens should be shipped in an appropriately labeled, insulated, waterproof shipping container with refrigerant packs.

Environmental Laboratory Services

2250 Holcombe Blvd

Procedure for Sample Submission

This procedure is prepared to ensure that laboratory documentation and data will be admissible in compliance or legal situations. The laboratory will have the original sample data package and all related documentation. This will allow the lab to ensure the quality of documentation. The protocols outlined in this document are applicable to parties responsible for sample collection, handling, field screening, documentation and submission of samples.

Four factors that will affect the integrity of data produced in the laboratory are:

1. Proper collection of a representative sample
2. Sample contamination
3. Documentation of sampling events
4. Adherence to proper holding time requirements

For any questions please contact Environmental Laboratory Manager at (832) 393-3976, Inorganic Chemistry Supervisor at (832) 393-3935, or Water and Dairy Supervisor at (832) 393-3948.

Sample receiving or tracking procedure

Samples are received at the laboratory as per the laboratory sample receiving protocol provided in this document. Trained sampling personnel bring all samples to the laboratory. No evidentiary type samples are accepted by the laboratory.

Sample release: Samples will not be transferred to another location for testing. After the samples are tested, samples will not be returned to the submitter. All samples except soil samples are discarded after the holding time has expired. Soil samples are stored for two years and then discarded or transported for disposal.

Sample Containers, Preservation, Sample volume, and Hold Times.

Prior to sample collection, containers, preservatives, holding times, sample volumes, and target analytes must be considered. Field personnel must make every effort to follow proper sample handling protocol and limit requests only to pertinent analyses. The parameters to be measures are usually dictated by the purpose of an investigation and should be selected based upon required monitoring conditions or upon the investigator's knowledge of the problem. The volume of sample collected must be sufficient to perform all the requested tests as well as perform the needed quality control tests such as duplicates, matrix spikes, etc. Please note that if you are requesting Total Suspended Solids (TSS) analysis, the laboratory requires a sample volume of about 800 ml. Therefore, please bring an additional cubitainer for TSS analysis.

Proper sample preservation is the responsibility of the sampling personnel. Laboratory staff will assist in the preservation of samples if requested. If trace metal samples are acidified in the lab there is a 24 hour waiting period before analysis can begin. Preservatives must be of reagent grade or higher. Acids suitable for trace metals analysis must be used for preserving metals samples. Fresh preservatives should be obtained from parent stocks prior to each sampling event. Any remaining preservatives that are not in sealed ampoules should be properly discarded and not returned to the stock.

Using narrow range pH paper and an aliquot of the preserved sample, check the effectiveness of required pH adjustment in the field.

In addition to chemical preservation, most samples must be properly iced (thermal preservation) at the time of collection (exception include metals). Ice must be added to the cooler prior to or immediately after the first samples are collected. Do not allow samples to freeze. A temperature range of just above freezing to 6°C, with no evidence of freezing is acceptable. Wet ice (not dry ice or ‘blue ice- packs’) should be used for this purpose. To ensure proper cooling, samples should be nearly covered by (rather than resting on top of) ice.

The holding time is the maximum time that a sample can be held from collection time to preparation or analysis. Some parameters e.g. semi-volatile organics have separate hold times for sample preparation and sample analysis. In the preservation and hold-time tables, “IMMEDIATE” is defined as within 15 minutes. This pertains to preservation as well as filtration immediately followed by preservation. Close attention must be paid to published holding times. Samples must be delivered to the lab as soon as possible after collection.

Field personnel should use extreme care to ensure samples are not contaminated. Secure sample container caps tightly before placing them in the cooler. Make sure melted ice does not cause sample containers to become submerged, as this may cause cross contamination. When small sample containers are used (for Volatile Organics Analysis (VOA) and bacteriological), it is recommended that these be secured in plastic bags before placing them in the cooler of ice. Each collected sample contained in the cooler is specified on the Chain of Custody sheet (COC). All other required field information such as sampling location, sample type, collection date and time, sample collector’s name and signature etc. must be entered on the sample submission sheet.

