



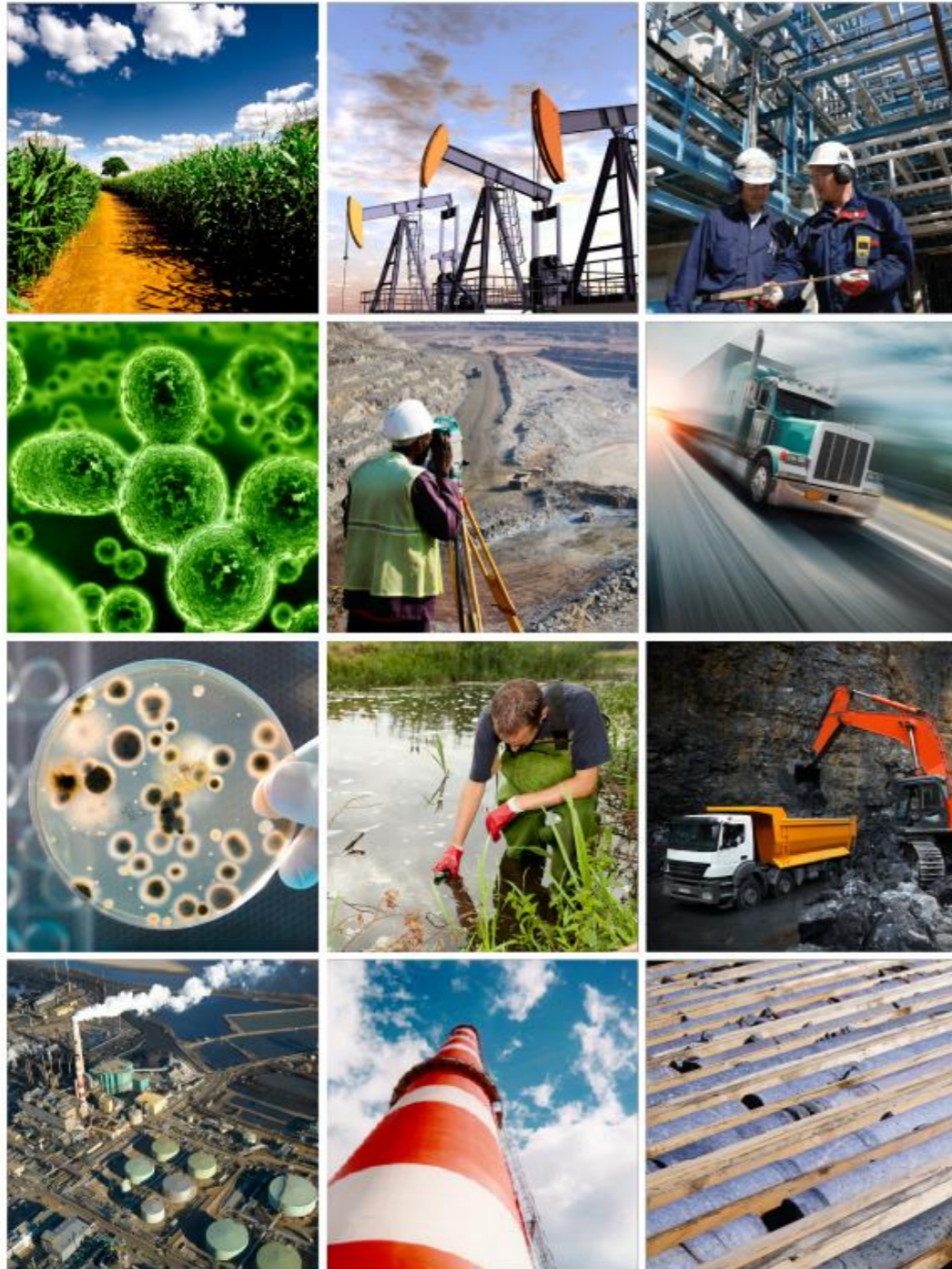
Air Services



AGAT Laboratories

Service Beyond Analysis
■ www.agatlabs.com

About Us



AGAT's Scientific Divisions

- Environmental Chemistry
- Forensic Analysis
- Ultra-trace & Toxicology
- Agricultural Analysis
- Air Quality Monitoring
- Food Testing
- Mining Geochemistry
- Oilsands Analysis
- Rock Characterization
- Routine Core
- Geology & Petrology
- Reservoir Characterization
- Petroleum Testing Services
- Lubricants Testing Services

