

Laboratory Services Division Annual Report 2011



Rapid Detection for the Public's Protection



Colorado Department
of Public Health
and Environment

Mission



The mission of the Laboratory Services Division is to protect the health, safety and environment of all Coloradans by providing accurate and timely laboratory analyses and information.

Vision



The vision of the division is to be recognized as an innovative and quality public health laboratory in the state of Colorado.

As a leader in the industry, the division will use advanced, leading-edge technology, employ a highly skilled workforce, and have the respect and support of all its customers, stakeholders and partners.

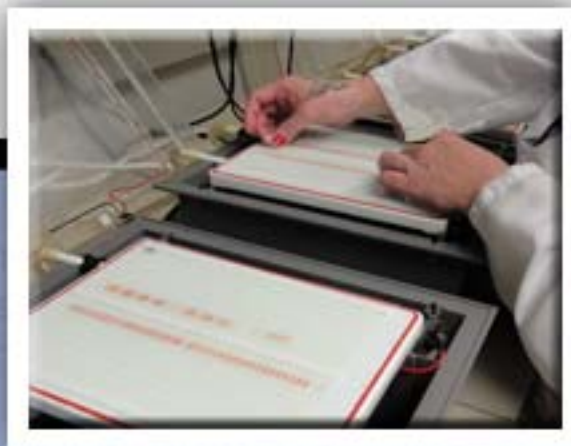


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A Message from the Director

Dear Customers and Stakeholders,

I am pleased to present the Division's annual report for the fiscal year ending June 30th, 2011.

During the past fiscal year, the Joint Budget Committee of the Colorado Legislature approved the establishment of a cash fund covering the chemistry and microbiology sections of the laboratory. This new fund will allow for more flexibility with the acquisition of new equipment. Although we ended the year with a cash surplus due to federal grants, we expect this will not be the case next year as grants will be reduced along with overall federal spending reductions.

With the approved addition of SCID (severe combined immunodeficiency) to the newborn screening panel this past spring, we expect to be implementing this new testing during the second quarter of the fiscal year.

The Division is undergoing a HIPAA/HITECH compliance audit and making system changes as appropriate with the intent to change our status as a non-covered entity to a HIPAA/HITECH covered entity. Once the Laboratory is a covered entity, the Division will consider implementing direct Medicaid billing.

Thank you for your continued support,

David A. Butcher, MBA, MLS (ASCP) SM
Laboratory Services Division Director
Colorado Department of Public Health and Environment



Tracking the Reestablishment of Terrestrial Rabies in Colorado

The reestablishment of rabies virus in the skunk population of Colorado in 2007 led to a significant increase in the number of wild animals identified by the state laboratory as infected with rabies virus. Terrestrial and bat rabies viruses pose a danger to the residents of Colorado, both through human and domestic animal exposures.

In 2011 the state laboratory continued to play a vital role in tracking the reemergence of terrestrial rabies, testing over 930 animal specimens for the presence of rabies virus. Specimens identified as positive for rabies virus included 52 bats of various species, 35 skunks, one coyote and one fox. Of the 930 animal specimens submitted to the laboratory for rabies virus testing, 318 were associated with human bites or exposures and included bats, raccoons, fox, coyotes, cats, dogs, a squirrel, a prairie dog and a rabbit. Two bats, positive for rabies virus, were associated with human bites.



The state laboratory strives to maintain its excellence in rabies testing, working on the development and implementation of a polymerase chain reaction assay to serve as a confirmatory rabies virus test for those specimens associated with human bites or exposure.

In 2012 the laboratory will complete development and implementation of typing assays which will allow the laboratory to identify the strain of rabies virus present in specimens positive for rabies virus.

State Lab Participates in National Study

The Colorado Department of Public Health and Environment laboratory was one of eight sites in the country selected by the Association of Public Health Laboratories and CDC to participate in a multi-center study to evaluate diagnostic methods for the detection and isolation of *Campylobacter* from stool samples.

Campylobacter, is most often associated with eating raw or undercooked poultry, but may also be acquired by ingesting unpasteurized milk or contaminated stream water and is one of the most common causes of diarrheal illness in the U.S. Identification of *Campylobacter* is traditionally achieved by growing the organism on bacterial culture media from a patient's stool specimen. However bacterial culture methods can be slow and require special media and trained microbiologists. Recently more rapid, non culture-based tests have been introduced into the clinical lab testing market in the U.S.



The state laboratory partnered with epidemiologists in the department's Disease Control and Environmental Epidemiology Division and Exempla Saint Joseph Hospital's microbiology laboratory to complete the study which evaluated these non culture-based tests.

With increased use of these non culture-based tests for the detection of *Campylobacter* in clinical laboratories in Colorado, the department observed a significant increase in the number of cases of *Campylobacter* reported to the state.

While convenient to use, the evaluation study demonstrated that the sensitivity and specificity of the *Campylobacter* non culture-based tests were variable.

Given the *Campylobacter* low incidence of disease in Colorado and the performance data generated in this study, the non culture-based tests do not appear reliable as stand-alone tests for direct detection of *Campylobacter* in stool.

Data generated in this study have been presented at national scientific meetings, will be used to develop clinical and public health laboratory best practice guidelines for *Campylobacter* testing, and will provide the necessary scientific data to enable CDC and other public health entities to reassess current *Campylobacter* case definitions.

State Lab Awarded Funds to Expand Molecular Testing for Tuberculosis

During fiscal year 2011, the Public Health Microbiology work unit was awarded funds as part of the Association of Public Health Laboratories' expansion of Nucleic Acid Amplification (NAA) testing for tuberculosis (TB) in public health laboratories. The laboratory has been performing NAA testing for the direct detection of *Mycobacterium tuberculosis* complex (MTBC) in respiratory specimens since 2006.

Despite the 2009 release of CDC's recommendation that NAA testing be performed on at least one respiratory specimen from each patient with signs and symptoms of pulmonary TB for whom a diagnosis of TB is being considered, only 9% of specimens received by the state laboratory for TB culture in 2010 were tested using the NAA testing method. Using the funds awarded for the expansion of NAA testing for TB in public health laboratories, the state lab aimed to increase the percentage of specimens tested using NAA by educating health care providers throughout Colorado on the importance of the rapid identification of MTBC in suspect patients using NAA testing, by offering free NAA testing to submitters, and by implementing more cost effective and affordable NAA testing by purchasing the Cepheid GeneXpert® IV and validating the GeneXpert® MTB/RIF assay. This assay allows for the direct detection of MTBC in respiratory specimens and detects preliminary evidence of resistance to first line treatment drugs.



The CDPHE laboratory worked closely with TB program staff to develop a written communication that was distributed to health care providers and laboratorians throughout Colorado. The goal of this letter was to enhance providers' understanding of the importance of NAA testing in the detection and prevention of transmission of TB and to educate them on the availability of NAA testing at the CDPHE laboratory.

Cross-Training Provides High Capacity Molecular Testing Response

In years past, the focus of the molecular science laboratory has been the development of new testing methods that detect the genetic material of bacteria or viruses. The lab's focus over the past year has been to ensure the ability to sustain a high capacity response over an extended time period. This ability was developed through a broadly defined cross-training program where analysts from each work unit were encouraged to develop proficiency in multiple test methodologies as well as technology used by other work units.

The result was an efficient workforce that could be redeployed as needed during an outbreak response or an event requiring high-volume testing. An expanded workforce provided an added benefit by allowing senior staff more time to implement enhanced testing protocols to existing test offerings. One example was the addition of an expanded respiratory virus panel that could be used to identify viruses other than influenza that caused illness in patients who had initially tested positive using less sensitive rapid test kits.