Sample Identification Requirements

All sample containers must be labeled with a unique identification number. A sample submittal form must accompany all samples that are submitted to the laboratory. The history of a sample must be clearly evident from the retained records and documentation. Copies or originals of all documentation that are associated with the sample collection and analysis event must be kept. This laboratory retains all sample transmittal documentation. This includes all records and documentation necessary to trace a sample from its point of origin through the final report. This includes, but is not limited to: sample receipt, log-in, sample preparation, and sample analysis. In addition tasks or activities related to each of the described events, e.g. reagent preparation, calibration, quality control measures etc. are also documented.

Laboratory Operating Hours and Sample Receiving

The normal operating hours of the laboratory is 8 a.m. to 5 p.m. However, due to documentation and pH analysis requirements, the following protocol must be followed for sample delivery to the laboratory. Please note that unless there is an emergency requirement, the environmental laboratory section closes at 5 pm. We request that field sampling personnel adhere to the following sample delivery time schedule.

- All samples must arrive at the laboratory by 3:30 p.m. All the paperwork should be completed before 4:30 p.m. Lab sheets will be revised, logged in, and accepted during sample check in. This will allow sufficient time for the laboratory personnel to complete all the needed work associated with these samples.
- Please notify lab management the day before, if possible, or at least 4 hours in advance if emergency or special sampling is planned or occurring.
- Not following this protocol or improper collection of samples can result in sample rejection. Please review and understand the proper sample collection and preservation protocol which is provided to you. If necessary, the laboratory will provide training in these areas.

Waste Water and Surface Water Sample Submission Requirements for Inorganics and Microbiological Testing

Analyte	Sample Container	Required Preservation	Minimum Required Sample Volume	Maximum Holding Time
Ammonia-N**	Plastic Cubitainer	H ₂ SO ₄ to pH<2 Cool to 4°C	500ml	28 days
C-BOD5***	Plastic Cubitainer	Cool to to 4°C	600ml	48 hours
Chloride***	Plastic Cubitainer	Cool to to 4°C	100ml	28 days
<i>E. coli</i>	Sterile Plastic	Cool to 4°C .008% Na ₂ S ₂ O ₃	100ml	6 hours
Enterococcus	Sterile Plastic	Cool to 4°C .008% Na ₂ S ₂ O ₃	100ml	6 hours
Fluoride***	Plastic cubitainer	Cool to to 4°C	100ml	28 days
Nitrate-N	Plastic cubitainer	Cool to to 4°C	100ml	48 hours
Phosphorus, total**	Plastic Cubitainer	H ₂ SO ₄ to pH<2 Cool to 4°C	100ml	28 days
Sulfate***	Plastic Cubitainer	Cool to to 4°C	100ml	28 days
TDS***	Plastic Cubitainer	Cool to to 4°C	400ml	7 days
TSS***	Plastic Cubitainer	Cool to to 4°C	1000ml	7 days
Mercury**	Plastic Cubitainer	HNO ₃ to pH<2 Cool to to 4°C	500ml	28 days
Trace Metals	Plastic Cubitainer	HNO ₃ to pH<2 Cool to to 4°C	700ml	6 months
Oil and grease	1L Amber Glass Bottle	H ₂ SO ₄ to pH<2 Cool to 4°C	900ml	28 days
pH and Conductivity***	Plastic cubitainer	Cool to to 4°C	200ml	pH 24 hours Cond. 28 days

**If testing for all of these analytes is required, provide one full cubitainer (1000ml) with preservative. The required sample volume for each individual test will be removed at the lab.

*** If testing for all of these analytes is required, provide one full cubitainer (1000ml) without preservative. The required sample volume for each individual test will be removed at the lab.

SOIL, SLUDGE, & OILY SAMPLES FOR INORGANICS:

Approximately 300 g sample in a glass bottle is sufficient for inorganic analysis. Short, straight-side clear glass jars of 300 ml capacity with Teflon lined caps are recommended.

