A CONTINUUM OF CHANGE

STATE HYGIENIC LABORATORY
at the University of Iowa
Dear friends,

One of the first things I am asked to do as we begin preparation of the State Hygienic Laboratory’s annual report is to suggest a theme. This year I decided to get a head start on that assignment by looking back over the themes we have adopted over the last nine years since I’ve been director, and I found something remarkable. Each year has been characterized by some kind of change. We have seen focus on transition, on discovery, on momentum. Even last year’s theme of partnerships was intended to promote new collaborations and initiatives. So I decided this year’s theme will be the reality of a Continuum of Change. And given all that is occurring in science, policy and leadership, it seems a most appropriate topic.

Certainly public health is no stranger to change. I started my career in public health as HIV/AIDS was exploding in public consciousness. It was a time when a new understanding of the social dimensions of disease was made apparent. Over the intervening years we have experienced the unexpected episodes of terrorism, the all-too-frequent occurrences of natural disasters and the emergence of other resurgent or novel diseases. In response, we have also seen the upgrading of our public health facilities, the discovery of new technologies, and the development and implementation of new strategies to best address the changing reality. The role of science and of its laboratories has been critical to achievement. This annual report will capture some of those accomplishments and point to promising future developments.

As I write this, I am approaching my 32nd year in state public health practice. For someone who had no understanding of public health when I was an undergraduate, it has been a remarkable career. In the words of the iconic sportscaster Jim McKay, I have experienced “the thrill of victory” as we have discovered agents causing disease outbreaks, and “the agony of defeat” as we continue to see significant disparities in health outcomes.

Through it all I am empowered by advances in public health science and strategies. Now I look ahead to more change coming from genomics revealed through laboratory advances and envision the ability of precision medicine and public health to dramatically impact the rates of all diseases, chronic as well as infectious. There is promise in the Continuum of Change that hopefully continues to mark the advancement of public health as a societal imperative.

Christopher G. Atchison, Director
MISSION:
The State Hygienic Laboratory at the University of Iowa protects and improves quality of life by providing reliable environmental and public health information through the collective knowledge and capabilities of our organization.
The Iowa Code (263.7) defines the State Hygienic Laboratory responsibilities as making “microbiological and chemical examinations and other necessary investigations by both laboratory and field work in the determination of the causes of disease, shall suggest methods of overcoming and preventing the recurrence of the disease, and shall evaluate environmental effects and scientific needs… in the interest of environmental quality and public health and for the purpose of preventing epidemics of disease.”

The Office of the Director consists of 10 key functional units that enable the State Hygienic Laboratory to achieve its statutory charge set forth in the Iowa Administrative Code in four areas: scientific, consultative, applied research, and education and training.

“What public health is is a trust... between the government and the people.”

—AUTHOR AND JOURNALIST LAURIE GARRETT
The Office of Information and Technology supports a complex set of networks providing comprehensive IT services to the three Hygienic Laboratory locations. The office maintains around-the-clock laboratory operations, including testing in clinical care, environmental and emergency preparedness.

The Hygienic Laboratory is regulated by many national and state agencies, each with their own data security and confidentiality requirements. To be compliant with mandated rules and regulations from such agencies, IT operates a rigorous set of security protocols, including firewalls, encryption, controlled access and monitored surveillance systems.

**HIGHLIGHTS:**

- Integrated more closely the Hygienic Laboratory’s OpenELIS Information System with the University of Iowa Hospitals and Clinic’s Epic Electronic Health Record system.
- Expanded implementation of OpenELIS with its adoption by the Missouri State Public Health Laboratory, and with possible adoption by the South Carolina Department of Health and Environmental Control’s Bureau of Laboratories.

The Office of Human Resources collaborates with laboratory leadership to ensure an engaged, competent and diverse workforce through challenging work activities and belief in the organization’s mission.

Human Resources oversees development and administration of policies and programs for recruitment, compensation, training, support and retention. Human Resources works with staff through all phases of employment, from orientation through professional development and retirement.

**HIGHLIGHTS:**

- Recruited and educated new staff, and enhanced the reward and recognition program.
- Provided opportunities for college students and other potential employees across the state and country to develop careers in clinical laboratory science, environmental health, chemistry, biology, microbiology and other fields of study.
IOWA LABORATORY APPRAISAL PROGRAM (CLIA)

Under the federal Clinical Laboratory Improvement Amendments (CLIA) of 1988, any laboratory or facility performing laboratory testing of human specimens to provide information for the diagnosis, prevention or treatment of disease, or the assessment of health, is required to obtain a CLIA certificate and to meet certain requirements.

For more than 45 years, the Hygienic Laboratory, under contract with the Iowa Department of Inspections and Appeals, has provided personnel to conduct laboratory surveys. Since 2002, the Hygienic Lab also has been responsible for administrative oversight of the CLIA laboratory program and state agency representative for the Center for Medicare and Medicaid Services CLIA program.

HIGHLIGHTS:

- CLIA laboratory surveyors traveled more than 27,910 miles throughout Iowa to conduct certification surveys of more than 200 clinical laboratories.

- Exceeded performance threshold goals set by the Centers for Medicare & Medicaid Services (CMS) for the State Agency Performance Review.

“Public health laboratories, together with hospitals and local health departments, are quite literally the ‘front lines’ of America’s surveillance of and response to biological, chemical, or radiological attacks.”

—TRUST FOR AMERICA’S HEALTH/THE ROBERT WOOD JOHNSON FOUNDATION
EMERGENCY PREPAREDNESS AND RESPONSE

The Hygienic Laboratory responds to credible threat events involving unknown substances; public health and environmental emergencies, including potential biological or chemical threats; pandemic influenza; disease outbreaks such as Ebola; and environmental or natural disasters, including chemical spills and flooding.

Confirmatory, or rule-out, testing is performed on clinical isolates to identify potential agents of bioterrorism. Emergency preparedness and response at the State Hygienic Laboratory encompasses the Laboratory Response Network, the Food Emergency Response Network and the Radiological Emergency Response Team.

HIGHLIGHTS:

- Tested clinical isolates from sentinel laboratories throughout Iowa for substances of potential public health threat and responded to credible threat events.
- Hosted the CDC’s Rapid Methods workshop and the Bioterrorism Train-the-Trainer workshop for sentinel laboratories to design and conduct training.
PUBLIC POLICY

The Office of Public Policy strives to provide objective, timely information regarding issues concerning the advancement of the State Hygienic Laboratory’s mission. The goal of the office is to foster and maintain relationships with government agencies, elected officials and key stakeholders to promote shared understanding and advancement of public health in Iowa.

The office tracks legislation related to Iowa’s public health system; provides educational materials to Iowa policymakers through open forums and Hill Day events; and interfaces with state educational professionals, and environment and public health partners.

