Laboratory Services Division
Annual Report 2012

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

Esteemed Customers and Stakeholders,

I am pleased to present the 2012 annual report of the Laboratory Services Division of the Colorado Department of Public Health and Environment.

A key accomplishment this past year was the commencement of Severe Combined Immunodeficiency (SCID) testing. The Newborn Screening Lab identified the first confirmed positive SCID case within 30 days of initiating the test in February. Additionally, the division completed the process for the exchange of the newborn screening test results interface with the Colorado Regional Health Information Exchange (CORHIO). This interface is now delivering results to CORHIO for use by participating hospitals, and work is progressing toward the inbound order phase of the interface.

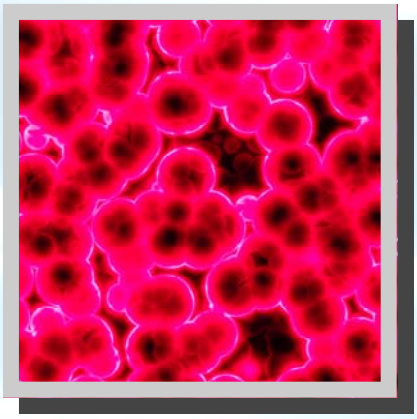
During the year, the department began using Lean process improvement methodologies to improve business processes and customer service. Laboratory staff members received training from representatives of ARUP in Utah (a national clinical and anatomic pathology reference laboratory) on the "value stream mapping" approach to analyzing a process and improving efficiencies. This process was applied to the water metals testing performed in the lab's chemistry unit. A joint Lean project was conducted with the department's Water Quality Control Division to identify ways to expedite availability of test results to that division and its regulated stakeholders. Improvements which were identified and evaluated through the Lean process are being implemented. The Laboratory Services Division is looking forward to continuing improvement process efforts in the coming year to add value for our customers.

Thank you for your continued support,

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

State Lab Awarded Funds to Explore Novel Approaches to Shared Tuberculosis Laboratory Services

The Tuberculosis Section of the state's Public Health Microbiology Laboratory was awarded funds by the Association of Public Health Laboratories (APHL) and the Centers for Disease Control (CDC) to complete a pilot project evaluating the benefits and limitations of regionalization of drug susceptibility testing for tuberculosis (TB).



The significant decline in TB cases identified in the United States is the direct result of a successful public health response; however, public health laboratories, central players in the successful reduction of TB cases in the United States, are facing challenges in maintaining TB testing services in an era of declining funding. The Northern plains and intermountain states continue to see a decline in the number of specimens submitted to their public health laboratories for TB testing, and fewer cases of TB are identified each year. As the demand for TB testing decreases in this region, maintaining all testing services for TB is becoming increasingly expensive, and maintaining technical proficiency has become increasingly difficult. Movement of populations within a geographic region is common, making it important for public health entities within geographic regions to work together.

The pilot project is a collaborative effort between the Colorado Department of Public Health and Environment's Laboratory Services Division, the Montana Laboratory Services Bureau, the North Dakota Division of Laboratory Services, the South Dakota Public Health Laboratory, the Unified Utah State Laboratories, the Wyoming Public Health Laboratory, and the Denver Public Health Laboratory. Objectives of the project include: decreasing the cost of TB drug susceptibility testing in our region; maintaining testing turn-around-times that benefit patient treatment and public health interventions, providing high quality drug susceptibility testing in low-volume state, enhancing interstate and intrastate collaboration in the area of public health testing, and developing the capability for electronic reporting between public health laboratories.

Molecular Science Lab Key to State's Rapid Outbreak Response

In 2012 the Molecular Science Laboratory continued its development of testing methods for the detection of the genetic material of bacteria or viruses. The successful validation and deployment of new instrumentation, technology, and targeted testing provided an expanded capability to support public health surveillance programs and assist in a more rapid outbreak response. Through ongoing development of testing methods, combined with staff training, the laboratory provides high-quality laboratory services to meet the needs of its customers and the residents of Colorado.

Support for these enhanced laboratory capabilities was provided through allocations from the Colorado General Fund and from federal grants awarded to the Laboratory Services Division's microbiology 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 Colorado Department of Public Health and Environment. These capabilities also are used by external partners who refer pure culture isolates or clinical specimens to the laboratory when seeking confirmation of presumptive findings or expanded investigation of challenging cases. The molecular-based testing options available at the laboratory provide an invaluable component to infectious disease clinicians and hospital infection control officers. Common features of the new technologies added or enhanced during the past year are testing sensitivity, specificity and speed.

The speed and sensitivity provided by molecular testing methods ensures the early detection of infectious agents and allows multiple agencies a solid basis from which to mount a public health response sooner than could be done in the past. As the division's trained staff now possesses 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 a faster overall response to outbreak investigations. Both staff and technology were on display in response to the *Listeria monocytogenes* outbreak that was rapidly linked to cantaloupe. The investigation was based partially on work completed by the laboratory's molecular science staff. In collaboration with the division's Public Health Microbiology Laboratory, Colorado has been at the center of a number of investigations of nationwide foodborne illness outbreaks. The work unit played a significant role in these investigations by using combinations of molecular methods to identify the disease-causing agent and to establish a link to the contaminated food source. The work unit contributed critical, decision-influencing data.

For clinical partners, the work unit performs DNA sequencing to confirm the identity of culture isolates that cannot be identified with certainty using traditional methods. A new molecular method for determining *Salmonella* serotypes benefits both clinicians and public health epidemiologists by defining cases and establishing clusters of illness. The application of MLVA and PFGE was expanded to include new target organisms and has proved beneficial to outbreak investigations, both locally and nationwide, and to hospital infection control staff seeking to identify the source and extent of nosocomial infections.

New PCR assays target vaccine preventable diseases such as *Neisseria meningitidis*, *Haemophilus influenzae*, and *Streptococcus pneumoniae*. The surveillance of respiratory illness was expanded to include new strains of influenza virus and Respiratory Syncytial virus. Normally seen in pediatric populations, this latter virus was determined to be the cause of an outbreak in Grand Junction by employing this new tool for enhanced respiratory virus surveillance. The work unit now performs year-round surveillance for influenza viruses and results are made available in near real-time for assessment by colleagues in the communicable disease program.

Environmental Microbiology Lab Helps to Keep Colorado's Food, Milk and Water Safe

The Environmental Microbiology work unit performs both routine food surveillance and outbreak response to foodborne illness. Additionally, lab staff test water samples from a variety of sources for bacterial contaminants and monitor 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 CDC to monitor the quality of retail food products. Full certification of these programs was issued by the EPA for water testing, and by the FDA for milk testing.

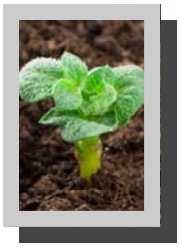
The work unit completed the third year of a three-year cooperative agreement with the FDA designed to support enhanced investigative capabilities in the area of foodborne disease. The new instruments included with this award are fully operational and offer superior technology compared to what was available previously to identify and characterize contaminants present in food products. The sensitivity and speed afforded by these instruments—and the staff to utilize them effectively—was demonstrated in the rapid response that resulted in the isolation and identification of *Listeria monocytogenes* associated with cantaloupe grown in Colorado. The performance in this and several other instances of food testing was considered exemplary by Federal partners. The cooperative agreement that ensured this response capability was renewed for another three-year term.

