MISSION
To promote the role of public health laboratories in shaping national and global health objectives, and to promote policies, programs and technologies that assure continuous improvement in the quality of laboratory practice and health outcomes.

VISION
A healthier world through quality laboratory practice.

(Cover photos):
Faculty and participants from 11 state public health newborn screening laboratories at the “Newborn Screening Molecular Training Workshop: Using Cystic Fibrosis as a Model” in March 2010.
Scientist conducting research in a trace elements clean lab, Wisconsin State Laboratory of Hygiene.
Jim Nahach prepares a soil sample for Base Neutral Acid (BNA) extractable analysis, Missouri Department of Natural Resources Environmental Services Laboratory.
Lab staffer at an EQA training in the Kingdom of Lesotho, as part of an APHL initiative to help increase capability and capacity of African laboratories.
Last year concluded the first decade of the 21st Century. In case anyone had doubts, the year confirmed the quickened pace of life we expect will continue in the current century, with both promising technological advances and a surfeit of public health challenges.

Amidst this backdrop, APHL’s job has been to assure that its member laboratories are well equipped to carry out the food safety, infectious disease and environmental testing and related work necessary to promote public health and safety. An association study released last June, for example, showed the dire need for additional government support for public health laboratories, documenting the elimination of 70% of federal preparedness funding to state public health laboratories between FY 2003 and FY 2008.

Although not able to make up this great loss, APHL was instrumental in obtaining targeted, new resources for member laboratories in 2010. APHL:

• Was awarded $2 million to fund the association’s Laboratory Technical Implementation Assistance Public Health (LTIAPH) program. Together with APHL’s ongoing Public Health Laboratory Interoperability Project (PHLIP), LTIAPH will significantly boost the electronic transfer of notifiable disease data among public health partners and help achieve the long overdue overhaul of the nation’s public health IT infrastructure.

• Worked with the public health community to preserve the Prevention and Public Health Fund created by the March 2010 health reform law. The fund—which provided $20 million in additional revenue for the Epidemiology and Laboratory Capacity grant program in FY 2010—had been eyed by lawmakers wanting to divert the resources elsewhere.

• Secured CDC funding for sub-grants to 64 state and territorial public health laboratories to improve capacity for molecular TB testing.

• Secured CDC funding for 24 grants, totaling $316,000, to help PulseNet food safety laboratories implement the latest technologies for analyzing foodborne pathogens.

Of course, APHL was also active on other fronts, including the response to the year’s most notable tragedies. The association provided assistance to quickly assess the status of Haiti’s laboratory system after a tragic magnitude 7.0 Mw earthquake in January 2010. And just a few months later, APHL convened its scientific partners to mount a swift laboratory response to the catastrophic Gulf Coast oil spill. With literally millions of barrels of crude oil gushing into the Gulf of Mexico, the association’s early intervention highlighted the need for new funding and technical guidance for the analysis of coastal seafood for toxic oil components.

Two of the association’s collaborative, international efforts will have an outsize impact on global health. The development of an inexpensive workstation to provide a safer environment for TB screening in resource-limited nations will improve testing for this potentially deadly, communicable disease and hopefully help arrest the spread of multi-drug resistant TB. A wide-ranging review of influenza laboratories in dozens of countries helped to lay the foundation for a truly worldwide network of laboratories able to provide early warning of a potential influenza pandemic.

We invite you to review the full range of our activities outlined in this report. And we heartily invite the support of current and potential new partners as we look forward to the work ahead.

Patrick Luedtke, MD, MPH
President
Scott J. Becker, MS
Executive Director
APHL is working to help its members achieve real-time electronic laboratory messaging capabilities by promoting the use of effective laboratory information management systems, enhancing the role of public health laboratories as partners in the collection and analysis of data, and collaborating with partners on major informatics initiatives.

Foodborne disease surveillance, HIV control, disaster recovery and a range of other public health services rely upon a single common activity: the timely flow of information.

Information, in fact, is so necessary to public health and medicine, that data exchange is at the heart of a bipartisan US government strategy to transform America’s health system. It is also the keystone of APHL’s four-year-old Public Health Laboratory Interoperability Project (PHLiP)—a joint effort with CDC’s Office of Infectious Diseases and Public Health Informatics and Technology Program Office, and the Office of Public Health Preparedness and Response and the newly-formed Laboratory Science, Policy and Practice Program Office.

PHLiP’s ambitious aim is the wholesale modernization of the public health laboratory information technology infrastructure to enable electronic interoperability and real-time data exchange among clinical and public health partners. After years of slow progress, the project received a boost in 2010 with the commitment of $2.5 million in supplemental funding from CDC’s Influenza Division to support PHLiP technical assistance activities.

Buoyed by these resources, since March 2010, the project has transitioned 17 public health laboratories to the standardized PHLiP protocols for communicating influenza surveillance data to CDC. This complex undertaking involved:

1. Building out a Health Level 7 (HL7) message format—the international standard for the exchange of electronic healthcare information;
2. Translating in-house messaging vocabularies to the PHLiP vocabulary of standardized LOINC® and SNOMED® codes to denote specific laboratory procedures and clinical data;
3. Configuring in-house messaging systems to encrypt data;
4. Making a secure connection to CDC using PHLiP route-not-read hubs.

“APHL’s PHLiP team came down to Kentucky to help us implement electronic reporting for influenza. They got right to work and, within two weeks, we were sending electronic data through the PHLiP network.”

Stephanie Mayfield Gibson, MD, FCAP Director, Division of Laboratory Services, Kentucky Department for Public Health

Kentucky State Public Health staff and PHLiP Assistance Team B during a site visit in September 2010. This lab is now in full production with PHLiP for the electronic laboratory surveillance message for Influenza.
Altogether, by the end of 2010, 49 state public health laboratories were either using the PHLIP influenza protocol or in the process of transitioning to PHLIP standards. These labs will be able to go live with electronic messages for other diseases as they are finalized by project partners.

