



HIGHLIGHTS OF EOALRSD

Emergencies, Operational Analytical Laboratories and Research Support Division

Le français suit

Fall/Winter 2012

The Highlights of EOALRSD provide information on the activities in the Emergencies, Operational Analytical Laboratories and Research Support Division within the Science and Technology Branch of Environment Canada. The purpose is to enhance communication and promote an awareness of the laboratory science being conducted across Canada and around the world.

The mission is to ensure credible, legally-defensible science to enable sound decision-making and accountability while aligning efforts on a national basis, using a single window access, to support an integrated, strategic approach to water issues.

Atlantic Laboratory for Environmental Testing

National Laboratory for Environmental Testing

Pacific and Yukon Laboratory for Environmental Testing

Prairie and Northern Laboratory for Environmental Testing

Quebec Laboratory for Environmental Testing

Emergencies Science and Technology

Research Support

Information and Quality Management

From the Director



In our last Highlights newsletter, we introduced you to the Laboratory Modernization Program (LMP), a Science & Technology (S&T) Branch initiative delivered in collaboration with the Business and Applications Solutions Directorate of Environment Canada's Corporate Services Branch. The Vision Statement of the LMP states our primary objective, which is the implementation of *harmonized workflows across S&T laboratories to better support the analytical needs of our clients and ensure secure and effective information management supported by a modern national LIMS.*

The Laboratory Modernization Program has been identified as an Environment Canada priority project as it addresses the need to ensure that the vast quantity of data generated in its network of Science and Technology Branch operational laboratories across three directorates (i.e. Water, Air and Wildlife) is safe, secure and managed efficiently.

In our last communication, we reported that our Project Team was well underway in activities focused on **Stabilization** of our current data systems, **Optimization** of our current processes and **Modernizing** our current data management systems through assembling requirements and undertaking a Request for Proposal Process for the procurement of a Commercial-off-the-Shelf (COTS) Laboratory Information Management System (LIMS) product.

I am very happy to announce to you that after a very thorough procurement process, including stakeholder consultations, RFP development, vendor demonstrations and reference interviews, we have now reached the point that a contract has been awarded to Promium, LLC (www.promium.com).

While a significant milestone has been reached, we recognize that many challenges lie ahead as we begin implementation in the 8 operational laboratories starting with our Proof of Concept site (Moncton) this Spring 2013.

In our "In the Spotlight" feature below, we provide you an update on our current LMP activities, including a forecast of what can be expected as we begin implementation across the labs.

IN THE SPOTLIGHT

Environment Canada's Lab Modernization Program reached a significant milestone in mid-March 2013, as a contract with Promium LLC was signed to procure and implement Promium's Element software in eight operational laboratories within Water, Air and Wildlife. Promium's Element LIMS (laboratory information management system) product is a configurable off-the-shelf software that has been designed specifically for environmental labs like ours supporting research, monitoring and regulatory work.

Over time, EC's operational labs have independently evolved their own processes and tools to support the needs of their clients. As a result, some clients have had to adjust to multiple processes depending on where they submitted their lab samples (i.e. various submission processes, separate data reports in terms of content and layout).

As our labs move towards adoption of a single LIMS solution, we are taking the opportunity to harmonize our processes and in so doing, are in a position to re-assess the needs of our clients and ensure a streamlined approach is implemented for clients when dealing with any of our labs, while ensuring that consistent and meaningful reports are generated regardless of where the analysis is performed.

A national LIMS will also provide EC with a view on where we have capacity to complete analysis work. This will enable us to improve workload planning and leverage spare capacity at all labs, which in turn will translate to increased efficiencies and enhanced turn-around times for requests. Our ability to forecast demand on a national scale and report back to our clients on the status of their work and provide a yearly snapshot of the total work submitted at any point in time will facilitate the planning both for the laboratory network and for our clients.

What's next??