Chemistry Lab's Testing Capabilities Serve State as well as Region

During 2012, the Environmental Chemistry Laboratory continued to serve the public of Colorado and other states, while advancing and expanding its testing capabilities.

The Environmental Chemistry Laboratory attained full certification from the Environmental Protection Agency (EPA) for all analyses required for testing public water systems for compliance purposes. This certification demonstrates that testing performed by the Colorado Department of Public Health and Environment Laboratory can rapidly identify potentially dangerous contaminants in public water systems, protecting the safety of Coloradans. In Colorado each citizen uses, on average, more than 100 gallons of water per day, for everything from drinking and bathing, to food preparation.

The Environmental Chemistry Laboratory continued to support its partners in other states by increasing its capability for the analysis of radioisotopes. In the past year the radiochemistry staff added the ability to test for strontium-90, nickel-63 and technetium-99 and also developed a low-level plutonium and isotopic uranium method for testing soil. These nuclides are a concern in states where radioactive waste repositories are located, and this added capability is critical in the event of a nuclear incident.

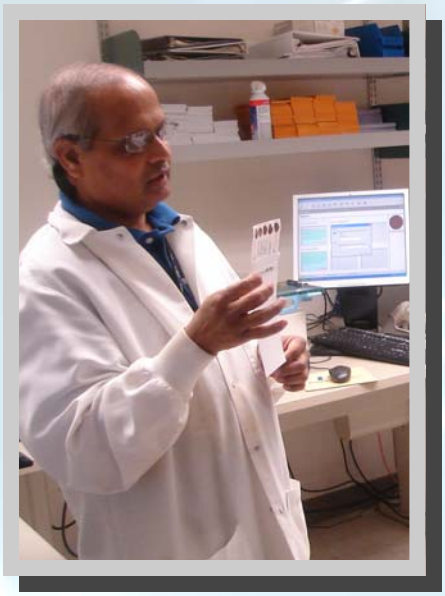


The testing capabilities of the Environmental Chemistry Laboratory expanded with the addition of testing for volatile organic compounds (solvents and gasoline products) in food, soil and fish. Many volatile organic compounds are carcinogenic and can migrate into water and food sources, potentially harming people and the environment. This added testing capability enables the Chemistry laboratory to analyze samples collected from oil or gas spills in a rapid manner to identify potentially dangerous contamination.

The Environmental Chemistry Laboratory has also expanded its testing to include the detection of unsafe levels of formaldehyde in salon products (i.e., professional strength hair straighteners). Formaldehyde is a probable human carcinogen and is especially harmful in the gas form. Many hair straightening products do not list formaldehyde as an ingredient contained in the bottle; however if present, formaldehyde gas is formed when heat is applied during the blow drying process. The laboratory currently analyzes samples that have been collected from salons by the Department of Regulatory Agencies (DORA) as a result of customer complaints.

The Environmental Chemistry Laboratory will continue to maintain and expand its capability and capacity to serve the citizens of Colorado.

Newborn Screening Test Identifies Rare Condition within First Month of Implementation



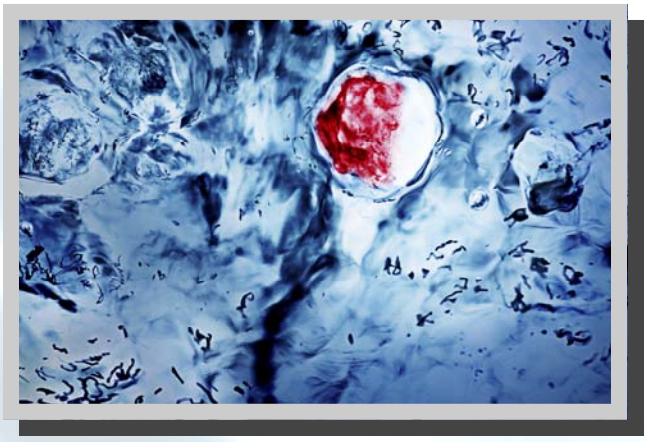
The Colorado Department of Public Health and Environment's Newborn Screening Laboratory is the laboratory designated for testing of all newborn babies for potentially life-threatening disorders. In response to recommendations of the National Advisory Committee on Heritable Disorders in Newborns and Children, the Colorado Board of Health voted in 2011 to add genetic testing for Severe Combined Immunodeficiency Disorder (SCID), to the newborn screening panel. In February 2012, Colorado became the seventh state to implement testing for SCID.

SCID is a rare primary immune deficiency with those affected lacking all natural immunities to germs, viruses and other environmental threats. Babies with this disorder usually develop one or more serious infections within the first few months of life and most untreated babies die before age one.

On February 1, 2012, after extensive validation studies, the department's Newborn Screening Laboratory implemented SCID testing. Just two weeks after implementation, the first baby positive for SCID was identified. The specimen was referred to Dr. Irwin Gelfand at National Jewish Hospital for confirmatory testing, and a diagnosis of SCID was made. SCID is a rare disorder affecting on average only about one to three out of the 70,000 to 80,000 babies born annually in Colorado. When diagnosed early, SCID can be cured through bone marrow transplant, allowing for a normal life for the affected baby and his/her family.

Public Health Microbiology Lab Expands Testing Capability and Continues to Assist Public Health Partners throughout Colorado

The primary function of the Public Health Microbiology Work Unit at the state laboratory is to provide assistance to public health and clinical entities throughout Colorado in the investigation of disease outbreaks, the identification of unusual microorganisms, and the identification of organisms classified as potential bioterrorism agents. During 2012, staff members completed extensive training in both molecular and traditional microbiological culture techniques, enhancing the capability of the laboratory to respond to outbreaks and other biological events. In collaboration with the molecular science unit, the microbiology unit significantly expanded its testing capability, implementing molecular testing methods for the detection of vaccine preventable diseases including *Neisseria meningitidis* and *Haemophilus influenzae* organisms responsible for bacterial meningitis. Implementation of these nucleic acid amplification methods significantly reduces the time of identification of infections allowing for rapid public health interventions. The laboratory's ability to respond to diarrheal outbreaks was enhanced with the implementation of molecular serotyping for *Salmonella*. Throughout the year, the laboratory provided assistance to public health and clinical partners investigating outbreaks including: *Listeria monocytogenes* in cantaloupe, *Legionella pneumophila*, *Salmonella* and *E. coli*.



Training and Testing are the Keys to Emergency Preparedness and Rapid Response

The Laboratory Services Division (LSD) serves the State of Colorado by routinely performing confirmation testing of clinical and environmental specimens submitted by hospitals, local health departments and first responder agencies. Additionally, the cause of outbreaks of disease and the composition of powders sent in threat letters by bioterrorists can be determined rapidly by the laboratory analysts using the most current technologies. What appears routine to the public is achieved by a continuing process of training and exercises that test the laboratory's ability to respond to events by providing accurate and timely results. Training and testing include outreach and joint exercises with both the health care and first responder communities within the state of Colorado and nationwide.

