

## Branch Laboratory

## Laboratory Overview



### South Texas Laboratory

#### Regional Public Health Laboratory Harlingen, Texas

- Includes Biosafety Level 3 (BSL-3)
- Performs clinical testing for South Texas
  - Clinical laboratory serves the Outpatient Clinic of the Rio Grande State Center and 10 Texas regions with more than 70 clinics
- Performs public health testing for South Texas
  - Mycobacteriology tests tuberculosis specimens
  - Consumer Microbiology tests drinking water
  - Syphilis serology tests for antibodies associated with a syphilis infection
- Serves as LRN laboratory for South Texas
  - Biological threat laboratory
  - Influenza surveillance laboratory

### Laboratory Services Section

- ⇒ **Largest testing volume Public Health Laboratory in the United States**
- ⇒ **Largest testing volume Newborn Screening Program (NBS) in the world**
- ⇒ **Laboratory facility includes Biosafety Level 3 (BSL-3)**

### Laboratory Operations Unit

#### Biochemistry and Genetics

- Newborn Screening
- Clinical Chemistry

#### Emergency Response

- Biological Threat Response
- Chemical Threat Response

#### Environmental Sciences

- Radiochemistry
- Organic Chemistry
- Inorganics Analysis

#### Microbiological Sciences

- Bacteriology/Parasitology Diagnostics Group
- Mycobacteriology Group
- Serological Analysis Group
- Medical Virology Group
- Consumer Microbiology Group

### Quality Assurance Unit

Quality Assurance  
Safety and Environmental Compliance  
Specimen Acquisition  
Data Entry and Results Reporting  
Building Systems Management

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**DSHS Vision:** A healthy TX

**Mission:** Improve health and wellbeing in TX

## Laboratory Services Section

*Implements comprehensive laboratory services to improve the public health and well-being of the citizens of Texas by providing:*

- Analysis of human, animal, and environmental specimens and samples
- Response to biological and chemical threats
- Professional consultation

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## Receiving to Response

### Specimen Receiving

#### Processes/accessions all samples and specimens

- Approximately 1.2 million per year
- 5,000 per day

#### Provides sample collection supplies and shipping containers to submitters

- Ships 640,000 specimen mailing kits per year

### Data Entry

#### Provides demographic data entry and validation

- 800,000 NBS specimens per year
- 265,000 Microbiological specimens per year
- 350,000 Texas Health Steps (THSteps) specimens per year

### Results Reporting

#### Distributes test reports

- Approximately 1.5 million per year

#### Responds to submitter requests for information

- Approximately 27,000 telephone, email, and fax inquiries per year, plus 62,000 duplicate reports.

### Emergency Response

*Part of the Laboratory Response Network (LRN) established by the Centers for Disease Control and Prevention (CDC).*

#### Biological Threat Laboratory

- Performs rapid testing of environmental and clinical samples
- Provides surge capacity for state LRN laboratories
- Trains staff in regional sentinel LRN laboratories

#### Chemical Threat Laboratory

- Trains hospitals, ER physicians, Poison Control Centers, and first responders for chemical threat exposure recognition and testing
- Screens clinical specimens (blood and urine) for the detection of chemical Weapons of Mass Destruction agents such as cyanide, nerve agent metabolites, Volatile Organic Chemicals and toxic metals

## Laboratory Operations

### Newborn Screening

#### Screens each baby born in Texas for disorders that cause intellectual disability or death in seemingly normal newborns.

- First screen collected at 24-48 hours old
- Second screen collected at 1-2 weeks old
- 400,000 babies are screened per year
- 800,000 specimens are tested per year
- Out of Range results are immediately forwarded to NBS Clinical Care Coordination to initiate follow-up
- Includes 28 genetic disorders and hypothyroidism, for a total of 29 disorders including:
  - Amino Acid Disorders
  - Biotinidase Deficiency
  - Congenital Adrenal Hyperplasia
  - Congenital Hypothyroidism
  - Cystic Fibrosis
  - Fatty Acid Disorders
  - Galactosemia
  - Hemoglobinopathies
  - Organic Acid Disorders
  - Severe Combined Immunodeficiency
- Additional services including PKU Dietary Monitoring and second-tier molecular tests for NBS disorders

### Clinical Chemistry

#### Tests specimens for:

- Lead
- Total Hemoglobin
- Hemoglobin types
- Diabetes
- Hyperlipidemia



## Laboratory Operations

### Environmental Sciences

#### Radiochemistry

- Analyzes drinking water samples for radionuclides
- Monitors for radionuclides in environmental samples for nuclear power plants, a weapons facility, and other locations

#### Organic Chemistry

- Analyzes drinking water samples for volatile organic chemicals, synthetic organic chemicals, disinfection byproducts and other organic chemicals
- Tests indoor samples for volatile organic chemicals

#### Inorganics Analysis

- Tests drinking water samples to determine metal constituents (arsenic, cadmium, lead and mercury), salts and minerals
- Determines metals content in environmental samples, consumer products and food items
- Performs tests on food and meat samples

### Microbiological Sciences

#### Bacteriology/Parasitology Diagnostics Group

- Using conventional and Molecular methods, tests specimens for bacteria associated with communicable diseases
- Tests specimens for parasites associated with communicable diseases
- Regional PulseNet Laboratory

#### Mycobacteriology

- Tests specimens for bacteria causing tuberculosis (TB); determines antibiotic resistance of TB isolates

#### Serological Analysis

- Tests for presence of antibodies from exposure to infectious diseases

#### Medical Virology

- Identifies viruses in patient and reference specimens
- Tests animals for rabies; performs surveillance for arboviruses

#### Consumer Microbiology Group

- Tests food and environmental specimens associated with foodborne outbreaks