ENVIRONMENTAL Services

Emission Inventories and Control Option Analysis

Reliable emission data is vital for a variety of purposes, such as modelling impacts to local and regional air quality, assessing the environmental effects of new/expanded facilities, applying for permits or licenses, evaluating the feasibility of emission control options, assessing health risks and reporting emissions to regulatory agencies. We can assist you in all of these areas.

Analysis of Emissions

Levelton is a leading expert in the analysis of emissions from stationary and mobile sources. We are experienced with:

- emission inventories for stationary point and area sources, and onroad and nonroad mobile sources;
- measurement and estimation of stack and fugitive emissions from industrial processes;
- individual facilities to provincial and national emission inventories;
- identification and analysis of emission control options and strategies to determine costs and benefits;
- preparation of National Pollutant Release Inventory reports;
- design and development of computerized databases and calculation tools to calculate, forecast and report emissions;
- providing workshops and training on best practices.

Levelton has inventoried all types of primary and secondary emissions of concern, such as:

- criteria air contaminants - NO_X, SO_X, PM_{10}, $PM_{2.5}$, CO, volatile organic compounds and ammonia;
- toxic and NPRI substances; and
- greenhouse gases (CO_2, CH_4, N_2O).

Our specialists have estimated emissions from most types of sources. This includes industrial, commercial and residential emission sources, as well as the specialized techniques and models needed to estimate emissions from motor vehicles, marine vessels, locomotives and aircraft.

Levelton's expertise in emission control technology has been applied to determine the most cost effective control strategies for inventoried emission sources, and to assess costs and benefits.

Studies have been completed to identify the best controls for individual industrial sources, as well as to develop broad emission control programs needed to improve regional air quality. The economic benefits from reductions in human health impacts have been estimated using the latest health impact assessment methods for particulate matter, toxics and criteria pollutants. Database and modelling tools have been created to model the effects of emissions before and after control programs.

Regional emission inventories are commonly developed with data on spatial and temporal variability. The spatial distribution of emissions has been determined by season, month and hour using both database and geographic information system software. These results have been used in regional air quality models, in assessments of the impacts of proposed new or expanded facilities and in support of air quality management plans.

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Levelton has strong database and computer programming capabilities that have been used to develop improved and more efficient methods to prepare emission inventories. For example, we have created emission calculation tools for:

- Petroleum product terminals, bulk plants and service stations.
- Commercial ocean-going and harbour vessels.
- Onroad and nonroad emissions from heavy duty diesel vehicles.
- Criteria pollutants from regional point, area and mobile sources - baselines and forecasts.
- Regional toxic and NPRI emissions.

Examples of emission inventory projects:

- Air Toxics Emission Inventory and Health Risk Assessment.
- Backcast and Forecast of Marine Vessel Emissions in British Columbia (1985-2025).
- Marine Vessel Emissions for the Year 2000 – B.C. and Washington State.
- Guidance for Estimating Criteria Air Contaminants for the National Pollutant Release Inventory.
- Emission model for Emissions from Terminals, Bulk Plants and Service Stations - nationally and for individual companies across Canada.
- Emissions from the Agricultural Sector.
- Emission Quantification Workshops.
- Reducing Emissions Report (CCPA annual report).
- Environmental and Safety Performance Report (CPPI annual report).

Numerous projects have been completed that identify and evaluate alternative emission control options for stationary and mobile sources. These vary from site-specific studies to measure, trouble-shoot and improve existing controls, to studies for regulatory agencies that evaluate the costs and benefits of more stringent air pollution control programs. Some examples of these are:

- Best Management Practices and Emission Inventory for Agricultural Sources.
- Emission Reduction Measures for Point and Area Sources.
- Best Management Practices for Hazardous Air Pollutants from Stationary Sources
- AirCare Inspection and Maintenance Program Technical Program Review – Phase I.
- Emission Reduction Options for Heavy Duty Diesel Fleet Vehicles and Nonroad Vehicles.
- National Framework for Petroleum Refinery Emission Reductions.
- Options to Reduce CO_2 Emissions from Electricity Generation in the APEC Region.
- Effects of Idling Reduction on Greenhouse Gas Emissions from Trucks at Canadian Ports.

We can provide services nationally through our offices in British Columbia and Alberta.

Levelton Consultants Ltd.

150 – 12791 Clarke Place Richmond, B.C. V6V 2H9
Tel: 604.278.1411 Fax: 604.278.1042
Email: info@levelton.com www.levelton.com

ABBOTSFORD 604.855.0206 CALGARY 403.269.4141 COURTENAY 250.334.9222 KELOWNA 250.491.9778 NANAIMO 250.753.1077 SURREY 604.533.2992 VICTORIA 250.475-1000