The Importance of Training

Training is a continuous process that addresses the constant turnover of laboratory personnel, improves skill levels and helps implement new testing methods. Additionally, training is an important tool to establish and maintain working relationships with partner agencies within Colorado and across the country. Hosted webinars and teleconferences, online courses and hands-on training with live cultures, called wet workshops, are training resources available to both LSD staff and community partners. The following are examples of these resources in use during the past year:

- The Colorado Laboratory Forum (CLF) was established by the LSD as a statewide resource for laboratory information and training. Its website lists upcoming training opportunities hosted by the LSD, current articles related to public health and it provides links to other training and reference sites such as the Centers for Disease Control (CDC) and the Association of Public Health Laboratories (APHL). CLF members have access to COTRAIN, where they can register for training classes and check their transcripts for documentation of completed courses.

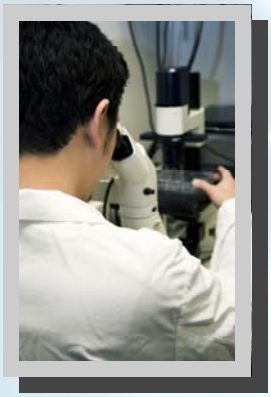
- Free webinars are offered throughout the year at the LSD. Topics cover a wide range of subjects of interest to clinical laboratorians, including updates on current infectious disease outbreaks, reviews of safe laboratory practices and updates on emerging infectious diseases.

- A new online training course was developed during the year and offered statewide, nationally and internationally to all lab professionals. Clinical laboratorians often have difficulties scheduling training around their work shifts. The CLF course was developed to allow students to log into the training program and proceed at their own pace, logging out and returning to the course to continue the training. The content includes a description of infectious bacteria and viruses, appropriate test methods and safe handling of these agents. Upon successful completion of the course, a certificate is awarded along with continuing education credits.

- More than 20 students representing clinical and local public health laboratories from across Colorado attended three hands-on workshops that provided experience working with attenuated (safe) strains of bacteria that are on the US Select Agent Program list. These bacteria include the agents responsible for such diseases as anthrax, plague, tularemia and brucellosis—all of which are present in Colorado and have the potential to be used as a bioterrorist weapon. The workshop includes presentations and discussions of these select agents to aid the laboratorians to recognize and safely test for the presence of these agents. Most importantly, students examined cultures and microscope slides of non-harmful strains of these bacteria. It is one thing to look at pictures of the bacteria and read about their characteristics, but it is more useful to observe live cultures and learn that they do not always look or behave "by the book".

- Slide sets of the organisms, as well as training guides, are provided with the course so that current procedures and reference information will be in place in their laboratories. These laboratorians are essential in the initial detection of bacterial select agents—so much so that the CDC refers to clinical and public health laboratories as "Sentinel" facilities. Their key role is to be able to perform tests to either rule out the presence of these bacteria, or to refer them to the LSD laboratory for identification and confirmation. The LSD recognizes the difficulty of laboratories located outside of the Denver metro area to be able to send their staff to training. To overcome this obstacle, the LSD offers the Sentinel laboratory workshops as "road shows", in which trainers provide the workshops at host laboratories across the state.

Readiness Through Testing



Proficiency testing has proven to be a valuable tool in assessing the effectiveness of training. The LSD participated in national proficiency testing programs and developed and administered its own testing programs. The LSD also provided bacteria and chemicals to serve as "unknowns"—unidentified materials used to evaluate the abilities of clinical laboratories—and first responders to successfully perform tests to correctly identify those agents:

- Both the Chemistry and Microbiology Units provided samples to the 8th Civil Support Team (CST) of the Colorado National Guard. These samples were used as "unknowns" to test the accuracy and timeliness of their testing methods.

- The LSD participated in the semi-annual proficiency testing program sponsored by the Association of Public Health Laboratories (APHL) and the Clinical Association of Pathologists (CAP). The Laboratory also served as the contact point for 17 other Colorado laboratories, collecting, reviewing and forwarding the results to the testing program headquarters at APHL/ CAP.

- The LSD prepared "unknowns" and administered monthly proficiency testing for the Biowatch program. Biowatch monitors air in the Denver Metropolitan area on a daily basis for the presence of airborne biological select agents and serves as an early warning system for bioterrorist events.

- The Chemistry and Microbiology Sections of the LSD participated in periodic testing for select agents through proficiency programs administered by the Laboratory Response Network of the CDC.

LSD Chemistry units participated in a combined EPA Region 7 & Region 8 exercise in which 100 mock urine specimens from the Missouri State Department of Public Health Laboratory were tested for the presence of arsenic. Additionally, more than 50 specimens originally sent to the Wyoming Department of Public Health were forwarded to the LSD for arsenic testing.

Emergency Response

The effectiveness of all of the staff training and exercises was proven when the LSD responded to several naturally-occurring outbreaks and threat letters encountered during the past year:

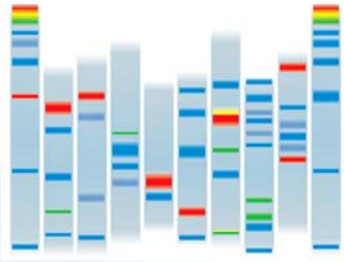
- The LSD Laboratory successfully identified human cases of melioidosis, tularemia and brucellosis, enabling prompt treatment by health care professionals. Additionally, plague and tularemia were identified in domestic pets and wildlife, leading to efforts in those areas to minimize the threats of exposure and disease in humans.

- The FBI submitted several threat letters containing unidentified powders. 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 LSD staff to report to the laboratory after hours to complete the analyses. During one response, a bag of 40 letters was submitted by the FBI from the United States Postal Service. Post Office staff had detected powder on these letters. Once the presence of select agents had been ruled out, the non-threat letters were cleared for delivery.

- In 2012 the United States Secret Service contacted the LSD directly to notify the staff that the laboratory facility was the designated site to submit any powders or suspicious substances during any of President Obama's and Governor Romney's visits to Colorado. Unlike the 2008 Democratic National Convention laboratory preparedness, the Secret Service was particularly concerned with persons "dusting" or dispersing sparkling substances on the candidates, potentially containing hazardous chemicals or biological substances. The LSD has instruments which can rapidly detect such substances.

- On several occasions the Biowatch Program identified several Biological Actionable Results (BARs) 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 the material was low level and naturally occurring, not the result of a terrorist attack.

- The LSD became one of the first state Laboratory Response Network laboratories in the country to be able to transmit test results directly to the CDC using LITS+, the laboratory's information system. The capability was tested and completed ahead of schedule. Test results now can be sent to the CDC much more quickly during an outbreak or other emergency response.



