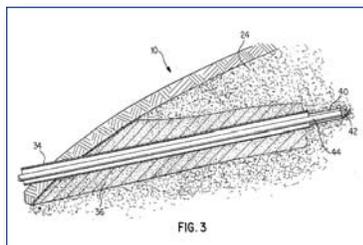


US Patent Pending For Experimental Horizontal Drilling Solution To Leachate Collection

The Rivanna Solid Waste Authority (RSWA) began to investigate the condition and operation of one of its closed waste disposal cells located at the Ivy Material Utilization Center near Charlottesville, Virginia, in 2005. This investigation was prompted by ongoing odor complaints by local residents. With the help of Environmental Standards, Inc. (Environmental Standards), the RSWA (our client) determined that liquid accumulations within the waste cell were impacting the collection efficiency of the site's active landfill gas (LFG) collection and control system. In order to mitigate this condition, Environmental Standards conducted a variety of characterization efforts, which culminated in the development of a computer model of the liquid within the cell.

Using this conceptual model, Environmental Standards evaluated potential dewatering strategies that could result in the dewatering of the accumulated liquids in a reasonable period

of time (2 to 8 years). Both vertical well and "horizontal" well dewatering systems were evaluated through iterative computer modeling efforts. These modeling efforts identified that a vertical well system of 101 vertical pumping wells pumped approximately every 2 to 3 weeks would be necessary to achieve the desired dewatering rates.



Above: One of nine design drawings submitted with patent application.
Below: Installation of experimental horizontal well.



Alternatively, a series of three horizontal wells that would allow accumulated liquids to gravity drain from the cells could be constructed. Once optimal systems were designed, Environmental Standards evaluated construction, operation, and maintenance costs of the two systems.

The cost for constructing either system was nearly identical (horizontal well construction was marginally less). The greatest difference was identified in the operation and maintenance costs to operate the two systems. The vertical well system

would require hundreds of thousands of dollars to maintain the many wells and would provide for, more or less, continuous pumping. The experimental horizontal drain system, on the

Environmental Overview Of The American Recovery And Reinvestment Act of 2009 (Recovery Act)

According to the US EPA website, the Recovery Act was signed into law by President Obama on February 17, 2009. This legislation is an unprecedented effort to jumpstart our economy, create or save millions of jobs, and put a down-payment on addressing long-neglected challenges so our country can thrive in the 21st Century. The Recovery Act is an "extraordinary response to a crisis unlike any since the Great Depression" and includes measures to modernize our nation's infrastructure, enhance energy independence, expand educational opportunities, preserve and improve affordable health care, provide tax relief, and protect those in greatest need.

(Continued on Page 2, see "Recovery Act")

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(Patent, Continued from Page 1)

other hand, if successful, was expected to cost less than \$20,000 a year to operate and maintain because these wells would gravity drain.

During the summer of 2008, Environmental Standards contracted with Directed Technologies Drilling, Inc. to construct the horizontal drains. At present, the experimental drains have been successfully installed, tested to ensure function, and are operating as designed. An additional benefit of the installation of the drains is expected when the drains are connected to the existing LFG collection system so that the dual-purpose of leachate removal and LFG collection is met - possibly providing green benefits for the community, as well.

Environmental Standards believes that this is the first post-closure installation of a gravity leachate collection system into a closed landfill utilizing horizontal drilling techniques in the United States and globally, one of the first. So unique is the technology, the firm has applied for patent protection for the innovative process and solution. ■

(Recovery Act, Continued from Page 1)

Implementing the Recovery Act

According to US EPA, the Recovery Act specifically includes \$7.22 billion for projects and programs administered by the Agency. These programs are reportedly designed to protect and promote both “green” jobs and a healthier environment. The environmental areas include:

- Clean Water State Revolving Fund and Drinking Water State Revolving Fund: \$4 billion for assistance to help communities with water-quality and wastewater infrastructure needs and \$2 billion for drinking water infrastructure needs. A portion of the funding will be targeted toward green infrastructure, water and energy efficiency, and environmentally innovative projects.
- Brownfields: \$100 million for competitive grants to evaluate and clean up former industrial and commercial sites.
- Diesel Emissions Reduction: \$300 million for grants and loans

to help regional, state and local governments, tribal agencies, and non-profit organizations with projects that reduce diesel emissions.

- Superfund Hazardous Waste Cleanup: \$600 million for the cleanup of hazardous sites.
- Leaking Underground Storage Tanks: \$200 million for the cleanup of petroleum leaks from underground storage tanks.