Please note that separate sample bottles are needed for Organics Analysis.

For questions and further details contact Environmental Laboratory Manager at (832) 393-3976, Inorganic Chemistry Supervisor at (832) 393-3935 or Water and Dairy Supervisor at (832) 393-3948.

Waste Water and Surface Water Sample Submission Requirements for Organics Testing

Analyte	Sample Container	Required Preservation	Minimum Required Sample Volume	Maximum Holding Time
Trace organics Semi-Volatile Priority Pollutants	Amber Glass Bottle w/ Teflon lined screw cap	Cool, 4°C	1000ml Note: for each sample set one sample should be collected- 3X1000ml	7 days until extraction
Volatile Organics BTEX	40ml glass vials w/ Teflon lined septum; no head space	Cool, 4°C	4-40ml vials	7 days
Total Petroleum Hydrocarbons (TPH)	40ml glass vials w/ Teflon lined septum; no head space	Cool, 4°C	4-40ml vials	7 days
Pesticides/PCB's	Amber Glass Bottle w/ Teflon lined screw cap	Cool, 4°C	1000ml Note: for each sample set one sample should be collected- 3X1000ml	7days until extraction

For questions and further details call the laboratory at(832)393-3900 or (832) 393-3976.

SOIL, SLUDGE, & PURE ORGANIC LIQUID SAMPLES:

For Semi and Non-volatile organics:

Approximately 200 g sample in glass bottle is sufficient for organic analysis. Short straight-side clear glass jars of 300 ml capacity with Teflon lined caps are recommended. A separate sample bottle is required for Trace Metals analysis.

For Volatile organics:

Low concentration soil sampling method - generally applicable to soils and other solid samples with VOC concentrations in the range of 0.5 to 200µg/kg. Collection method: EPA Method 5035. The low level soil method utilizes a hermetically-sealed sample vial, the seal of which is never broken from the time of sampling to the time of analysis. Since the sample is never exposed to the atmosphere after sampling, the losses of VOCs during sample transport, handling, and analysis are negligible. The applicable concentration range of the low soil method is dependent on the determinative method, matrix, and compound. However, it will generally fall in the 0.5 to 200µg/kg range.

Volatile organic compounds (VOCs) are determined by collecting an approximately 5g sample, weighed in the field at the time of collection, and placing it in a pre-weighed vial with a septum-sealed screw-cap that already contains a stirring bar and a sodium bisulfate preservative solution. The vial is sealed and shipped to a laboratory or appropriate analysis site. The entire vial is then placed, unopened, into the instrument carousel. Immediately before analysis, organic-free reagent water, surrogates, and internal standards (if applicable) are

automatically added without opening the sample vial. The vial containing the sample is heated to 40 C and the volatiles purged into an appropriate trap using an inert gas combined with agitation of the sample. Purged components travel via a transfer line to a trap. When purging is complete, the trap is heated and back-flushed with helium to desorb the trapped sample components into a gas chromatograph for analysis by an appropriate determinative method.

Bulk Sampling

For medium to high concentration soils and also, when clients do not wish to perform the above method of sampling. This method is used when low concentrations (<200ug/kg) of volatiles are not important. **Please note** that during bulk sampling, some amount of volatile organics will be lost during collection, transport and analysis since the sample jar has to be opened for sample analysis.

- Samples are collected in 4oz or 8oz jars with Teflon lined caps.
- Jars are filled to the top to minimize loss of volatiles.
- Jars are transported to the laboratory on ice.
- Holding time for solid samples is 14 days from collection.
- Every attempt will be made to analyze samples as soon as possible

Sample Collection for TPH Analysis of Soil.

Perform Bulk sampling technique described above.

NOTE: For samples analyzed using bulk sampling, the results for hydrocarbons in the nC6 to nC12 range, if present, will be lower due to some loss of those hydrocarbons during bulk sampling, transport, and analysis. If hydrocarbon results in this range are important or their presence is suspected and there is a need to capture as much concentration as possible, please use Method SW-846 5035 (low concentration soil sampling method above) for sample collection. In such cases the size of the sample for TNRCC method 1005 analysis that is collected should be approximately 10g. The sample should be collected using a coring device, and extruded into a pre-weighed 40ml vial with a PTFE-lined septum cap.