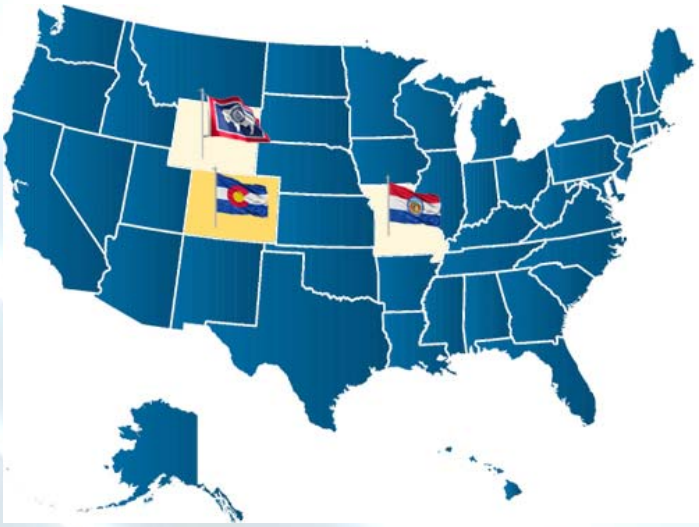
Outreach

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

- The LSD hosted a public open house during National Laboratory Week. Laboratory senior staff gave presentations describing the laboratory services performed in each of their units. A question and answer session and reception followed, along with a tour of the LSD facilities.

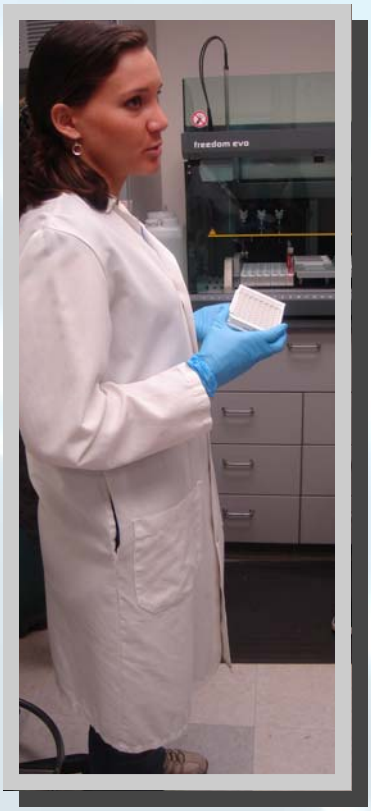
- The laboratory assisted the Missouri Department of Public Health Laboratory, providing consultation to improve participation by its clinical laboratories in their state training programs.

- The LSD served as a reference LRN laboratory for the State of Wyoming for one week while the Wyoming laboratory was moved to new facilities.



- LSD staff served as observers of a combined 8th Civil Support Team (CST) of the Colorado National Guard and FBI mock exercise conducted at Dick's Sporting Goods Stadium. The exercise was designed to realistically replicate a bioterrorist attack at the stadium. The exercise included sampling for agents, treatment of exposed sampling staff and rapid collection and testing of hidden bacterial and chemical agents.

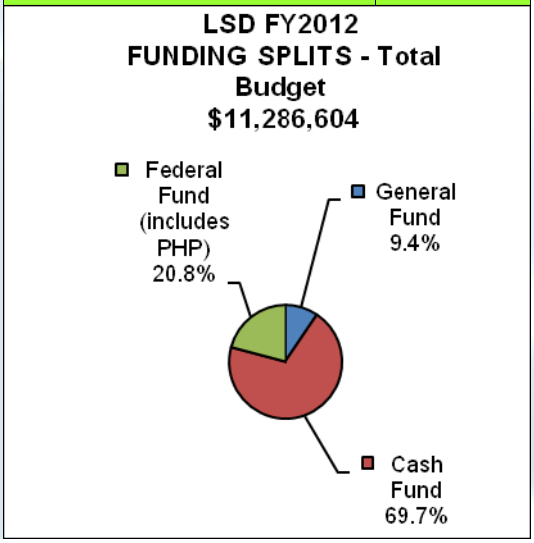
- Tours of the laboratory facilities are provided annually to more than 150 visitors from high schools, colleges and medical schools, as well as state and federal organizations. Dakota Ridge High School's anatomy class brought the largest group this year with 54 students and teachers. The tour provided participants an up close and personal look at the facilities and allowed visitors to ask questions of the lab staff.



- Outreach is important to the LSD to identify and maintain working partnerships with local, state, federal and private organizations, as well as providing the public insights of the laboratories and the role they play in supporting public health in Colorado. Tours provide an opportunity for students to view the workings inside the laboratories and perhaps inspire some to pursue a career in public health laboratory science.

FINANCIALS

Cash Revenues by Program Fiscal Year 2011-2012	
Certification	$ 86,502
Public Health Micro (includes Serology and Molecular)	$ 500,599
Zoonosis (rabies/plague)	$ 1,049
Toxicology	$1,065,395
Chemistry	$ 485,797
EBAT	$ 11,500
Env Micro	$ 128,752
NBS	$4,524,169
Total Fee Revenues	**$6,803,763**
Other Cash Revenues by Source	
LEAF	$ 877,884
WQCD	$ 408,932
APCD (Odor School)	$7,307
Training	$419
HUTF - EBAT Replacement Project	$1,200,000
Total Other Cash	$2,494,542
Total Cash Revenues	**$9,298,305**



Grants Received Fiscal Year 2011-12
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) - Hepatitis C Serosurveillance Testing
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 Dept. of Public Safety - Edward Byrne Memorial Justice Assistance Grant Program (JAG)
Colorado Dept. of Transportation (CDOT) FY2012 Office of Traffic Safety Grant
Colorado Division of Criminal Justice (DOJ) - Paul Coverdell National Forensic Sciences Improvement

Expenditures—Fiscal Year 2011-12	
Total Indirect Paid	$1,423,520
Total Personal Services	$6,287,050
Total Operating	$5,409,189
Total Expenditures	**$13,119,759**

WORKLOAD REPORT- Serology

SEROLOGY LABORATORY

Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 11	FY 12
ELISA Serology		
Measles IgM	6	3
Positive	0	0
Mumps IgM	0	0
Positive	0	0
West Nile Virus	12	2
Positive	3	1
Hantavirus		
Human IgG	58	27
Reactive	2	0
Human IgM	58	27
Reactive	5	2
Total ELISA Analyses	**134**	**59**
Total ELISA Positives	**10**	**3**
Febrile Serology		
Brucella	3	1
Positive	3	1
Tularemia	6	7
Positive	0	0
Total Febrile Analyses	**9**	**8**
Total Febrile Positives	**3**	**1**
Hepatitis Serology		
Hepatitis A	1	2
Reactive	0	0
Hepatitis B Surface Antigen (HBsAG)		
Refugee sera	N/A	N/A
Reactive[1]	N/A	N/A
Non-refugee sera	15	13
Reactive	0	1
Anti-Hepatitis B Surface Antibody (Anti-HBs)		
Refugee sera	N/A	N/A
Reactive[1]	N/A	N/A
Non-refugee sera	10	9
Reactive	5	4