The Obama administration is hoping that the new law is geared for performance and unprecedented transparency. US EPA plans to award both the designated funds to states and the competitive grants as quickly as possible. All funding will be monitored by the Agency’s Inspector General’s Office, which will receive \$20 million for oversight and review.

Learn more on recovery.gov, where announcements of grants will be posted in an effort to demonstrate transparency. ■

Charlottesville Office Relocation

Our Virginia operations began humbly as a project office focused on the post-closure responsibilities of a central Virginia landfill. Today, our Virginia location offers our entire suite of environmental support services. We are partnering with municipalities and industrial facilities throughout Virginia.

Napoleon Bonaparte said that “There are two levers that move men: interest and fear.” In our case, we were going to have to convert the restroom into an office, and no one was in favor of that!

The relocation of our Charlottesville, Virginia, office was announced in the last issue of *The Standard*. On moving day, the movers came and then proceeded to “walk” the contents of our office to the building next door. Our big move involved a 75-foot traverse. Our shiny, new renovated facilities have room for everybody and anticipated future expansion.

We are proud of our new office and welcome you to visit us at our new facility at 1208 East Market Street in Charlottesville, Virginia. ■



Virginia Office Staff (left to right): Scott Nash, David Stiefel, Heather Tierney, Phil McKalips, Ann Marie Gathright (behind Phil), Tammy Noel, Tim Cory, and Drew Sullenberger.

Government Accounting Office Report Critical Of US EPA

The United States Environmental Protection Agency's (US EPA's) policies and programs affect almost all segments of the economy, society, and government. The Agency operates in a highly complex and controversial regulatory arena, confounding its ability to implement its mission of protecting human health and the environment. The Government Accounting Office (GAO) was recently asked to identify challenges at the US EPA that hinder its ability to implement programs effectively and to suggest corrective actions that would help the US EPA to more effectively carry out its mission. In March 2009, the GAO published a report entitled "Environmental Protection Agency Major Management Challenges." A summary of this report is presented below.

- While the US EPA has launched initiatives to improve general agency management, the initiatives have, for the most part, fallen considerably short of the Agency's goals.
- The US EPA has failed to develop sufficient chemical assessment information to limit public exposure to many chemicals that may pose substantial health risks.
- The US EPA faces many

important challenges related to implementation of the Clean Air Act, including coordination with other federal agencies, analyses of health impacts from air pollution, and delays in regulating mercury and other air toxics. Furthermore, the US EPA faces challenges relating to numerous regulatory proposals that have been overturned or remanded by the courts.

- The nation's water utilities face billions of dollars in upgrades to aging and deteriorating infrastructures that left unaddressed can significantly affect water quality. The US EPA will receive \$6 billion in additional water infrastructure funding from the recently passed stimulus bill (see Recovery Act, Page 1).
- With the passing of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also known as Superfund) in 1980, the US EPA was granted the authority to ensure the cleanup of hazardous waste sites. Several key management problems, however, have not been resolved since that time. For example,

citing competing priorities and lack of funds, US EPA has not implemented a 1980 statutory mandate under Superfund to require businesses handling hazardous substances to provide financial assurances to pay for potential environmental cleanups.

- The federal government's approach to climate change has been *ad hoc* and is not well coordinated across government agencies. For example, the federal government lacks a comprehensive approach for targeting federal research dollars toward the development and deployment of low-carbon technologies.

The GAO has made a number of recommendations intended to improve US EPA's programs by enhancing the information it uses to manage the programs and strengthening internal controls. The US EPA has concurred with most of the recommendations but has been slow to implement some of them. In the conclusion of its report, the GAO advises the US EPA that a sustained commitment by US EPA leadership will be required in order to face these challenges head-on. ■

Geoscientists Evaluate Ten Sites In Colorado, Wyoming, Kansas, and Oklahoma

The Environmental Standards Geosciences Department is currently involved in a project developing a Request for Proposal (RFP) for a major natural gas pipeline company. The RFP is being written to provide a detailed soil sampling plan for investigation of multiple areas of concern at 10 distinct sites with a wide geographic extent. The site locations are geographically distributed over four states (Colorado, Wyoming, Kansas, and Oklahoma) and range from a location in north-western Wyoming just to the east of Yellowstone National Park to a location in the panhandle of Oklahoma.

