



# Fenceline Monitoring

Fugitive volatile organic compound (VOC) releases from facilities in the petroleum and petrochemical sectors pose health and environmental risks to Canadians. As part of the Government of Canada's Chemical Management Plan (CMP), new requirements will be imposed upon petroleum refineries, upgraders and certain petrochemical facilities to reduce the risk of exposure to humans and the environment. A recent publication (May 2017) in the Canada Gazette, indicates that a fenceline monitoring program for petroleum and petrochemical sectors will come into effect on January 1, 2018 and be applied across Canada effective July 1, 2018, <http://www.gazette.gc.ca/rp-pr/p1/2017/2017-05-27/html/reg2-eng.php>.

This program will require 18 petroleum refineries, 6 upgraders and 2 petrochemical facilities to sample and analyze the concentrations of certain VOC's (benzene, 1,3-butadiene, as well as the total concentration of all retainable VOCs) around their respective facilities' perimeters as per U.S EPA Method 325A and 325B.

## EPA 325 Background

In May 2013, the US EPA released a proposed rule as an update to the current "National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries" which will now require all refineries to monitor volatile benzene concentrations around the fenceline (perimeter) of their facilities. Benzene was selected as a representative compound to evaluate overall refinery emissions. Originally implemented as part of the annual Risk and Technology Review (RTR), which is a combined effort to evaluate both risk and technology as required by the Clean Air Act (CAA) after the application of maximum achievable control technology (MACT) standards, the proposed rule is designed to establish a fenceline concentration of benzene that would trigger required corrective action in the event of an exceedance.

The proposed rule was posted to the US Federal Register on June 30, 2014. Implementation of this proposed rule will result in reductions of hazardous air pollutants that affect public health directly (cancer risk and chronic health effects), as well as indirectly by contributing to the formation of ground-level ozone (smog).

EPA Method 325 "Volatile Organic Compounds from Fugitive and Area Sources" was developed to enable refineries to comply with the updated US federal regulation 40 CFR 63. EPA Method 325 includes two sub-parts: EPA 325A: Sampler Deployment and VOC Sample Collection, and EPA 325B: Sampler Preparation and Analysis. These complementary methods outline the design, deployment, preparation, and analysis of a series of passive sampling sorbent tubes suspended around the refinery property line. After 2 weeks (14 days) of sampling, the passive sampling tubes are detached from the shelters, re-sealed and sent to a laboratory for TD-GCMS analysis. Although benzene is the primary target compound, the sampling and analysis methodology can also be used to determine other VOCs, including 1,3-butadiene, toluene, ethylbenzene, xylenes and other hazardous air pollutants (HAPs).

## ALS Waterloo and EPA 325B Sampler Preparation and Analysis:

ALS Waterloo is the Canadian industry leader in providing analytical support for EPA 325 monitoring programs. Currently participating in the SLEA (Sarnia Lambton Environmental Association) Collaborative Study of Petrochemical Facilities as the only approved and accredited Canadian laboratory, supporting biweekly media preparation and sample submissions from multiple facilities. Concurrently supporting an EPA 325 air sampling project in the Maritimes. Selected as Quality Control Laboratory for a large international research study on the EPA 325 method.