WORKLOAD REPORT- Serology

SEROLOGY LABORATORY
Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 11	FY 12
Hepatitis B Surface Antigen (HBsAG), Neutralization		
Refugee sera	N/A	N/A
Reactive[1]	N/A	N/A
Non-refugee sera	0	1
Reactive	0	1
Hepatitis C	305	323
Reactive	58	50
Total Hepatitis Analyses	**331**	**348**
Total Hepatitis Reactives	**63**	**56**
Human Immunodeficiency Virus		
HIV-1 RNA, TMA (pooled)[2]	N/A	N/A
HIV-1 RNA, TMA (non-pooled)	N/A	N/A
Reactive	N/A	N/A
Avioq, HIV 1	N/A	178
Total Reactive	N/A	28
HIV-1, 2 plus O EIA	1,464	1,183
Total Reactive	76	92
Serum	N/A	N/A
Oral Fluid	N/A	N/A
HIV-1/2 Multispot	18	11
Reactive	0	0
HIV-2	N/A	N/A
HIV reactive	N/A	N/A
Western Blot	218	272
Total WB positive	159	229
Total HIV Analyses	**1,700**	**1,466**
Total HIV Reactive	**235**	**321**
IFA Serology		
Rocky Mountain Spotted Fever[3]	0	0
Positive	0	0
Legionella pneumophilia	0	0
Positive	0	0
Coxiella burnetti (Q Fever)		
Phase I	0	0
Phase I Positive	0	0
Phase II	0	0
Phase II Positive	0	0
Total IFA Serology Analyses	**0**	**0**
Total IFA Serology Positives	**0**	**0**

** Transferred to CDC sendouts in FY07

WORKLOAD REPORT - Serology

SEROLOGY LABORATORY

Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 11	FY 12
Plague - Animal		
Total Plague specimens	20	21
Testing Positive	3	3
Plague - Human		
Total Plague specimens	0	0
Testing Positive	0	0
Rabies		
Specimens Examined	930	1120
Specimens with bite exposure	320	344
Specimens testing positive	89	113
Rubella Serology		
Premarital Specimens Total	0	0
Specimens with titer <1:10	0	0
Miscellaneous	1	
Positive	0	0
Specimens Sent to the Centers for Disease Control[4]		
Specimens Submitted	0	0
Syphilis Serology		
Routine RPR	3,750	3,747
Reactive	300	283
VDRL (Spinal Fluid)	159	136
Reactive	0	0
VDRL (non-Spinal Fluid)	0	0
Reactive	0	0
FTA	16	26
Reactive	3	6
Syphilis TPPA	996	906
Reactive	409	415
Titer	0	1
Reactive	0	0
Total Syphilis Analyses	**4,921**	**4,816**
Total Syphilis Reactive	**303**	**290**

[1] Included with reactives for non-refugee sera through FY2008. Laboratory ceased Refugee testing June 30, 2010.

[2] RNA,TMA pooled testing study implemented in FY 2008 and completed in FY2010.

[3] The Virology and Public Health Microbiology laboratories do not perform testing but submit specimens of sera and cultures to the Centers for Disease Control for the investigation of viral, bacterial and mycological agents.

[4] 2011 and 2012 data included in the Public Health Microbiology data.

TOTAL TESTS	16,647	7,838
TOTAL ABNORMALS	830	466

WORKLOAD REPORT - Public Health Microbiology

PUBLIC HEALTH MICROBIOLOGY LABORATORY

Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 11	FY 12
Campylobacter Cultures[1]	N/A	N/A
Isolates:[1]	N/A	N/A
Campylobacter Confirmations[1]	N/A	N/A
Isolates:[1]	N/A	N/A
Chlamydia Specimens		
Chlamydia and Gonorrhea Tested by Aptima	21,267	19,941
Positives	1,636	1,569
GC (Gonorrhea) Positive	N/A	N/A
CT (Chlamydia) Positive	N/A	N/A
CT & GC Positive	N/A	N/A
Trichomonas Vaginalis Cultures/Identification	216	0
Positives	26	0
Enteric Culture Specimens	1,815	1,333
Isolates:		
Salmonella Positive	611	564
STEC Positives:		
Shigella	89	63
E. coli 0157	270	212
Campylobacter Positive[1]	93	82
Fungus	0	1
Positives	0	0
Neisseria Specimens	30	17
Isolates:		
N. gonorrhoeae	0	5
N. meningitidis	18	11
Ova and Parasite Testing		
Specimens Examined	46	31
Positives	10	8
Reference Bacteriology		
Miscellaneous Cultures	350	365
Y. pestis (Plague)	18	19
Y. pestis (other)	12	1
V. cholerae (Vibrio)	18	15
Franciscella tularensis (Tularemia)	43	5
B. anthracis (Anthrax)	25	26

WORKLOAD REPORT - Public Health Microbiology

PUBLIC HEALTH MICROBIOLOGY LABORATORY

Laura Gillim-Ross, PhD, Supervising Microbiologist

	FY 11	FY 12
Total Reference Identifications	29	58
Positives	103	107
Specimens Sent to the Centers for Disease Control [2]		
Specimens Submitted	380	183
Positives	100	N/A
Streptococcus Culture		
Specimens (Group A, Group B, Strep pneumoniae)	773	692
Positives	0	1
Tuberculosis Specimens	1,267	900
Isolates:		
M. tuberculosis Complex	38	0
Avium Complex	5	0
Smear Positive	61	36
Culture Positive	73	29
TOTAL TESTS	31,686	23,156
TOTAL ABNORMALS	4,303	2,687

[1]Cambylobacter testing included in enteric counts as it is part of the enteric panel effective with FY2010 data.

[2]The Virology and Public Health Microbiology laboratories submit specimens of sera and cultures to the Centers for Disease Control for the investigation of viral, bacterial and mycological agents. Data collected in the new tracking system (LITS Plus) does not include the number of abnormal results and, therefore, this data is not available after FY2009.

WORKLOAD REPORT - Molecular Science

MOLECULAR SCIENCE LABORATORY
Hugh Maguire, PhD, Supervising Microbiologist

	FY11	FY 12
*Molecular Typing***		
Pulsed Field Gel Electrophoresis		
Bacillus	24	0
Campylobacter	11	0
E. coli O157	59	57
other E. coli STEC	169	115
Enterococcus	11	91
Listeria monocytogenes	10	72
Methicillin-resistant Staphylococcus aureus	163	58
Neisseria meningitidis	7	1
Salmonella	588	534
Serratia marscecens	16	0
Shigella sonnei	50	29
Shigella flexneri	33	15
Shigella boydii	2	4
Streptococcus (Group B)	2	0
Other	21	28
Total Molecular Typing	1,166	1,004
Polymerase Chain Reaction		
Anthrax	0	0
Positive	0	0
Brucella spp.	22	13
Positive	2	0
Burholderia spp.	0	3
Positive	0	1
Coxiella Burnetti	1	2
Positive	0	0
E.coli Virulence Marker - stx 1	588	303
Positive	236	170
E.coli Virulence Marker - stx 2	588	303
Positive	97	96
Francisella tularensis (human testing)	8	6
Positive	2	2
H_1N_1 Influenza A	1,297	723
Positive	226	35
Influenza A	1,297	732
Positive	739	593
Influenza B	1,297	732
Positive	127	2
Influenza Subtyping	739	557
Positive	737	0
MLVA[3]	141	172
Positive	0	0
Mumps	0	0
Positive	0	0
Norovirus	598	594
Positive	112	164