APHL is working with CDC and the US Food and Drug Administration (FDA) to establish procedures for designating coding elements for new laboratory tests at the time the FDA clears the tests. The idea is to include the harmonized coding vocabulary for emerging disease tests and other new assays in the test package insert so the information is immediately available to scientists performing the test.

The electronic laboratory messaging enabled by PHLIP is of paramount importance, especially considering that as recently as the 2009 Influenza A H1N1 pandemic, public health laboratories sent tens of thousands of test results to CDC via fax, e-mail and internet-based mechanisms using manual data entry. Not only did the widespread use of manual messaging systems distract from outbreak response at a critical time, but much of the data reached CDC weeks—in some cases months—after it was generated.

In contrast, the four state public health laboratories using PHLIP standards at the time quickly incorporated the novel strain codes into their messaging systems and sent standardized surveillance data electronically to CDC in near real-time.

In July 2010, APHL was awarded $2 million through a competitive CDC grant funded through the HITECH provision of the American Recovery and Reinvestment Act of 2009 for the association’s latest initiative: Laboratory Technical Implementation Assistance for Public Health (LTIAPH).

Through LTIAPH, APHL will provide assistance to ten CDC state and local Epidemiology and Laboratory Capacity Program (ELC) grantees that have also received HITECH funding to enhance their electronic messaging capabilities. Based on the successful PHLIP technical assistance model, APHL has created a menu of services to offer the ten joint ELC/HITECH grantees and is setting up a technical assistance team to provide those services.

The goals are (1) to enable state health agencies to receive real-time, electronic notifiable disease data from public health and hospital laboratories and (2) to enable data exchange between hospital labs and public health laboratories, and between electronic health records and public health laboratories.

By moving public health laboratories onto the information highway, APHL is increasing the efficiency of the nation’s health and public health systems. Greater efficiency, in turn, means swifter disease detection and swifter intervention to safeguard the public’s health.

NEWBORN SCREENING AND THE BENEFITS OF INTEROPERABILITY

Newborn screening (NBS) to detect congenital and hereditary disorders has been an astounding public health success, saving the lives of thousands of infants. The use of standardized protocols to manage NBS data promises to make the program even more valuable and less vulnerable to disruption by:

1) Speeding the transfer of high-stakes data to electronic health records, physicians, public health agencies and hospitals;

2) Enabling NBS laboratories to back up one another during emergencies;

3) Facilitating the pooling of data across states so NBS trends and outcomes can be studied;

4) Facilitating quality reporting and long-term research on rare NBS conditions.

In November 2010, APHL—along with the National Newborn Screening and Genetics Resources Center, Health Resources and Services Administration (HRSA), National Library of Medicine (NLM) and CDC—co-sponsored a national conference to consider various aspects of electronic laboratory NBS messages as a means to national harmonization. The association is continuing this partnership so NBS stakeholders can quickly realize the benefits of electronic interoperability.

“The role of the public health laboratory is to provide data that can be utilized from a surveillance and epidemiology standpoint. As long as that data remains in the laboratory, it’s of no use to anyone.”

Glen Baker, MD, Director, Arkansas Public Health Laboratory
APHL promotes policies, processes and innovations that improve quality laboratory practice to deliver greater value to public health stakeholders. At the same time, the association works to assure the resources needed to sustain quality practice.

- APHL joined with the entire public health community to beat back an early threat to the **Prevention and Public Health Fund** (PPHF) created by the March 2010 health reform law. The PPHF—whose mandatory funding will rise incrementally from $500 million to $2 billion by FY 2015—was targeted for elimination by legislators who wanted to divert the resources elsewhere. Thankfully, the PPHF remains in place. It provided $20 million in additional funding for the **Epidemiology and Laboratory Capacity grant program** in FY 2010 and is expected to provide $40 million in FY 2011.

- Two years ago, the Wisconsin State Laboratory of Hygiene became the first lab in the world to institute routine newborn screening (NBS) for severe combined immunodeficiency (SCID), and in January 2010 the national Advisory Committee on Heritable Disorders in Newborns and Children added SCID to its recommended core panel of NBS disorders. Yet implementing the SCID assay—one of only two first-line, molecular NBS assays—poses technical and policy challenges, such as access to specialized SCID immunologists. In October, APHL co-sponsored a three-day meeting to help state NBS programs meet these challenges. The meeting brought together a range of NBS stakeholders from almost every state and culminated in a hands-on workshop for laboratory staff.

- APHL entered into an agreement with the Ghana Ministry of Health, CDC’s Newborn Screening Quality Assurance Program (NSQAP) and three Ghanaian medical organizations to formalize an innovative partnership that provides for 1) technical assistance to implement universal NBS for sickle cell disorders (SCDs) in Ghana and 2) collection of umbilical cord blood from Ghanaian mothers for use by the NSQAP SCD proficiency testing program. The NSQAP runs the world’s only proficiency...
testing program for SCDs, and the Ghanaian specimens are expected to include all SCD variants. APHL co-sponsored a laboratory training workshop in Ghana during a global SCD conference in July and arranged for Ghanaian scientists to receive quality assurance/quality control training at the NSQAP and Georgia Public Health Laboratory in September.

- APHL leaders held a “think tank” with the Public Health Accreditation Board (PHAB)—which oversees the voluntary accreditation of public health agencies—to explore a possible partnership to create an accreditation program for public health laboratories. Voluntary accreditation would benefit laboratories by providing a structured process for evaluating the efficiency, effectiveness and overall functionality of the laboratory organization. Next steps include development of laboratory-specific standards that could be used in conjunction with the PHAB process.

- Five public health laboratories completed APHL’s Laboratory System Improvement Program (LSIP) assessment, including the first local laboratory, the City of Milwaukee Public Health Laboratory. Past LSIP improvement activities have led laboratories to institute specimen courier systems, form laboratory advisory committees and make other enhancements to deliver greater value to customers.

“APHL Innovation Grants are funding laboratory improvements that are critical to public health. We are working with colleagues in North Dakota, South Dakota and Wyoming to design a regional public health laboratory system that offers the same state-of-the-art services available in more populous areas.”

