

Environmental **NEWS**

Spring 2010

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**Lancaster
Laboratories**

Celebrating **50** Years



An interview with Dr. Wilson Hershey,
President

As Lancaster Laboratories moves into its 50th year in business, it is a time of reflection as well as projection. No one in the original three-person business in 1961 could have imagined what we would look like 50 years later. Having joined Lancaster Labs 38 years ago as a bench chemist and serving as president for the past 15 years, Dr. Wilson Hershey shares his historical perspective.

Dr. Hershey, what was the basic objective for helping clients meet their goals in the early days?

It was determined early on that delivering outstanding quality and service were absolutely essential for clients' success as well as ours.

How has Lancaster Labs' steady growth benefited client relationships?

Today, with 1,000 employees and sites in the U.S. and Europe, we are better recognized and better positioned to serve clients than ever before. In industry surveys, clients say they prefer us based on scientific and regulatory expertise, meeting project deadlines, client service and price. And because of this, the companies that trust us are nearly all of the largest pharmaceutical companies, more than half of the largest chemical and petrochemical firms and large tobacco companies.

What have we learned in the first 50 years that is unlikely to change?

Continuous renewal is essential. We must always add new services and

The next 50 years

improve existing ones. We must continue to become more efficient. We must never get comfortable with the status quo and must continue to "reinvent" the business.

Personalized client service is a must. It is one way to provide real value and differentiate ourselves. All labs deliver certificates of analysis. Our goal is to have service, quality and technical expertise set us apart.

Size matters. Having grown from a 2,500 square-foot lab in 1961 to 225,000 square foot state-of-the-art facility in Lancaster, demonstrates our ongoing financial stability and commitment to respond to clients' growing needs. Our three tier service model—fee for service, FTEs at our lab and Professional Scientific Staffingsm (PSS) at client sites—is resonating with our large clients.

Employees are key. We are audited by 100 or more companies and agencies per year. Often during the wrap-up meeting after the audit, we are complimented not only on the technical expertise of our employees but on their can-do attitude, smiles and camaraderie—something not found at many of our competitors.

What will change in the next 50 years?

Technology will continue to change at an ever increasing rate. In 1961 an instrument was capable of running one amino acid sample per day. Today, a sample can be run in 12 minutes using UPLC. Computerization and information management has improved at an even faster pace. Staying ahead of the curve will continue to be a differentiator.

Regulations will change. While the US EPA and FDA are unlikely to relax the official regulations, it remains to be seen how they will enforce those regulations for laboratories. Offering new regulatory methods and ensuring our customers projects are compliant is paramount.

More testing will be done in Europe and Asia. We need to remain adaptable to the needs of these markets and act accordingly.

In summary, our long-term vision is to be the best lab, the gold standard for our industry. With a keen eye on the horizon, we will continually strive to do better for our clients. And backed by our rich 50-year history of delighting clients, Lancaster Labs will work hard to remain the trusted lab for the next 50 years.

Professional Scientific Staffingsm growth doubles

Lancaster Laboratories cites 100 percent growth for its Professional Scientific Staffingsm (PSS) service model in 2009, while having expanded to 14 sites in North America and Europe since its inception seven years ago.

"Driven in part by the economy and the resulting staffing challenges coupled with the outstanding service we provide, our PSS model is being well-received with our industrial clients," says PSS director Beth DiPaolo. "Therefore, we are continually working on great opportunities to add staff at existing sites and are pursuing business at several new sites. And we expect to have another strong performance this year."

Lancaster Laboratories' PSS delivers innovative staffing solutions, placing its highly-qualified scientists at the customer's site dedicated to the success of their in-house laboratory testing projects. Infusing its 50-year track record of scientific expertise and HR best practices, Lancaster Laboratories hires, trains and manages its employees to perform laboratory services at customers' sites, using their quality systems.

IRS 20-Factor compliant, PSS provides the same level of services, expertise and cGMP compliance available at the Lancaster Labs facilities. Eliminating the co-employment risk for the customer, PSS provides a "non-permanent" workforce at a lower cost than fixed headcounts. For more information, call Beth DiPaolo at 717-656-2300.

Innovation and timely testing prevent plant shutdown

As Lancaster Laboratories begins its 50th year in business, it's interesting to note that some of the factors that drove its founder still exist to today. When Dr. Earl Hess founded the Lab, he envisioned being a "chemist in private practice;" someone who could come up with innovative, analytical solutions for local businesses. While Lancaster Labs' clients are now global instead of local, their need for fast solutions to analytical challenges still exists, as recently demonstrated when a large industrial client experienced a malfunction in their purified water processing.