The work unit now performs year-round surveillance for influenza viruses and over the past year performed over 5,000 tests with results made available in near real-time for assessment by colleagues in the department's Communicable Disease Program.

Molecular-based test methods such as polymerase chain reaction (PCR), pulsed-field gel electrophoresis (PFGE), multilocus variable number of tandem repeat analysis (MLVA), DNA sequencing, and high throughput testing protocols continue to provide support to multiple divisions within the department. The speed and sensitivity provided by molecular testing methods ensures early detection of infectious agents and provides multiple agencies a solid basis from which to mount a public health response sooner than could have been done in the past.

Molecular Lab Plays Key Role in Outbreak Detection

As our broadly trained scientists and technicians now possess a greater operational awareness, our ability to identify clusters of patients infected by similar bacteria or viruses has increased and many operations occur in parallel, rather than sequentially, resulting in an overall faster response to outbreak investigations. A result from laboratory testing usually initiates a public health investigation to determine the source of the problem and mount a response.

In collaboration with the division's public health microbiology laboratory Colorado has been at the center of a number of national foodborne illness outbreak detections and the work unit played a significant role in each by using combinations of these molecular methods to identify the disease-causing agent and establish a link to the contaminated food source.



These abilities were on display throughout the year as the work unit contributed critical, decision-influencing data to outbreaks of *Campylobacter* linked to raw milk consumption, *E. coli* O26 in a daycare setting, the first use of CaliciNet to track a national Norovirus outbreak, *Salmonella* infections linked to consumption of rattlesnake patties, and *Bacillus cereus* contamination of alcohol swabs used in metro area hospitals, to name a few.

Select agents (biological agents determined to have the potential to pose a severe threat to human and animal health) continue to be a key focus of all public health laboratories. In a joint project with the CDC Laboratory Response Network, staff implemented a protocol to send select agent testing data directly to the CDC. Such a system already is in place for influenza data, and could undergo future iterations to support transmission of all laboratory findings.

Environmental Microbiology Lab Ensures Food, Milk and Water are Free of Bacterial Contamination

The environmental microbiology laboratory performs both routine food surveillance and outbreak response to foodborne illness. Additionally, the lab tests water samples from a variety of sources for bacterial contaminants and monitors the quality of milk produced or consumed within the state. In this capacity, the group performs analyses on large numbers of food samples suspected as being the source of foodborne or waterborne illness. The work unit participates in a number of programs initiated by the CDC to monitor the quality of retail food products.



The work unit completed the second year of a three-year cooperative agreement with the Food and Drug Administration designed to support enhanced investigative capabilities in the area of foodborne disease. The new instruments included with this award are fully operational and offer superior technology compared to what previously was available to identify and characterize contaminants present in food products. This capability was demonstrated through the identification *Campylobacter* in raw milk and products made from raw milk, *Salmonella* in rattle-snake patties, *E. coli* O157 in retail foods, and *Salmonella* from retail gorgonzola cheese.

The laboratory continued a joint *Listeria monocytogenes* surveillance with the department's Division of Environmental Health and Sustainability. In this program the work unit employs molecular-based technology to rapidly detect this organism that might be present at very low numbers in an environmental sample. As the primary site in Colorado for milk testing, a number of analyses are performed on milk samples from all dairies to ensure a safe and quality product is available to consumers. The laboratory retains certification by the FDA as a fully accredited milk testing laboratory. In collaboration with division chemists the unit performs water testing from various sources within the state including surface, rivers and streams, municipal, and private systems targeting coliform bacteria as the marker of contamination. This multi-unit program is certified by the Environmental Protection Agency. The large number of water samples tested supports a sustained safe source of drinking water for Colorado.

Chemistry Lab Verifies Food Safety

The food testing program of the Laboratory Services Division routinely analyzes bottled water for volatile organic compounds and metals; meats for fat content to verify labeling; seafood for mercury content; and acidified foods, such as sushi rice and salsa, for equilibrium pH and water activity.



In addition to routine analyses, the food testing capabilities of the chemistry laboratory expanded under the Cooperative Agreement Program with the Food and Drug Administration.



In the event of any national emergency, the laboratory is one of twelve in the country available to provide surge capacity testing support to the FDA.

During the past year the laboratory completed matrix studies for organic toxins and metals and performed a matrix expansion study to detect illicit drugs in foods.

Validating a Test Method for the Detection of Atrazine in Water Ensures Safe Well Water

Chemical pesticides, herbicides and insecticides enter the ground water as a result of runoff from agricultural areas, forests or landscaped areas, however, for many of these chemicals there is not an established regulatory drinking water contamination limit.

Atrazine, one of the most widely used pesticides in the U.S. which has been detected in drinking water sources, is being closely evaluated by the Environmental Protection Agency (EPA) for its potential toxicity impact on humans.



Due to wide use of atrazine in Colorado and concerns that farming activities could affect the water quality of the wells of private homeowners, the chemistry laboratory validated two analytical methods for the detection of this pesticide in water.

The first method was a rapid screening method using enzyme-linked immunosorbent assay (ELISA). The second method allowed for the quantitation to compare atrazine levels against the EPA protection safety standards.

In validating these methods, the laboratory tested 25 water samples from private wells. Three samples had detectable levels of atrazine, but these levels were below the EPA chronic exposure recommendation of 3 parts per billion.

Chemistry Laboratory Validates a Test Method for Detecting Harmful PAHs in Seafood

Oil spills often generate concern about the safety of eating seafood from the spill region.

Toxic chemicals found in oil, such as polycyclic aromatic hydrocarbons (PAHs), may accumulate in seafood.

Consumption of PAH contaminated seafood raises the risk of cancer, birth defects or DNA mutations in humans.

Following the massive offshore oil spill from the Deepwater Horizon oil drilling rig in the Gulf of Mexico in 2010, the chemistry laboratory received two instruments from the FDA and validated a testing method for detecting harmful PAHs in seafood.



Chemistry Analysts Focus on Environmental Protection

- The chemistry laboratory routinely analyzes river, lake, streams, drinking water, storm water, wastewater and groundwater to ensure they meet regulatory requirements. Additionally analysts provide the public with the interpretation of their testing results and information regarding water quality issues.
- The environmental protection analysts received new instrumentation for measuring sulfate, chloride, nitrate and fluoride in water and wastes which increase the capacity of the section to support water quality studies throughout the state.
- 147 samples from the Centers for Disease Control were analyzed for metals, anions and radon. The samples were from private well affected by the flooding in West Virginia. In addition the section analyzed 49 samples for atrazine, nitrates and metals in storm water and surface waters.
- The laboratory was accepted into the Water Laboratory Alliance of Environmental Protection Agency and is currently under a Basic Order Agreement to provide emergency response to intentional or unintentional contamination of the nation's drinking water supply.
- The laboratory increased its capability of environmental analyses by validating a new test for tannin and lignin in water. Tannin and lignin are organic compounds found naturally in soil, plants and trees and may affect the taste, color or smell of drinking water.
- In response to a study performed by an environmental group, the laboratory validated a method to analyze water for low levels of hexavalent chromium, a probable carcinogen.
- Besides providing gravimetric and lead analysis of particulate matter on filters collected by the Air Pollution Control Division, the laboratory validated methodology to analyze the filters for selected regulated metals.

State Laboratory Prepares for Emergencies Through Testing and Incident Response

Creating new partnerships with local, state and national organizations not only improved services within Colorado in 2011, but had regional and national benefits as well.