Anne Weber, Bureau Chief, Montana Laboratory Services Bureau

SUPPORTING INNOVATIVE LABORATORY SYSTEMS RESEARCH

In April and November 2010, APHL awarded over $220,000 to 13 laboratories as part of its CDC-supported research program, Innovations in Quality Public Health Laboratory Practice. The program aims to document public health laboratories’ impact on community health, as well as their technological and workforce needs. The first projects include a study of the impact of enhanced, laboratory-based pediatric influenza surveillance (Southern Nevada Public Health Laboratory) and an evaluation of tools to assess exposure to synthetic marijuana-like substances, i.e., K2 or Spice (Arkansas Public Health Laboratory).
APHL provides essential services to support the work of member laboratories conducting infectious and foodborne disease surveillance and outbreak response. It serves as a liaison among public- and private-sector stakeholders, provides technical support and works to assure its members have the resources necessary to carry out their public health missions.

By detecting and characterizing disease-causing organisms, public health and food safety laboratories constitute the first line of defense against communicable and foodborne illness. Laboratory data, including the results of highly specialized tests offered only in the public sector, enables public health officials to track and contain sources of infection.

In 2010, APHL worked to assure that its member laboratories are able to capitalize on technological advances to carry out this health-critical mission. APHL:

- Secured CDC funding for sub-grants to 64 state and territorial public health laboratories to improve capacity for molecular testing to identify *Mycobacterium tuberculosis*, the agent responsible for tuberculosis (TB) infection. Molecular techniques enable a more rapid turnaround time than older test methods and, thereby, facilitate the rapid diagnosis and intervention needed to prevent the spread of newly emergent multidrug-resistant and extremely drug-resistant TB strains.

- With CDC, convened the 2010 HIV Diagnostics Conference involving test manufacturers, health officials, Department of Defense officials, academicians and public health, clinical and hospital laboratory. A major outcome was the proposal of a new *HIV testing algorithm* to potentially replace the current recommended protocol, dating back to 1989. The proposed algorithm incorporates the latest HIV immunoassay technology, as well as molecular HIV tests. It will detect recent infection, differentiate between HIV-1 and HIV-2 infection, and likely decrease the number of inconclusive or indeterminate results.

- Held the 2010 North American Laboratory Summit for Influenza in Vancouver, British Columbia, August 10-11, in collaboration with the Canadian Public Health Laboratory Network and Mexico’s InDRE. Dedicated to public health lab partnerships and exchange of scientific information, the summit was a tri-national event and centered on improving border relationships and enhancing collaboration amongst North American countries and their respective laboratory systems. It provided participants with information about public health threats and ongoing preparedness activities.

- Advocated for a quality systems approach to the oversight of laboratory developed tests (LDTs). APHL hopes to prevent the imposition of overly burdensome regulations that could stifle or delay the development of LDTs for emerging or rare diseases for which there are none commercially available, FDA-cleared tests, or for which FDA-cleared tests perform poorly. LDTs created by CDC and state public health laboratories have been critical for timely responses to past emergencies, including the 2003 SARS outbreak and the 2006 Iowa mumps epidemic.

“Because of APHL’s collaboration with us, the US will see NAAT testing for tuberculosis years earlier than if we had rolled this out ourselves.”

Rear Admiral Kenneth Castro, MD, Director, Division of Tuberculosis (TB) Elimination, NCHHSTP

David Mills, director of the New Mexico Scientific Laboratory Division; Paul Kimsey, director at the California Department of Public Health; Susan Neill, director at the Texas Department of State Health Services; Scott Becker, executive director, APHL.
• Secured CDC funding for 24 grants, totaling $316,000, to help PulseNet laboratories implement the latest technologies for analyzing foodborne pathogens: immunomagnetic separation (currently used to detect five strains of shiga toxin-producing E. coli), molecular serotyping (currently used to characterize Salmonella strains), and multiple-locus variable number tandem repeat analysis (currently used to subtype Salmonella and E. coli O157:H7). PulseNet, a national network of public health laboratories that performs standardized testing to detect and characterize foodborne pathogens, was involved in several outbreak responses last year, including investigations of Salmonella Enteritidis in shell eggs and E. coli O157:H7 and Listeria in artisan cheeses.

In addition, APHl piloted a toolkit created by the Council to Improve Foodborne Outbreak Response (CIFOR) to facilitate implementation of CIFOR’s landmark foodborne disease outbreak response guidelines, released last year. APHl is now introducing the updated toolkit to public health audiences at regional PulseNet meetings.

Finally, the association substantially increased its involvement with the Food Emergency Response Network (FERN), run by the FDA and US Department of Agriculture (USDA). APHl hosted a national FERN training conference last August, ramped up its efforts to communicate FERN’s vital role in assuring food safety from farm to table and has begun to assist with FERN training activities that will be offered in 2011.

“With federal funding for molecular serotyping, we can characterize Salmonella isolates in just a few hours instead of days. This information will help public health agencies respond much more quickly to foodborne disease outbreaks and almost certainly save lives.”

Denise M. Toney, PhD, Lead Scientist, Commonwealth of Virginia Division of Consolidated Laboratory Services

APHl and CDC created an assessment tool to gauge the capacity for influenza testing and surveillance in countries around the world. Assessments were conducted in the following countries:

- Angola
- Argentina
- Armenia
- Brazil
- Cambodia
- Côte d’Ivoire
- Democratic Republic of Congo
- Ecuador
- Egypt
- Ethiopia
- Fiji
- Georgia
- Guyana
- India
- Indonesia
- Kenya
- Laos
- Mexico
- Moldova
- Mongolia
- Morocco
- Nepal
- Nicaragua
- Nigeria
- Panama
- Paraguay
- Peru
- Philippines
- Rwanda
- Sri Lanka
- Suriname
- Tanzania
- Thailand
- Uganda
- Vietnam
- Zambia

Preparing agar plugs of DNA for PFGE testing. Utah Public Health Laboratory.

Preparing gel for PFGE testing, Virginia Division of Consolidated Laboratory Services.