HIGHLIGHTS:
- Updated policymakers, state leaders and public health partners about the impact of work by Iowa’s public health laboratory during several Hill Day events at the state capitol.
- Led and supported initiatives aimed at developing new and existing policy.

STRATEGIC COMMUNICATIONS

The Office of Strategic Communications serves as the lead communications section for the agency and develops the focus and themes for external messaging. It tells the State Hygienic Laboratory story through collateral material design, website management, original articles and social media.

Strategic Communications works with state and national media, educators and public health partners to share the news of Iowa’s state public health laboratory. It provides crisis communications during environmental and public health emergencies by managing clear and open communication.

HIGHLIGHTS:
- Worked with local, state and national media to highlight the work of the State Hygienic Laboratory on more than 25 public health topics.
- Established an ongoing analytics review to measure interaction with website.
RESEARCH AND DEVELOPMENT

Research and Development oversees internal and external efforts to advance laboratory capabilities by engaging in applied research. The office evaluates emerging methodologies and activities, including test methods, instrumentation and the overall science platform of the laboratory. Externally, the office advises and assists in the development of research agreements with external partners.

Laboratory staff collaborate with state and federal public health partners such as CDC, FDA and USDA to provide laboratory services in support of their programs to improve public health. These scientists collaborate with researchers and students at the University of Iowa. They also team with other universities and private industry on a variety of topics, including infectious diseases, environmental health, occupational health, newborn screening and neonatal health.

HIGHLIGHTS:

- Participated in a CDC initiative for Advanced Molecular Detection, which is designed to apply the latest molecular methodology to better protect the public from disease threats.
- Partnered with FDA and Iowa Department of Inspection and Appeals for an Illumina MiSeq Next Generation Sequencing instrument and officially joined FDA's GenomeTrakr program used to link bacterial strains from food, clinical and environmental samples to determine the source of contamination.
Genomics is the analysis of the sequence, structure and function of the genome, and it is seen as a significant improvement in personalized health. Its purpose is to explore the implications, challenges and opportunities associated with the use of genomic information, focusing on the newborn period.

This office works closely with the Newborn Screening section, which identifies infants at risk for more than 50 inherited diseases by testing a small blood spot obtained from a simple heel-stick shortly after birth. Similarly, it works with the Maternal Screening program to identify babies at increased risk of developmental delays with the intent of improving delivery and outcomes.

**HIGHLIGHTS:**

- Measured and assessed timeliness in newborn screening to improve the opportunity for clinical interventions.
- Continued to analyze and assess child health and subsequent educational achievement in school, and identified mechanisms leading to early labor and/or delivery as well as complications that commonly occur in preterm infants.

“Science makes the breakthroughs. Public Health operationalizes them and leaps ahead.”

—WHO DIRECTOR-GENERAL DR. MARGARET CHEN
EDUCATION AND TRAINING:
Provide education and training to promote the scientific basis for health and environmental quality, which is tied to all external goals and objectives. [Derived from Iowa Administrative Code 681(263)-Chapter 5.1(3)]

EDUCATION, TRAINING AND PROFESSIONAL DEVELOPMENT

The Hygienic Laboratory provides training for laboratorians, first responders, sanitarians and others. Educational topics include emergency preparedness, regulations, food safety, infectious diseases and newborn screening, among others.

The office oversees science, technology, engineering and math (STEM) projects, internships, fellowships, externships for teachers and the Student Mentorship program.

HIGHLIGHTS:
- Presented training and education events for nearly 18,000 people from across the nation, including more than 15,000 from Iowa.
- Hosted 25 STEM events with 1,447 participants and participated in an additional seven STEM events throughout the state with more than 6,000 participants. Originated and continued to support the iExploreSTEM festival held in 29 locations throughout Iowa with 16,350 student participants.

CENTER FOR THE ADVANCEMENT OF LABORATORY SCIENCE (CALS)

CALS is a new opportunity in public health educational opportunities. It is unlike any other space in the state and nation, demonstrating the leadership of the State Hygienic Laboratory in public health education and training.

CALS consists of a classroom and fully functional laboratory for hands-on learning, and an adjoining large conference room. The center is a public venue intended for use by environmental and public health professionals, education groups, and community businesses and organizations.

HIGHLIGHTS:
- In its second year of operation, CALS hosted more than 7,500 people who attended 410 events, from programs for students, teachers and laboratory staff across the state to CDC-sponsored events and HazMat training.
- Held 14 professional development/training events for approximately 3,700 public health professionals and 25 Real-World Student Engagement Career Awareness events for 1,447 students.
The Office of Organizational Development oversees strategic planning, organizational change, quality systems, operations effectiveness, performance measurement and systems design. Areas of focus include workforce performance, customer engagement, financial sustainability, improvement and innovation, and growth of knowledge and expertise.

As part of the office, improvement events focusing on operations are held to increase the efficiency and effectiveness of operations and services. These include applying improvement concepts to redesign processes; collecting and analyzing data; and training, education and leadership.

**HIGHLIGHTS:**
- In cooperation with FDA and APHL, created more than six modules for ISO/IEC 17025 quality management system training used by laboratory staff to test food and feed samples through the Food Safety Modernization Act.
- Developed and applied a new strategic plan model that aligns organizational goals with Iowa Administrative Rules. Applied a new business model for strategic growth and communities of practice that incorporates a matrix for decision-making, deep dive, management control, implementation and evaluation.

“Public health is trained in compassion and driven by passion.”

—WHO DIRECTOR-GENERAL DR. MARGARET CHAN
The Division of Administration and Finance is responsible for the management of the business practices (Financial Management, Grants and Contracts, Outreach, and Safety and Security), all Hygienic Laboratory facilities (including the Center for the Advancement of Laboratory Sciences), and the pre- and post-analytic processes related to laboratory testing (Central Services, Client Services, and Central Accessioning and Receiving).

Business management for the laboratory is centralized in the Coralville laboratory. Staff who oversee the pre- and post-analytical processes are located in the Coralville, Ankeny and Milford laboratories.

- Moved billing for environmental and disease testing to a new accounting system that replaced a legacy in-house system.
- Processed 34,753 pieces of mail and 9,037 UPS shipments to fulfill clinical and environmental order requests.
- Completed the 143-page update and distribution of Iowa DNR Guidebook 2016.
- Implemented an online evaluation of the newly designed environmental and clinical final report as a member of the OpenELIS (Enterprise Laboratory Information System) Final Report Redesign Subcommittee.
- Developed an in-house customer service training program.
Central Services processed 2,577 clinical order requests and 13,353 environmental order requests. This resulted in 9,037 UPS shipments and 34,753 pieces of mail managed by the section.

Central Services, located in Coralville and Ankeny, creates and distributes analytical test collection kits to clients throughout Iowa and other states. These kits are vital for the testing the lab performs. Staff also process incoming and outgoing packages and correspondence.