The state laboratory successfully identified human cases of tularemia, melioidosis and brucellosis to enable prompt treatment by health care professionals.

Biological “select agents” *Yersinia pestis* (plague) and *Francisella tularensis* (tularemia) in both domestic pets and wildlife were also quickly identified by the lab, resulting in immediate action to minimize the threats of exposure and disease in humans.

The FBI submitted several threat letters containing unidentified powders to the state lab for analysis. Both chemists and microbiologists used advanced testing methods to rapidly analyze the powders and to quickly rule out any biological or chemical hazards to the public. Some of this work required the staff to report to the lab after hours to complete the analyses.

This work was recognized nationally when the Association of Public Health Laboratories documented Colorado’s state lab staff efforts in an article published in its 2010-2011 survey report.

On several occasions the Biowatch Program identified several "BARS" or Biological Actionable Reports as air sampling monitors located in the Denver Metropolitan Area detected the DNA of the bacteria *Francisella tularensis*, a bacterial select agent endemic to the region. Further testing indicated that the material was low level and naturally occurring, not the result of a terrorist attack.

The emergency response program received a new Gerstel single-rail GC/MS to use for volatile organic compound blood analysis. In the past year, emergency response analysts have analyzed blood samples from a possible occupational exposure in Pueblo, responded to a cattle poisoning and analyzed several white powders.

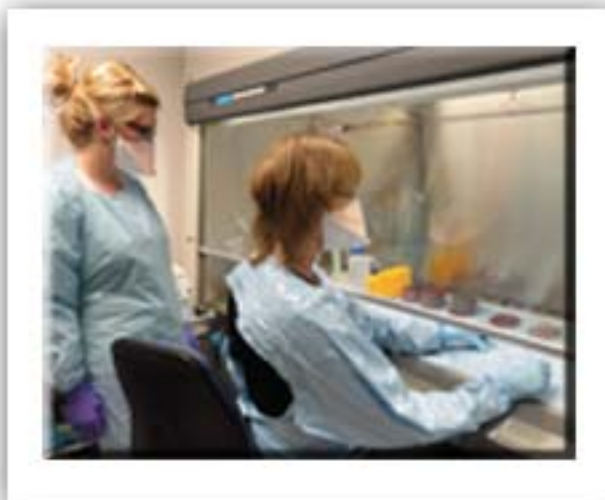
The radiochemistry lab developed the capability to analyze environmental samples for strontium-90, the signature isotope from nuclear power plants, to support monitoring activities surrounding the Fukushima Daiichi nuclear accident.



Training Professional Partners in Emergency Preparedness

Training is a continuous process to address turnover of laboratory personnel, improve skill levels and to communicate new testing methods. It also serves as a means of maintaining close communications with clinical and local public health laboratories within the state. Several training tools have been developed, including hosted webinars, online courses and wet workshops. During the past year training was expanded to first responders who are tasked with collecting specimens for later testing at the laboratory.

The state laboratory continues its outreach role to laboratorians across the state via the Colorado Laboratory Forum. In the area of training, the website lists upcoming training opportunities hosted by the division and provides links to other training and reference sites. The site also directs members to the learning management system, CO.TRAIN site, that both registers participants for training and maintains records documenting successful completion of training courses.



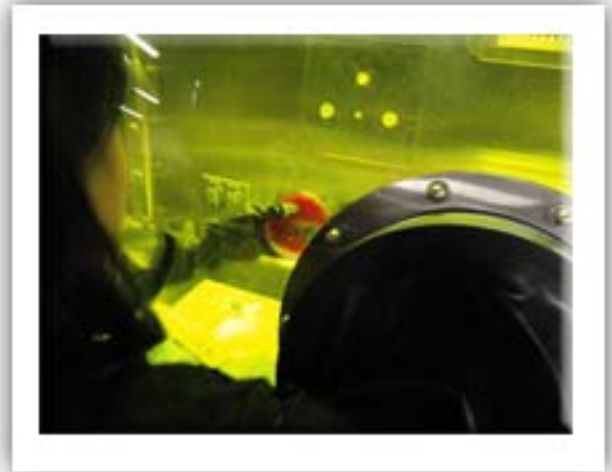
Webinars were presented throughout the year at the state lab, covering a wide range of topics of interest to clinical laboratorians, including updates on human pandemic influenza, safe laboratory practices and updates on emerging infectious diseases. A comprehensive online training course covering bacterial agents and safe laboratory practices was developed with laboratorians' schedules in mind.



Students proceeded through the course at their own pace and when their schedule allowed. Upon successful completion of the course and the exam, a certificate was awarded along with PACE professional continuing education credit.

Hands-On Training Reaches International Students

Over fifty students from nearly two dozen clinical and local public health laboratories from across Colorado attended five wet workshops that provided hands-on experience working with attenuated (safe) strains of bacteria that are on the US Select Agent Program list. These included bacteria responsible for such diseases as anthrax, plague, tularemia and brucellosis. Students examined cultures and performed testing to either rule out the presence of these bacteria, or to refer them to the state laboratory for identification and confirmation.



These sentinel lab staff, working in either hospital or local public health laboratories, are the first line of defense in detecting a naturally occurring outbreak or a bioterrorism event. Part of the training included safely handling and storing infectious agents and the proper use of the different types of biosafety cabinets. The outreach component of this training was the presentation of two of the wet workshops at the Mesa County Public Health Department Laboratory located in Grand Junction. These “road shows” are important in that they provided wet workshops in regions of the state where travel or laboratory staffing needs would otherwise limit access to such training.

First responder training was provided during three presentations at the Aurora Fire Department HAZMAT station. Other agencies, including the FBI, EPA, 8th Civil Support Team of the Colorado National Guard and US Postal Service Inspection Service attended these sessions and provided training. Biosafety, specimen submission requirements and chain of custody procedures were presented.

The state lab also played a national and international training role. In May 2011 the Laboratory Resonse Network of the Centers for Disease Control and Prevention designated the Colorado Department of Public Health and Environment's Laboratory Services Division as a national training site for its rapid methods course. The newest test methods in detecting select agent bacteria and toxins are taught in this course. The use of DNA and antibodies allows for rapid identification of these agents in two-four hours instead of days required for traditional bacterial culturing. Fifteen laboratorians from eleven states, the territory of Puerto Rico and the Republic of Mexico participated in the four day hands-on workshop. Because of the success of the workshop, the laboratory facilities and Denver's location, the CDPHE Lab will be an ongoing training site, with the next workshop scheduled for May 2012.

Proficiency Testing Strengthens Preparedness Response

To assess the effectiveness of training, proficiency testing has proven to be a valuable tool.

The state laboratory participated in national proficiency testing programs as well as developed and administered its own programs:

Approximately 35 clinical and local public health laboratories participate in proficiency testing provided at no cost by the state lab through the Colorado Laboratory Forum. Twice during the year, test kits were delivered to each participating laboratory with three case studies and unknown specimens to either rule-out or refer to the state lab for confirmation of the presence of bacterial select agents.



The state lab participated in the semi-annual Laboratory Preparedness Exercise (LPX) sponsored by the Association of Public Health Laboratories (APHL) and College of American Pathologists. The state lab also served as the contact point for seventeen other participating Colorado laboratories, tallying the number of statewide clinical labs that properly contacted the state lab for referral of organisms for confirmation. These referral results were sent to APHL for a nationwide analysis of how “sentinel” laboratories were performing their role to rule-out or refer-for-confirmation bacteria suspected of being dangerous to public health.

