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SGH FACT SHEET

SGH – SPATIOTEMPORAL GEOCHEMICAL HYDROCARBONS
Predictive Geochemistry

An Organic Geochemistry used to identify and delineate buried inorganic mineral deposits and organic petroleum plays. The initial *Soil Gas Hydrocarbon* designation can still be used and is still recognized.

Detects 162 specific non-gaseous hydrocarbon compounds that have been synthesized by bacteria feeding on the target. In the decomposition of these microbes, cell membranes break down and release these hydrocarbons. The hydrocarbons are diffused through the overburden to the surface.

A small fist sized, near-surface sample of soil, peat, humus, sediment, sand, till, lake or ocean bottom sediments is easily obtained to be sent to the laboratory for analysis of these hydrocarbons. The ease of taking samples for SGH reduces sampling program costs in comparison to other geochemical methods.

The list of 162 hydrocarbons encompasses 19 different chemical classes. This information-rich data set provides a strong, highly confident "forensic" signature that identifies the type of target at depth.

The differences in the spatial diffusion of these classes are able to be mapped and used to vector to the vertical projection of the target reducing drill program costs.

SGH is a deep penetrating geochemistry able to detect shallow targets as well as mineral deposits in excess of 500 metres or petroleum plays in excess of 1,000 metres in depth.

An SGH survey can be interpreted for multiple target types irrespective of lithology and geography.

SGH has been observed to agree with other geochemistries such as Radon Gas surveys and geophysics such as CSAMT and other magnetic based surveys.

Over 700 surveys have been analyzed and interpreted using SGH. All submissions of samples for SGH include the delivery of an SGH Interpretation Report which is included in the price of analysis.

Actlabs has developed forensic identification signatures or templates for *Gold*, *Copper*, *Nickel*, *Cu-Ni-PGE*, *IOCG*, *Uranium*, *SEDEX*, *VMS*, *Lithium Pegmatite*, *Polymetallic* and *Kimberlite* targets as well as for *Coal*, *Gas*, *Conventional and Unconventional Oil Plays*.

Client comment: "Whilst I appreciate your offer and intent on using our results as a unique case study, we regard our knowledge of the (SGH) technique as a competitive advantage in terms of conducting exploration at a lower cost than our peers."

In a comment from Geoscience BC regarding the SGH performance at Mt. Milligan: "You nailed it!"

After development in 1996, the Canadian Mining Industry Research Organization (CAMIRO) extensively tested this geochemistry in several projects.

CAMIRO-97E04: Ten surveys were selected by the participating sponsors: BHP, Cameco, Cominco, Noranda, INCO, Outokumpu, Rio Algom and WMC. Geochemical methods had previously performed poorly, or not at all, in these areas. Inorganic geochemistries were only able to find 3 of these 10 targets. This SGH "nano-technology" was able to depict 9 of the 10 targets in these blind studies.

CAMIRO-01E01: Sponsors in this project were: Cameco, Outokumpu, Barrick Gold, Newmont, Noranda, Anglo American, WMC, Codelco, HBED, BHP-Billiton, Xstrata, Ontario Geological Survey, Manitoba Geological Survey and the Alberta Geological Survey. The following objectives were set: Is there a bacteriological explanation as to the origin of these hydrocarbons? Can SGH identify other types of targets? Can SGH discriminate between barren and ore-bearing magnetic conductors? The success of this complex project in determining the origin of the hydrocarbons and demonstrating signatures for Kimberlites and Olympic-Dam deposits resulted in positive reviews from four independent consultants who are top experts in this field: Dr. Ron Klusman, Dr. Gordon Southam, Dr. Joel Leventhal and Dr. Barbara Sherwood-Lollar.

CAMIRO-08E01: Sponsors in this project were: Areva, Cameco, Anglo American, Vale Exploration, Hathor Exploration, JNR, Titan Uranium, Denison Mines, Triex Minerals, Santoy Resources, Pitchstone, Purepoint, Uravan Minerals, Canalaska, Mega Uranium and UrEnergy. This study was to determine what geochemistry was best for locating unconformity-type uranium deposits study sites selected as Cameco's Cigar Lake and McClean Lake in Saskatchewan. The consultants were not able to determine an inorganic geochemistry that was as capable as SGH.

Many other research studies have been conducted over the years. From these studies the Ontario Geological Survey has indicated that "SGH is an excellent proxy for REDOX measurements" through work over the Cross Lake VMS deposit. They have stated in their handbook for exploration that SGH should be part of the formula for exploration and that SGH represents "good value".

DeBeers Canada use SGH over any prospective Kimberlite as it reduces their drill program by 50%.

SGH was the only geochemistry that was able to delineate the complete ore zone in the USGS study at the giant Copper-Gold-Molybdenum Porphyry deposit at Pebble, Alaska.

SGH was included in several Geoscience BC projects that studied the performance of a multitude of geochemical methods. SGH was successful at the Gold-Silver 3T's prospect in Central BC in the 2007-7 project as well as for the Copper-Gold Porphyry target at Mouse Mountain in the Quesnel, BC area in project 2008-1. SGH and several other methods were successful in the 2010-3 project at the Copper-Gold Porphyry Kwanika deposit; however SGH was the only geochemistry that was successful through the glacio-fluvial sediments at the Mt. Milligan deposit in North Central BC in the 2010-8 project.

Of the companies that have tried SGH over **90%** have observed success in orientation studies and have subsequently used SGH in further exploration.