The soil investigation work is being conducted to supplement previous sampling activities at the various sites. The goal of the work is to better

delineate constituents of concern in both a horizontal and vertical direction. The completed RFP will be distributed by the natural gas pipeline company and used to select the most qualified consultant for the work.

In developing the RFP, Environmental Standards devoted a considerable amount of time evaluating both the existing analytical data and site drawings provided by the natural gas company. Site visits were conducted by two members of our Geosciences Team, who travelled a combined distance of approximately 2500 miles in 4 days. The site visits were used to evaluate access to sampling locations, the most appropriate equipment to be used for the sampling, and the impacts of the

investigations on site operations. The information gathered during the site visits was compiled and incorporated into the RFP.

The Environmental Standards Quality Assurance Chemistry Department assisted in the project through development of a Quality Assurance Project Plan (QAPP). During implementation of the sampling project detailed in the RFP, the Geosciences Department plans to provide third-party field auditing services for the client to document compliance with project control documents during sample collection activities. Environmental Standards is pleased to support the natural gas pipeline company in this very interesting four-state "Geo Tour" Project. ■

TCE Update

An article in the last issue of *The Standard* reported that the United States Environmental Protection Agency (US EPA) had issued a January 15, 2009, memo withdrawing the 2001 trichloroethylene (TCE) Health Risk Assessment and associated toxicity values. The January 2009 memo also established the US EPA's current recommended toxicity values for inhalation and oral exposures. In yet another turn of events for the TCE "saga," the US EPA recently withdrew the January 15, 2009, memo. In April 2009, the US EPA officially published a memo stating that the January 2009 memo had been withdrawn so that the Agency could further evaluate the cancer toxicity values used for inhalation exposures. In the interim, toxicity values are to be selected based on the US EPA's 2003 Toxicity Value Hierarchy.

The withdrawn January 15, 2009, memo also discussed the multiple lines of evidence that are necessary to characterize vapor intrusion exposures. In its latest April 2009 memo, the US EPA stated that a separate document will be published that will address this approach.

The Standard will continue to monitor the TCE issue. ■

Pennsylvania Laboratory Accreditation Changes



On March 17, 2009, the Pennsylvania Department of Environmental Protection (PA DEP) posted proposed Title 25 Chapter 252 amendments on its laboratory accreditation website (www.depweb.state.pa.us/labs/cwp/view.asp?A=3&Q=515609). These amendments, which are a result of PADEP's Triennial Review of Water Quality Standards, are listed below by category.

Additions to the Regulation

- Sample acceptance and handling requirements
- Analytical test report requirements
- Manual integration and confirmation requirements
- Timeline for reviewing and validating drinking water sample results
- Timeline to notify the PA DEP of a change in analytical capability

Clarifications to the Regulation

- Registration Requirements
- Laboratory Supervisor Documentation
- Procedures for Record-keeping
- Quality Manual Requirements
- Proficiency Testing Reporting Requirements

Elimination/Revision of Cost-Prohibitive requirements

- Secondary NELAP laboratory

submittal of PT study reports not required

- Alternating the concentrations of calibration verifications not required
- Purchase of an autoclave not required
- Annual professional service of the autoclave not required
- Acceptance criteria for thermometer calibration revised (less stringent)

Fee Structure Changes

- Average annual fee increase for WWTP Laboratories of \$50
- Average annual fee increase for a Non-Potable Water Laboratory of \$500
- Average annual fee increase for a Non-Potable Water and Solids Laboratory of \$1350
- Supplemental on-site assessment fee added
- Tests added to the Basic Non-Potable Water Category

These amendments are tentatively expected to be formally "published" in mid- to late-June 2009 and a 30-day comment period will follow. If the approval cycle remains on schedule, the changes will be formally approved in January or February 2010 and implemented in April 2010. For additional information about laboratory accreditation in Pennsylvania, contact Senior Quality Assurance Chemist Pat Conlon at 610-935-5577. ■

New Jersey Adopts Licensed Site Remediation Professional Program

The March 2009 edition of *The Standard* included an article about pending legislation that would transform the site remediation process in New Jersey. On May 7, 2009, Governor Corzine signed the Site Remediation Reform Act (SRRA) into law. Under the terms of this new legislation, oversight of cleanup projects that range from residential underground storage tanks to complex industrial cleanups is transferred from the New Jersey Department of Environmental Protection (NJ DEP) to private consultants – consultants who are licensed by the

NJ DEP as site remediation professionals.

