



# Emission Mapping and Information Tool (EMIT)



J. Wayne Boulton<sup>1</sup>, Paul Joynt<sup>1</sup>, Michael Van Altena<sup>1</sup>, Daniel Jutzi<sup>2</sup>, Dennis Herod<sup>2</sup>, Patricia Smith<sup>3</sup>, Dominique Ratte<sup>3</sup>, David Neimi<sup>3</sup>  
 1. RWDI AIR Inc., 650 Woodlawn Rd. West, Guelph, Ontario, Canada  
 2. Environment Canada, Air Emissions Priorities, 351 St. Joseph Blvd, Gatineau, Quebec  
 3. Environment Canada, Pollution Data, 200 Sacre Coeur Blvd, Gatineau, Quebec

## Introduction

For most, comprehensive air pollutant emission data for Canada are currently only available at a provincial/territorial and national level.

To facilitate custom querying and mapping of emission data, required by staff analysts, Environment Canada's Air Emissions Priorities division retained RWDI AIR Inc. to develop the Emission Mapping and Information Tool (EMIT). EMIT was written as a Toolbar extension to ESRI's core ArcMap platform.

EMIT can be used to load, query, map, and report on pre-compiled Canadian and US emissions data at a number of geo-political levels using a simple query 'wizard'.

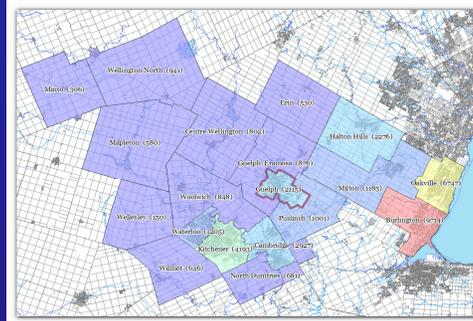
Air pollutant emissions can be queried and mapped down to the Census Subdivision (CSD) level in Canada (large cities, municipalities, etc.), and at the County level in the US.

Query results are, by default, generated as new map layers and plotted in ArcMap. Once generated, these GIS layers (personal geodatabases) can then be manipulated to produce custom maps and support subsequent analyses such as the comparison of emissions data with ambient pollution concentrations and Air Quality Health Indices (AQHI).

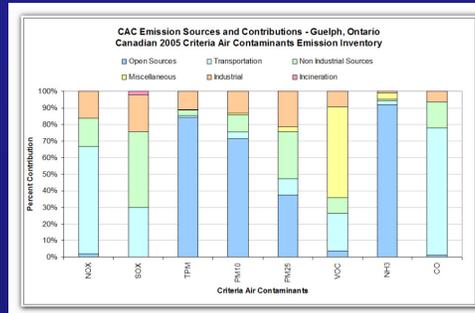
18th International Emission Inventory Conference  
 Baltimore, Maryland, USA April 14 - 17, 2009  
 "Comprehensive Inventories - Leveraging Technology and Resources"  
 Contact: Wayne.Boulton@rwdi.com (+1 519.823.1311 x2289)  
 Contact: Dennis.herod@ec.gc.ca (819.994.4408)

## Case Study

EMIT was used to produce custom maps and query results to help Engineers in the City of Guelph's Planning Department identify key emission sources and assess how they compare to other, like-sized municipalities.



Annual emissions of NO<sub>x</sub> (tonnes) from anthropogenic sources (2005 CAC EI)



Emissions by source sector for Guelph

## Key Features

Queries can be executed across any combination of Provinces, Census Divisions, and / or Census Subdivisions (States and Counties in the US).

EMIT is currently populated with:

- Canadian 2002 CAC EI by CSD.
- DRAFT Canadian 2005 CAC EI by CSD.
- US 2002 NEI by County.

Depending on the geographic area selected, users can choose to compute emission summaries geographically by any one of:

- Province
- Census Division
- Census Subdivision

Pollutant lists are pre-populated based on the emission database selected (country and year).

Source Type information is emission database dependent. Source Groups in Canada match the cascading reporting groups used by Environment Canada. US emissions are grouped by US EPA TIER III reporting categories.

Users are prompted to enter additional metadata and check the "query" prior to execution. This information (query and metadata) is exported to an EMIT log file (ASCII file).

Query results are automatically loaded into ArcMap as a new layer (personal geodatabase).

## Next Steps...

Include additional functionality and more inventory years (including projections) for Canada and the U.S. so that trends and forecasts can also be assessed.

Generate Custom Emission Maps in Minutes