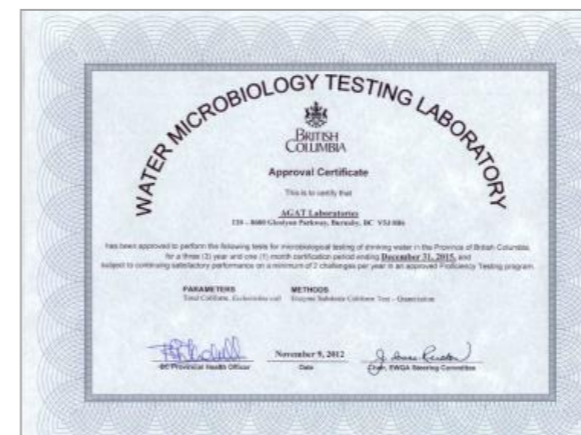
Accreditation

Quality Control/Quality Assurance

- The Standards Council of Canada (SCC)
- The Canadian Association for Laboratory Accreditation (CALA)
 - QMI-SAI-Global
 - APEGGA
 - MDDEFP
 - EWQA

International Organization for Standardization for the following standards:

- ISO 9001
- ISO/IEC 17025



Locations



Air Pollution

Air pollution comes from many different sources. Natural processes that affect air quality include volcanoes, which produce sulfur, chlorine, and ash particulates. Wildfires produce smoke and carbon monoxide. Cattle and other animals, Even pine trees emit (VOCs).

Many forms of air pollution are human-made. Industrial plants, power plants and vehicles with internal combustion engines produce nitrogen oxides, VOCs, carbon monoxide, carbon dioxide, sulfur dioxide and particulates..

WHO estimates that in 2012, some 72% of outdoor air pollution is related premature deaths



AQMS/CAAQS

- , in 2012 ministers of the environment, with the exception of Québec, agreed to implement a new Air Quality Management System (AQMS) to guide work on air emissions across Canada.

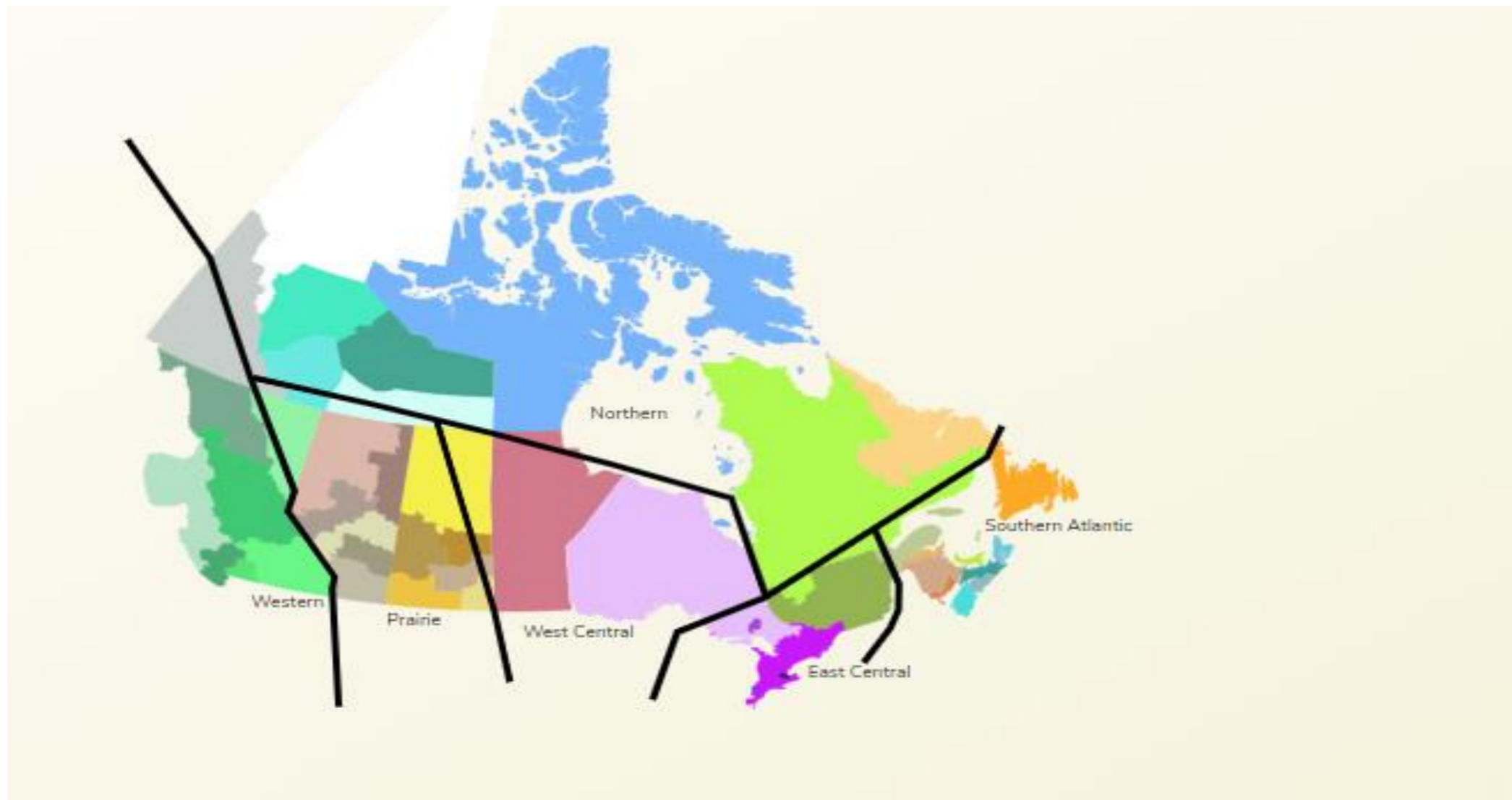
- Canadian Ambient Air Quality Standards (CAAQS) are developed as a key element of the Air Quality Management System