The NJ DEP must complete the development (e.g., establish licensing board) and implementation of an SRRA-compliant program within 18 months. Current projects have up to 3 years to transfer to the new program.

Many questions are being raised regarding the legislation and its consequences. Suffice it to say that this new legislation and the intended

manner in which environmental projects will be executed in New Jersey will have a dramatic effect on virtually every environmental cleanup project in the state. Consultants, attorneys, private legislative parties, and government relations specialists are individually and as a group trying to influence the regulations that will ultimately govern future cleanups in the Garden State.

Contact Principal Geoscientist Gerry Kirkpatrick at 610-935-5577 for more information. ■

Quality Of Water From Domestic Wells In The United States

2,167 Wells Sampled in 30 Regionally Extensive Aquifers

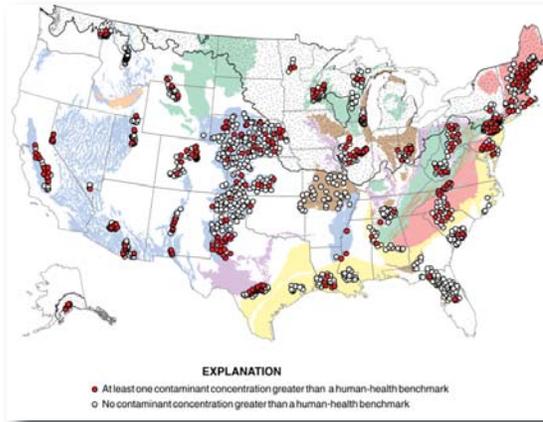
(Data Source: USGS Circular 1332)

More than 43 million people - about 15 percent of the population of the United States - rely on domestic wells as their source of drinking water (Hutson, *et al*, 2004). The quality and safety of water from domestic wells (*i.e.*, private wells) are not regulated by the Federal Safe Drinking Water Act or by state laws in most cases. Rather, individual homeowners are responsible for maintaining their domestic well systems and for monitoring water quality. The lack of regular monitoring of domestic wells makes periodic assessments at national, regional, and local scales especially important as sources for providing information about this key source of drinking water. Domestic wells sampled in this study are located in 48 states and within 30 regionally extensive aquifers used for water supply in the United States. The aquifers represented by wells in the study are shown in the figure above.

A recently released study from the National Water-Quality Assessment (NAWQA) Program of the US Geological Survey (USGS) assesses water-quality conditions for about 2,100 domestic wells across the United States. As many as 219 groundwater quality properties and contaminants, including pH, major ions, nutrients, trace elements, radon, pesticides, and volatile organic compounds, were measured. Fecal indicator bacteria and additional radionuclides were analyzed for a smaller number of wells. The large number of contaminants assessed and the broad geographic coverage of the study provides a foundation for an improved understanding of the quality of water from the major aquifers tapped by domestic supply wells in the United States.

Major study findings included:

- More than one in five (23 percent)



Map of sampling locations and contaminant findings.

sampled domestic wells contained one or more contaminants at a concentration greater than a human-health benchmark.

- Contaminants most often found at concentrations greater than human-health benchmarks were inorganic chemicals.
- Nitrate is the only contaminant derived primarily from man-made sources that was found at concentrations greater than a human-health benchmark in more than 1 percent of wells.
- Man-made organic compounds were detected in more than one-half (60 percent) of the sampled wells, but concentrations were seldom greater than human-health benchmarks (less than 1 percent of wells).
- Microbial contaminants were detected in as many as one-third of the approximately 400 wells sampled.
- About one-half (48 percent) of the sampled wells contained at least one contaminant at a level or concentration outside of the range of values recommended by US EPA for the aesthetic quality of water.
- Contaminants usually co-occurred with other contaminants as mixtures.

For a complete copy of the report, go to pubs.usgs.gov/circ/circ1332/. ■

Stationary Source Audit Sample Program - A Step Closer To NELAC Institute Approval

On May 15, 2009, The NELAC Institute (TNI) announced that the draft standard for the Stationary Source Audit Sample (SSAS) Program was posted for approval on the TNI website. Stationary source testing is a field of environmental monitoring that measures the emissions of air pollutants from stationary sources, such as factories and power plants. To gauge the accuracy and effectiveness of this testing, the US EPA's Office of Air and Radiation (OAR) administers a Stationary Source Audit Program (SSAP) that provides audit samples to state and local agencies without cost.