The state lab prepared and administered monthly proficiency testing for Colorado’s Biowatch program. The Biowatch Program monitors air in the Denver metropolitan area for the presence of airborne biological select agents on a daily basis.

Both the chemistry and microbiology labs participated in periodic testing for select agents through proficiency testing administered by the CDC’s Laboratory Response Network.

Community Outreach in 2011

In addition to training and testing, other outreach efforts included:

- The state lab hosted an open house to the public during National Medical Laboratory Professionals Week, April 24-30, 2011. Laboratory staff gave presentations to the public describing the types of services performed at the laboratory, followed by a reception and tour of the facilities. Local news media featured the state lab tour on their evening news.
- A presentation was given by lab staff at the Laboratory Response Network National meeting held at San Diego, CA. The talk described the nationally recognized training and outreach programs offered by the state lab staff in Colorado.
- The laboratory assisted the Arizona Department of Public Health Laboratory by sending supplies to the neighboring state lab. Numerous powder threat letters had exhausted the supply of critical test reagents and the Colorado lab was able to ship these items overnight to Arizona so that testing was not delayed.
- State lab personnel conducted site visits to the 8th Civil Support Team of the Colorado National Guard at Buckley Air Force Base and the USDA and Colorado State University research facilities in Ft. Collins.
- Tours of the state laboratory facilities were given to over 150 visitors from high schools, colleges, medical schools and state and federal organizations. A highlight was a visit from public health scientists and veterinarians from the countries of Indonesia, Mynamar, Trinidad-Tobago and Thailand, who were able to share their experiences with the lab staff.

Newborn Screening: Lifesaving Test from a Drop of Blood

The CDPHE newborn screening laboratory is the laboratory in the state designated to conduct tests for thirty metabolic conditions in newborns. This program is supported through fees for testing and follow-up.



Newborn screening is done shortly after birth by collecting a few drops of blood from the baby's heel on a special piece of filter paper. Colorado infants also receive a second newborn screening, usually at the first well-baby checkup (at 8 to 14 days old).



A second screen is performed because some conditions may not manifest until later, following release from the hospital or birthing center.



The medical conditions that are detectable by this screen may show no obvious symptoms in newborns, but can cause severe illness, mental retardation and, in some cases, death if not found and treated very early in life.

The newborn screening lab uses tandem mass spectrometry technology, or MS/MS, to screen for these metabolic disorders and the lab works in conjunction with metabolic physicians from The Childrens Hospital of Denver, refining the standards used to define abnormal MS/MS findings, and reducing the number of abnormal calls that did not result in the diagnosis of a true case of illness.

Toxicology Lab Provides Conclusive Drug and Alcohol Results

The toxicology laboratory routinely analyzes blood and urine specimens for ethyl alcohol, drugs of abuse and volatile substances to assist law enforcement agencies in administering drinking and drugged driver laws.

The toxicology laboratory provides testing for the forensic community that is sensitive and conclusive for drugs in blood, urine or solid dose materials (pills, powders, etc.). Customers served by the toxicology laboratory include professionals from law enforcement, drug treatment centers, youth facilities, community corrections, individuals, hospitals, and public and private attorneys.



Blood and Urine Drug Testing

The laboratory uses a range of carefully controlled chromatographic and immunoassay techniques for detecting and confirming the presence of drugs of abuse in blood and urine specimens.

Blood samples are screened by Enzyme-Linked Immunosorbent Assay (ELISA) and urine samples are screened by Enzyme Multiplied Immunoassay Technique (EMIT). Confirmations are performed using gas chromatography mass spectrometry (GC/MS).

The standard ten drug panel identifies the following:

- Alcohol
- Amphetamines
- Barbiturates
- Benzodiazepines
- Cannabinoids (THC)
- Cocaine
- Methadone
- Opiates
- Phencyclidine (PCP)
- Propoxyphene (Darvon)



Blood Alcohol Testing

Blood alcohol specimens are analyzed by headspace/gas chromatography. All samples are analyzed in duplicate by dual columns.

Certifying Laboratories Protects All Citizens

Federal and state authoritative agencies establish regulations pertaining to quality standards of performance to ensure the accuracy, reliability and timeliness of laboratory testing required for labs to gain certification. Administration of these regulations is accomplished through the Laboratory Services Division's certification program.

The certification program conducts on-site inspections to ensure that testing laboratories meet established certification standards in the following 12 essential areas: personnel qualifications; standard operating manuals; analytical processes; proficiency testing; quality control; security; chain of custody processes; specimen retention; work and storage space; records; results reporting; and quality assurance.

Clinical Laboratories

Under the Clinical Laboratory Improvement Amendments (CLIA), a clinical laboratory is defined as any facility that performs testing on specimens derived from humans for the purpose of providing information for the diagnosis, prevention or treatment of disease; or impairment or assessment of health.

The U.S. Congress passed CLIA in 1988, establishing quality standards for all clinical laboratory testing and placing all clinical laboratories under the authority of the amendments.

The Centers for Medicare and Medicaid Services administer CLIA at the federal level. Clinical laboratories that receive Medicare or Medicaid payments must be CLIA-certified.

Colorado provides CLIA certification for in-state clinical laboratories. As part of the certification process, CLIA clinical laboratories are required to analyze proficiency-testing samples three times per year in the same manner and by the same individuals as those performing the patient testing.

The certification program conducts required on-site inspections every two years to ensure sustained compliance with CLIA requirements.



Milk Laboratories

The FDA promotes and helps ensure compliance with the model Laboratory Quality Assurance Branch, Grade A Pasteurized Milk Ordinance (PMO), a document that is recommended for legal adoption by states, counties and municipalities to encourage a greater uniformity and a higher level of excellence of the milk sanitation practice in the United States.

In the state certification program, a milk laboratory evaluation officer (LEO) evaluates and certifies dairy testing laboratories to ensure compliance with the FDA's Laboratory Quality Assurance Branch, Grade A PMO. The LEO reviews the quality systems used by laboratories testing raw and finished milk products as well as dairy plants that perform antibiotic screening of bulk milk tankers.

Alcohol and Drug/Toxicology Laboratories

Under the Colorado Department of Public Health and Environment's Rules and Regulations Concerning Testing for Alcohol and Other Drugs, the certification program annually inspects all law enforcement intoxication and drug laboratories that perform tests on subjects arrested under substance abuse laws as they relate to driving and issues certifications when facilities demonstrate compliance with department standards.

Forensic toxicology laboratories are certified for one or more of the following testing categories:

- blood alcohol
- blood drugs
- urine drugs
- post-mortem

As part of the certification process, alcohol and drugs/toxicology laboratories are required to analyze proficiency-test samples from commercial vendors three times per year.

Drinking Water Laboratories

The Safe Drinking Water Act is the main federal law that ensures the quality and safety of drinking water for Americans.

Either the Environmental Protection Agency or the state in which testing is performed must certify laboratories that analyze drinking water samples for compliance with the Safe Drinking Water Act.

The certification program conducts on-site inspections every two years for in-state drinking water testing laboratories and select out-of-state laboratories.

Certifying Intoxilyzers, Operators and Instructors

The Intoxilyzer 5000EN is the evidential breath alcohol testing instrument used by law enforcement agencies in Colorado to determine whether a person is driving under the influence of alcohol.

The results from the Intoxilyzer 5000EN have been proven to be scientifically accurate and precise. Results generated by the Intoxilyzer 5000EN are the only breath testing results that are allowed as evidence in Colorado courts.