The section provides support for the entire laboratory by purchasing, tracking and distributing supplies necessary for laboratory testing. Team members are certified in Hazmat shipping requirements for select packages, and specially trained personnel perform necropsy work to assist with rabies testing.

Central Services also is responsible for scheduling the University of Iowa Fleet Service leased vehicles used by staff. Staff travel approximately 166,509 miles to perform the Hygienic Laboratory’s mission.
The Grants-to-Counties program added arsenic testing for water from private wells and announced this addition to clients through an awareness campaign consisting of webinars, promotional materials, conferences and meetings with county environmental health departments.

The Client Outreach section carries out the Hygienic Laboratory’s service, education and research mission by increasing understanding and use of the state’s public health and environmental laboratory system. Strategic planning, process improvement, market research and analysis, and customer feedback are key parts of the section.

The Client Outreach program manager is the liaison between the laboratory and its clients.
A new training program rolled out to give perspective on customer relations and interactions.

The Client Services section consists of support services that relate to customer service. The 26 staff members work in the areas of data entry, customer service contact and, in Ankeny, Central Services.

Client Services also includes Central Accessioning—receives and processes clinical and environmental samples; Glassware Wash – cleans and sterilizes glass equipment; and Media Prep – prepares the sterile material used to help identify bacteria and viruses. This section also completes data entry for clinical and environmental samples that are delivered by clients.

Client Services oversees kit orders and results for Iowa DNR projects that occur from spring to fall to ensure supplies and support are provided.

CLIENT SERVICES

SHERRI MARINE: sherri-marine@uiowa.edu

FINANCIAL MANAGEMENT

CHRIS ANDERSON: christine-m-anderson@uiowa.edu
PAMELA LENZ: pamela-lenz@uiowa.edu

Each year, Financial Management processes more than 18,000 invoices.

The finance section is responsible for the management of the $24 million State Hygienic Laboratory operation, including overseeing revenues and expenses to accomplish the objectives of the laboratory. This accounting, billing, purchasing, financial analysis, and revenue- and expense-stream management section of the laboratory provides financial transaction support for more than 4,000 clients and distributes more than 18,000 invoices per year.

HIGHLIGHTS:

• Developed an in-house customer service training program.
• Contributed to the Grants to Counties program, which provides testing to private well owners through local departments of public health.
• Represented the Hygienic Laboratory in the Iowa Environmental Health Association, Iowa Public Health Association and American Water Works Association.

HIGHLIGHTS:

• Completed major development design on StrataJazz Management Reporting and Decision Support System.
• Utilized Strata Decision software for the FY17 operational budget.
• Moved billing for environmental and disease testing to a new accounting system that replaced a legacy in-house system.
• Processed more than 80 forms related to sponsored projects for local, state and federal funding agencies.
Outside funding for all 11 core functions of a public health laboratory – from disease surveillance and data management to preparedness and laboratory improvement – is overseen by Grants and Contracts staff.

The Grants and Contracts section coordinates pre- and post-award administrative functions for internal (University of Iowa) and external funding sources. These external sources include state agencies, federal agencies, and various other public and private sources of funding.

State agency partners include the Iowa Department of Natural Resources, the Iowa Department of Public Health, the Iowa Department of Inspections and Appeals, and agencies in other states.

Federal and national partners include the Centers for Disease Control and Prevention, the Food and Drug Administration, the Environmental Protection Agency, the US Department of Agriculture and the Association of Public Health Laboratories.

**HIGHLIGHTS:**

- Oversaw processing of more than 80 sponsored projects.
- Strengthened post-award financial management of sponsored projects by continuing to utilize an internally developed expense and revenue monitoring tool in conjunction with University of Iowa financial management tools.

TRISHA KREMAN: trisha-kreman@uiowa.edu
The primary mission of the Disease Control Division is to test human specimens, food and water for diseases of public health significance to protect the citizens of Iowa. The Hygienic Laboratory supports numerous programs to prevent and control communicable disease, participates in epidemiologic investigations of disease outbreaks and serves as a reference laboratory for the clinical testing. Testing services help prevent the spread of disease in Iowa through the detection of infectious organisms, and help families through newborn screening for genetic disorders and maternal screening.

- Began performing assays to test for exposure to the Zika virus.
- Responded to a major mumps outbreak across Iowa, primarily circulating within the state university campuses.
- Detected more than 10 foodborne outbreaks, five being national outbreaks.
- Was chosen for a national newborn screening initiative to improve timeliness of screening.
- Discovered that *Salmonella Enteriditis* was the cause of an outbreak associated with walking tacos served at a high school graduation party.
- Tested more than 8,000 Iowa children for lead exposure.
- Tested more than 1,000 beach sand samples from two Iowa beaches for measurement of *E.coli*.
- Developed protocols and provided training for Next Generation Sequencing.
BLOOD LEAD
BRIAN WELS: brian-wels@uiowa.edu

More than 8,000 Iowa children were tested for lead exposure this year.

The Hygienic Laboratory is the central testing laboratory for Iowa Department of Public Health’s Childhood Lead Poisoning Prevention Program. As such, the Blood Lead section tests for the presence of lead in humans, and is the state’s reference laboratory for confirmation of all capillary lead screening results.

The primary instrument used to screen blood specimens is a graphite furnace atomic absorption spectrometer. The Hygienic Laboratory also has the capability of using more sensitive multi-elemental techniques such as inductively coupled plasma mass spectrometry to detect low levels of lead and other potentially toxic metals such as cadmium, arsenic and mercury from the same blood specimen. Results from these instruments are analyzed by laboratory scientists to confirm the level of lead from venous blood specimens.

Recent technological advancements in point-of-care testing allows health care providers to test blood for levels of lead. However, because of the significant public health threat from lead poisoning, the Hygienic Laboratory maintains the capability to provide both screening and confirmatory testing for IDPH.

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Older Homes are More Likely to Contain Lead-Based Paint*

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<th>Year Home Was Built</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<th>2022</th>
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<td>Between 1960-1977</td>
<td>24%</td>
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<td>Between 1940-1969</td>
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<td>69%</td>
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<td>Before 1940</td>
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<td>87%</td>
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*Source: Environmental Protection Agency

TOTAL TESTS 8,353
DNA fingerprinting was used to detect Clostridium perfringens in taco meat served at a high school staff luncheon.

The Environmental Microbiology section provides analytical services to detect potentially harmful microorganisms in many environmental matrices, including food and water. Such analyses are used in outbreak investigations to pinpoint the source of contamination and to assess the environmental impact from exposure to microbial contaminants. Culture confirmation of microorganisms is critical in the performance of DNA fingerprinting on the food, environmental and clinical stool isolates to evaluate the scope of the outbreak — local or national — and focus remediation efforts.