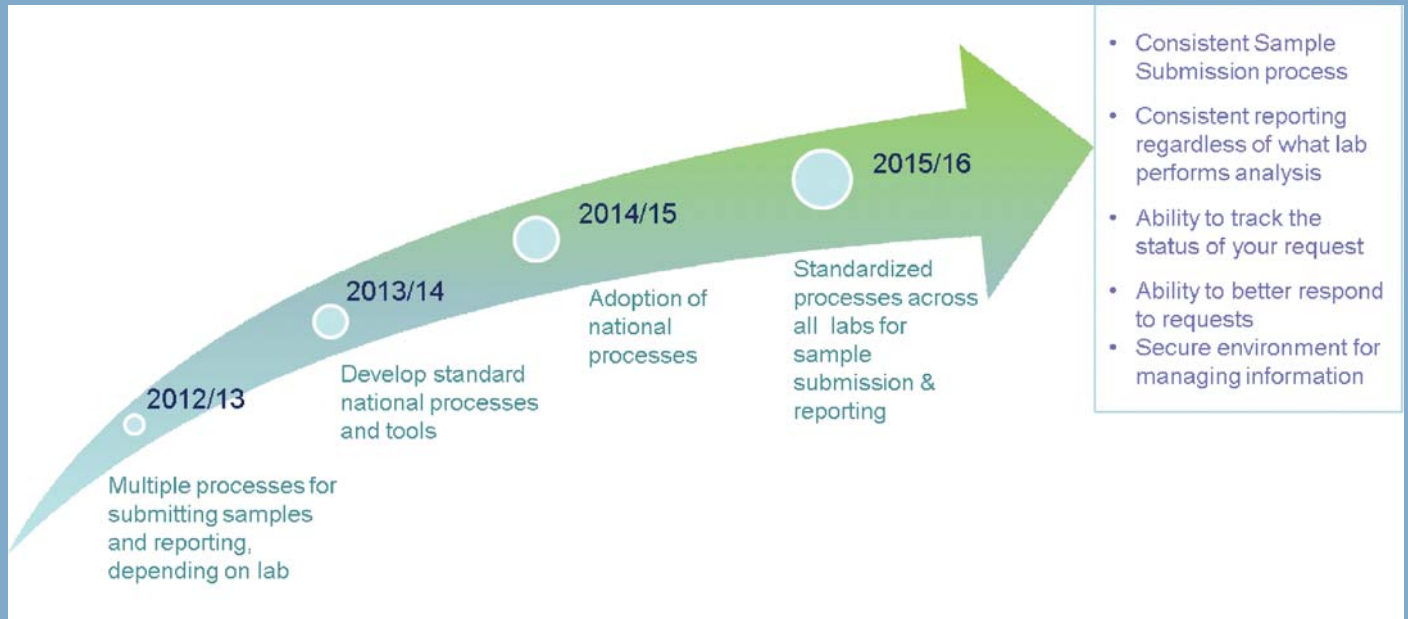
Over the last 18 months, a great deal of effort and time has been spent documenting how our labs operate in order to better understand the implications of moving to a national service model.

The Program team plans to meet with the vendor in early April to finalize the implementation plan including the Gap Analysis exercise, a key piece in identifying how the new LIMS is going to meet our needs. Installation and administration of the Element Database will take place in the National Data Centre in Ottawa. The associated servers and database will be managed through agreements between Shared Services Canada, Corporate Services Branch and the Science and Technology Branch. Once installed, the Promium team will focus on configuration of the NLIMS at the Proof of Concept site which will be our Moncton facility (ALET). Plans have been initiated to consult with our clients as we prepare for the work to begin in Moncton. We will be using this staging ground to continuously validate that the needs of our clients are met, and from there, roll out the solution to the remaining 7 labs.

It is expected that the set-up, configuration, and system/user acceptance testing including migration of the Moncton facility to full operation will take approximately 9 months. Once

completed, it is expected that subsequent migrations of the remaining laboratories will take approximately 4-5 months each depending on the size of the laboratory. The estimated completion date for the full NLIMS implementation in all 8 laboratories is Spring 2016.

As the implementation unfolds in Moncton, national processes will be adopted that may impact other laboratories. Communication between the laboratories and clients will be key to ensure a smooth transition for everyone.