The US EPA contends that it is inappropriate for the Agency to compete with private entities; as such, the OAR and TNI initiated discussions in late 2007 to establish what role TNI might have in transitioning the SSAP administration to the private sector. In 2008, TNI formed the Stationary Source Audit Sample Expert Committee to develop consensus Working Draft Standards (WDSs) to establish the specifications for a new privatized SSAP.

Three WDSs (one each for providers, provider accreditors, and participants) were presented to the public for comment in January 2009. The committee is reviewing these comments for incorporation in the Voting Draft Standards that will be presented at the TNI Forum in August 2009. The US EPA is expected to discontinue supplying audit samples no later than October 2009; therefore, the committee is working in an expedited mode to provide for the transition to the new SSAP under TNI. The posting of the new standards brings to fruition the efforts of TNI to incorporate the SSAS Program into the TNI standard. ■

Defense Department Environmental Laboratory Accreditation Program

The Assistant Deputy Under Secretary of Defense issued a memorandum establishing the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) on December 24, 2008. The program is intended to promote consistency among the DoD components, facilitate the procurement of analytical services, shift the expense of laboratory assessments from the DoD to the private sector, and allow the DoD to focus its resources on providing project-specific quality assurance oversight. Effective October 1, 2009, laboratories that are seeking to perform testing in support of the DoD environmental restoration programs (Army, Navy, or Air Force) will be subject to DoD ELAP requirements.

The DoD ELAP will require laboratories to demonstrate conformance to

the DoD Quality Systems Manual for Environmental Laboratories, which is based on the National Environmental Laboratory Accreditation Conference Quality Systems Standard – the standard that provides guidelines for implementing the international standard, ISO/IEC 17025, General Requirements for the Competence of Testing and Calibration Laboratories. DoD ELAP oversight will apply to laboratories providing data serving environmental programs/projects at DoD operations, activities, and installations, including government-owned, contractor-operated facilities and formerly used defense sites, where testing is being performed in support of environmental restoration programs. Accreditation will be open to all environmental laboratories that can demonstrate conformance to the DoD Quality Systems Manual.

The DoD Environmental Data Quality Workgroup, which will provide oversight of the DoD ELAP accreditation process, will authorize third-party organizations to assess laboratory conformance to the DoD Quality Systems Manual and to monitor implementation of corrective action responses. These assessment organizations must meet program requirements, such as submission of a documented management system conforming to the international standard, ISO/IEC 17011; acceptance of specific conditions and criteria for recognition; and completion of assessor training. Accredited laboratories will receive certificates that detail their scope of accreditation from the third-party assessors. ■

Out And About - Summer 2009 Conferences

The **Battelle In Situ and On-Site Bioremediation Symposium** was held May 5-8, 2009, in Baltimore, Maryland. Principal Geoscientist Gerry Kirkpatrick, P.G., presented “*In-Situ* Bioremediation of Chlorinated Solvents in Fractured Triassic Bedrock of Southeastern Pennsylvania.”

The annual **TCEQ Environmental Trade Fair and Conference** was held in Austin, Texas, May 12-14, 2009. Technical Director of Chemistry/Principal Rock J. Vitale, CEAC, CPC, presented “Nonylphenols - A New Group of Compounds of Concern” and Quality Assurance Specialist/Principal Ruth L. Forman, CEAC, presented “The Art of Reading a Lab Report - Can You Pass the Test?”

The **Florida Society of Environmental Analysts (FSEA) Spring Meeting and Technical Session** was held in St. Petersburg Beach, Florida, May 20-22, 2009. Rock J. Vitale, CEAC, CPC, presented “The Do’s and Don’ts Regarding MDL Verification Studies.”

The **2009 Northeast Sustainable Communities Workshop** was held June 18, 2009, in Newark, New Jersey. Gerry Kirkpatrick, P.G., was a panelist for the session “Sustainable Approaches to Assessment and Remediation at Brownfields Sites.”

The **15th Annual Good Laboratory Practice (GLP) Reception & Conference**, sponsored by the VA AWWA / VWEA Laboratory Practice Committee, will be held August 3-4, 2009, in Charlottesville, Virginia. Senior Quality Assurance Chemist Pat Conlon will present “How to Prepare Your Laboratory for an Internal and ‘Official’ Audit and Document Control.” Mr. Conlon will also present “The NELAC Institute Efforts to Assist Laboratories” on behalf of The NELAC Institute.