Laboratory testing is also provided in support of statewide water surveillance programs to assess the overall safety of public and private drinking water supplies, surface waters (lakes and ponds), and recreational waters (pools and spas). Pathogen analyses of water, food and environmental samples are expanding with emphasis on Cryptosporidium, Legionella, Salmonella and Listeria.
HIGHLIGHTS:

• Received ISO/IEC 17025:2005 accreditation from the American Industrial Hygiene Association-Laboratory Accreditation Program for the environmental microbiology food analyses after many years of preparation and proficiency sample testing.

• Began Cryptosporidium and Giardia testing in support of the EPA Long Term 2 Enhanced Surface Water Treatment Rule Round 2 (LT2) on surface water samples throughout the nation. The laboratory was awarded the state of Missouri’s Cryptosporidium testing in a five-year contract for LT2. This rule and supporting surveillance activities were developed to reduce disease incidence associated with this parasite and other disease-causing microorganisms in drinking water.

• Discovered Salmonella Enteriditis was the cause of an outbreak associated with walking tacos served at a high school graduation party.

• Called in to the investigation by the Iowa Department of Inspection and Appeals to identify the source and scope of the contamination Listeria monocytogenes in Maytag blue cheese from Newton, Iowa.

• Tested more than 1,000 beach sand samples from two Iowa beaches for measurement of E.coli per dry weight gram. These samples were submitted by the Iowa Department of Natural Resources to try to pinpoint the source of contamination in recreational waters.

• Developed a sampling plan with the Iowa Department of Inspections and Appeals as part of the FDA ISO 17025 food accreditation requirement. Samples from such products as apple cider, gelatin, salsa, popcorn, bread dough, bottled water, chocolate, honey and environmental sponges were collected by Inspections and Appeals from food manufacturing facilities across Iowa to be tested throughout the year for a variety of microbiological contaminants, including Salmonella, Shiga toxin-producing E.coli, Listeria monocytogenes, coliform bacteria and E.coli.

TOP TESTS

PUBLIC WATER SUPPLY: COLIFORM BACTERIA (SAFE DRINKING WATER ACT)
PRIVATE WELL: COLIFORM BACTERIA
PRIVATE WELL: NITRATE
POOL: COLIFORM BACTERIA
WASTEWATER AND SURFACE WATER: E.Coli

41,207 TOTAL TESTS
The Iowa Maternal Prenatal Screening Program offers four serum screening options to provide patients and health care providers with information about pregnancy and the developing fetus, as well as a confirmatory test performed on amniotic fluid for open neural tube defects. The patient/provider may choose from a menu of screening choices offered which include a serum sample drawn during the first or the second trimester of pregnancy, or combine results of samples drawn from each of the first and second trimesters for a combined risk called Integrated Screening, which results in an increased detection rate for Down syndrome.

Screenings are available to all Iowa women during pregnancy and are designed to identify women with an increased risk of having a baby with Down syndrome (trisomy 21), Edwards syndrome (trisomy 18) or an open neural tube defect (e.g. anencephaly or spina bifida). They may also identify women at increased risk of having a baby with other kinds of birth deficiencies, or women at risk of developing a problem later in pregnancy. If an abnormality is identified, the woman’s medical provider is notified and may choose to perform additional testing. Genetic counseling is also made available for parents to help them make informed decisions about the pregnancy.
Microbiology partnered with the Molecular section and the Research and Development section to transition from the PulseNet system of monitoring disease outbreaks to Next-Generation Sequencing for quick genotyping.

Microbiology is the study of microorganisms in humans that are, or may be, the cause of illness. Specialized testing is performed in several areas: bacteriology, parasitology, mycobacteriology (tuberculosis) and mycology (fungi).

The Microbiology section supports IDPH, all county health agencies and hospitals throughout the state by isolating, identifying and characterizing pathogens that are of public health significance. The section also performs all rabies testing associated with human exposure and performs enteric pathogen serotyping. It uses Pulsed Field Gel Electrophoresis to determine the DNA fingerprint of bacteria and is a member of the CDC’s PulseNet, which uses these fingerprints to detect and define local and multi-state foodborne outbreaks.

Selected section staff participate in the CDC Laboratory Response Network, which responds quickly to biological, chemical and radiological threats and other high priority public health emergencies. They are able to perform confirmatory testing of suspect agents of bioterrorism.

**HIGHLIGHTS:**


- Participated in an APHL/CDC study with Michigan, New York, North Carolina, Florida, Minnesota and Texas to evaluate the ability of MALDI-TOF to accurately identify biothreat agents.

- Detected more than 10 foodborne outbreaks (including five national ones) by using PulseNet testing. Outbreaks included *Salmonella Poona* in cucumbers (40 states involved), *E. coli* O157:H7 in pizza dough (20 states involved) and *Salmonella Typhimurium* in cantaloupe (24 states involved).

- Assisted with the development, culture and extraction portion of an APHL/CDC TB Next Gen Sequencing project.
A mumps outbreak that affected many students at Iowa universities and the emergence of Zika topped the testing volume in Molecular Diagnostics and Virology. The section responded by adopting a technology known as reverse transcription polymerase chain reaction (RT-PCR) to quickly detect the presence of this virus.

Molecular testing techniques have significantly increased the overall sensitivity and specificity of detection of bacteria and viruses that cause disease. The Molecular Diagnostics and Virology section works in close partnership with the Iowa Department of Public Health to target diseases of public health significance – highly communicable diseases that require intervention to reduce or stop their spread. Such diseases include legionellosis, viral meningitis, mumps, herpes and chicken pox.

The section also tests specimens related to disease outbreaks, such as whooping cough (pertussis) and norovirus, the primary cause of gastroenteritis outbreaks in Iowa. The Hygienic Lab is the only lab in the state that performs confirmatory norovirus tests. Identification of these viruses allows state outbreak investigators to optimally target remediation and prevention strategies.

Testing is also performed in support of various surveillance programs: viral respiratory diseases and sexually transmitted diseases through IDPH, and arbovirus surveillance in partnership with IDPH, Iowa State University and local public health departments.

- Viral respiratory disease surveillance informs the medical community of when and where influenza is circulating in the state and if these strains match the current vaccine.
- Sexually transmitted disease surveillance provides testing for the diagnosis of chlamydia and gonorrhea infections, ensuring patients receive proper treatment to prevent further spread of infection and providing reliable surveillance data.
- Arbovirus surveillance tests mosquitoes and humans for West Nile virus and alerts public health officials when mosquito-borne illnesses are circulating, which allows them to implement methods of infection prevention.
HIGHLIGHTS:

- Developed protocols and provided training for Next Generation Sequencing for multiple sections of the laboratory in support of the CDC’s PulseNet (sequencing clinical isolates associated with foodborne outbreaks), FDA’s GenomeTrakr (sequencing suspected food and environmental samples) and tuberculosis surveillance.