Preparing gel for PFGE testing, Utah Public Health Laboratory.
APHL bolsters laboratory readiness to respond to situations that pose public health threats, both isolated events and wide-ranging emergencies. Working with member laboratories and partners, the association provides timely communication, coordination and technical assistance as needed.

Roughly 4.9 million barrels of crude oil poured into the Gulf of Mexico between April 20 (when the Deepwater Horizon drilling rig exploded) and July 15 (when the gushing seafloor wellhead was finally plugged). The massive spill occurred just 41 miles off the Louisiana coast, with devastating consequences for coastal residents and marine life.

A major concern from the outset has been the contamination of seafood with toxic crude oil components, such as polycyclic aromatic hydrocarbons (PAHs). Testing for PAHs, in particular, has been used to assess contamination before re-opening areas closed to seafood harvesting and to reassure a wary public that Gulf Coast seafood is safe to eat.

APHL’s early intervention—including convening an expert PAH detection workgroup and surveying public health, environmental and food safety labs in the region—highlighted critical needs. In response, the FDA updated the 20-year-old National Oceanographic and Atmospheric Administration (NOAA) PAH testing protocol and provided funds enabling several Gulf Coast laboratories to implement the test, which requires the use of a liquid chromatograph and other costly equipment.

Compared with the older test method, the FDA protocol allows scientists to analyze a greater number of samples simultaneously and cuts about five days off the turnaround time—important advantages during a crisis.

With continuing concerns about seafood safety, APHL is working with its scientific partners—APHL member laboratories, the FDA, CDC, Environmental Protection Agency and NOAA—to examine alternative markers of seafood contamination, including some that break down more slowly than PAHs. APHL has also helped to refine methods to detect persistent components of the oil dispersants discharged into the Gulf of Mexico.

All of this work is crucial to identify and minimize human health risks and to hasten the region’s recovery from the largest marine oil spill in U.S. history.
MAINTAINING LAB READINESS

Even in the midst of disaster, APHL recognized the necessity of continuing preparedness activities. In 2010, the association made progress in several critical areas:

• With CDC’s Division of Preparedness and Emerging Infections and CDC’s National Center for Environmental Health, hosted a national meeting of the Laboratory Response Network (LRN), which detects and confirms the presence of biological and chemical threat agents. The meeting featured rapid diagnostics, unusual case presentations and the first-ever LRN awards for outstanding contributions to public health preparedness and response. Of note, the LRN welcomed the first scientific delegation from Mexico’s INDRE to attend the meeting, an important milestone in cross-border preparedness.

• Issued its third status report on preparedness in state public health laboratories. The highly regarded report notes serious strains in the nation’s laboratories, stemming from an increased burden of testing and markedly diminished resources; overall federal funding for state public health laboratory preparedness fell from nearly $200 million in FY 2003 to about $60 million in FY 2008.

• Partnered with CDC’s Division of Preparedness and Emerging Infections Laboratory Response Network (LRN) Program Office, CDC’s Public Health Informatics and Technology Program Office (PHITPO) and three state public health laboratories to implement the LRN Laboratory Information Management Systems Integration (LIMSI) Project. The three laboratories involved in this unique LIMSI pilot project—the Virginia Division of Consolidated Laboratory Services (DCLS), the Idaho Bureau of Laboratories and the William A. Hinton State Laboratory Institute, Massachusetts Department of Public Health—modified their laboratory information management systems (LIMS) to enable them to send electronic data messages for biothreat agents to CDC, thereby eliminating redundant data entry and dependence on the CDC-provided software, LRN Results Messenger.

• With CDC’s Division of State and Local Readiness, developed and piloted performance measures for laboratories receiving funding through CDC’s Public Health Emergency Preparedness Cooperative Agreement. APHL and CDC also developed key measures of laboratory preparedness, such as the time needed to notify public health partners of significant laboratory results. These measures will help labs hone in on barriers to attaining target capabilities.

“...The Deepwater Horizon seafood safety response was an excellent example of a successful multi-agency (FDA and NOAA) as well as multi-jurisdictional (federal and state) response. We thank APHL for their assistance in this response. Incorporation of APHL into our communications protocols greatly enhanced our interactions with the public health laboratory community.”

Tony Barkey, MPH, Public Health Preparedness and Response specialist, explains APHL’s efforts to develop guidelines for laboratories on responding to non-clinical samples collected in the field.

Michael A. McLaughlin, PhD, CAPT, USPHS, Science Coordinator-Chemistry Division of Field Science/ORA Food and Drug Administration
APHL works to raise awareness of environmental issues affecting human health and to improve environmental health laboratory practice. The end result: threats are more quickly assessed and an appropriate response mounted. The association serves as a liaison between member laboratories and federal agencies, including the CDC’s National Center for Environmental Health and the US Environmental Protection Agency (EPA).

(Pictured top): Lori Dunmire, Chemist III, Environmental Services Program, Missouri Department of Natural Resources, performs an extraction in preparation for an Haloacetic Acid (HAA) analysis.

(Pictured bottom): Justin R. Miller-Schulze, PhD, 2009-2010 environmental health fellow, doing mass spec repairs.
Lack of a robust information technology (IT) infrastructure in environmental testing laboratories could well be the roadblock to fast, informed decision-making in the event of an environmental emergency.

For example, if toxic chemicals were released in a US city today—the result of a terror attack or an industrial accident—it is likely the scientists analyzing the chemical agents would have to manually enter data from lab instruments into the laboratory information management system (LIMS) and output results to response agencies in a spreadsheet. State and federal officials, in turn, would then have to manually review the data before sharing it with incident response managers.

As in the clinical laboratory, APHL recognizes that, for environmental laboratories, interoperable electronic data exchange systems are the answer. Last year, APHL developed a white paper outlining the unique challenges posed by environmental test data—such as its complexity compared to infectious disease data—and laid out its vision for an Environmental Public Health Laboratory Interoperability Project (E-PHLIP). The goal is to develop viable IT architecture options and tools for the electronic exchange of environmental testing data at all levels of public health laboratories.