CAAQS have been developed for nitrogen dioxide (NO_2) sulphur dioxide (SO_2) and fine particulate matter ($\text{PM}_{2.5}$) and ozone (O_3).



AIR ZONES AND AIRSHEDS

Air zones and airsheds are used to manage air quality at the local and regional levels respectively.



Air Services – Ambient

Passive samples(PAQ) are composed of chemically treated filters that absorb target compounds.

After filters are exposed to the environment, they are analyzed in our Clean Air Laboratory to measure pollution concentrations collected for the duration of exposure.

The sampling system has a protective rain shelter and is a cost-effective solution when conducting passive air monitoring. The system is portable, does not require electricity, data loggers or pumps, and ensures that there is no active movement of air through the sample, Sample are run for

SO₂, H₂S, NO₂ AND O₃



Air Services – Ambient

In January of 2018 New Fence line monitoring will be implemented for fence line monitoring of VOC's would

Apply to Refineries, upgraders and certain petrochemical faculties

facility operators would be required to establish sampling locations along the perimeter of the facility and to collect and analyze samples in accordance with specified criteria. These criteria align with specific elements of U.S. EPA Methods 325A and 325B relating to VOCs from fugitive and area sources.

:

LDAR. Facility operators would be required to implement LDAR programs for undertaking inspections (at least three per year) and repairs, as well as maintaining an inventory of equipment components.

While the LDAR requirements are proposed to take effect on July 1, 2019, only one inspection would be required for equipment components in the inventory (rather than three) in order to allow facilities time to implement the more comprehensive program beginning in 2020.

Preventive equipment requirements. As of July 1, 2019, for purposes of minimizing releases into the environment, facility operators would need to ensure that the applicable design and operating criteria are met with respect to certain equipment components, including open-ended lines, sampling systems, pressure relief devices, and compressors.

Air Services – Ambient

The New proposed Methane Regulations will be phased in starting in 2020 and fully implemented by 2023.

The Methane Regulations contain both general requirements and requirements that apply to facilities producing and receiving at least 60,000 m³ of methane gas in a year. Targeted emission sources will include fugitive equipment leaks, well completions by hydraulic fracturing, compressors, facility production venting, and pneumatic devices. The regulations are expected to lead to methane emissions reductions of 21 megatonnes carbon dioxide equivalent (Mt CO₂e) by 2025 (a 41% drop from 2012 levels) and 282 Mt CO₂e cumulative between 2018 and 2035.



Air Services – Ambient

Integrated sampling programs are sampled by drawing air through filters and absorbents for multiple components including:

High volume sampling for TSP ,PM10 , PM2.5 ,Metals and Mercury with filters.

High volume sampling for PCB, PAH, Dioxins with PUF Cartridges

Collection of whole air samples Stainless Steel (i.e. SUMMA Canisters) for VOCs.

Collection of air from Thermal Desorption tubes

Formaldehyde and Phenol through Sep-Pak Cartridges and Tubes.