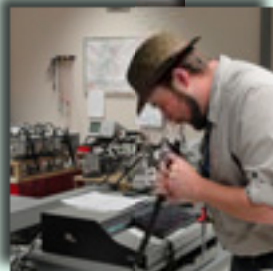
The rules governing the DUI/DWAI program in Colorado are the Rules Pertaining to Testing for Alcohol and Other Drugs (5 CCR 1005-2). These rules are established by the Colorado Department of Health and Environment and approved by the Colorado Board of Health.

Training and Certifying Law Enforcement Officers

The EBAT program is responsible for certifying law enforcement officers operating the Intoxilyzer 5000EN to perform DUI testing on suspected drunk drivers. It is responsible for certifying those law enforcement officers who act as instructors, verifying their competency as qualified to teach their staff how to operate the equipment.

Intoxilyzer 5000EN operators undergo an initial certification process with the EBAT program and are subsequently re-certified by a qualified instructor at an approved law enforcement facility using the equipment.

All records of certification for each instructor and operator are maintained at the law enforcement agency.



Maintaining and Certifying Equipment

The division's Evidential Breath Alcohol Testing (EBAT) program routinely maintains, repairs, calibrates and annually certifies the Intoxilyzer 5000EN instruments for use by state law enforcement officers. The EBAT program also conducts on-site inspections annually to ensure instruments are being operated in an adequate environment.

Additionally, the EBAT program approves preliminary breath testing services and ignition interlock devices. Law enforcement officers use preliminary breath testing devices to establish probable cause for arrest for driving under the influence of alcohol.

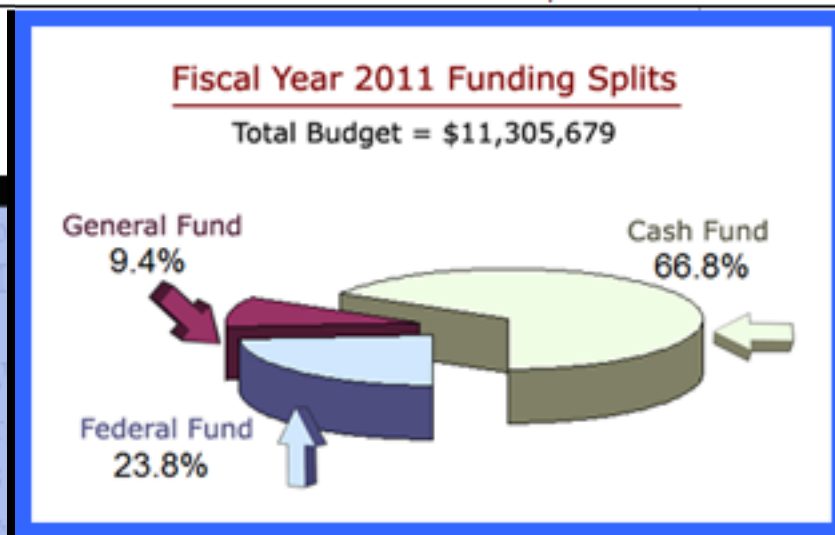
However, the results generated by these devices are not considered of evidentiary quality and are not admissible as evidence in Colorado courts.

Financials

Cash Revenues	
Cash Revenues by Program	
Certification	\$ 77,547
Chemistry	\$ 598,867
Environmental Microbiology	\$ 135,668
Evidential Breath Alcohol Testing	\$ 10,713
Newborn Screening	\$ 4,936,479
Public Health Microbiology <i>(includes Serology and Molecular)</i>	\$ 405,830
Toxicology	\$ 973,350
Zoonosis (rabies/plague)	\$ -
Total Fee Revenues	\$ 7,138,454
Other Cash Revenues by Source	
Law Enforcement Assistance Fund (LEAF)	\$ 867,807
Water Quality Control Division	\$ 235,418
Air Pollution Control Division (Odor School)	\$ 6,234
Training	\$ 522
Total Other Cash	\$ 1,109,981
Grants Received	Total Cash Revenues
	\$ 8,248,436

Public Health Emergency Preparedness
Consumer Protection Division (CPD) - Food and Drug Administration Grant
Epidemiology and Laboratory Capacity
Tuberculosis Elimination and Laboratory Program
Emerging Infections Programs
H1N1 Influenza Grant
Refugee Preventive Health Grant
Preventive Health and Health Services Block Grant
Clinical Laboratory Improvement Amendments
Disease Control and Environmental Epidemiology Division (DCEED) <i>Hepatitis C Serosurveillance Testing</i>
DCEED - Syphilis Serology Grant
WQCD - River and Stream Testing Services
DCEED - Human Immunodeficiency Grant
Food Safety and Security Monitoring Project (Chemistry)
Food Safety and Security Monitoring Project (Microbiology)
Prevention Services Division (Fluoride)
Colorado Division of Criminal Justice (DOJ) <i>Paul Coverdell National Forensic Sciences Improvement</i>

Expenditures - Fiscal Year 2011	
Total Indirect Paid	\$ 1,351,968
Total Personal Services	\$ 5,898,095
Total Operating	\$ 3,916,894
Total Expenditures	\$11,166,957



WORKLOAD REPORT
Serology

SEROLOGY LABORATORY		
Laura Gillim-Ross, PhD, Supervising Microbiologist		
	FY 10	FY 11
<i>ELISA Serology</i>		
Measles IgM	2	6
Positive	0	0
Mumps IgM	0	0
Positive	0	0
West Nile Virus	2	12
Positive	0	3
Hantavirus		
Human IgG	58	58
Reactive	0	2
Human IgM	58	58
Reactive	3	5
Total ELISA Analyses	120	134
Total ELISA Positives	3	10
<i>Febrile Serology</i>		
<i>Brucella</i>	5	3
Positive	4	3
<i>Tularemia</i>	4	6
Positive	3	0
Total Febrile Analyses	9	9
Total Febrile Positives	7	3
<i>Hepatitis Serology</i>		
Hepatitis A	6	1
Reactive	1	0
Hepatitis B Surface Antigen (HBsAG)		
Refugee sera	1,063	0
Reactive ¹	58	0
Non-refugee sera	2	15
Reactive	0	0
Anti-Hepatitis B Surface Antibody (Anti-HBs)		
Refugee sera	1,063	0
Reactive ¹	308	0
Non-refugee sera	4	10
Reactive	0	5

1- Laboratory discontinued refugee testing on June 30, 2010.

WORKLOAD REPORT
Serology

SEROLOGY LABORATORY		
Laura Gillim-Ross, PhD, Supervising Microbiologist		
	FY 10	FY 11
Hepatitis B Surface Antigen (HBsAG), Neutralization		
Refugee sera	58	0
Reactive ¹	55	0
Non-refugee sera	0	0
Reactive	0	0
Hepatitis C	1,398	305
Reactive	370	58
Total Hepatitis Analyses	3,594	331
Total Hepatitis Reactives	371	63
<i>Human Immunodeficiency Virus</i>		
HIV-1 RNA, TMA (pooled) ²	417	N/A
HIV-1 RNA, TMA (non-pooled)	18	N/A
Reactive	3	N/A
HIV-1, 2 plus O EIA	3,769	1,464
Total Reactive	98	76
Serum	3,423	N/A
Oral Fluid	346	N/A
HIV-1/2 Multispot	0	18
Reactive	0	0
HIV-2	0	0
HIV reactive	0	0
Western Blot	245	218
Total WB positive	207	159
Total HIV Analyses	4,449	1,700
Total HIV Reactive	308	235
<i>IFA Serology</i>		
Rocky Mountain Spotted Fever ³	0	0
Positive	0	0
<i>Legionella pneumophila</i>	2	0
Positive	0	0
<i>Coxiella burnetti</i> (Q Fever)		
Phase I	1	0
Phase I Positive	0	0
Phase II	0	0
Phase II Positive	0	0
Total IFA Serology Analyses	3	0
Total IFA Serology Positives	0	0

1- Laboratory discontinued refugee testing on June 30, 2010.