In June, APHL representatives met with LIMS vendors to explore options and challenges. And in September, association members and staff met with the EPA deputy administrator to share APHL’s vision for E-PHLIP and to discuss the creation of a separate EPA office devoted to working with environmental testing laboratories. This work is ongoing.

A second APHL focus in the environmental arena last year was biomonitoring—the direct measurement of environmental contaminants in human blood, urine or other specimens to gauge the extent of potentially adverse environmental exposures. The association is spearheading the creation of a state-based National Biomonitoring Network that will provide data to determine whether there is a need to mitigate suspected exposure pathways.

To further this effort, APHL contracted with the National Conference of State Legislators to develop a biomonitoring best practices report for state lawmakers. The report was released in July and addresses everything from biomonitoring program protocols to biomonitoring legislation and the use of program data to inform public policy.

APHL also provided funding to the Association of State and Territorial Health Officials and the Council of State and Territorial Epidemiologists to support the development of guidance documents detailing how health officers and epidemiologists can promote and strengthen biomonitoring programs. An initial draft of APHL’s own biomonitoring guidance document for public health laboratories was completed in November.
Public health laboratories are an essential, yet underdeveloped, component of national health systems in many countries. APHL works in partnership with national health authorities and international agencies to strengthen laboratory systems to provide quality care for patients and disease surveillance information essential for effective health planning and disease prevention.

The collapse of Haiti’s physical infrastructure following a cataclysmic magnitude 7.0 Mw earthquake in January 2010, and the Haiti cholera outbreak this year have caused thousands of deaths and widespread physical and mental hardships. Haiti, the poorest country in the western hemisphere, had limited capacity in its national public health laboratory system before these horrific events, and now the laboratory system must respond to the daily need for testing hundreds of specimens to diagnose the spread of cholera and other life threatening diseases so that effective control and prevention measures can be implemented. A senior APHL consultant spent much of 2010 working with Haiti’s Laboratoire National de Santé Publique to assess the earthquake damages to dozens

The National QA team at the Nigeria National EQA Center in Zaria, Nigeria, preparing QA panels for the upcoming Phase II RTK Evaluation.
of area laboratories throughout the country and coordinate efforts to repair physical damage, replace equipment, provide supplies and support staff in restoring testing services.

During 2010, APHL contributed to strengthening laboratory systems globally through many successful initiatives.

• Collaborating with the World Health Organization and CDC, APHL wrote a comprehensive **guidance document for the development of national laboratory strategic plans**. This widely distributed publication had input from many stakeholders and has since been used, with APHL’s assistance, by health ministries in Guyana, Tanzania, Mozambique, Namibia, Sierra Leone and other countries to develop strategic and implementation plans that have strengthened public health laboratory systems.

• Co-sponsoring the fourth training program offered by the APHL-George Washington University International Institute for Public Health Laboratory Management. Twenty-seven scientist-managers from 13 countries completed the program, which focused on quality laboratory systems, leadership skills, the use of geographic information systems and strategic planning. The Institute has graduated more than 100 students since its inception in 2007.

• Leading a technical workgroup to develop specifications for an inexpensive, ventilated workstation (VWS) to provide a safer environment for preparation of sputa smears for **TB screening** in low-income nations. TB is the leading infectious killer of people living with HIV/AIDS and has a high prevalence in many developing countries. AFB smear microscopy, an inexpensive and simple test procedure, is the main screening tool for diagnosis of TB and is performed in rudimentary health clinic settings. The VWS provides a safe work environment for technicians who process the potentially infectious sputum specimens for testing. The VWS was demonstrated at a meeting of the International Union Against TB and Lung Disease and noted as an innovative measure to improve worker safety. The technical workgroup was funded by CDC and included the Baker Company, Germfree, HDR-CUH2A and many other TB experts.

• Implementing a pilot, **central laboratory database (CLD)** for the national lab system in Mozambique—part of a broad APHL effort to provide efficient means for analysis of laboratory-based disease surveillance and diagnostic information in developing countries. The CLD enables timely analysis of disease trends and prevalence to guide national health planning and resource allocation to assure cost-effective health care and prevention services.

COUNTRIES SUPPORTED THROUGH THE APHL GLOBAL HEALTH PROGRAM (DOMESTIC COAG, GAP COAG, WHO TWINNING):

- Angola
- Barbados
- Botswana
- Central Asia
- China
- Côte d’Ivoire
- Democratic Republic of the Congo
- Ethiopia
- Ghana
- Guyana
- Haiti
- Kenya
- Lesotho
- Mozambique
- Namibia
- Nigeria
- Rwanda
- Sierra Leone
- Swaziland
- Tanzania
- Ukraine
- Vietnam
- Zambia

APHL Annual Meeting attendees tour the EPA Research and Development Laboratory. Those pictured include two members of the Ethiopian Public Health Laboratory Association, Dr. Aytenew Ashenafi and Dr. Almaz Abebe Tadesse.

The GWU-APHL leadership team awards a graduation certificate to CDC-Namibia Laboratory Section chief, Souleymane Sawadogo. (From left to right): Ralph Timperi, Souleymane Sawadogo, Jeannie Jordan, Alan Greenberg, Patrick Luedtke and John Nkengasong.
APHL strives both to attract students to the field of public health laboratory science and to develop the skills of mid-level professionals who will become the next generation of public health laboratory leaders. At a time of rapid change—and in the midst of an acute shortage of laboratory professionals—this work is among APHL’s highest priorities.

In 2010, APHL:

- Hosted the first international workshop of the APHL/CDC National Laboratory Training Network™ (NLTN), a widely acclaimed resource for continuing education (CE) in laboratory science. The workshop was delivered in Mexico and focused on parasitology. The NLTN also implemented an electronic learning management system, enabling students to keep course materials, transcripts and CE credits in one virtual space.

- With funding from the American Reinvestment and Recovery Act, conducted a training needs assessment, which led to the development and delivery of two hands-on workshops: one on rotovirus testing and one addressing molecular methods for detecting bacteria that cause vaccine-preventable diseases (VPDs), such as pertussis. In light of a resurgence of VPDs, APHL also developed a proficiency-like program for pertussis and measles testing, a valuable quality improvement resource.