Air Services – Ambient

One of the biggest challenges in sampling ambient air is upwind sources

Methane and Hydrogen sulfide from biological waste. While fossil fuels and vehicular traffic, (especially diesel) can contribute.

In the Spring sampling next to or hanging sampling media from a tree could contribute to sample concentrations.

For sorbent media, humidity, temperature can interfere with collection, Some sorbent (XAD) should not be exposed to light, before, during and after sampling.



Air Services – Ambient

2007 Environmental Canada Study- Background VOC's

Parameter	MOE ug/m3	Kitchener	Hamilton
Benzene	0.506	0.61	1.2
Carbon Tetrachloride	0.417	0.58	0.57
1,2- Dichloroethane	0.0428	0.05	0.05
Trichloroethylene	0.5556	0.07	0.08



Air Services – Indoor Air Quality

Indoor air quality (IAQ) is a term which refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.

Indoor air can be very difficult. Sampling from homes, offices, or building where humans themselves can and do influence the results. How and what to sample for; will be equine for each situation, depending on “what” the sampling is trying to achieve. Unlike soil vapour or Sub Slab, IAQ can be sampled for a wide range of different parameters and regulations.



Air Services – IAQ

Before taking any IAQ sampling a complete walk through must be done to note any potential issues which could interfere from achieving required detection limits. Remove items before sampling.

Source	Contaminants
Paints	Benzene, Toluene, Trimethylbenzenes, Pentane, Tetrachloroethene
Carpets	Benzene, Toluene, Styrene, Trimethylbenzenes, Chlorobenzenes, Decane
Wood Burning	Toluene, Xylenes, Styrene, Trimethylbenzenes, Naphthalene
Polystyrene Board	Styrene, Butadiene
Paint Removers	Toluene, Acetone, Methylene chloride, Chlorobenzenes, Tetrachloroethene
Spray Products	Xylenes, Acetone
Adhesives/Tapes/Glues	Benzene, Toluene, Styrene, Xylene, Tetrachloroethene, Decane
Room Deodorizers	Ethanol, d-Limonene, Camphor, Phthalates
Tobacco Smoke	Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
Gasoline/Driving	Benzene, Toluene, Xylenes, Styrene, Trimethylbenzenes
Solvents/Degreasers	Toluene, Ethylbenzene, Trichloroethanes, Trichloroethene, Methylene chloride
Dry Cleaning	Tetrachloroethene, Trichloroethene (spot remover)
Moth balls	Naphthalene, 1,4-dichlorobenzene
Pressed wood products	Formaldehyde



Air Services – IAQ

Up to 500 – 2 samples
>500 to 1000 – 3 samples
1 additional sample for every 1000m²