2- RNA TMA pooled testing study completed in fiscal year 2010.

3- Laboratory does not perform this testing; specimens submitted to CDC.

WORKLOAD REPORT
Serology

SEROLOGY LABORATORY		
Laura Gillim-Ross, PhD, Supervising Microbiologist		
	FY 10	FY 11
<i>Plague - Animal</i>		
Total Plague specimens	18	20
Testing Positive	3	3
<i>Plague - Human</i>		
Total Plague specimens	0	0
Testing Positive	0	0
<i>Rabies</i>		
Specimens Examined	907	930
Specimens with bite exposure	330	320
Specimens testing positive	121	89
<i>Rubella Serology</i>		
Premarital Specimens Total	0	0
Specimens with titer <1:10	0	0
Miscellaneous	1	1
Positive	0	0
<i>Specimens Sent to the Centers for Disease</i>		
Specimens Submitted	69	0
<i>Syphilis Serology</i>		
Routine RPR	6,306	3,750
Reactive	311	300
VDRL (Spinal Fluid)	210	159
Reactive	2	0
VDRL (non-Spinal Fluid)	1	0
Reactive	1	0
FTA	35	16
Reactive	11	3
Syphilis TPPA	995	996
Reactive	384	409
Titer	0	0
Reactive	0	0
Total Syphilis Analyses	7,547	4,921
Total Syphilis Reactive	325	303
<i>Virus Complement Fixation</i>		
Number of Specimens		
Paired sera	0	0
Single sera	0	0
Total VCF Analyses	0	0
TOTAL TESTS	16,647	8,045
TOTAL ABNORMALS	830	471

PUBLIC HEALTH MICROBIOLOGY LABORATORY
Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 10	FY 11
<i>Campylobacter</i> Cultures ¹	N/A	N/A
Isolates: ¹	N/A	N/A
<i>Campylobacter</i> Confirmations ¹	N/A	N/A
Isolates: ¹	N/A	N/A
Chlamydia Specimens		
Chlamydia and Gonorrhea Tested by Aptima	22,099	21,267
Positives	1,635	1,636
GC (Gonorrhea) Positive	47	N/A
CT (Chlamydia) Positive	1,542	N/A
CT & GC Positive	46	N/A
Trichomonas Vaginalis Cultures/Identification	838	216
Positives	84	26
Enteric Culture Specimens	2,009	1,815
Isolates:		
<i>Salmonella</i> Positive	585	611
STEC Positives:		
<i>Shigella</i>	81	89
<i>E. coli</i> O157	157	270
<i>Campylobacter</i> Positive ¹	106	93
Fungus	0	0
Positives	0	0
<i>Neisseria</i> Specimens	38	30
Isolates:		
<i>N. gonorrhoea</i> e	0	0
<i>N. meningitidis</i>	26	18
Ova and Parasite Testing		
Specimens Examined	4,141	46
Positives	1,385	10
Reference Bacteriology		
Miscellaneous Cultures	303	350
<i>Y. pestis</i> (Plague)	13	18
<i>Y. pestis</i> (other)	12	12
<i>V. cholerae</i> (Vibrio)	17	18
<i>Francisella tularensis</i> (Tularemia)	5	43
<i>B. anthracis</i> (Anthrax)	25	25
Total Reference Identifications	375	29
Positives	93	103
<i>Specimens Sent to the Centers for Disease Control</i> ²		
Specimens Submitted	283	380
Positives	N/A	100
<i>Streptococcus</i> Culture		
Specimens (Group A, Group B, <i>Strep pneumoniae</i>)	802	773
Positives	0	0
Tuberculosis Specimens	1,113	1,267
Isolates:		
<i>M. tuberculosis</i> Complex	14	38
Avium Complex	16	5
Smear Positive	24	61
Culture Positive	67	73
TOTAL TESTS	31,686	25,823
TOTAL ABNORMALS	4,303	3,133

²*Campylobacter* testing included in enteric counts as it is part of the enteric panel effective with FY2010 data.

WORKLOAD REPORT
Public Health Microbiology

WORKLOAD REPORT
Molecular Science

MOLECULAR SCIENCE LABORATORY		
Hugh Maguire, PhD, Supervising Microbiologist		
	FY 10	FY 11
<i>Molecular Typing**</i>		
Pulsed Field Gel Electrophoresis		
<i>Bacillus</i>	N/A	24
<i>Campylobacter</i>	N/A	11
<i>E.coli</i> O157	60	59
other <i>E.coli</i> STEC	109	169
<i>Enterococcus</i>	N/A	11
<i>Listeria monocytogenes</i>	9	10
Methicillin-resistant <i>Staphylococcus aureus</i>	109	163
<i>Neisseria meningitidis</i>	N/A	7
<i>Salmonella</i>	631	588
<i>Serratia marscecens</i>	N/A	16
<i>Shigella sonnei</i>	55	50
<i>Shigella flexneri</i>	41	33
<i>Shigella boydii</i>	2	2
<i>Streptococcus</i> (Group B)	4	2
Other	34	21
Total Molecular Typing	1,054	1,166
<i>Polymerase Chain Reaction</i>		
Anthrax	0	0
Positive	0	0
<i>Brucella</i> spp.	12	22
Positive	0	2
<i>Burholderia</i> spp.	1	0
Positive	0	0
<i>Coxiella burnetti</i>	2	1
Positive	0	0
<i>E.coli</i> Virulence Marker - stx 1	N/A	588
Positive	N/A	236
<i>E.coli</i> Virulence Marker - stx 2	N/A	588
Positive	N/A	97
<i>Francisella tularensis</i> (human testing)	N/A	8
Positive	N/A	2
H ₁ N ₁ Influenza A	0	1,297
Positive	0	226
Influenza A	7,817	1,297
Positive	1,936	739
Influenza B	2,749	1,297
Positive	0	127
Influenza Subtyping	N/A	739
Positive	N/A	737
MLVA ³	N/A	141
Positive	N/A	0
Mumps	2	0
Positive	0	0
Norovirus	927	598
Positive	241	112
Orthopox	0	0
Positive	0	0
Pertussis	240	611
Positive	2	4

MOLECULAR SCIENCE LABORATORY

Hugh Maguire, PhD, Supervising Microbiologist

	FY 10	FY 11
Plague - zoonosis	70	73
Positive	0	8
Plague - human testing	N/A	7
Positive	N/A	0
Ricin	0	0
Positive	0	0
RSV	3	1
Positive	3	0
Shigella	0	0
Positive	0	0
St Louis Encephalitis	100	100
Positive	0	0
Tularemia	45	69
Positive	1	4
Varicella-Zoster Virus	0	0
Positive	0	0
Variola	0	0
Positive	0	0
West Nile, RT-PCR		
Bird/Mosquito Specimens	3,080	1,258
Positive	0	19
Human	0	37
Positive	0	0
Western Equine Encephalitis	100	100
Positive	0	0
Total Polymerase Chain Reaction	15,148	8,832
Total Polymerase Chain Reaction Positives	2,183	2,313
DNA Sequencing¹	1	11
CalciNet (CDC -Norovirus database)	N/A	88
TOTAL TESTS	16,203	10,009
TOTAL ABNORMALS	4,015	2,313

¹DNA Sequencing added in FY2008.