Trace Metal Analysis in Water Samples by Modified EPA Methods 6010b/3005A

Metal	Minimum Reporting Levels (mg/L)	Turnaround time	Maximum Holding time
Cu	0.01	≥15 days	6 months
Mn	0.01	≥15 days	6 months
Zn	0.03	≥15 days	6 months
Ni	0.03	≥15 days	6 months
Pb	0.05	≥15 days	6 months
Cr	0.01	≥15 days	6 months
Cd	0.01	≥15 days	6 months
Ag	0.01	≥15 days	6 months

Trace Metal Analysis in Soil Samples by Modified EPA Methods 3050B/6010B

Metal	Minimum Reporting Levels (µg/g)	Turnaround time	Maximum Holding time
Cu	5	≥15 days	6 months
Mn	5	≥15 days	6 months
Zn	10	≥15 days	6 months
Ni	10	≥15 days	6 months
Pb	10	≥15 days	6 months
Cr	5	≥15 days	6 months
Cd	2	≥15 days	6 months
Ag	2	≥15 days	6 months

Trace Metal Analysis by Other Methods

Metal	Sample Matrix	Minimum Reporting Level	Modified EPA Method	Turnaround Time	Maximum Holding Time
Hg	Water	0.5µg/L	EPA 7470A	≥15 days	28 days
Hg	Soil	0.5µg/g	EPA 7471A	≥15 days	28 days
Hg	Air Filter	0.05µg/filter	OSHA ID-145	≥15 days	28 days
Pb	Aqueous	2µg/L	EPA 7421	≥15 days	28 days
As	Aqueous	2µg/L	EPA 7060/7010	≥15 days	28 days
As	Soil	0.5µg/g	EPA 3050B/7010	≥15 days	6 months
Se	Aqueous	2µg/L	EPA 7740	≥15 days	28 days
Se	Soil	0.5µg/g	EPA 3050B/7010	≥15 days	6 months

Sample Submission Protocol for Environmental Lead Testing

Lead in wipes, paint chips, and soil are acceptable sample types

The normal operating hours of the laboratory are 8 am to 5 pm. Please follow the following protocol for delivery to the laboratory. Unless there is an emergency requirement the environmental laboratory closes at 5 pm. We request that field sampling personnel adhere to the following sample delivery schedule.

- All samples must be brought by **4:30 pm** with completed paperwork for all associated samples. Completed lab sheets will be logged in by a chemist and accepted during sample check in.
This allows sufficient time for personnel to complete all needed steps in accepting the samples, and closing down the laboratory for the day.
- Please notify laboratory management the day before, if possible, or a few hours in advance if emergency or special sampling is planned or occurring.
- If it's not possible to get samples to the laboratory by the 4:30 pm, they should be delivered the next morning.
- The laboratory will reject samples collected improperly or without following the proper protocol. This includes: having more than one exposed wipe in a 50 mL conical tube, insufficient quantity (optimally, 3g for paint chips and 15g for soils) and no sample where paperwork says there is.

The following are required for sample acceptance:

- All necessary areas on the lab form are completed.
- The current revision of the lab form is used.
- Assigned lab numbers match the corresponding paperwork, samples.
- A field blank is submitted with every batch of wipes.
- The area (in square feet) for wipes is recorded (nothing in field blank's spot).
- All samples are submitted in Ziploc bags or 50 mL conical tubes.
- One wipe is submitted per tube.
- A signature and date is provided to certify collection of wipe samples.
- Field information on samples checked against the lab form is correct.
- Each error is crossed out, initialed, dated, and the required correction made.
- The chemist logs in the lab form and signs it for acceptance.