- Responded to a major mumps outbreak across Iowa, primarily circulating within the state university campuses.

- Facilitated testing of the Zika virus for the state of Iowa at the early onset of the epidemic. Once the Emergency Use Authorization was issued by the U.S Food and Drug Administration, the section provided on-site testing for Zika, chikungunya and dengue viruses using the TrioPlex RT-PCR assay.

TOP TESTS

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<th>TEST</th>
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<tr>
<td>MUMPS VIRUS BY RT-PCR</td>
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<td>ZIKA VIRUS BY RT-PCR</td>
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<tr>
<td>INFLUENZA VIRUS BY RT-PCR</td>
</tr>
<tr>
<td>NOROVIRUS BY RT-PCR</td>
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<tr>
<td>CHLAMYDIA/GONORRHEA BY NAAT</td>
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50,648 TOTAL TESTS

NOT INCLUDING PROJECTS AND SEQUENCING
NEWBORN SCREENING
MIKE RAMIREZ: michael-ramirez@uiowa.edu

The Iowa Newborn Screening Program was selected for the NewSTEPs 360 program, a 20-state cohort aimed at improving timeliness in newborn screening. NewSTEPs 360 is a collaboration between the Association of Public Health Laboratories and the Colorado School of Public Health.

The Iowa Newborn Screening Program is among the fastest in the nation in delivering test results to health care providers, creating a greater opportunity for interventions that can improve outcomes for babies affected by a genetic disorder.

The Newborn Screening section identifies infants at risk for more than 50 inherited conditions by testing a small blood spot obtained from a simple heel stick shortly after birth. At this age, most infants with an inherited condition show no obvious signs of disease. However, with special tests, the Iowa Newborn Screening Program can identify an infant who may be at risk and alert the doctor and caregivers of the need for immediate medical treatment for the infant.

With early diagnosis and medical treatment, complications from these serious, but uncommon, conditions can usually be prevented. The goal is to identify the disorder before the disorder causes damaging health effects.

The Iowa Newborn Screening Program is part of the Iowa Department of Public Health, and is a collaborative effort between the IDPH, the State Hygienic Laboratory, the University of Iowa Stead Family Children’s Hospital, Central Delivery Service of Iowa, and Iowa birthing and newborn care providers. In addition to Iowa, the Hygienic Laboratory provides newborn screening testing for North Dakota and South Dakota.

BLOOD SPOT SCREENING PANEL

- BIOTINDASE DEFICIENCY
- GALACTOSEMIA
- HEMOGLOBINOPATHIES
- CYSTIC FIBROSIS
- CONGENITAL HYPOTHYROIDISM
- CONGENITAL ADRENAL HYPERPLASIA
- AMINO ACID DISORDERS
- FATTY ACID OXIDATION DISORDERS
- ORGANIC ACID DISORDERS
- SEVERE COMBINED IMMUNODEFICIENCY
HIGHLIGHTS:

- Integrated screening for Severe Combined Immunodeficiency (SCID) into the South Dakota newborn blood spot screening panel on Sept 1, 2015. SCID is the first condition to directly use a DNA target as the marker for the disorder and the first condition identified through newborn screening for which a cure is available.

- Gave a “Best Practices in Newborn Screening” presentation to health care professionals representing seven hospitals in northwest Iowa.

- Chosen to be part of the Collaborative Improvement and Innovation Network (CoIIN) project on specimen submission timeliness in newborn screening. The goal is to ensure all specimens are received for testing within 60 hours of birth.

- Hosted the “Iowa CoIIN for Timeliness in Newborn Screening” webinar and made onsite visits to several hospitals across Iowa to educate nursery and lab staff regarding best practices for bloodspot collection and to discuss timeliness goals.

- Iowa lab and clinical staff gave the “Newborn Screening Timeliness” presentation at the North Dakota Newborn Screening Conference, which was attended by more than 100 health care professionals.

SCREENING VOLUME

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<tr>
<th></th>
<th>IOWA</th>
<th>NORTH DAKOTA</th>
<th>SOUTH DAKOTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimens</td>
<td>331,660</td>
<td>95,878</td>
<td>106,964</td>
</tr>
<tr>
<td>Received</td>
<td>41,509</td>
<td>13,734</td>
<td>13,695</td>
</tr>
</tbody>
</table>

SPECIMENS RECEIVED
The Serology section began performing assays for Zika virus exposure.

Serologic testing is used to diagnose certain acute, recent or chronic infectious diseases by detecting antigens or antibodies in the blood. In some cases, when the suspected etiologic agent is impossible, difficult or dangerous to grow in cultures in a routine diagnostic laboratory, serology is the safest, most practical testing method. Monitoring antibody levels that the body produces in response to exposure is important in the medical care of the patient, as well as in stopping the spread of disease from person to person.

Serology’s most commonly performed assay helps diagnose latent tuberculosis infection. More than half of these tests are performed for Iowa colleges and universities on international students from high-risk TB areas of the world. Screening for latent TB infection is an admission requirement to prevent the potential spread of the disease that could occur as the international students join the student campus population.

Measles and mumps exposures, as well as mosquito- and tick-borne diseases, are some of the diseases commonly requested for testing in support of epidemiological investigations performed by the Iowa Department of Public Health.

HIGHLIGHTS:

- Supported IDPH in testing for mumps during an outbreak that started in the fall of 2015 and continued through the summer of 2016.
- Began Zika IgM Antibody testing in May.

TOP TESTS

QUANTIFERON-TB GOLD
SYPHILIS VDRL
SYPHILIS TPPA
MUMPS IGM ANTIBODY
HISTOPLASMA ANTIBODY

17,729 TOTAL TESTS
The Environmental Health Division routinely monitors private and public drinking water, private wells, streams and lakes, wastewater, air, soil and food for contaminants of potential environmental and public health concern. It also responds to environmental and man-made emergencies – such as compromised water supplies due to chemical spills and flooding – with testing needed to protect public health. Services include testing samples submitted by the general public, local health departments and state agencies.

- Radiochemistry validated a method for the analysis of catfish for radiostrontium as part of the joint USDA-FDA Food Emergency Response Network.
- The first full year of data collection from the Global Lakes Ecological Observation Network buoy on West Okoboji Lake was completed.
- The Ambient Air Quality section interactive display traveled aboard the UI Mobile Museum more than 9,000 miles across Iowa to 90 events, attracting about 36,000 visitors in 39 counties and 57 towns.
- In conducting approximately 75 bioassessments of water throughout the state, staff members collected samples of water, fish and benthic macroinvertebrates, and performed a comprehensive physical habitat assessment.
- Through eight drills – five drills at Duane Arnold Energy Center in Palo, Iowa, and three at Ft. Calhoun Nuclear Station in Nebraska – the laboratory maintained its readiness for emergency response to radiological events.
Staff in training, students, teachers and other visitors to the lab toured the Ambient Air Quality trailer at the Coralville laboratory to explore the technology and learn about air quality monitoring.