As we strive to improve our service, we recognize that our clients will continue to have specific needs that can only be delivered by certain labs, so we will continue to operate locally while leveraging the benefits of a national laboratory network.

Caffeine Analysis Performed at NLET

The Organic Analysis Laboratory has expanded its repertoire to include the analysis of caffeine in water. This compound is of interest to our client because caffeine can be used as an indicator of anthropogenic pollution of urban aquatic environments. It is hypothesized that if caffeine is present in water, biologically active pharmaceuticals and personal care products may also exist. Caffeine has been shown to be chemically stable and concentration levels are not significantly reduced through traditional wastewater treatment. Therefore caffeine is a good indicator of treatment plant efficiency and contamination of natural aquatic environments influenced by anthropogenic activity. NLET is working in collaboration with the client to conduct studies that provide a better understanding of caffeine as a chemical indicator of the quality of sampled aquatic environments and to ensure we are addressing emerging issues.

Ed Sverko: 905-336-4423; Ed.Sverko@ec.gc.ca

For further information, please contact:

Pat Falletta, Manager
National Laboratory for Environmental Testing
Environment Canada
Canada Centre for Inland Waters
867 Lakeshore Road, P.O. Box 5050
Burlington, ON L7R 4A6
tel.: (905) 336-4563
fax: (905) 336-6404
e-mail: Pat.Falletta@ec.gc.ca

Prairie and Northern Laboratory for Environmental Testing

Karen Dodds and David Boerner Visit PNLET

On October 23rd, 2012 Karen Dodds, Assistant Deputy Minister S&T, and David Boerner, Director General WS&T, visited the Prairie and Northern Laboratory for Environmental Testing (PNLET). The laboratory staff appreciated their briefing on the status and future direction of the organization and the opportunity to have concerns addressed. Following the team meeting they toured the facilities and had casual conversations with staff. PNLET would like to thank Karen and David for making time in their busy schedule to visit the laboratory.



For further information, please contact:

Narine Gurprasad, Manager
Prairie and Northern Laboratory for Environmental Testing
Environment Canada
5320-122 Street
Edmonton, Alberta T6H 3S5
tel.: (780) 435-7335
fax: (780) 435-7268
e-mail: Narine.Gurprasad@ec.gc.ca

Quebec Laboratory for Environmental Testing

The excellence of the Quebec Laboratory for Environmental Testing (QLET) is recognized once again!

The QLET's ISO/IEC 17025 accreditation was renewed in October 2012 for a period of 2 years by the Canadian Association for Laboratory Accreditation (CALA). In addition to meeting requirements following the auditors' visit, the laboratory's range of accreditation has been once again enlarged in order to meet the needs of projects and programs. As well, the laboratory has taken all necessary measures to add and recognize six new analytical methods. In the field of chemistry, this includes methods for calculating total nitrogen, metals dissolved by ICP-MS and turbidity, while in ecotoxicology, this includes tests using *Daphnia magna* and solid-phase tests using luminescent bacteria. The QLET is also proud to see its capabilities recognized by an international standard, making it known for credibility and the highest standards of quality among all scientists making use of their services.

For further details on the QLET's scope of accreditation, consult [CALA's website](#).

Mirka Blanchet : 514-496-8576; Mirka.Blanchet@ec.gc.ca

For further information, please contact:

François Dumouchel, Manager
Quebec Laboratory for Environmental Testing
Environment Canada
105 McGill, 7th floor
Montreal, QC H2Y 2E7
tel.: (514) 496-7100
fax: (514) 496-7143
e-mail: Francois.Dumouchel@ec.gc.ca

Information and Quality Management

IQM completes first Naphthenic Acid Interlaboratory Calibration Study for Oil Sands Testing Laboratories

The Information and Quality Management (IQM) group has been participating in various Oil Sands related studies in the last two years. The naphthenic acid interlaboratory calibration study was initiated to assess comparability of methods currently used by the laboratory community in the Oil Sands sector.