Please come with enough time to submit samples to the laboratory since all paperwork and samples must be checked for accuracy and completeness. Incomplete forms or samples left by the sampler before laboratory personnel review all paperwork and take over chain of custody will not be accepted. If sampling personnel leaves the lab before samples are accepted, the chemist will reject any samples which do not meet the acceptance criteria.

This Lead Sample Submission Protocol applies to all samples submitted for Lead analysis to the City of Houston Holcombe Laboratory

Blood Lead Testing

Blood-Lead Specimen Receiving, Specimen rejection Protocol.

1. The blood specimen is drawn for blood lead testing according to the policy and procedure designed by the City of Houston Department of Health and Human Services Nursing Services.
2. The following tubes will be used for this procedure:
 - a. Becton Dickinson (BD) 250uL-500uL Tube Microtainer with K2EDTA
 - b. Becton Dickinson (BD) 2mL Vacutainer K2EDTA 3.6mg Tube
3. The tubes should be filled only to the specified fill volume, as the ratio of the EDTA is very important to prevent micro clots.
4. Collected specimens are placed individually in biohazard bags and are sealed properly.
5. STAT samples should be provided in biohazard STAT bags which are then placed in PAPER bags with cold packs. These bags are then marked 'BLOOD- LEAD STAT' clearly on the outside.
6. The blood specimen should be delivered to the laboratory preferably on the date of collection. Place the specimen in the indicated laboratory collection receptacle. The blood-lead specimen must be stored on ice or kept cold with cold packs until they are delivered to the laboratory.
7. Samples must be received in the lab within six (6) days of collection to allow the laboratory to complete the analysis before the end of seven day holding time requirement. Samples delivered on Friday should be within 4 days of sample collection because the laboratory is closed on Saturday and Sunday.

Sample rejection criteria:

- Samples in any tubes other than specified above.
- Samples not placed individually in bio-hazard bags
- Samples over or under the Fill Volume.
- Samples delivered without having sufficient time for analysis to meet the seven-day holding time requirement.
- Samples received in mail or transported without cold packs or ice.
- Samples with sample information and the data entry information are different.
- Samples without a collection date.
- Sample tubes that are broken or leaking.
- Clotted samples.
- Any proficiency samples referred from another lab

Dairy Sample Testing

For inquiries please contact the lab at (832) 393-3939.

Tests Performed

Test Name	Sample type
PAC (petrifilmaerobic count)	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk Grade A Retail Raw Goat Milk Other Milk & Dairy products Ice Cream Reduced Milkfat, Low fat, Skim, Nonfat Frozen Yogurt Novelties
PCC (petrifilm coliform count)	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk Grade A Retail Raw Goat Milk Other yogurt, ice cream, etc products Reduced Milkfat, Low fat, Skim, Nonfat Frozen Yogurt Mix Reduced Milkfat, Low fat, Skim, Nonfat Frozen Yogurt Novelties
Growth Inhibitor	Individual producer milk Grade A Retail Raw Milk Grade A Retail Raw Goat Milk Bulk Whole Milk Bulk Skim Milk Pasteurized Milk Supply Whole Milk Bulk Cream Heat Treated Bulk Cream Bulk Heavy Cream Light Cream / Whipping Cream Cream / Whipping Cream Heavy Cream / Whipping Cream UHT, ESL Cream Aseptic Cream Half-Half (plain or added solids) UHT, ESL Half-Half
Antibiotic Rapid Test	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk Grade A Retail Raw Goat Milk
Aflatoxin	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk
Freezing Point	In-Plant Raw Milk (Silo, Commingled) Individual producer milk

	Grade A Retail Raw Milk
Direct Somatic Cell Count	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk
Electronic Somatic Cell Count	In-Plant Raw Milk (Silo, Commingled) Individual producer milk Grade A Retail Raw Milk
Phosphatase	Whole Milk High fat Whole Milk High fat Whole Creamline Milk UHT, ESL Whole Milk Aseptic Whole Milk Skim, Nonfat, Fat-free Low fat, Reduced Milkfat Milk (1/2%, 1%, 2%) UHT, ESL Skim & Low fat Milk Aseptic Skim & Low fat Milk UHT, ESL Half-Half
Colilert-18	Dairy water: glycol and well water

Sample Rejection Criteria

The following sample requirements are necessary for National Conference on Interstate Milk Shipments laboratories to accept samples for Section 6 testing. Samples that do not meet these requirements will be rejected.