WORKLOAD REPORT - Molecular Science

MOLECULAR SCIENCE LABORATORY
Hugh Maguire, PhD, Supervising Microbiologist

	FY11	FY 12
Orthopox	0	0
Positive	0	0
Pertussis	611	463
Positive	4	12
Plague - zoonosis	73	58
Positive	8	3
Plague - human testing	7	3
Positive	0	0
Ricin	0	0
Positive	0	0
RSV	1	0
Positive	0	0
Shigella	0	
Positive	0	
St Louis Encephalitis	100	100
Positive	0	0
Tularemia	69	58
Positive	4	0
Varicella-Zoster Virus	0	0
Positive	0	0
Variola	0	0
Positive	0	0
West Nile, RT-PCR		
Bird/Mosquito Specimens	1,258	1,588
Positive	19	61
Human	0	0
Positive	0	0
Western Equine Encephalitis	100	100
Positive	0	0
Total Polymerase Chain Reaction	8,795	6,510
Total Polymerase Chain Reaction Positives	2,313	1,139
DNA Sequencing[1]	11	15
CalciNet (CDC -Norovirus database)	88	15
TOTAL TESTS	16,203	7,529
TOTAL ABNORMALS	4,015	1,139

[1]DNA Sequencing added in FY2008.

[2]Influenza testing methodology changed to polymerase chain reaction (PCR) beginning in FY2005 with full

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

WORKLOAD REPORT - Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
INORGANIC CHEMISTRY:		
Sample Submitter[1]		
Hazardous Materials	N/A	N/A
Water Quality Control Division - River/Streams	N/A	N/A
Water Quality Control Division - Tech Svcs	N/A	N/A
Water Quality Control Division - CORADS	N/A	N/A
Cash - Municipal	N/A	N/A
Cash - Private	N/A	N/A
Dental Health	N/A	N/A
Consumer Protection	N/A	N/A
Air Pollution	N/A	N/A
Colorado Geological Survey	N/A	N/A
Human Biomonitoring	N/A	N/A
Other Tests	N/A	N/A
Quality Control Audits	N/A	N/A
Total Analyses	N/A	N/A
# of Specimens	N/A	N/A
ORGANIC CHEMISTRY:		
Sample Submitter[1]		
Hazardous Waste	N/A	N/A
Water Quality Control Division - River/Streams	N/A	N/A
Water Quality Control Division - Tech Svcs	N/A	N/A
Cash - Municipal	N/A	N/A
Cash - Private	N/A	N/A
Dental Health	N/A	N/A
Consumer Protection	N/A	N/A
Air Pollution	N/A	N/A
Other Tests	N/A	N/A
Quality Control Audits	N/A	N/A
Total Analyses	N/A	N/A
# of Specimens	N/A	N/A
RADIOCHEMISTRY:		
Radiochemistry Sample Submitter[1]		
Cash Funded	N/A	N/A
Rocky Flats Program	N/A	N/A
Hazardous Materials (non-Rocky Flats)	N/A	N/A
Water Quality Control Division	N/A	N/A
Other Agencies	N/A	N/A
Quality Control Audits	N/A	N/A

1 Due to changes in the Laboratory Information Tracking System, data is no longer available by customer type. Data will be reported by test type effective beginning with FY2010.

WORKLOAD REPORT - Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
Total Analyses	N/A	N/A
Radiation Counting Facility Analyses[1]		
C-14	N/A	N/A
Gamma Spectroscopy	N/A	N/A
Gross Alpha/Beta water	N/A	N/A
Gross Alpha/Beta contamination survey	N/A	N/A
Ni-63 Contamination surveys	N/A	N/A
Radon 222	N/A	N/A
Radium 226	N/A	N/A
Radium 228	N/A	N/A
Americium 241	N/A	N/A
Plutonium-238/239	N/A	N/A
Isotopic thorium	N/A	N/A
Isotopic uranium	N/A	N/A
Total uranium	N/A	N/A
Whole Body Counts	N/A	N/A
Quality Control Audits	N/A	N/A
Total Analyses	N/A	N/A
Total Number of Analyses[1]	N/A	N/A
QA/QC*	N/A	N/A
Total Analyses*	N/A	N/A
Total Samples Submitted	N/A	N/A
INORGANIC CHEMISTRY:		
Acid Based Accounting	N/A	11
Alkalinity, Phenolphthalein	438	394
Alkalinity	1,512	1,597
Aluminum	527	1,610
Antimony	198	53
Arsenic	1,193	2,845
Arsenic III	149	0
Arsenic V	149	0
Barium	390	462
Barium - XRF	0	0
Beryllium	339	358
Bicarbonate	0	9
BOD	272	176
BOD, Carbonaceous	23	33
Boron	8	3
Bromate	99	131
Bromide	34	21
Cadmium	1,944	2,359

WORKLOAD REPORT - Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
Cadmium - XRF	0	0
Calcium	832	1,543
Carbaryl	11	0
Carbonate	9	14
Chlorate	3	1
Chloride	420	750
Chlorine	24	32
Chlorite	20	15
Chlorophyll - a	33	34
Chromium	433	1,739
Chromium, Hexavalent	22	22
Cobalt	9	13
COD	7	4
Color @ 436	3	0
Conductivity	167	171
Copper	2,443	2,938
Corrosivity	0	157
DOC	113	0
Equilibrium pH	51	50
Fluoride	1,369	1,520
FTIR Scan	2	4
Hardness	1,689	2,011
Iron	3,432	3,564
Lead	2,483	3,072
Lithium	4	1
Magnesium	671	1,547
Manganese	1,920	2,188
Manganese - XRF	0	1
Mercury	421	875
Molybdenum	168	1,057
Nickel	380	1,653
Nitrogen	2,778	3,297
Nitrogen, Nitrate	2,689	626
Nitrogen, Nitrate/Nitrite	2,031	2,373
Nitrogen, Nitrite	212	275
pH	425	445
Phenol	6	6
Phosphorus, Ortho-Phosphate	8	18
Phosphorus, Phosphate	1,364	1,571
Potassium	167	341
Selenium	2,024	2,676
Silica	0	2
Silicon, Total	44	41
Silver	1,602	2,047