- Recruited the 16th class of Emerging Infectious Disease (EID) Fellows. The 22 fellows—18 at the bachelor’s and master’s level and 4 at the postdoctoral level—were placed in state, county and CDC public health laboratories. As an example, in October, EID fellow Ryan Brock Neil, PhD, accepted a position as manager of immunology and virology at the Tennessee Division of Laboratory Services.

Trainers from across the US participate in a 2-day Train the Trainer workshop that provided them with the materials and information required to design and implement a sentinel laboratory training program focused on bioterrorism preparedness.

### APHL/NLTN Training Courses – 2010

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• With CDC, the University of Texas at Austin (UT-Austin) and the Association of Schools of Public Health, co-sponsored a two-day, **public health career awareness fair** at UT-Austin. APHL speakers included Susan Neill, PhD, director of the Texas Laboratory Services Section, and David Carpenter, PhD, former director of the Illinois Department of Public Health Laboratory, and Brian Menegaz, EID Training Fellow.

• Created an inventory of programs available to prepare students technically for careers in public health laboratory practice—an essential resource for future laboratory scientists.

APHL’s **National Center for Public Health Laboratory Leadership (NCPHLL)** was established in 2002 to prepare current and emerging leaders with the skills to meet a broad range of evolving technological and organizational challenges. In 2010, the Center:

• Developed a set of **laboratory biosafety competencies** for professionals in clinical, environmental, public health, academic and research facilities. This rigorous endeavor involved CDC and a multi-agency panel of 29 collaborators, plus input from more than 340 laboratory practitioners. It addresses the safe handling and storage of hazardous agents used at the three highest biosafety levels.

• Recruited a **third cohort of emerging public health laboratory leaders** to participate in skill-building activities and peer mentoring. The NCPHLL is especially pleased to note that a number of former emerging leaders have been promoted into leadership positions.

• Laid the groundwork for a **community of emerging leaders** so that leadership cohorts can continue networking and launching new projects. Last year, Cohort I delivered its **Public Health 101** course—intended to broaden scientists’ perspective of the overall public health system and the laboratory’s role within that system—to public health laboratorians in Austin, Salt Lake City, Minneapolis, Miami, and Phoenix. Through funding support from Abbott Laboratories, the NCPHLL Emerging Leader Cohort worked in collaboration with the CCCLW (Coordinating Council for Clinical Laboratory Workforce) to develop the architecture and content of **labsciencecareers.com**, an online resource for high school and undergraduate students interested in careers in laboratory science.

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“**My EID fellowship really opened the door to my public health career. At the moment, I am developing molecular tests, including one for rapid detection of multi-drug resistant TB.**”

Ailyn Pérez-Osorio, PhD, Lead Microbiologist, Molecular Diagnostics Lab, WA State Department of Health

(Pictured left): During “Laboratory Identification of Emerging Pathogenic Molds,” a three-day training course hosted by NLTN and CDC, staff instruct students on how to classify and identify molds based on their colonial and microscopic characteristics.
FINANCIALS

Total Revenue: 34,997,187

- Grants and Contracts: 32,834,128
- Workshops: 822,399
- Membership Dues: 596,045
- Conferences and Exhibits: 445,158
- Other: 299,457

Total Revenue: 34,997,187
## APHL Domestic Program Expenditures

<table>
<thead>
<tr>
<th>Program</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious Diseases</td>
<td>7,234,030</td>
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<tr>
<td>Leadership Development</td>
<td>3,860,920</td>
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<tr>
<td>Workshops</td>
<td>3,824,090</td>
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<tr>
<td>Informatics</td>
<td>1,993,770</td>
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<tr>
<td>Member Services</td>
<td>1,891,180</td>
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<tr>
<td>Newborn Screening</td>
<td>1,405,010</td>
</tr>
<tr>
<td>Food Safety</td>
<td>1,399,630</td>
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<tr>
<td>Environmental Health</td>
<td>958,200</td>
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<tr>
<td>Laboratory Systems and Standards</td>
<td>858,900</td>
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<tr>
<td>Knowledge Management</td>
<td>469,480</td>
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<tr>
<td>Conferences</td>
<td>304,270</td>
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<tr>
<td>Administration</td>
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<td><strong>Total Domestic Programs</strong></td>
<td><strong>24,389,170</strong></td>
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</tbody>
</table>

## APHL Global Health Program Expenditures

<table>
<thead>
<tr>
<th>Country</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>61,930</td>
</tr>
<tr>
<td>Botswana</td>
<td>816,750</td>
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<tr>
<td>Côte d’Ivoire</td>
<td>112,440</td>
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<tr>
<td>Democratic Republic of the Congo</td>
<td>28,600</td>
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<tr>
<td>Ethiopia</td>
<td>792,090</td>
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<tr>
<td>Guyana</td>
<td>71,280</td>
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<tr>
<td>Haiti</td>
<td>473,670</td>
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<tr>
<td>Kenya</td>
<td>460,220</td>
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<tr>
<td>Lesotho</td>
<td>264,650</td>
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<tr>
<td>Mozambique</td>
<td>3,785,110</td>
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<tr>
<td>Namibia</td>
<td>18,230</td>
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<tr>
<td>Nigeria</td>
<td>452,760</td>
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<tr>
<td>Rwanda</td>
<td>99,740</td>
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<tr>
<td>Sierra Leone</td>
<td>380,450</td>
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<tr>
<td>Tanzania</td>
<td>242,790</td>
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<tr>
<td>Ukraine</td>
<td>17,620</td>
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<tr>
<td>Vietnam</td>
<td>244,430</td>
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<tr>
<td>Zambia</td>
<td>121,270</td>
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<tr>
<td>Other Global Health</td>
<td>421,640</td>
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<tr>
<td>Program Management</td>
<td>1,386,100</td>
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<tr>
<td><strong>Total Global Health Programs</strong></td>
<td><strong>10,251,770</strong></td>
</tr>
</tbody>
</table>

### EXPENSES

- **Total Expenses:** 34,640,940
- **Domestic Programs:** 70%
- **Global Health Programs:** 30%
APHL AWARDS

Emerging Leader Award
APHL's Emerging Leader Award honors an individual whose leadership has been instrumental in one or more advances in laboratory science, practice, management, policy or education within his or her first five to ten years in the profession.