The **2009 National Environmental Monitoring Conference (NEMC)** will be held August 10-14, 2009, in San Antonio, Texas. Ruth L. Forman, CEAC, will present “The Impact of New US EPA Methods - A Case Study

of Contortions and Permutations - US EPA Method 5035.” Pat Conlon will present two papers: “1,4-Dioxane Micro-Aqueous Extraction with GCMS SIM” and “Discussion of the Limitations of Citeable References for Commonly Accepted Performance Standards for Technical Measurements and for Ethical Practices.”

If you would like a copy of any of these presentations, please contact Marketing Coordinator Abby Wilson at awilson@envstd.com. ■

Analytical Laboratory News

Analytical Bio-Chemistry Laboratories, Inc. (ABC Laboratories) of Columbia, Missouri, announced the merger of Morse Laboratories of Sacramento, California, in April 2009. Morse Laboratories, which was established in 1935, will continue to operate under the same name. ■

Fungal Results Interpretation – Know The Full Story

The interpretation of fungal results is impacted by a number of factors and is typically not a straightforward process. Some professionals and laboratories provide a straight



and physical disturbances. These variations can be orders of magnitude for samples collected minutes apart (e.g., 1000 spores to 100,000 spores). Unless a large number

statistical review of the fungal results (comparing outdoor results to indoor results) to provide an indication of the presence of elevated levels of fungal spores. The statistical approach provides direction to areas of concern, but by no means provides the whole story for a fungal investigation. Fungal spore counts in air are impacted by a number of factors - a diurnal cycle, airflow patterns, seasonal variation,

of samples covering different times of the day and a good portion of the property inside and outside are used, the statistical approach falls short. A statistically rigorous sample collection and analysis scheme is expensive and success is not guaranteed.

In order to get the complete picture, a professional must gather information to supplement sample results - infor-

mation relative to the surrounding land use, surrounding rooms, connected buildings, property history (e.g., leaks, fires, and floods), HVAC system layout, and visual observation. Interviews with complaining occupants, non-complaining occupants, property managers, and maintenance personnel provide information that can be used to develop an effective sample collection scheme. Property owners should be aware that properties with fungus issues typically involve more than just replacing the drywall.

If you suspect your property has fungal or other indoor environmental issues, contact Quality Assurance Chemist Stephen T. Zeiner, CRMI, CEAC, at 610-935-5577 for assistance. ■

Clarification Of Requirements For 40 CFR Part 136 Methods

On May 7, 2009, Richard Reding, Chief of the US EPA Engineering and Analytical Support Branch of the Office of Science and Technology, issued a memorandum calling for higher and more uniform standards of quality assurance (QA) for methods performed under 40 CFR Part 136. This memorandum addressed concerns about differing amounts and types of QA and quality control (QC) procedures in the currently approved methods.

The key points of this memorandum are listed below.

- When the QA/QC requirements for an approved method are presented in a separate part of the compendium of methods, such as Standard Methods and ASTM Methods, the QA/QC methods must be followed even when the QA/QC section may not be cited in the *Federal Register*.
- The QA/QC followed when using Standard Methods and ASTM compendium methods must be in compliance with the most recent editions of these methods

- even though older editions of the analytical methods may still be cited and approved.

- If a laboratory auditor determines that an approved method may have insufficient QA/QC requirements, it is reasonable to require QA/QC equivalent to other approved US EPA methods and/or to the NELAC QA/QC requirements.
- Twelve QC checks that are considered essential requirements for all 40 CFR Part 136 testing are identified; these QC checks must be incorporated into the laboratory's documented quality system unless a written rationale is provided that indicates why these controls are inappropriate for the specific analytical method(s).

This memorandum, which clarifies a number of ambiguities in approved methods, constitutes a strong endorsement of a high level of quality system standards and requirements across all 40 CFR Part 136 analytical programs. ■

US EPA To Accelerate Reassessment of Dioxin and Dioxin-Like Substances

In May 2009, the US EPA announced its intention to accelerate the completion of an assessment of the health risks posed to the public by dioxins and dioxin-like substances. Dioxins, a class of hundreds of chemicals that are difficult to remove from water and soil, are produced by industries that incinerate waste or manufacture chemicals and pesticides. The dioxin issue has received considerable attention as a result of major dioxin cleanup sites in the United States.

The US EPA presented a plan, inclusive of milestone dates, to address issues that include a comprehensive human health and exposure assessment relative to dioxin ("dioxin reassessment") and dioxin soil cleanup levels. The Agency anticipates that the final dioxin human health and exposure assessment will be completed by the end of 2010. ■



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