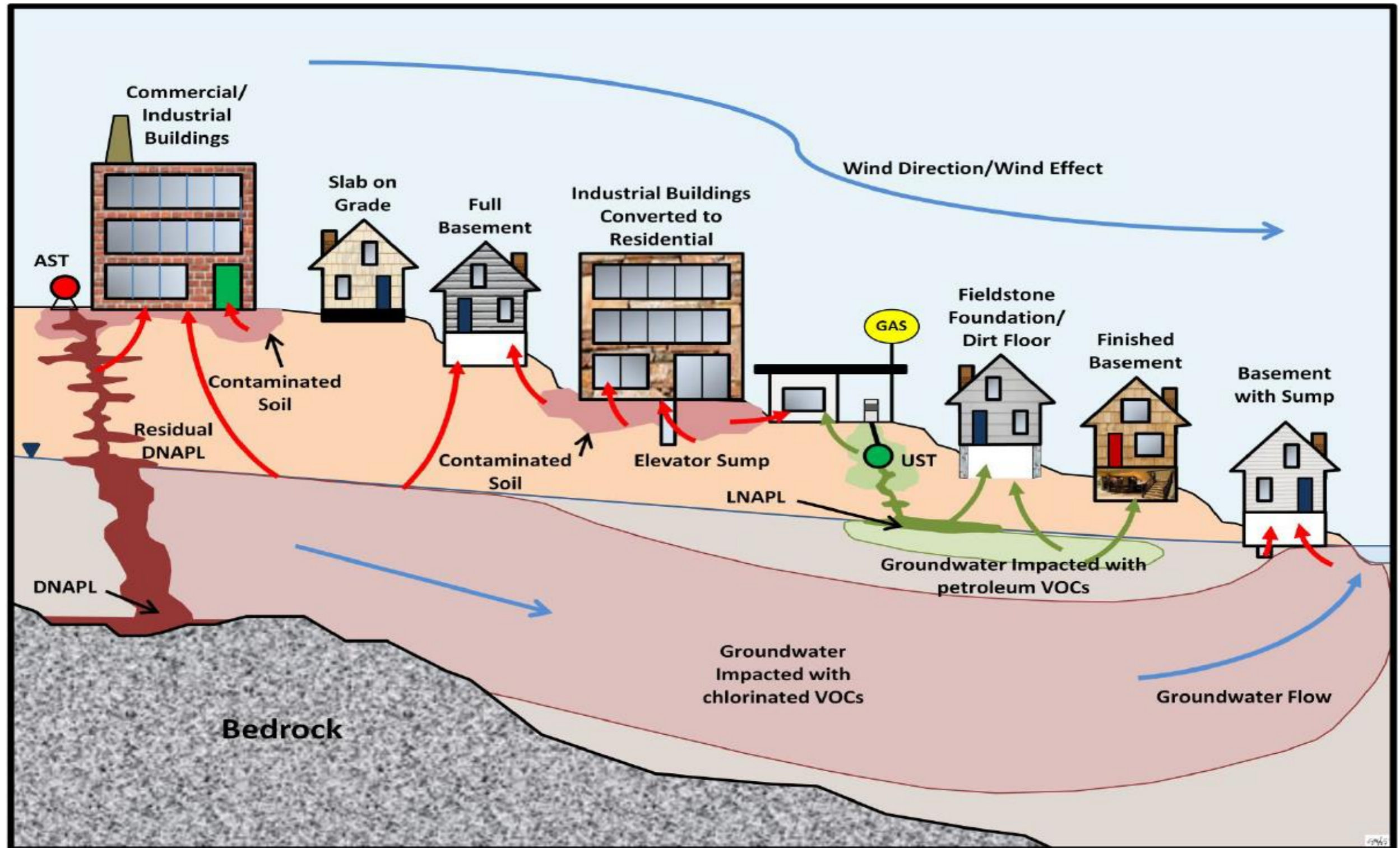
SOIL VAPOUR

Soil vapour intrusion is the migration of volatile chemicals from contaminated groundwater and/or soil into overlying buildings. Where vapour intrusion occurs, there is the potential for impacts to indoor air quality and unacceptable risks to building occupants.

- ❖ Vapour Well
- ❖ Sub Slab (under dwelling)
- ❖ Ambient (outside the dwelling)
- ❖ Indoor air sampling (inside the dwelling)



SOIL VAPOUR



SOIL VAPOUR

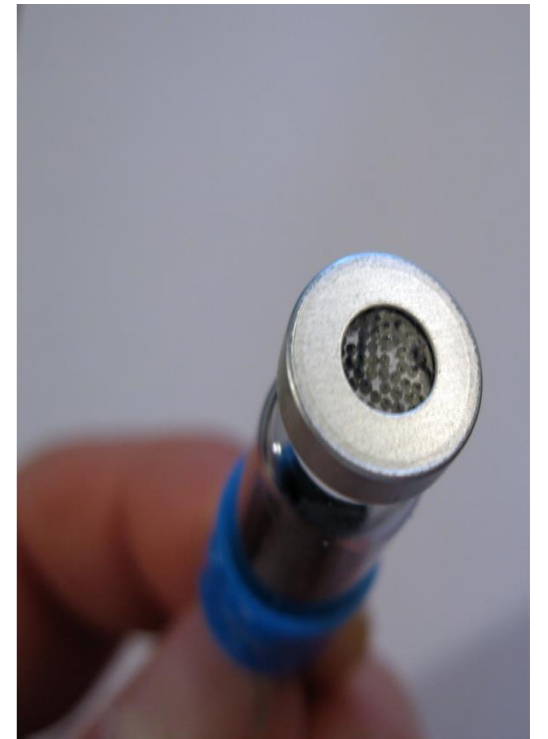
Soil vapour samples are sampled with Summa Canister, or TD tubes or WMS passive air sampler



SOIL VAPOUR

The Waterloo Membrane Sampler™ (WMS™), a passive sampler for monitoring volatile organic compound (VOC) vapor concentrations, it was developed at the University of Waterloo and run exclusive at AGAT LABS

WMS™ contains a sorbent in an inert container with an opening of known dimensions covered with a membrane. VOC vapors pass through the membrane at a constant rate, called the uptake rate, over time.