Robyn Atkinson, PhD, director, Knoxville Regional Laboratory, Tennessee Department of Health

Gold Standard Award for Public Health Laboratory Excellence
The Gold Standard Award for Public Health Laboratory Excellence is given to an APHL member who has made significant contributions to the advancement of public health laboratory science and/or practice.

Sammie Malone, MS, bureau director, Environmental Services, Mississippi Public Health Laboratory

Lifetime Achievement Award
The Lifetime Achievement Award honors individuals who have established a history of distinguished service to APHL, made significant contributions to the advancement of public health laboratory science or practice, exhibited leadership in the field of public health and/or positively influenced public health policy on a national or global level.

Ronald Laessig, PhD

Thomas E. Maxson Education, Training and Workforce Development Award
The Thomas E. Maxson Education, Training and Workforce Development Award is given to an APHL member who has made significant contributions to public health laboratory practice by creating, delivering or developing continuing education opportunities, programs, policies or practices for the laboratory community.

Judy Delany, MS, MPH, liaison to the Office of State, Tribal, Local and Territorial Support and the Office of Surveillance, Epidemiology and Laboratory Services, CDC

(awarded posthumously)
**Healthiest Laboratory Award**

The Healthiest Laboratory Award celebrates excellence in environmental stewardship and health promotion in both practice and policy. It recognizes APHL member laboratories demonstrating outstanding efforts to reduce their collective environmental impact and to promote health & wellness.

*Susan Neill*, PhD, MBA, on behalf of the Laboratory Services Section of the Texas Department of State Health Services

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**On the Front Line Award**

The On The Front Line Award honors an individual or organization outside of the APHL membership which makes significant contributions to APHL, its membership and mission.

*Robert Maxfield*, MS, associate director, USEPA Region 1 – New England Regional Laboratory

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**Presidential Award**

The Presidential Award is presented at the discretion of the APHL president to an individual who has made significant contributions to the association’s work to promote policies that strengthen public health laboratories.

CDC Influenza Division, *Daniel Jernigan*, MD, MPH; *Joseph Miller*, PhD; *Stephen Lindstrom*, PhD (not pictured); *Roy Johnson*
2010 APHL TIMELINE

JANUARY
- APHL launches the Biomonitoring Database Project to house basic information about laboratories’ biomonitoring interests and projects.
- APHL and the CDC/GAP Kenya Office support LIMS implementation in three Kenyan provincial laboratories.

FEBRUARY
- At the Public Health Preparedness Summit in Atlanta, GA, APHL staff and members present on the role of public health laboratories in detecting emerging diseases.
- APHL, along with more than 175 organizations, issues a letter to the President and Congress in support of comprehensive health reform efforts, emphasizing the need to increase funding for disease prevention, wellness and public health.

MARCH
- APHL co-hosts the “Newborn Screening Molecular Testing Workshop: Using Cystic Fibrosis as a Model” at CDC.
- In Orlando, FL, APHL and CDC convene the 2010 HIV Diagnostics Conference to discuss the latest technologies and methods in HIV testing.
- President Obama signs health reform legislation into law, allocating $500 million in FY10 for the Prevention and Public Health Fund and authorizing $195 million for the Public Health Workforce Recruitment and Retention Program.

APRIL
- APHL and WHO co-host a PulseNet International Network meeting in Muscat, Oman, to strengthen national capability to control outbreaks of foodborne disease in the Mideast.
- APHL awards six research mini-grants to member laboratories through the Innovations in Public Health Laboratories Program.

MAY
- To assist in coordinating the national laboratory response to the BP oil spill, APHL hosts an information session with more than 120 participants.
- Over 380 newborn screening specialists gather in Orlando, FL, for the 2010 Newborn Screening Conference. Football great and parent advocate Jim Kelly gives a rousing and heartfelt keynote.
- US Secretary of Health and Human Services Kathleen Sebelius approves the addition of Severe Combined Immune Deficiency Disorder (SCID) to the core panel of disorders recommended for newborn screening.
- APHL organizes a multi-state call to discuss protocols for the isolation of *E. coli O145* in lettuce.

JUNE
- APHL holds its Annual Meeting and 4th State Environmental Laboratory Conference, “Public Health Laboratories: A Climate of Change,” in Cincinnati, OH.
- APHL convenes a Gulf Seafood Safety Response Work Group with federal, state and local partners to inform member and non-member laboratories of ongoing seafood safety testing and method development activities in response to the BP oil spill.
- APHL and CDC host the 6th National Conference on Laboratory Aspects of TB.
- A laboratory information management system goes live at Coast Province General Hospital in Kenya with APHL support.
JULY
- CDC awards APHL $2 million, funded under the HITECH Provision of the American Recovery and Reinvestment Act of 2009, to provide technical assistance to advance electronic exchange of laboratory data.
- In Port-au-Prince, Haiti, APHL provides technical assistance for design and planning of a critically-needed modular laboratory to replace facilities destroyed in the January earthquake.
- APHL joins coalition of public health partners that defeats an amendment that would have eliminated funding for the Prevention and Public Health Fund created under the Affordable Care Act.

AUGUST
- APHL, CPHLN and INDRE hold the 2010 North American Laboratory Summit for Influenza in Vancouver, Canada.
- APHL Executive Director Scott Becker travels to Addis Ababa, Ethiopia, to attend the annual meeting of the Ethiopian Public Health Laboratory Professionals Association.
- APHL’s corporate membership program is featured in the August issue of the leading national association magazine.
- APHL co-organizes the first consultation in Johannesburg, South Africa, to explore the feasibility of establishing PulseNet Africa.
- APHL is awarded USDA/FSIS funding for meeting coordination, training needs assessment and marketing activities related to the Food Emergency Response Network (FERN).