³Multi-locus variable number tandem repeat analysis (MLVA) testing added in FY2011.

WORKLOAD REPORT
Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORIES

Laurie Peterson-Wright, Supervisor

	FY 10	FY 11
INORGANIC CHEMISTRY		
Alkalinity, Phenolphthalein	155	438
Alkalinity	1,667	1,512
Aluminum	232	527
Antimony	88	198
Arsenic	902	1,193
Arsenic III	5	149
Arsenic V	5	149
Barium	172	390
Barium - XRF	1	0
Beryllium	159	339
Bicarbonate	56	0
BOD	401	272
BOD, Carbonaceous	28	23
Boron	4	8
Bromate	95	99
Bromide	27	34
Cadmium	1,814	1,944
Cadmium - XRF	1	0
Calcium	322	832
Carbaryl	N/A	11
Carbofuran	N/A	42
Carbonate	47	9
Chlorate	1	3
Chlordane	N/A	42
Chloride	470	420
Chlorine	22	24
Chlorite	33	20
Chloroform	N/A	108
Chlorophyll - a	59	33
Chromium	198	433
Chromium, Hexavalent	10	22
Cobalt	5	9
COD	30	7
Color @ 436	N/A	3
Conductivity	208	167
Copper	2,263	2,443
DOC	N/A	113
Equilibrium pH	N/A	51
Fluoride	1,172	1,369
Hardness	1,854	1,689
Iron	3,426	3,432
Lead	2,395	2,483
Lithium	1	4
Magnesium	289	671
Manganese	1,768	1,920
Mercury	224	421

WORKLOAD REPORT
Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORIES		
Laurie Peterson-Wright, Supervisor		
	FY 10	FY 11
Molybdenum	83	168
Nickel	189	380
Nitrogen	3,264	2,778
Nitrogen, Nitrate	637	2,689
Nitrogen, Nitrate/Nitrite	1,978	2,031
Nitrogen, Nitrite	202	212
pH	449	425
Phenol	7	6
Phosphorus, Ortho-Phosphate	7	8
Phosphorus, Phosphate	1,469	1,364
Potassium	118	167
Selenium	1,711	2,024
Silicon, Total	13	44
Silver	1,495	1,602
Sodium	371	725
Solids, Dissolved	321	340
Solids, Settleable	25	17
Solids, Suspended	598	524
Solids, Total	17	40
Solids, Volatile	4	1
Special Procedure	4	0
Strontium	N/A	6
Sulfate	1,800	1,581
Sulfate, Dissolved	6	6
Sulfide	28	4
Sulfite	4	2
Sulfur	74	86
Tannin and Lignin	N/A	1
Thallium	80	47
Thorium	2	5
Tin, Total	1	9
Titanium	1	4
Total Solids	N/A	8
Tungsten	1	0
Turbidity	68	50
Uranium	843	734
Uranium, Total Recoverable	19	0
Vanadium, Total	5	9
Water Activity	6	15
Zinc, Dissolved	1,701	1,871
Filter Weighing Program:		
Lead Analysis	N/A	202
P10_Gross Weight	2,478	8,388
P10_Tare Inspection	70	210
PM2.5	1,311	3,938
Total Number of Inorganic Analyses	42,067	56,777
Inorganic QA/QC*	3,865	881
Total Inorganic Analyses*	45,932	57,658

WORKLOAD REPORT
Organic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORIES

Laurie Peterson-Wright, Supervisor

	FY 10	FY 11
ORGANIC CHEMISTRY		
1,1,1-Trichloroethane	72	96
1,1,2-Trichloroethane	72	96
1,1-Dichloroethylene	72	97
1,2,4-Trichlorobenzene	72	96
1,2-Dichloroethane	72	96
1,2-Dichloropropane	72	96
2,4,5-TP	1	0
2,4,5-TP (Silvex)	31	49
2,4-D	45	49
Alachlor (Lasso)	31	50
Aldicarb	30	42
Aldicarb Sulfone	30	42
Aldicarb Sulfoxide	30	42
Atrazine	61	67
Benzene	83	99
Benzo(a)pyrene	32	50
BHC Gamma (Lindane)	32	50
Bifenthrin	47	11
Bromodichloromethane	143	108
Bromoform	143	108
Carbaryl	58	11
Carbofuran	30	42
Carbon Tetrachloride	72	96
Chlordane	29	42
Chloroform	144	108
Cyanide, Direct	13	12
Cyanide, Distilled	11	190
Cyanide, WAD	25	0
cis-1,2-Dichloroethylene	72	97
Dalapon	31	52
Di(2-ethylhexyl)adipate	31	50
Di(2-ethylhexyl)phthalate	33	60
Dibromoacetic acid	111	92
Dibromochloromethane	144	117
Dibromochloropropane	65	42
Dichloroacetic acid	111	92
Dichloromethane	72	94
Dinoseb	35	53
Diquat	30	43
Dissolved Oxygen*	1	0
DMSCC	773	222
Endothall	29	43
Endrin	32	50
Ethylbenzene	79	100
Ethylene dibromide	65	42

WORKLOAD REPORT
Organic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORIES

Laurie Peterson-Wright, Supervisor

	FY 10	FY 11
FTIR Scan*	1	2
Glyphosate	29	43
HAASs	4	16
Heptachlor	32	50
Heptachlor epoxide	31	50
Hexachlorobenzene	31	50
Hexachlorocyclopentadiene	32	50
Methoxychlor	31	50
Methyl Methacrylate	28	38
Monobromoacetic acid	111	184
Monochlorobenzene	72	96
Oil & Grease	27	33
ortho-Dichlorobenzene	72	96
Oxamyl	30	42
para-Dichlorobenzene	72	96
Pentachlorophenol	33	50
Permethrin	54	11
Picloram	31	52
Piperonyl Butoxide	47	11
Poisons (Screen)	1	1
Polychlorinated biphenyls	31	44
Simazine	31	50
Styrene	72	96
SVOC (Screen)	16	10
Tetrachloroethylene	72	97
TOC	30	182
Toluene	80	99
Toxaphene	29	42
trans-1,2-Dichloroethylene	72	97
Trichloroacetic acid	111	92
Trichloroethylene	72	97
Vinyl Chloride	72	97
VOC (Screen)	47	74
VOCs	63	1
Xylenes (total)	80	100
Total Number of Organic Analyses	5,205	5,293
Organic QA/QC*	952	1,059
Total Analyses*	6,157	6,352

WORKLOAD REPORT
Radiochemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORIES

Laurie Peterson-Wright, Supervisor

	FY 10	FY 11
RADIOCHEMISTRY		
Americium-241	19	17
Barium-133	4	0
Beryllium-7	N/A	24
Carbon-14	42	1
Cesium-134	10	43
Cesium-137	22	48
Cobalt-57	11	10
Cobalt-60	21	25
Gross Alpha	145	141
Gross Beta	192	172
Iodine-131	3	21
Lead-210	1	2
Lead-212	1	0
Lead-214	1	0
Manganese-54	10	8
Nickel-63	5	16
Plutonium-238	22	16
Plutonium-239+240	25	18
Potassium-40	15	17
Radium-226	124	113
Radium-228	86	79
Radon-222	57	208
Strontium 90	4	9
Tritium	36	11
Uranium-234	49	35
Uranium-235	49	30
Uranium-238	49	39
Zinc-65	10	7
Whole Body Counts	24	14
Total Number of Radiochemistry Analyses	1,039	1,124
<i>Radiochemistry QA/QC*</i>	160	359
Total Radiochemistry Analyses*	1,199	1,483