A leak in the system caused the purified water to become contaminated with 2-diethylaminoethanol, which is used for conditioning processed steam. The client took action to correct the problem, but they needed to know the extent of the contamination in the water system quickly so they could get their production back on track and avoid a prolonged plant shutdown. Since the compound is not a typical pollutant, no existing environmental test methods could be identified. However, the client was familiar with Lancaster Labs through work with its Pharmaceutical departments, and they placed a call for assistance to Lancaster Labs on a Thursday. Lancaster Labs' Specialty Services Team was established to develop new test methods, using existing technology to meet client specific needs. And chemists within this team answered the call by evaluating the contaminant and immediately proposing a potential technique for quantifying 2-diethylaminoethanol.

The client accepted the proposal and the wheels for providing answers on a rush basis

were set in motion. Sampling bottles were supplied to the manufacturing site on the same day because of the close proximity of Lancaster Labs' West Coast service center. While the samples were enroute by courier across the country to Lancaster, PA, chemists at Lancaster Labs were developing and validating a method that

the minimum detection limit needed by the client. During that weekend, analysts used the newly validated method to analyze the samples, which included one at the source to confirm the leak and others from various points of use to determine the extent of contamination. By Monday, the results



Principal chemist Rick Shober utilizes a Thermo TSQ Quantum Access LC/MS/MS to solve a client's problem on a rush project.

would detect the contaminant at concentrations in the low parts per billion range. A source of analytical standard was located and a Lancaster Labs driver was dispatched to retrieve it so that development work could start immediately, rather than wait for next day delivery.

The proposed method involved direct aqueous injection onto a Thermo TSQ Quantum Access, a triple quadrupole liquid chromatograph/mass spectrometer (LC/MS/MS). By Friday, the day after the initial phone call, the instrument was set up, and the standard was being used to verify that the proposed method could reliably detect the contaminant at concentrations as low as 5 ppb—a level that was 10 times lower than

were calculated and reported to the client. They were relieved to learn that their remediation efforts were successful and manufacturing operations could continue without further treatments or delay.

In this case, the expertise of Lancaster Labs' analysts and the availability of state-of-the-art instrumentation were employed to provide an innovative solution to a client's analytical challenge in a timeframe that met their needs. While Dr. Hess may not have had an LC/MS/MS 50 years ago, this kind of customized service is exactly what he envisioned.

For more information on method development by the Specialty Services Team, please call Chuck Neslund at 717-656-2300, ext. 1819.

Accreditation News

NJDEP certification obtained for extractable petroleum hydrocarbon testing



Principal chemist Bob Brown loads soil and water samples for analysis.

The New Jersey Department of Environmental Protection (NJDEP) recently published a new method entitled, "Analysis of Extractable Petroleum Hydrocarbons (EPH) in Aqueous and Soil/Sediment/Sludge Matrices." The method focuses on non-volatile petroleum products, which are separated into aliphatic and aromatic fractions. The fractions are analyzed individually using gas chromatography that further separates the extract into carbon ranges, each with an assigned toxicity factor. This technique supplies more specific information that can be used to implement health based soil remediation standards.

Applying their experience with similar methods that are required in other states, chemists at Lancaster Labs submitted method validation data, and the Labs' certification was approved by the State of N.J. "We have a lot experience with this type of testing and are accepting samples for this method," says Jenifer Hess, manager of the EPH Department.

NJDEP low level air testing approval pending

Lancaster Labs has also requested NJDEP approval to perform low level air testing using the state specific GC/MS method known as NJDEP-LLTO-15-3/2007. Lancaster Labs was required to submit an acceptable electronic data deliverable as one of the requirements for certification. Because of the analytical challenges presented by the lower report limits and rigorous quality control requirements, only a small number of laboratories are expected to apply for the LLTO-15 certification.

DoD accreditation earned

Lancaster Labs recently received Department of Defense (DoD) approval to perform a wide range of analyses to support environmental restoration programs for any branch of the military. The DoD established an accreditation process based on the DoD Quality Systems Manual for Environmental Laboratories in an effort to promote consistency among laboratory service providers. The manual includes elements of the NELAC Quality System Standards and additional DoD specific requirements.