SEPTEMBER
- APHL collaborates with national and international health agencies to officially open the Makoanyane Military Hospital in the Kingdom of Lesotho.
- APHL establishes the departments of Newborn Screening and Genetics and Food Safety to support expanding activities in these areas.
- Association members and staff meet with the EPA deputy administrator to share APHL’s vision for E-PHLIP and to discuss the creation of a separate EPA office devoted to working with environmental testing laboratories.

OCTOBER
- The 2010 Laboratory Response Network (LRN) National Meeting attracts a record turnout to San Diego, CA. APHL presents the first LRN awards to honorees.
- Twenty-five lab professionals from Africa, Asia and the Caribbean train at the International Institute for Public Health Laboratory Management, co-sponsored by APHL and the George Washington University.

NOVEMBER
- APHL staff meet with Dr. Elisabeth Hagen, Undersecretary for Food Safety at USDA, to discuss public health laboratory needs in relation to USDA’s priorities on food safety prevention and education.
- The US Senate votes in favor of the Food and Safety Modernization Act, imposing stricter standards on the food industry to prevent outbreaks of foodborne illness.
- The City of Milwaukee Public Health Laboratory is the first local laboratory to complete the LSIP assessment.

DECEMBER
- APHL publishes its recommendations for improving national emergency response capabilities in Field Device Use by Responders: Issues and Solutions.
- APHL consultants travel to Zaria, Nigeria, to provide technical assistance with a PEPFAR initiative to evaluate an HIV rapid test kit.
- NCPHLL’s Emerging Leaders Program presents Public Health 101, a four-hour interactive training course on the history of public health laboratories, at the New Mexico Department of Health Scientific Laboratory.
- Food Safety and FDA Modernization Act signed into law by President Obama. New law includes several provisions related to laboratory testing of food products and reporting requirements on improvements in clinical testing related to outbreaks of foodborne diseases.
APHL SERVICE RECOGNITION

Outgoing Board Member
Frances Downes, DrPH, Board Member, 2007-2010, and Past President, 2009-2010, Director, Public Health Laboratory, Michigan Department of Community Health

Outgoing Committee Chair
Michael Wichman, PhD, Chair, Environmental Health Committee, 2004-2010, Associate Director, Environmental Health, State Hygienic Laboratory at the University of Iowa

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- Office of Noncommunicable Diseases, Injury and Environmental Health; National Center on Birth Defects and Developmental Disabilities; National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
- Office of Public Health Preparedness and Response
- Office of State, Tribal, Local and Territorial Support
- Office of Surveillance, Epidemiology and Laboratory Services; Laboratory Science, Policy, and Practice Program Office; Public Health Informatics and Technology Program Office

**Other Federal Agencies**
- Centers for Medicare and Medicaid Services, Division of Laboratory Sciences
- Department of Defense
- Department of Homeland Security, Office of Health Affairs; Science and Technology Directorate
- Department of State, Office of Global AIDS Coordinator
- Environmental Protection Agency, Office of Water, Office of Solid Waste and Emergency Response
- Federal Bureau of Investigation, Hazardous Materials Science Response Unit; Hazardous Materials Response and Training Unit; Chemical, Biological, Radiological Nuclear Sciences Unit; Weapons of Mass Destruction Directorate
- Food and Drug Administration, Center for Biologics and Evaluation Research, Center for Devices and Radiologic Health, Center for Food Safety and Applied Nutrition, Center for Veterinary Medicine, Office of Regulatory Affairs
- Health Resources and Services Administration, Maternal and Child Health Bureau
- National Institutes of Health, National Institute of Allergy and Infectious Diseases, Regional Centers of Excellence
- National Oceanic and Atmospheric Administration
- US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, Office of the National Coordinator for Health Information Technology

**Associations and Non-Governmental Organizations**
- AOAC International
- Association of American Feed Control Officials
- African Field Epidemiology Network
- Alliance to Make US Healthiest
- American Clinical Laboratory Association
- Association of Food and Drug Officials
- American Nurses Association
- American Public Health Association
- American Society for Clinical Pathology
- American Society for Microbiology
- American Thoracic Society
- ANSER (Analytic Services, Inc.)
- Association of Maternal and Child Health Programs
- Association of Schools of Public Health
- Association of State and Territorial Health Officials
- Booz Allen Hamilton
- Canadian Public Health Laboratory Network
- The Caribbean Epidemiology Center
- Children’s Environmental Health Network
- Clinical and Laboratory Standards Institute
- Clinton Health Access Initiative
- College of American Pathologists
- Columbia University Mailman School of Public Health, University Technical Assistance Program
- Council of State and Territorial Epidemiologists
- Council to Improve Foodborne Outbreak Response
- D4O- Design for Others
- Elizabeth Glaser Pediatric AIDS Foundation
- Federal University of Rio De Janeiro
- Foundation for Innovative Diagnostics
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  www.riverd.com  
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  www.VWRSP.com/Government  
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National Conference of State Legislatures  
National Environmental Health Association  
National Newborn Screening and Genetics Resource Center  
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    National Center for HIV/AIDS, Viral Hepatitis, STDs and TB Prevention
    National Center for Emerging and Zoonotic Infectious Diseases
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    National Center for Birth Defects and Developmental Disabilities
    National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
  Office of Public Health Preparedness and Response
  Office of Surveillance, Epidemiology and Laboratory Services
    Laboratory Science, Policy, and Practice Program Office
    Public Health Informatics and Technology Program Office

Environmental Protection Agency
Jeffrey Modell Foundation
President’s Emergency Plan for AIDS Relief
United States Department of Agriculture – Food Safety and Inspection Service
World Health Organization

This report was supported in part by Cooperative Agreement Numbers 1U2GPS001799, U60/CDS03019, 1U60HM000803 and 1U60HH000125 from CDC, and by the USDA, FSIS Number FSIS-C-30-2010/01. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC or USDA, FSIS.