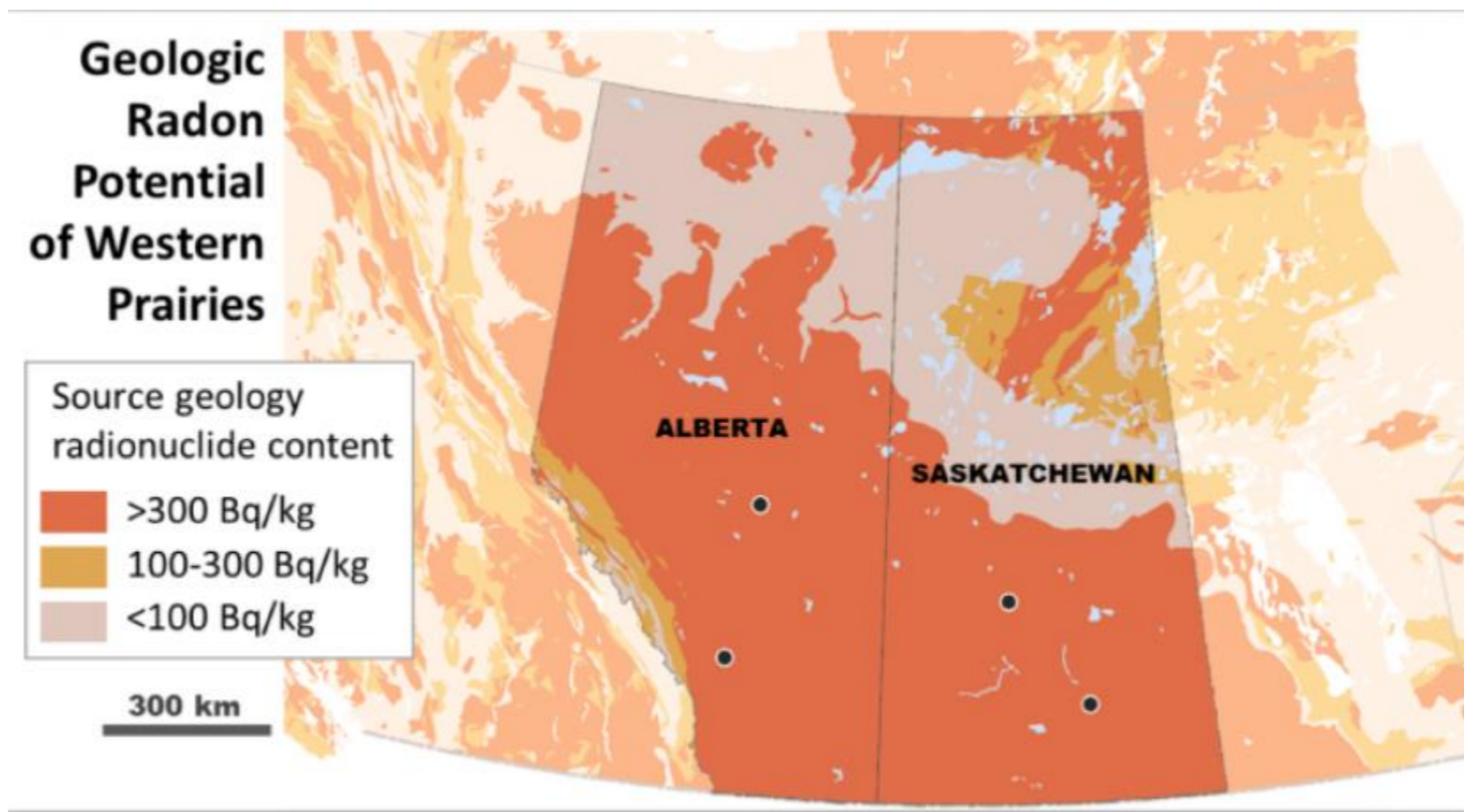


RADON

Radon is a naturally-occurring radioactive gas produced by the decay of Uranium-238 in rock, soil, and water.

Short-Term Tests Offers a quick snap shot of radon exposure values during the period of monitoring. Kits should be distributed every 200 m² in the lowest occupied level of your building, for a minimum of 48 hours to 10 days.

Long term tests are recommended and conducted for a period of 91 days during the home heating season, approximately October to April





Contact information

Theresa Stephenson , Manager of Technical Services
Stephenson@agatlabs.com 905-818-6237

Karen Malanowich, District Manager, Environmental - Saskatchewan and Manitoba
malanowich@agatlabs.com phone 306-382-5703