NELAC Standard Update

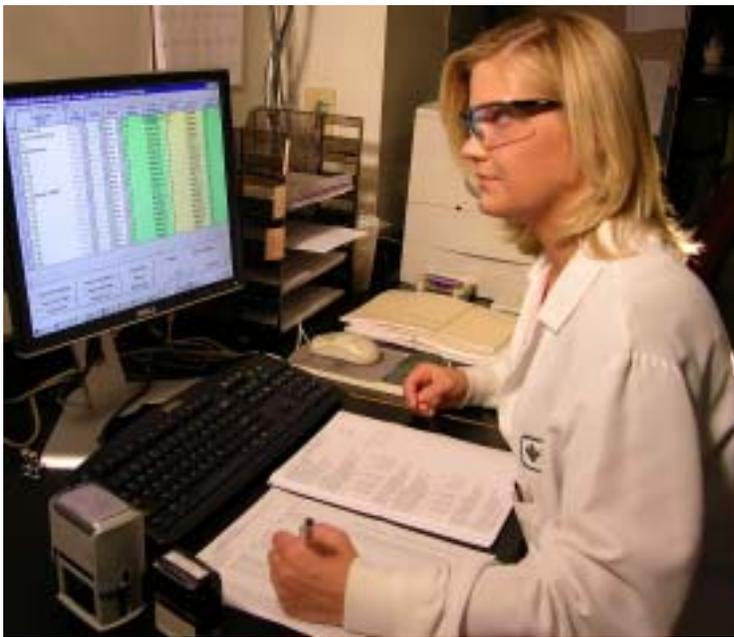
The NELAC Institute (TNI) is finalizing changes to the standard used for laboratory accreditation. The new TNI Standard will replace the existing 2003 NELAC Standard, which defines requirements for environmental laboratory accreditation. The revision includes clarifications of requirements included in the earlier version and reorganization of the existing standard into modules by discipline.

The official implementation date is July 1, 2011, which will allow laboratories time to come into compliance with new requirements and give state accreditation bodies the opportunity to make necessary regulatory adjustments. Because all laboratories who hold current NELAC accreditation must comply with the new standard, TNI will be providing training to the regulated community at meetings to be held around the country. Lancaster Labs participated in the consensus process used to revise the existing document and will be ready to implement the new standard when it becomes effective. Lancaster Labs is certified to the NELAC Standard through the Pennsylvania Department of Environmental Protection.

QA member joins NELAC Quality Systems Committee

Most of the work accomplished by TNI is done by industry volunteers who serve on committees. Dorothy Love, a principal specialist in the Quality Assurance Team at Lancaster Labs, was recently named to a three-year term on the TNI Quality Systems Committee. In addition to developing the standards for environmental laboratory quality systems, the committee is responsible for providing clarification to questions from users of the standard.

For more information about Lancaster Labs' accreditations, contact Environmental Business Development at 717-656-2300.



Senior chemist Heather Williams sets up a calibration to run samples for the new ISO method.

Every year, millions of gallons of hydrocarbon contaminated water are discharged into the oceans from ships and industrial plants located in coastal regions. Multiple national and international agencies regulate the allowable hydrocarbon concentrations of this wastewater. So plant and ship operators are required to monitor and record their discharges, which usually go overboard directly into the waterway.

Large commercial vessels typically carry treatment apparatus on board to reduce hydrocarbon contaminants in bilge water to an acceptable level, and the wastewater is monitored by onboard devices, which measure hydrocarbon levels on a real-time basis. Although these controls are usually effective in maintaining compliance, substantial fines are levied against ship operators who violate discharge limits.

Recently, the corporate owner of a super tanker decided it would be prudent to verify that their onboard monitor was providing accurate hydrocarbon concentration readings and contacted Lancaster Labs for assistance.

specific methods, but for this application, it was thought that using an internationally recognized testing method would be the best approach. They developed and validated a method based on ISO 9377-2:2000, Determination of Hydrocarbon Oil Index. In addition to being recognized by a number of foreign regulators, this gas chromatographic method uses hexanes rather than more toxic chlorinated solvents to extract hydrocarbons from the water, making it a more environmentally friendly technique. The hexane extraction is more selective for hydrocarbons, and after concentration, polar substances are removed using a Florisil column cleanup.