- a. Producer samples are about 3/4 full. Samples too full are not tested.
- b. Samples at the time of receipt by the testing laboratory must be 0.0 to 4.4C to be accepted for regulatory testing. Liquid samples must not be frozen.
- c. Samples must not be leaking.
- d. Tops of samples must be protected from direct contact with ice.
- e. Unprotected sample(s) must not be submerged in water and/or ice or slush.
- f. If milk sample temperature control exceeds 4.4°C on receipt, do not test microbiologically (samples may be tested if temperature does not exceed 7°C and time of receipt is ≤ 3 hours from collection and sample temperature at receipt is no greater than at collection).

Collection of Drinking water for Total Coliforms and *E. coli* testing

Potable Water Samples

Samples are accepted at two locations: Holcombe Central Lab and North-Side Health Clinic. The Holcombe Lab accepts and test samples of potable water intended for human consumption. These samples must be submitted in sterile treated bottles supplied by the City of Houston Health Department, Harris County Health Department, the Texas Department of State Health Services, Texas Commission on Environmental Quality (TCEQ), or your local health authority. Water samples are accepted from 8:00 am to 4:00 pm Monday through Friday.

For questions please call the laboratory at (832) 393-3939 or contact Water and Dairy Supervisor at (832) 393-3948. The laboratory has arranged an additional potable water testing drop off location to service customers from the North part of the City at:

North-Side Health Clinic
8504 Schuller Road
Houston, TX 77093
Clinic phone number: (713) 696-5900

The clinic is open for sample drop off from 8:30 am to 4:00 pm, Monday thru Thursday. Drop off instructions are provided at the clinic or call the laboratory at (832) 393-3939.

Sample Rejection Criteria:

1. Sample is not delivered to the laboratory within 28 hours after collection.
2. Sample contains less than the required 100 ml (-2.5 ml) of water.
3. A current City of Houston account number, check, or money order does not accompany sample.
4. Chlorine odor is detected when the sample is processed, or the sample exhibits a blue color when the Colilert reagent is added or develops a brown color as the sample warms.
5. Sample is frozen or >35.5° C upon arrival at the laboratory.

Sample Preservation

Hold all samples at 1 - 5°C before analysis and test within 30 hours of collection.

Collection of Non-Potable Water for *E. coli* and *Enterococcus* Species Testing

Sample Collection, Handling, and Preservation

Note: The Lab does not collect samples. Samples are submitted by City of Houston Bureau of Pollution Control and Prevention and various other agencies.

- Samples to be analyzed for *E. coli* and *Enterococcus* spp. must be held at < 10°C and arrive at the laboratory within 6 hours of collection on ice.
- Samples must be processed within 2 hours of arriving at the laboratory.
- Samples that arrive after the 6 hour time limit will not be analyzed.
- Samples are accepted only in approved sterile plastic bottles. Chlorinated samples must be collected in bottles treated with sodium thiosulfate.
- Samples must be checked for chlorine residual by using low range chlorine strips (0-10 mg/L). Samples with detectable chlorine will be rejected.



Houston Department of Health and Human Services
 Bureau of Laboratory Services
 2250 Holcombe Blvd
 Houston, TX 77030
 (832) 393-3900



Incident Report

Date and Time of Incident _____

Patient MR #: _____

Specimen Source _____

Test Requested _____

Nature of Incident _____

Reported By _____ Date _____

For HDHHS Internal Use

Incident Response _____

Print Name _____ Sign _____ Date _____

Supervisor _____ Date _____

Laboratory Manager _____ Date _____

Laboratory Director _____ Date _____

Compliance supervisor _____ Date _____

Quality Control Officer _____ Date _____