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WORKLOAD REPORT - Inorganic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
Sodium	725	1,987
Soil Preparation	0	34
Solids, Dissolved	340	440
Solids, Settleable	17	14
Solids, Suspended	524	378
Solids, Total	40	20
Solids, Volatile	1	1
Special Procedure	0	12
Specific Gravity	0	1
Strontium	6	5
Sulfate	1,581	1,894
Sulfate, Dissolved	6	53
Sulfide	4	6
Sulfite	2	3
Sulfur	86	99
Tannin and Lignin	1	1
Thallium	47	55
Thorium	5	0
Tin, Total	9	4
Titanium	4	1
Total Solids	8	4
Tungsten	0	0
Turbidity	50	442
Uranium	734	2,227
Uranium, Total Recoverable	0	46
Vanadium, Total	9	10
Water Activity	15	10
Zinc, Dissolved	1,871	2,167
Zirconium - XRF	0	1
Filter Weighing Program:		
Lead Analysis	202	220
High Voume Filters	N/A	6,672
Low Volume Filters	N/A	3,744
Metals Analysis - Filters	N/A	1,244
P10_Gross Weight	8,388	N/A
P10_Tare Inspection	210	N/A
PM2.5	3,938	N/A
Total Number of Inorganic Analyses [1]	*56,587*	*70,551*
*QA/QC**	*877*	*1,173*
*Total Analyses**	*57,464*	*71,724*
ORGANIC CHEMISTRY:		
1,1,1-Trichloroethane	96	74

WORKLOAD REPORT - Organic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
1,1,2-Trichloroethane	96	74
1,1-Dichloroethylene	97	74
1,2,4-Trichlorobenzene	96	75
1,2-Dichloroethane	96	74
1,2-Dichloropropane	96	74
2,4,5-TP	0	0
2,4,5-TP (Silvex)	49	36
2,4-D	49	37
Alachlor (Lasso)	50	34
Aldicarb	42	32
Aldicarb Sulfone	42	32
Aldicarb Sulfoxide	42	32
Atrazine	67	42
Benzene	99	86
Benzo(a)pyrene	50	34
BHC Gamma (Lindane)	50	34
Bifenthrin	11	0
Bromodichloromethane	108	198
Bromoform	108	198
Carbaryl	11	0
Carbofuran	42	32
Carbon Tetrachloride	96	75
Chlordane	42	33
Chloroform	108	198
cis-1,2-Dichloroethylene	97	74
Cyanide, Direct	12	4
Cyanide, Distilled	190	14
Cyanide, WAD	0	9
Cyanobacteria	0	105
Dalapon	52	36
Di(2-ethylhexyl)adipate	50	34
Di(2-ethylhexyl)phthalate	60	40
Dibromoacetic acid	92	104
Dibromochloromethane	117	198
Dibromochloropropane	42	32
Dichloroacetic acid	92	104
Dichloromethane	94	70
Dinoseb	53	36
Diquat	43	35
Dissolved Oxygen*	0	1
Endothall	43	32
Endrin	50	34
Ethylbenzene	100	86
Ethylene dibromide	42	32

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WORKLOAD REPORT - Organic Chemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
Glyphosate	43	32
Heptachlor	50	34
Heptachlor epoxide	50	34
Hexachlorobenzene	50	34
Hexachlorocyclopentadiene	50	34
Hydroxide	0	1
Methoxychlor	50	34
Methyl Methacrylate	38	21
Monobromoacetic acid	184	104
Monochloroacetic acid	0	104
Monochlorobenzene	96	74
Oil & Grease	33	31
ortho-Dichlorobenzene	96	75
Oxamyl	42	32
para-Dichlorobenzene	96	74
Pentachlorophenol	50	35
Permethrin	11	0
Picloram	52	36
Piperonyl Butoxide	11	0
Poisons (Screen)	1	1
Polychlorinated biphenyls	44	34
Simazine	50	36
Styrene	96	75
SVOC (Screen)	10	6
Tetrachloroethylene	97	79
TOC	182	41
Toluene	99	86
Toxaphene	42	33
trans-1,2-Dichloroethylene	97	74
Trichloroacetic acid	92	104
Trichloroethylene	97	75
UV@254	0	2
Vinyl Chloride	97	74
VOC (Screen)	74	73
VOCs	1	0
Xylenes (total)	100	86
Total Number of Organic Analyses [1]	*5,053*	*4,326*
*QA/QC**	*1,011*	*865*
*Total Analyses**	*6,064*	*5,191*

WORKLOAD REPORT - Radiochemistry

INORGANIC/ORGANIC/RADIOCHEMISTRY LABORATORY
Laurie Peterson-Wright, Supervisor

	FY 11	FY 12
RADIOCHEMISTRY:		
Americium-241	17	13
Barium-133	0	0
Beryllium-7	24	7
Carbon-14	1	0
Cesium-134	43	20
Cesium-137	48	20
Cobalt-57	10	7
Cobalt-60	25	35
Gross Alpha	141	228
Gross Beta	172	261
Iodine-131	21	0
Lead-210	2	0
Lead-212	0	0
Lead-214	0	0
Manganese-54	8	4
Nickel-63	16	14
Plutonium-238	16	21
Plutonium-239+240	18	26
Potassium-40	17	14
Radium-226	113	189
Radium-228	79	179
Radon-222	208	78
Strontium 90	9	13
Tritium	11	16
Uranium-234	35	29
Uranium-235	30	25
Uranium-238	39	29
Yttria-88	0	1
Zinc-65	7	4
Whole Body Counts	14	13
Total Number of Radiochemistry Analyses [1]	*1,124*	*1,246*
*QA/QC**	*359*	*553*
*Total Analyses**	*1,483*	*1,799*

1 Due to changes in the Laboratory Information Tracking System, data is no longer available by customer type. Data will be reported by test type effective beginning with FY2010.

WORKLOAD REPORT - Toxicology

TOXICOLOGY LABORATORY

Cynthia Burbach, Supervising Toxicologist

	FY 11	FY 12
Analytical Services		
Blood Alcohol	8,814	7,734
Methamphetamine Wipes	0	0
Toxic Vapors	57	42
Blood Drug Analyses*	20,937	10,771
Confirmations	3,884	2,530
Urine Analyses	4,491	5,193
Confirmations	1,525	360
Analyses Referred to Private Labs	5	40
Total Specimens Received	10,630	10,612
Total Analyses (includes confirmations)	39,708	26,630
QA/QC	14	73
QA/QC Performed for EBAT Program	63	87
Total Analyses	39,785	26,790
Other		
Court Appearances	211	212
Litigation Packages	583	1,029
TOTAL TESTS	39,785	26,790

WORKLOAD REPORT - EBAT and Certification

EVIDENTIAL BREATH ALCOHOL TESTING
Jeff Groff, Supervisor

	FY 11	FY 12
Alcohol Test Program (LEAF)		
Alcohol standard solutions	2,560	2,160
Breath test operator/instructor certification	1,378	1,632
Certfication of EBAT Instructors	*271*	*291*
Certification of EBAT Operators	*1,107*	*1,355*
Instrument Certification	408	395
Facility on-site inspections	165	163
Number of facilities cited for deficiencies	66	44
Proficiency Testing/QA	N/A	N/A
Certified record requests and subpoenas processed	897	818
Alcohol Class Kits Prepared	180	161
Technical and Court Assistance/Expert Testimony	809	737
Subpoenas Processed	*162*	*142*
Legal Testimony (Court Appearances/Affidavits/Opinions)	*22*	*15*
Stakeholder Contacts (Technical/Regulatory Assistance)	*625*	*580*