The contaminants in bilge water present an analytical challenge because they come from multiple sources, including machinery wash down, marine fuels and lubricating oils. To analyze this demanding mix, a gas chromatograph fitted with a flame

Why it's better to partner with us

Hydrocarbon oil index method validated for bilge water testing

The chemists at Lancaster Labs have years of experience analyzing hydrocarbons for compliance with USEPA and various state

ionization detector (FID) is used. Samples are fortified with hydrocarbons C_{10} and C_{40} to mark the area for analysis, and all peaks between these two markers are quantitated to determine the hydrocarbon oil index. The reporting limit achieved was 0.1 mg/L, which is well below the discharge limits allowed for most waterways. Using this method, Lancaster Labs was able to verify that the meters in use on board the tanker were providing accurate hydrocarbon results for the bilge water being discharged.

Another application for the hydrocarbon oil index test was identified when a different client

In addition to being recognized by a number of foreign regulators, this gas chromatographic method uses hexanes rather than more toxic chlorinated solvents to extract hydrocarbons from the water, making it a more environmentally friendly technique.

submitted wastewater samples from an off-shore island power plant that was discharging its wastewater into the Atlantic Ocean. Again, the request was to verify that the monitoring system for the discharge was providing accurate data, and Lancaster Labs' chemists were able to use the ISO based method to answer that concern.

For more information on hydrocarbon oil index and other hydrocarbon analytical techniques, contact Environmental Business Development at 717-656-2300.

Overcoming reporting limit challenges

A common problem in the regulated community is difficulty verifying successful remediation by testing to very low analytical detection limits. Existing test methods are not always capable of determining the concentrations required by regulators. While the Specialty Services Team at Lancaster Labs was established specifically to develop new methods for a client's unique analytical challenges, there are other analytical teams at Lancaster Labs that are also innovating to meet client needs by modifying existing published methods to achieve ultra-trace

concentration of 1 ppt. This compound is typically analyzed using EPA method 1625 or SW-846 method 8270C, which calls for liquid/liquid extraction of the water sample, extract concentration and analysis by GC/MS. The published method lists the detection limit at 5 parts per billion (ppb) or several orders of magnitude above what the client needed. Chemists at Lancaster Labs were able to use a novel modification of method 1625, along with the extremely sensitive Thermo DSQII GC/MS instruments to meet the 1 ppt requirement.

Selective ion monitoring (SIM) is another technique available to improve sensitivity for GC/MS methods. Chemists in the GC/MS Volatiles Department have used SIM to modify EPA method 524 to

achieve low detection limits for selected compounds, including one client request to analyze 1,2,3-trichloropropane down to 1 ppt.



GC/MS semi volatiles principal chemist Tim Trees and manager Rick Karam discuss NDMA data on water samples.

detection limits. To ensure the quality of the data produced, the method modification process at Lancaster Labs includes validation of the method detection limit along with accuracy and precision checks. Here are some examples of what can be achieved with successful method modification projects.

The required limits can be as low as the part per trillion (ppt) range, as was the case for one Lancaster Labs client that was asked to report N-nitrosodimethylamine (NDMA) to a

Lancaster Labs offers rapid response services to support the U.S. Gulf Coast

As the largest single facility laboratory in the U.S., Lancaster Labs has 800 scientists—backed by 225,000 square feet of state-of-the-art lab capacity—working 24/7 to help Gulf Coast clean-up. With significant resources in the Gulf, Lancaster Labs has been providing sample pickup, packing and coordination of field activities for years.

Lancaster Labs holds the required certifications in the Gulf Coast, including NELAP (Louisiana, Texas, and Florida), and can handle samples of any type, including air, sediment, waste, biota/tissue, soil, and aqueous samples for more EPA methods than any other single facility laboratory.

Experience supporting significant projects in the Gulf Coast, Lancaster Labs offers a full range of testing services, including:

- **TPH and Petroleum Fingerprint Analyses**
- **State Specific TPH methods for Texas, Louisiana and Florida**
- **Dispersion Chemicals, including Glycols and 2-butoxy ethanol**
- **Volatiles, Pesticides and Organic Acids**
- **PAHs and Semivolatiles by full scan, SIM, and low level 8270**
- **Alkyl PAHs**
- **Dioxins and Furans**
- **Inorganics, metals and water quality**
- **Hazardous Waste Analysis for TCLP and RCI**

Lancaster Labs provides EQUIS, Enfos, Locus, State and more than 100 custom EDD formats. For more information, call Don Wyand, 717-656-2300, ext. 1525.