WORKLOAD REPORT
Toxicology

TOXICOLOGY LABORATORY		
Cynthia Burbach, Supervising Toxicologist		
	FY 10	FY 11
<i>Analytical Services</i>		
Blood Alcohol	6,463	8,814
Methamphetamine Wipes	0	0
Toxic Vapors	N/A	57
Blood Drug Analyses*	12,473	20,937
Confirmations	2,171	3,884
Urine Analyses	10,235	4,491
Confirmations	2,177	1,525
Analyses Referred to Private Labs	N/A	5
Total Specimens Received	9,455	10,630
Total Analyses (includes confirmations)	33,519	39,708
QA/QC	14	14
QA/QC Performed for EBAT Program	14	63
Total Analyses	33,533	39,785
TOTAL TESTS	33,533	39,785
<i>Other</i>		
Court Appearances	124	211
Litigation Packages	532	583

WORKLOAD REPORT
EBAT and Certification

EVIDENTIAL BREATH ALCOHOL TESTING

Jeff Groff, Supervisor

	FY 10	FY 11
<i>Alcohol Test Program (LEAF)</i>		
Alcohol standard solutions	2,360	2,560
Breath test operator/instructor certification	1,875	1,378
<i>Certification of EBAT Instructors</i>	494	271
<i>Certification of EBAT Operators</i>	1,381	1,107
Instrument Certification	403	408
Facility on-site inspections	195	165
Number of facilities cited for deficiencies	60	66
Proficiency Testing/QA	N/A	N/A
Certified record requests and subpoenas processed	1,058	897
Alcohol Class Kits Prepared	196	180
Technical and Court Assistance/Expert Testimony	887	809
<i>Subpoenas Processed</i>	250	162
<i>Legal Testimony (Court Appearances/Affidavits/Opinions)</i>	37	22
<i>Stakeholder Contacts (Technical/Regulatory Assistance)</i>	600	625

LABORATORY IMPROVEMENT PROGRAM

Jeff Groff, Supervisor

	FY 10	FY 11
<i>Laboratory Certifications</i>		
CLIA Laboratory Certifications	208	204
<i>Number of laboratories cited for deficiencies</i>	116	137
NCIMS Certifications	9	11
Drug Residue Certifications (LEAF)	10	9
MQSA Inspections	N/A	N/A
<i>Safe Drinking Water (SDW) Act</i>		
Radiochemistry Certifications	3	1
Microbiology Certifications	33	30
Chemistry Certifications	21	19
<i>Number of SDW laboratories cited for deficiencies</i>	79	55
Desk Survey Reviews (<i>in-state</i>)	51	51
Desk Survey Reviews (<i>out-of-state</i>)	34	31
TOTAL SURVEYS	369	356

WORKLOAD REPORT
 Environmental Microbiology

ENVIRONMENTAL MICROBIOLOGY LABORATORY

Hugh Maguire, PhD, Supervising Microbiologist

	FY 10	FY 11
<i>Water Analyses</i>		
Drinking Water Specimens		
Private Specimens	2,417	2,366
Municipal Specimens	3,725	3,548
Miscellaneous Tests in Drinking Water (Confirmation, Fecal, Strep, Coliform)	146	6
Waste Water		
Sewage Effluents Analyses	31	0
Stream Pollution Study Specimens	989	233
Miscellaneous Analyses (Confirmation, Fecal, Strep, Coliform, Legionella)	144	6
Total	7,452	6,159
QA/QC	104	104
Total Water Analyses	7,556	6,263
<i>Food Analyses¹</i>		
Food Samples	1,475	1,542
Total Food Analyses	3,078	4,100
QA/QC	144	175
Total Food Analyses	3,222	4,275
<i>Milk Analyses²</i>		
Finished Milk	1,145	1,462
Raw Milk	208	263
Coliform (Plate count for total coliform bacteria)	1,240	1,600
DMSCC (Direct Microscopic Cell Count)	215	222
Freezing Point (test for added water)	228	225
Inhibitors (test for antibiotics in milk)	1,051	1,302
Phosphatase (test for complete pasteurization)	1,079	1,360
Standard Plate Count (total bacterial content of milk)	1,194	1,551
%Fat	1,073	1,357
Total Milk Tests	6,080	7,617
QC	525	540
Total Milk Analyses	6,605	8,157
TOTAL TESTS	17,383	18,695
TOTAL ABNORMALS		

¹Section received funding for additional food testing from the CDPHE

Consumer Protection Division in FY2010 resulting in an increased

²Milk testing decreased in FY2010 as there were fewer dairies and an overall reduction in production due to the economic environment.

COLORADO REGIONAL NEWBORN SCREENING LABORATORY

Daniel Wright, Supervisor

Submitter State	FY 10			FY 11		
	Totals	Screens	Analyses	Totals	Screens	Analyses
Colorado						
Initial	67,290	62,289	2,387,433	65,780	60,693	2,332,471
Wyoming	6,924	6,054	243,174	6,611	5,814	232,417
Other States/Territories	3,231	1,421	103,646	2,872	1,469	93,571
Total	77,445	69,764	2,734,253	75,263	67,976	2,658,459
QA/QC	4,400	4,000	8,400	4,400	4,000	8,400
TOTAL ANALYSES	81,845	73,764	2,742,653	79,663	71,976	2,666,859

WORKLOAD REPORT
Newborn Screening

Total Abnormals	FY 10	FY 11
Congenital Adrenal Hyperplasia	379	213
Hemoglobin Abnormals	2877	2457
Phenylketonuria Abnormals	45	33
Biotinidase Deficiency Abnormals	465	193
Hypothyroidism Abnormals	1153	1005
Cystic Fibrosis Abnormals	1338	962
Galactosemia Abnormals	2	9
MS/MS	694	628
TOTAL ABNORMALS	6,953	5,500

LABORATORY TESTING and SERVICES TOTALS

LABORATORY TESTING & CERTIFICATION GRAND TOTALS	2011 Actual
CHEMISTRY & MICROBIOLOGY <i>(Newborn screening totals shown on previous page.)</i>	
Number of tests performed.	2,834,708
Number of results detected in excess of established standards (abnormal results).	11,417
CERTIFICATION	
Number of laboratory inspections completed.	356
Number of law enforcement officers trained annually in the proper usage and maintenance of breathalyzer equipment.	1,378



LABORATORY TRAINING

Suzanne Kelley, MT(ASCP), M.Ed, Supervisor

Webinars offered at the Laboratory Services Division - FY2011

- 1 Why H1N1 Still Matters
- 2 Advanced Analytical Technologies for Analyzing Environmental Matrices Contaminated with Petroleum Hydrocarbons
- 3 Affordable Health Care Act of 2010
- 4 Agents of Opportunity for Terrorism
- 5 An Overview of Molecular Methods for Pathogen Diagnosis
- 6 Applying Lean to Work Flow Processes
- 7 Approaches to Measuring Chromium in Drinking Water
- 8 Chemistry Disaster Response Tools
- 9 CQI An Essential Building Block in a Quality Management System
- 10 Crisis in Japan: Medical and public health implications of a radiation emergency
- 11 Diagnosis of Recent VZV Infection: Serology, PCR & Strain Surveillance
- 12 *E. coli* Webinar - STEC: Why You Should Be Screening For More Than O157
- 13 Emerging and Resurging Infectious Disease Update 2011
- 14 Enbridge - Public Health Response to the Other 2010 Oil Spill
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- 32 Lab Testing Methods for Control of Rotavirus Gastroenteritis
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