The Ambient Air Quality section provides technical expertise, equipment calibration and maintenance for monitors that sample and analyze Iowa's ambient (outdoor) air quality. These monitors – along with monitors maintained by public health departments in Linn and Polk counties – form a surveillance network covering all major population and industrial centers in Iowa.

The state of Iowa requires ambient air monitoring as part of the Clean Air Act. The Hygienic Lab's Ambient Air section fulfills this requirement through a contract with the Iowa Department of Natural Resources.

Data from more than 100 monitors at 29 sites in 16 Iowa counties is available in the Ambient Air section of the Hygienic Laboratory's website. Real-time data is highlighted and provides concentration information about many pollutants in Iowa's air. Many of these monitors have been active for several decades.

Data that is collected by Air Quality staff is submitted to the Iowa DNR and EPA and used for research and enforcement. These are keys to Iowa having some of the cleanest air in the country.

AMBIENT AIR QUALITY
AMANDA HUGHES: amanda-hermann@uiowa.edu

HIGHLIGHTS:

- Videos, interactive maps and trivia questions created by the Ambient Air Quality section were part of a digital display selected to be part of the University of Iowa Mobile museum. The museum traveled more than 9,000 miles across Iowa to 90 events, attracting about 36,000 visitors in 39 counties and 57 towns.

- Two Iowa teachers, who spent part of their summer as externs, developed a poster and an at-a-glance display for a 65-foot monitor to give visitors an overview of the Ambient Air Quality network.
The Industrial Hygiene program performs occupational health testing for the Bureau of Labor to support the Iowa Department of Workforce Development and the Iowa Occupational Safety and Health Administration programs (Iowa OSHA). Testing for these programs is performed in both the Ankeny and Coralville labs, and consists of testing air filters for both inorganic and organic chemicals to assess occupational exposures to chemicals and fumes in the workplace.

The Hygienic Laboratory also tests for asbestos, a group of similar minerals with separable, long, thin fibers. It is a natural mineral fiber that was used in products primarily because of its fire-retardant capability and strength. Asbestos has long been suspected as a health threat to humans, because the fibers can be inhaled and are difficult to remove from the lungs.

Asbestos testing is performed for businesses, state agencies and individuals. Materials that are frequently tested for asbestos include roofing, flooring and other items used in construction.

INDUSTRIAL HYGIENE
SARAH MAY: sarah-may@uiowa.edu

<table>
<thead>
<tr>
<th>TOP TESTS (INDUSTRIAL HYGIENE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>METALS-METHOD NIOSH 7300</td>
</tr>
<tr>
<td>VARIOUS ORGANIC SOLVENTS IN AIR BY GAS CHROMATOGRAPHY</td>
</tr>
<tr>
<td>PARTICULATES (RESPIRABLE AND TOTAL DUST) IN AIR</td>
</tr>
<tr>
<td>VARIOUS ORGANIC SOLVENTS IN AIR BY LIQUID CHROMATOGRAPHY</td>
</tr>
<tr>
<td>311 TOTAL TESTS (CORALVILLE)</td>
</tr>
<tr>
<td>277 TOTAL TESTS (ANKENY)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOP TEST (ASBESTOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BULK BUILDING MATERIALS (EPA METHOD EPA/600/R-93/116)</td>
</tr>
<tr>
<td>1,228 TOTAL TESTS</td>
</tr>
</tbody>
</table>
The laboratory continued development and implementation of a processed food testing program in coordination with the Iowa Department of Inspections and Appeals.

Inorganic elements are minerals and metals found in the environment, some of which are harmful to human and animal health, even with minimal exposure. Some inorganic compounds occur naturally in the environment, such as metals found in soil and rock, while others are present due to human activities, such as crop fertilization or the use of lead in paint prior to 1978. Detection of these elements is important because mitigation techniques can then be implemented to reduce potentially dangerous exposure.

Testing is conducted for state agencies, public water supplies, county public health departments, businesses and private citizens. The Inorganic Chemistry section can determine the presence of inorganic elements in air, groundwater, drinking water, surface water, wastewater, soil, sludge, vegetation and food. Tests conducted on these matrices can determine the presence of arsenic, cadmium, mercury, lead and many other metals in the environment. Samples from public and private (well) water supplies are analyzed for levels of nitrate, nitrite, total coliform and *E. coli* bacteria. Testing for lead in dust, paint, soil, pottery and food products is performed to help identify sources of lead exposure.

Inorganic Chemistry processes samples with short holding times (within 48 hours of collection) to determine the presence and levels of orthophosphate, nitrite and nitrate. Determination of levels of oil and grease in waste streams is determined at the Coralville laboratory.
After more than 30 years, the Laboratory Certification program has grown to 186 laboratories that it certifies to test wastewater, drinking water, solid waste and samples that may threaten the environment.

Public water providers in the United States are required to monitor their drinking water to determine if consumers are adequately protected from microbiological, chemical and radiochemical contaminants. Similarly, wastewater treatment facilities perform analyses to assure that the wastewater is properly treated to protect the environment from bacteria, pathogens and other pollutants.

The Hygienic Laboratory provides laboratory certification assessments and management for the Iowa Department of Natural Resources. These were developed over the past 30 years to provide a comprehensive list of testing parameters and fields of testing for laboratory certification.

A laboratory is certified to perform a specific method for a specific analyte or analyte group. The program also provides the opportunity for a testing laboratory to become certified for a specific analyte group across multiple environmental programs. For example, a lab may acquire certification for inorganic chemicals (IOCs) within the wastewater, drinking water and contaminated sites programs.

There are 186 laboratories certified in 2016. These include municipal and regional water plants, water treatment facilities and commercial laboratories. Approximately 150 laboratories perform only wastewater testing. The remainder test for drinking water, or a combination of drinking water and wastewater. Commercial laboratories include those that are located both in and outside of the state that perform work in Iowa.

Certification in Iowa is on a two-year cycle with most laboratories receiving an onsite inspection once during that two-year period. Some laboratories, especially out-of-state laboratories that are certified in their home state, can be certified for Iowa based on reciprocity with their state’s certification or accreditation in the National Environmental Laboratory Accreditation Program. Through reciprocity, a laboratory may not require an onsite inspection.
Water quality data collected from two automated samplers near Big Spirit Lake are helping determine the effectiveness of prairie strips in the reduction of sediment and nutrient runoff from a nearby field.