Contact us

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For literature requests or

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At Lancaster Laboratories, we believe that our people provide our strength. Their dedication to quality, professional competence and hard work is the key element in the company's success. In this regular feature, we introduce you to some of the people who have helped make Lancaster Labs an industry leader.

With four out of eight siblings with computer science degrees, it's no wonder Holly Trego adeptly manages Lancaster Labs' Environmental Applications Development Department. As a kid, Holly used to tag along with her sister to Millersville University, where her sister was pursuing her computer science degree. Appreciating Holly's interest in computers, the professors would allow her in to the labs, helping to foster her love of the science. Yet it was her talent that landed Holly an internship with Lancaster Labs and a full-time position in 1996. Since then she's earned a master's degree in computer science from Pennsylvania State University.

For clients, Holly and her team manage data from the moment it comes off the instrument, through LIMS, to customizing data packages to the final reporting system, all tailored to client requirements.

What does your current job entail?

I am the manager of the Environmental Applications Development Department and work with the developers to prioritize the various projects that are requested. We track the requested changes and prioritize them with the input from management staff throughout the company. I started with Lancaster Laboratories as a developer myself

People are the Chemistry



Holly, Terry and Teresa Trego

so I also help support several areas of the company with changes to the systems.

What is the scope of your department?

Environmental Applications Development consists of six developers who constantly update and improve our LIMS and supporting computer systems. With a total of 78 years of experience in our team at Lancaster Laboratories, we have a group that understands the Environmental departments very well. Our team has integrated just about all of the instruments directly into our LIMS system and allows data to flow from the instrument through to the process of verification and reporting. We also provide support for various areas such as Transportation, Bottles, Sample Login, Scheduling, Billing and

Reporting, Electronic Data Deliverables and Data Packages to name a few. Our team has a significant impact on every area of the company and works to support the wide range of employees that use our systems.

How would you characterize your leadership style?

The staff that I manage has a wide range of experience, and I enjoy working in a collaborative manner with them. They often have important insight into how to best improve a process and work hard to understand the requirements of our clients (both internal and external). I enjoy meeting and discussing approaches that could be taken so that we can come up with solutions to the problems that are efficient and effective. I enjoy understanding the systems and how all of the pieces of the puzzle fit together so that I can point people in the right direction when changes need to be made.

And when you're not working?

I am spending time with my husband, Terry, my daughter, Teresa, and our Brittany Spaniel, Julie. We enjoy spending time with family, friends and neighbors and like to be on the go. We enjoy traveling and are always planning our next big trip. This summer we are taking Teresa to Disney World and are planning a trip to the French Riviera. We recently took a trip to Northern France and had a great time in Paris, Normandy, Mt. Saint Michele and Reims. We have traveled to Italy, Germany, Austria and France. We would love to visit Ireland, Spain and England as well. We are also expecting a baby in September and look forward to the hectic lifestyle that will bring to our growing family.

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National Ground Water Association	Baltimore, MD	September
Dioxin 2010 Conference	San Antonio, TX	September 12-17
Air & Waste Management Association	Chicago, IL	September 29-30
Assoc. Environmental Health & Sciences	Amherst, MA	October 18-21
Railroad Environmental Conference	Champaign, IL	October 26-28
California Groundwater Association	Sparks, NV	November 4-6
Society of Environmental Toxicology & Chemistry	Portland, OR	November 7-11
Eastern Analytical Symposium & Exposition	Somerset, NJ	November 15-18

Lunch and Learn with Lancaster Labs

Lancaster Labs' offers technical seminars on regulatory topics and supporting testing capabilities along with lunch on us. Topics include:

Vapor and Air Analyses: project planning, regulations and sampling protocol for soil gas, vapor intrusion or other air related projects.

Petroleum Analyses: methods, results interpretation and common interferences.

Detection Limits and Low Level Analyses: Understanding MDLs, LOQs and PQLs; interpreting analysis reports and determining when low level analysis techniques are needed.

Low Level Metals Analysis Using ICP/MS Reaction/Collision Cell with HMI to Eliminate Interferences.

Specialty Analyses and Method Development: Explosives, Perchlorate, Hydrazines, Alkyl PAHS.

Laboratory Testing QC/QA: detailed explanation laboratory QC sample value and data evaluation.

Call environmental business development to schedule a presentation at your site. 717-656-2300.

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