LABORATORY IMPROVEMENT PROGRAM
Jeff Groff, Supervisor

	FY 11	FY 12
Laboratory Certifications		
CLIA Laboratory Certifications	204	240
Number of laboratories cited for deficiencies	*137*	*101*
NCIMS Certifications	11	20
Drug Residue Certifications (LEAF)	9	8
MQSA Inspections	N/A	N/A
Safe Drinking Water (SDW) Act		
Radiochemistry Certifications	1	2
Microbiology Certifications	30	34
Chemistry Certifications	19	21
Number of SDW laboratories cited for deficiencies	*55*	*69*
Desk Survey Reviews *(in-state)*	51	52
Desk Survey Reviews *(out-of-state)*	31	34
TOTAL SURVEYS	**356**	**411**

WORKLOAD REPORT - Environmental Microbiology

ENVIRONMENTAL MICROBIOLOGY LABORATORY

Hugh Maguire, Supervisor

	FY 11	FY 12
Water Analyses		
Drinking Water Specimens		
Private Specimens	2,366	2,244
Municipal Specimens	3,548	3,365
Miscellaneous Tests in Drinking Water	6	40
(Confirmation, Fecal, Strep, Coliform)		
Waste Water		
Sewage Effluents Analyses[1]	N/A	N/A
Stream Pollution Study Specimens	233	N/A
Environmental Pollution Specimens	N/A	309
Miscellaneous Analyses	6	44
(Confirmation, Fecal, Strep, Coliform, Legionella)		
Total	9,707	9,058
QA/QC	104	144
Total Water Analyses[2]	**9,811**	**9,202**
Food Analyses[3]		
Food Samples	1,542	1,504
Total Food Analyses	4,100	3,942
QA/QC	175	202
Total Food Analyses	**4,275**	**4,144**
Milk Analyses[4]		
Finished Milk	1,462	1,829
Raw Milk	263	296
Coliform (Plate count for total coliform bacteria)	1,600	1,829
DMSCC (Direct Microscopic Cell Count)	222	35
Freezing Point (test for added water)	225	221
Inhibitors (test for antibiotics in milk)	1,302	1,431
Phosphatase (test for complete pasteurization)	1,360	1,539
Standard Plate Count (total bacterial content of milk)	1,551	1,695
%Fat	1,357	0
Total Milk Analyses	7,617	6,750
QC	540	540
Total Milk Analyses	**8,157**	**7,290**
TOTAL TESTS	17,383	20,636
TOTAL ABNORMALS		

[1]Sewage Effluents Analyses rolled into Stream Pollution Study Specimens in 2010. Test Group renamed Environmental Pollution Specimens in FY2012 to better reflect purpose of work.

[2]Adjusted totals to reflect total number of analyses rather than number of specimens as there are two analyses performed (Escherichia coli PA and Total coliforms PA) on each drinking water specimen.

[3]Section received funding for additional food testing from the DEHS Division in FY2010 and from the FDA (FERN grant) resulting in an increased workload in food analyses.

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

WORKLOAD REPORT - Newborn Screening

COLORADO REGIONAL NEWBORN SCREENING LABORATORY
Daniel Wright, Supervisor

Submitter State	FY 11 Totals	FY 11 2nd Screens	FY 11 Total Analyses	FY 12 Totals	FY 12 Screens	FY 12 Total Analyses
Colorado						
Initial	65,780	60,693	2,332,471	64,443	59,491	2,285,284
Wyoming	6,611	5,814	232,417	6,539	5,707	229,580
Other States/Territories[1]	2,872	1,469	93,571	2,237	1,366	74,435
Total	75,263	67,976	2,658,459	73,219	66,564	2,589,299
QA/QC	4,400	4,000	8,400			0
Total Analyses	79,663	71,976	2,666,859	73,219	66,564	2,589,299

Total Abnormals	FY 11	FY 12
Congenital Adrenal Hyperplasia	213	229
Hemoglobin Abnormals	2457	2699
Phenylketonuria Abnormals	33	69
Biotinidase Deficiency Abnormals[2]	193	83
Hypothyroidism Abnormals	1005	1214
Cystic Fibrosis Abnormals	962	1041
Galactosemia Abnormals	9	2
MS/MS	628	667
SCID (Severe Combined Immunoassay Deficiency)	N/A	31
Total Abnormals	5,500	6,035

[1]Guam ceased sending specimens 2/29/12

[2]Correcting problems with certain lot of blotter paper and the addition of transporting specimens via courier using a cooler have significantly lowered false the false positive rate on this assay

TOTAL TESTS	2,658,459	2,589,299
TOTAL ABNORMALS	5,500	6,035

WORKLOAD REPORT - Environmental Microbiology

ENVIRONMENTAL MICROBIOLOGY LABORATORY

Hugh Maguire, Supervisor

	FY 11	FY 12
Water Analyses		
Drinking Water Specimens		
Private Specimens	2,366	2,244
Municipal Specimens	3,548	3,365
Miscellaneous Tests in Drinking Water	6	40
(Confirmation, Fecal, Strep, Coliform)		
Waste Water		
Sewage Effluents Analyses[1]	N/A	N/A
Stream Pollution Study Specimens	233	N/A
Environmental Pollution Specimens	N/A	309
Miscellaneous Analyses	6	44
(Confirmation, Fecal, Strep, Coliform, Legionella)		
Total	9,707	9,058
QA/QC	104	144
Total Water Analyses[2]	**9,811**	**9,202**
Food Analyses[3]		
Food Samples	1,542	1,504
Total Food Analyses	4,100	3,942
QA/QC	175	202
Total Food Analyses	**4,275**	**4,144**
Milk Analyses[4]		
Finished Milk	1,462	1,829
Raw Milk	263	296
Coliform (Plate count for total coliform bacteria)	1,600	1,829
DMSCC (Direct Microscopic Cell Count)	222	35
Freezing Point (test for added water)	225	221
Inhibitors (test for antibiotics in milk)	1,302	1,431
Phosphatase (test for complete pasteurization)	1,360	1,539
Standard Plate Count (total bacterial content of milk)	1,551	1,695
%Fat	1,357	0
Total Milk Analyses	7,617	6,750
QC	540	540
Total Milk Analyses	**8,157**	**7,290**
TOTAL TESTS	17,383	20,636
TOTAL ABNORMALS		

[1]Sewage Effluents Analyses rolled into Stream Pollution Study Specimens in 2010. Test Group renamed Environmental Pollution Specimens in FY2012 to better reflect purpose of work.

[2]Adjusted totals to reflect total number of analyses rather than number of specimens as there are two analyses performed (Escherichia coli PA and Total coliforms PA) on each drinking water specimen.

[3]Section received funding for additional food testing from the DEHS Division in FY2010 and from the FDA (FERN grant) resulting in an increased workload in food analyses.

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