The Water Chemistry Laboratory at the Iowa Lakeside Laboratory – Regents Resource Center is a satellite environmental laboratory located in Milford, Iowa. It conducts analytical testing on both public and private drinking water, groundwater, surface water and wastewater.

Lakeside’s newest building is the Waitt Lab, a gift of the Friends of Lakeside Lab. Opened in 1998, it contains the Bovbjerg Water Chemistry Laboratory, two classrooms, several offices and Andrea’s Atrium, which is used for receptions and gatherings.

Staff provides educational and outreach services for local students and citizens, as well as classes for college students and interns offered at Iowa Lakeside Lab and area community colleges. The lab also assists local water testing facilities.

HIGHLIGHTS:

- Worked with Iowa State University, the Dickinson County Soil and Water Conservation District, and Spirit Lake Protective Association in the STRIPS (Science-based Trials of Row Crops Integrated with Prairie Strips) program. This 10-year project looks at the effectiveness of prairie strips in reducing sediment and nutrient loss from farm fields.

- Joined a number of state and local environmental professionals to create the first annual Prairie Lakes Conference. Held in the Iowa Great Lakes Region, agenda topics were geared toward the connections between Iowa’s land, prairies and lakes.

- Completed first full year of data collection from the Global Lakes Ecological Observation Network (GLEON) buoy on West Okoboji Lake. Data will be checked for quality and uploaded to the GLEON database.

- Continued partnership with the Friends of Lakeside - Cooperative Lakes Area Monitoring Project (CLAMP). This program – in its 18th year of monitoring the water quality of Dickinson County lakes – reports data throughout the summer at www.clamp1909.blogspot.com.
Despite the harsh Iowa winters, limnologists collect samples throughout the year from 61 ambient streams to test for levels of contaminants that may endanger water quality.

Limnologists collect and analyze samples of surface water, wastewater and groundwater throughout Iowa. They examine the physical, chemical and biological characteristics and processes of aquatic systems and their watersheds. The data from this work is used to assess long-term trends in water quality throughout the state.

The environmental specialists in the Limnology section are among the very few taxonomic experts in the Midwest who identify, describe and classify organisms. Most of their work is devoted to sampling Iowa’s surface waters (primarily rivers and streams) and evaluating both water quality and the impact of human activity.

**HIGHLIGHTS:**

- Collected samples from 61 ambient stream sites each month. Analyses included nutrients, such as nitrogen and phosphorus; bacteria, such as *E. coli*; several forms of solids; and neonicotinoid pesticides.

- Conducted approximately 75 bioassessments throughout the state. These assessments generally require several staff members to complete sampling of each site for water, fish and benthic macroinvertebrates, and a comprehensive physical habitat assessment.

- Completed sampling of selected cold water streams in northeast Iowa for nutrient analysis. Full bioassessments were completed for four streams in northeast Iowa. Continuous monitoring of temperature and dissolved oxygen using data loggers also was required for these streams.

**TOP TESTS**

- CHLOROPHYLL
- FIELD PH
- FIELD TEMPERATURE
- FIELD DISSOLVED OXYGEN
- BENTHIC MACROINVERTEBRATE ID

**7,083** TOTAL TESTS
The Hygienic Laboratory collaborated with the National Cancer Institute and the UI Center for Health Effects and Environmental Contamination to conduct a pilot study to implement a novel bioassay as a global indicator of endocrine disruption in public drinking water supplies for epidemiologic studies of cancer in Iowa.

Human activities often have a significant impact on the environment. Contaminants that infiltrate our natural resources can be detrimental to the health of both humans and animals. The Organic Chemistry section analyzes air, soil, water, vegetation and food to identify and measure potentially toxic organic compounds, such as plasticizers, pesticides, personal care products, pharmaceuticals and industrial chemicals.

Testing is conducted for state agencies, public water supplies, county public health departments, businesses and private citizens. Routine environmental monitoring is conducted to evaluate the ongoing health of Iowa’s environment, while responsive testing is conducted to determine the risk of human and animal exposure in the event of environmental catastrophes.

Analysis for organic compounds is conducted using highly specialized methods and instrumentation in order to detect very low levels of organic compounds. New testing methods are implemented as new threats emerge, such as the possible presence of hormones and steroids in drinking water.

Organic Chemistry sections of the lab include Gas Chromatography Analysis and Liquid Chromatography Analysis, so named for the technology used in the analyses of various samples to determine organic contaminants. A gas chromatograph is used to analyze relatively low molecular weight organic compounds that can be vaporized by heating, while a liquid chromatograph can detect extremely low levels of compounds that have a higher molecular weight and are not as easily vaporized.

HIGHLIGHTS:

- Completed design of new Quality Control Chart reports for all Environmental Health Division QC types utilizing the laboratory’s OpenELIS information system to provide efficient visual representation and in-depth statistical analysis of Quality Control data.
- Developed a new electronic system for tracking and labeling the large number of chemical solutions produced in the laboratory.
- Participated in the Iowa Fish Tissue Monitoring Program in conjunction with the Iowa Department of Natural Resources. The program tested different types of fish from multiple sites for contaminants that can bioaccumulate, including mercury, polychlorinated biphenyls, chlordane and dieldrin.
**TOP TESTS (GAS CHROMATOGRAPHY)**

- **HALO ACETIC ACIDS**
  - EPA METHOD 552.2
  - (DISINFECTION BYPRODUCTS)

- **TRIHALOMETHANES**
  - EPA METHOD 524.2
  - (DISINFECTION BYPRODUCTS)

- **VOLATILE ORGANIC COMPOUNDS**
  - EPA METHOD 524.2

- **PESTICIDES**
  - EPA METHOD 8270

- **SEMIVOLATILE ORGANIC COMPOUNDS**
  - EPA METHOD 525.2
  - (PESTICIDES AND PLASTICIZERS)

4,742 TOTAL TESTS

**TOP TESTS (LIQUID CHROMATOGRAPHY)**

- **ACID HERBICIDES IN VEGETATION AND OR SOIL**

- **GLYPHOSATE IN VEGETATION AND/OR SOIL**

- **MISCELLANEOUS PESTICIDES IN VEGETATION OR SOIL**

- **GLYPHOSATE IN WATER**

- **CHLOROACETANILIDES, ENVIRONMENTALLY PERSISTENT DEGRADATES OF ACETOCHLOR, ALACHLOR, METOLACHLOR, DIMETHENAMID (HERBICIDES AND BREAKDOWN PRODUCTS)**

1,168 TOTAL TESTS
The number of new, out-of-state clients dramatically increased.

Radionuclides can be harmful to human health if inhaled or ingested. They are commonly present at low concentrations in geological formations, produced at low levels through interactions between the atmosphere and cosmic radiation, and are produced artificially through human activities, such as power generation, medical therapy and heavy industry.