In January 2012 a working committee of practitioners performing naphthenic acid analyses from private laboratories, academia and government was formed and IQM scientists were invited to participate in the planning of a naphthenic acid interlaboratory study. IQM provided

expertise in Quality Management and Proficiency Testing to organize sample preparation, distribution and statistical analysis of laboratory data. The study was completed in September 2012 and a report was widely distributed to parties in the Oil Sands sector.

The interlaboratory study involved 15 private, government, and academic laboratories. For Total naphthenic acid analysis, an industrial naphthenic acid mixture was provided for use as a quantification reference. Blind samples included filtered Oil Sands Process Water (OSPW), Athabasca River water, Athabasca River water spiked with naphthenic acid and reagent water spiked at two levels with naphthenic acid.

In the data reported for total naphthenic acid there were similarities seen in most of the data sets within the similar instrumentation groupings, especially in the spiked reagent water and spiked Athabasca River water. Wide disparities were seen in the results for the OSPW samples. The report has made specific recommendations on future studies to address sampling, preservation and analysis to improve the comparability of analytical methods for total naphthenic acid in water.

The working committee of experts and practitioners performing naphthenic acid analyses met with IQM in October 2012 to discuss findings and plan for future studies.

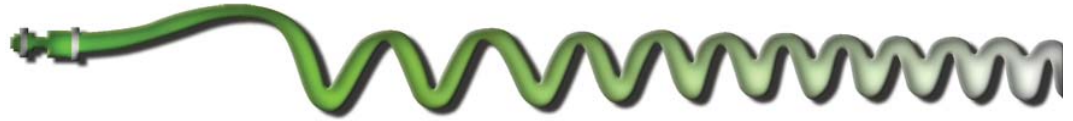
IQM is accredited under the ISO/IEC 17043:2010 Standard as a Proficiency Testing provider for a wide range of inorganic and organic parameters. In addition IQM develops Reference Materials for use by the laboratory community in the environmental sector.

Haig Agemian: 905-336-4679; Haig.Agemian@ec.gc.ca

For further information, please contact:

Haig Agemian
Chief, Information and Quality Management,
Environment Canada
Canada Centre for Inland Waters
867 Lakeshore Rd., P. O. Box 5050,
Burlington, ON L7R 4A6
tel.: (905) 336-4679
fax: (905) 336-6404
e-mail: Haig.Agemian@ec.gc.ca

Client Talk



In this section an update on the work being conducted to support the Oil Sands is being provided. Through the annual call letter the Division had received a threefold increase in demands for analytical services to support this initiative. The Mid Year Review showed that 40% of the projected workload or a 10.5 PY equivalency has been required by the Division to study the effects of this industry on the environment. Work is being conducted through collaborations between research scientists, the project leads of the Water Quality Monitoring and Surveillance Division, provincial government and academia. Preliminary results are expected to be released at upcoming conferences such as the Society of Environmental Toxicology and Chemistry (SETAC) and a planned web portal for public viewing.

The Division has completed the development of a parameter list, including reporting limits and data quality objectives for the Oil Sands study. The purpose is to communicate the analytical objectives to participating laboratories in the conduct of analytical services to support the Oil Sands. The list is comprised of the parameters of relevant importance in assessing the environmental impacts of the Oil Sands development. Environment Canada laboratories, the Alberta provincial laboratory and private industry will be producing the quality assured analytical data to facilitate the environmental assessment. Through this cooperation, efficiencies and cost savings will be realized by employing the laboratory that can best meet the requirements of the program. The list also ensures that there is data comparability between the participating laboratories because data quality objectives are specified. This will allow a pooling of data from various sources though different methodologies may yield different results and must be factored in in the interpretation of the data (e.g. hot block digestion versus microwave digestion in trace metal analysis of sediments). Participation in inter-comparison studies will provide information regarding the comparability of the methods used. This should be part of the program and a service that is offered by the Information and Quality Management group (see article preceding this section).

For more information on the activities of EOALRSD access the website at www.ec.gc.ca/inre-nwri or contact Sharon Carrier at Sharon.Carrier@ec.gc.ca or 905-336-6261.