



Spotlight:  
**RESEARCH AND DEVELOPMENT**



**AGAT** Laboratories

Service Beyond Analysis ■ [www.agatlabs.com](http://www.agatlabs.com)

Over 30 years in advancing innovation and providing creative solutions for our clients.

At AGAT Laboratories, research and development is a long standing policy that is integrated throughout all of our divisions and their operations. Since the beginning, our innovations have set the industry standard for new and creative solutions to complex client problems.

## Our Research and Development Program

Through our *Research and Development Program*, AGAT Laboratories is committed to the advancement of technology and services for our clients in each industry. Our diverse group of scientists are involved in research and development efforts that are essential to increasing the efficiency of our clients' operations and accommodating their project needs.

### Benefitting your Operations

Our research initiatives are realized not only internally but by our clients as well. Their operations can benefit from utilizing the new services, products and techniques that are developed through our work in this area.

## Our Laboratory Partnership Program

### The AGAT Advantage



Through our *Laboratory Partnership Program*, we promote a strong relationship between our clients, their Client Project Managers and laboratory personnel to ensure all our clients utilize each of our value-added services to their full advantage.

AGAT Laboratories promotes stronger client relations and optimal service through the following value-added services:

- ***Research and Development Program***
- Dedicated Client Project Managers
- Innovative e-services
- Technical information seminars
- Laboratory tours
- Experience
- State-of-the-art instrumentation
- Client Review Forms
- Innovations

# Our Projects

AGAT Laboratories' research and development projects have been taken on both as sole ventures and as collaborative efforts with our clients and members of the scientific community.

Following is a list of some research and development activities in the various divisions that our company services:

## ■ Environmental Chemistry

- Effect of digestion temperature on the rate metals are extracted from soil and/or drilling waste samples
- The use of pH manipulation to drop Polymers out of Microtox samples in the clarification process
- The development and adaptation of the CCME Hydrocarbon Methodology to air samples
- The development of a determinative method for  $\text{Fe}_2^+$  and  $\text{Mn}_2^+$  in water by Ion Chromatography/ Ultra Violet/Visible Detection
- The effect of sample saturation of the Metals Digestion Procedure
- Drying drilling mud for total and extractable Barium analysis at a higher temperature
- Determination of metals in marine waters using ICPMS and Chelating procedures
- Investigating recovery of Total PCBs from SPLP Leachate fluid
- The analysis of Standard 7 Anions plus Chlorate, Chlorite and Bromate by Ion Chromatography
- Improving the resolution of Benzo(j)fluoranthene and Benzo(b)fluoranthene compounds for the analysis of soils and waters using novel column types
- Adapting standard methodologies for extractable Petroleum Hydrocarbons in the analysis of biological tissue matrices
- Investigation of application of extraction and analysis techniques for Total PCBs in soils to analysis using GC-ECD on dried paint matrices
- Application of existing preparation of analytical techniques for Phenolics in water analysis to soil samples
- Impact of Trichloroethylene (TCE) on Vinyl Chloride (VC) levels
- Biodegradation of organic distillates
- Quantification of overlapping PCB GC profiles using dual linear regression

## ■ Ultra-trace Toxicology

- Background PCDD/PCDF concentrations in soils of central Alberta

## ■ Air Quality Monitoring

- Total emission capture from a glycol dehydrator for the purpose of quantification of benzene and other hazardous pollutants
- Indoor air quality and sick building syndrome





# Service Beyond Analysis

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## ■ Oilsands Analysis

- In conjunction with the Alberta Research Centre, developed the ACOSA method of direct bitumen determination
- Standard protocol for preparing Dean Stark retains for particle size analysis (reversing hydrophobic clays)
- Unique automated centre cut Oilsands sampling saw
- Automated Oilsands slabbing saw for high quality sample representation
- NIR technology to study asphaltene deposition behaviour at reservoir conditions
- AGAT Laboratories' technology to study heavy oil miscibility at reservoir conditions
- AGAT Laboratories' technology to study gas diffusion and multi-contact gas properties for heavy oil gas injection
- AGAT Laboratories' technology to study heavy oil interfacial tension at reservoir conditions
- Mercury-free PVT (Pressure Volume Temperature) cells specifically for heavy oil to avoid mercury emulsion problems
- Core holders to study SAGD (Steam Assisted Gravity Driven) and VAPEX (Vapour Extraction) properties using 1.5-meter core lengths
- Pre-printed Alberta Energy and Utilities Board (AEUB) labels for AGAT Laboratories' Oilsands boxes.
- Image analysis tools to automatically measure and annotate core samples, depths, facies etc.
- Interfaces that automatically generate electronic worksheets when samples are logged in for both Dean Stark saturations and particle size
- Size and configuration to enhance flow of work with custom-built freezers
- The utilization of paleomagnetism to determine accurate dating of diagenetic events
- The utilization of a digital micropermeameter and image-based analytical techniques to predict, with increased accuracy, reservoir volumetrics in tight low permeability fractured reservoirs
- In-situ hydrocarbon characterization in explorative core samples
- Phase behaviour sampling
- Ambient full diameter porosity
- Produced fluids well data management systems, total and spectral gamma measurement and dynamic electrical properties
- In-situ hydrocarbon characterization in explorative core sample
- Trace sulphur species in high-pressure hydrocarbon

## ■ Oil and Gas Chemistry

- Field Bar-Coding System
- Polyacrylamide (polymer) quantification in oilfield water samples
- H<sub>2</sub>S measurements in vapour streams from SAGD operations
- Hot Flash analysis for liquid hydrocarbons
- Decomposition of transformer insulating oils