The Radiochemistry section primarily performs analyses of water and soil to determine radioactivity concentrations, but also is capable of analyzing air, food, milk, urine and foliage. The section maintains preparedness for any radiation emergency response incidents.

**HIGHLIGHTS:**

- Increased testing by 100 percent from approximately 2,000 tests performed last year to 4,000 tests performed in fiscal year 2016. Additionally, turnaround times for the highest volume tests either decreased or remained the same.

- Served on the conference organizing committee for the Radiochemical and Radiobioassay Measurement Conference – a major national conference hosted at the University of Iowa.

- Completed validation of a method for the analysis of catfish for radiostrontium as part of the joint USDA-FDA Food Emergency Response Network. Performed 33 additional analyses as part of routine surveillance for gamma emitting radionuclides in the food supply in the first year of radiochemistry’s involvement in the USDA FERN cooperative agreement program.

**PUBLISHED:**


Taking part in eight drills this year helped the Radiological Emergency Response Team (RERT) section maintain the Hygienic Laboratory’s preparedness for radiological emergencies.

The RERT is part of Iowa’s Radiological Emergency Response program. This group provides field monitoring, technical consultation and initial accident assessment in coordination with the Iowa Department of Public Health.

The team also works with Iowa Homeland Security and Emergency Management Division to prepare for the unlikely event of an act of terrorism or an accident at one of the four nuclear power plants in or near Iowa. The role of the Hygienic Laboratory’s RERT is to evaluate the extent to which radioactive materials have been released from an incident.

Federal guidelines require emergency planning for areas within a 10-mile and a 50-mile radius of a nuclear power station. The laboratory also provides the following services:

- Field surveillance and monitoring of radiation levels, including coordination of environmental sampling with state and federal agencies;
- Dose assessment in support of IDPH programs;
- Laboratory analysis and support of environmental sampling and radiological monitoring activities during an emergency and post emergency;
- Maintenance and communication of data relating to radiation exposure and contamination; and
- Technical expertise for local emergency response personnel for monitoring and decontamination of evacuees.

**HIGHLIGHTS:**

- Participated in eight drills: five drills at Duane Arnold Energy Center in Palo, Iowa, and three at Ft. Calhoun Nuclear Station in Nebraska. (Drills are non-federally evaluated practice events, generally held quarterly.)
- Participated in a rehearsal and evaluated emergency phase exercises for the Ft. Calhoun Nuclear Station. (A rehearsal is considered a practice before a federally evaluated exercise.)
- Rehearsed and evaluated emergency and ingestion pathways as part of a team exercise at Duane Arnold Energy Center.
- Evaluated by FEMA Region 7 onsite at the Radiochemistry Laboratory.
- Continued to implement the RadResponder Network. This network assists in rapidly recording, sharing and aggregating large quantities of data during a radiological emergency.
- Hosted an EPA onsite training for Radiochemistry Laboratory emergency response.
JULY 2015
A three-year grant funds laboratory testing for “high consequence pathogens,” including Ebola.

AUGUST 2015
A nationwide outbreak of *Salmonella* Poona in cucumbers peaks in August and eventually sickens more than 900 people - including reported cases in Iowa - before it ends in March 2016.

NOVEMBER 2015
Mumps cases soar to 196, the highest level since the 2006 outbreak. Total Iowa reportable cases for 2015 is 287.

DECEMBER 2015
A Shigellosis outbreak in the state sickens more than 560 people from March 1 to Dec. 18.

MARCH 2016
During a year when national focus is on the health effects of lead, the Ankeny lab performs more than 1,600 tests for lead in drinking water.

APRIL 2016
Forty HazMat techs from Iowa practice techniques to detect substances that could be used in a chemical threat.
SEPTEMBER 2015
The Iowa Newborn Screening Program begins testing for Severe Combined Immunodeficiency, or SCID (sometimes known as “bubble boy syndrome”) for South Dakota.

OCTOBER 2015
Clostridium perfringens is found in meat served at a Polk County school.

JANUARY 2016
The CDC increases to 24 the number of countries – excluding the U.S. – that are on its traveler alert list because of ongoing transmission of the Zika virus.

FEBRUARY 2016
Arsenic in Iowa is above EPA standards.

MAY 2016
Smoke from Canadian wildfires blankets much of the state. Ambient Air Quality section tracks the pollution.

JUNE 2016
Municipal water from Sugar Land, Texas, is tested for Cryptosporidium (crypto).
OPERATING REVENUE

FEE FOR SERVICE/CONTRACT REVENUE $14,013,577
STATE APPROPRIATION 4,402,615
OTHER STATE FUNDING 76,570
GRANTS & CONTRACTS 5,033,822
FACILITIES & ADMINISTRATION COST RECOVERY 207,475
TOTAL OPERATING REVENUE $23,734,059

- FEE FOR SERVICE/CONTRACT REVENUE 59%
- STATE APPROPRIATION 19%
- OTHER STATE FUNDING 1%
- GRANTS & CONTRACTS 21%
- FACILITIES & ADMINISTRATION COST RECOVERY <1%
EXPENSES (CASH BASIS)

PERSONNEL $15,567,419
SUPPLIES, SERVICES & REPAIRS 6,373,676
CAPITAL ASSETS 592,166
FEES, LEASES & OVERHEAD 663,359
FACILITIES & ADMINISTRATION COST 637,976
TRAVEL 256,269

TOTAL EXPENSES $24,090,865
ENVIRONMENTAL TESTING — FY2016

145,714 ANALYSES PERFORMED*
71,459 SAMPLES SUBMITTED

CLINICAL TESTING AND NEWBORN SCREENING — FY2016

422,045 ANALYSES PERFORMED*
113,297 SAMPLES SUBMITTED

*INCLUDES NUMBERS NOT ASSIGNED TO COUNTIES
TOTAL TESTING — FY2016

567,759 ANALYSES PERFORMED*
184,756 SAMPLES SUBMITTED

ENVIRONMENTAL — FY2016
145,714 ANALYSES PERFORMED*
71,459 SAMPLES SUBMITTED

CLINICAL — FY2016
90,385 ANALYSES PERFORMED*
71,788 SAMPLES SUBMITTED

NEWBORN SCREENING FOR IOWA — FY2016
331,660 ANALYSES PERFORMED (INCLUDED ON CLINICAL TESTING MAP)
41,509 SAMPLES SUBMITTED

NEWBORN SCREENING FOR SOUTH DAKOTA — FY2016
106,964 ANALYSES PERFORMED
13,695 SAMPLES SUBMITTED

NEWBORN SCREENING FOR NORTH DAKOTA — FY2016
95,878 ANALYSES PERFORMED
13,734 SAMPLES SUBMITTED

TOTAL TESTING FOR IOWA AND NATIONWIDE COMBINED: 770,601

*INCLUDES NATIONWIDE NUMBERS