

Gap Analysis for the Stationary Combustion Filterable and Condensable Particulate Matter Emissions Factors

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Purpose

The broad objective of this study is to provide a gap analysis of the filterable and condensable emission factors from the stationary combustion sources including external and internal combustion sources fired on gaseous and liquid fuel.

Currently, filterable particulate matter is required to be included in emission inventories and reported to the Environment Canada as part of the National Pollutants Release Inventory (NPRI). It is expected that the condensable particulate matter emissions will also be required to be included in emission inventories and reported to NPRI in the near future.

The list of objectives of the study is:

- literature review investigating currently

available filterable and condensable emission factors including but not limited to:

U.S. EPA AP-42 sections and related background documents to analyse the uncertainties of those emission factors:

external natural gas combustion, section 1.4

external LPG combustion, section 1.5

natural gas-fired turbines, section 3.1

natural gas-fired reciprocating engines, sections 3.2, 3.2 and 3.2

large stationary diesel and all stationary dual-fuel engines, section 3.4

GRI, NYSERDA and API studies on development of fine particulate emission factors and speciation profiles from various combustion sources

evaluation of the accuracy of currently available filterable and condensable PM emission factors;

review of the latest methods for measurement of filterable and condensable PM emissions from stationary combustions particularly U.S. EPA Method 202 (i.e. U.S. EPA Federal Register Part II 40 CFR Part 51, December 21, 2010) and potential uncertainties of those measurement methods; and

development of a test plan to improve the filterable and condensable PM emission factors for a potential next phase of the project.

Policy Issue

Improving air emissions inventories through improved

emissions factors and reporting methodologies. Air emissions inventories are becoming an increasingly important method of monitoring and reporting on industry emissions, for the public, governments, and individual companies. Further, governments are beginning to use these emissions inventories to negotiate international treaties, establish air emissions policy measures and targets, and develop forecasts. As such, it is important that the UOG operators report facility emissions using standardized methodologies and emissions factors with low uncertainty, and have access to a wide variety of effective emissions monitoring technologies.

Knowledge Gap

The filterable fraction of particulate matter is currently included in emission inventories and environmental assessments. It is anticipated that the condensable fraction, in addition to the filterable fraction, may be required in the future. A project that investigates currently available filterable and condensable emission factors, evaluates their accuracy, and develops and implements a test plan to improve the factors is required.

Report