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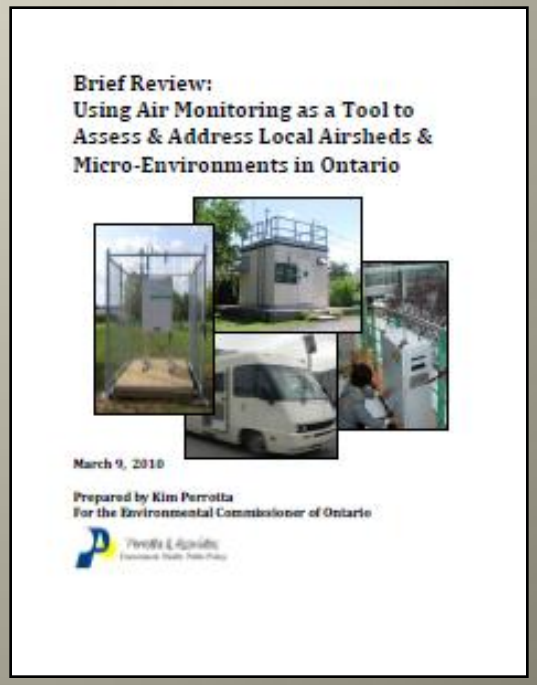
Brief Review: Using Air Monitoring as a Tool to Assess & Address Local Airsheds & Micro-Environments in Ontario

2010 Background Report for
Environmental Commissioner of Ontario
Presentation to Clean Air Hamilton
Presented by Kim Perrotta
December 13, 2010

Report for the Environmental Commissioner of Ontario

- When, where & how air monitoring is currently being used in Ontario as a tool to assess & address local airsheds and/or micro-environments.
- When, where and how it could or should be used – Public Health perspective
- Small budget & short timeline so excluded federal projects & source emissions monitoring
- Based primarily on key informant interviews



Former or Current Projects

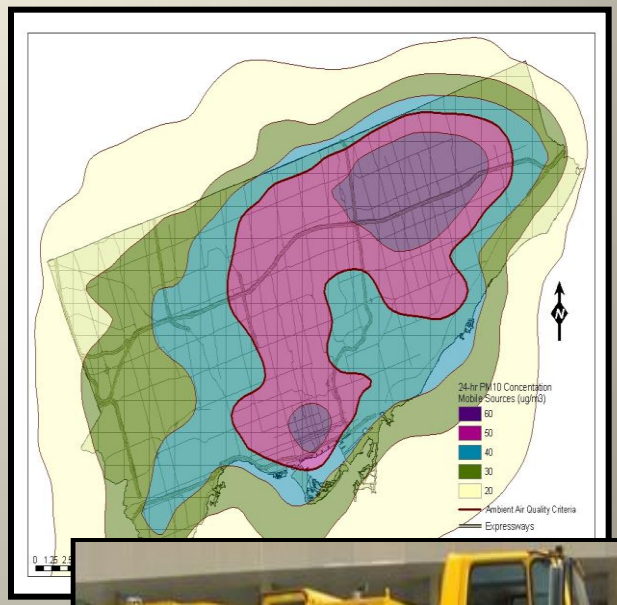
- MOE Air Monitoring Branch – Regional Scale
- MOE Regional Offices – Local Scale - Enforcement
- MOE Central Region – Clarkson Airshed Study
- MOE Central West – Road Dust Study
- Hamilton Air Monitoring Network - Road Dust Study
- Partnerships - Sudbury Air Quality Study
- Partnerships - Clean Air Hamilton – Mobile Monitoring
- **Municipalities - City of Toronto**
- **Municipalities - Halton Region**
- **Municipalities - City of Ottawa**

Key Informant Interviews "Could or Should be Used"

- Staff from Six Public Health Units (PHUs) actively engaged in air quality issues; 4 from GTA & 2 outside GTA
- **Public Health Comments** re:
  - Interest in Characterizing Local Air Quality
  - Role that they see for Air Monitoring as a Tool
  - Assessing Cumulative Impacts re: Projects & Proposals
  - Assessing Cumulative Impacts re: Land Use Planning
  - Responsibility for Assessing Local Airsheds & Micro-Environments
- Observations & Recommendations

Toronto Airshed Modelling Supported by Air Monitoring

- City has been doing airshed modelling for CACs since early 1990s
- 2 km resolution; five sectors
- Now expanding to air toxics
- Modelling suggested road dust was a significant source of PM10
- Air Monitoring was done to validate contribution from roads
- Then focused on street cleaning
- Then on street cleaning equipment
- Results were used to justify spending $5 million more when purchasing 50 new street cleaners



Halton Region
Airshed Modelling & Air Monitoring

- In 2007, began airshed modelling & air monitoring programs
- Airshed Model for CACs; 2 km resolutions; 5 sectors; using TO approach
- Stationary AQHI Station in Milton – AQHI & Real-time results on the Region's website
- Two - AirPointers – 5 CACs each
- Monitoring being used:
  - Validate & calibrate airshed model
  - Assess micro-environments (traffic corridors
  - Land use planning policies
  - Educate public & decisions makers

City of Ottawa
Satellite Data, Modelling & Monitoring

- In 2007, submitted proposal to GeoConnections (NRCanada)
- Using Satellite data to characterize AQ across the National Capital Region
- Used NAPS sites, Mobile monitoring, & Portable monitors to validate data
- 1 km resolutions; CACs
- Modelling to attribute sources
- Will be used to:
  - Inform land use & transportation planning
  - Educate public and decision-makers about contribution of different sectors

Public Health Staff
Air Monitoring as a Tool

- Validate and calibrate airshed modelling tools
- Inform land use & transportation planning policies
    - e.g. Sensitive land uses & high volume highways
- Assess land use planning applications
  - e.g. Daycare facilities relative to truck depots
- Measure background levels for proposed projects
  - e.g Energy from Waste
- Confirm levels of air pollutants predicted with air modelling for proposed projects or facilities after they are completed
  - e.g. foundry air modelling underestimated impacts
- Inform purchasing policies within municipalities
  - e.g. street cleaning equipment

Public Health Unit Perspective
Assessing Cumulative Impacts of Projects

- Concerned re: cumulative impacts of air pollutants on local air quality
- Proponents asked to include background air levels for CACs
- Sometimes frequency analysis
- Some using MOE stations for background
- Some PHUs/Municipalities doing airshed modelling to provide estimates that could be used
- Most do not have the resources or the expertise

Public Health Unit Perspective
Air Monitoring & Land Use Planning

- Subdivisions, super-centres, drive-throughs, & truck depots - not required to do AQ Assessments
- Few PHUs worked to get policies into OPs to require AQ assessments & consideration of cumulative AQ impacts
- Raises complex questions:
  - Interpretation of results
  - Application to Planning
- Collaboration needed:
  - PHUs
  - Planning
  - MOE

Whose Responsibility is Air Monitoring? PHU/MOE/Municipal Perspectives

- **Project/Facility Proposal –** Proponent – agreement
- **Complaints -** AQ/Odour re: Point Source - MOE - agreement
- **Compliance Issues** – AQ/Odour – MOE - agreement
- **Regional Scale AQ** – MOE – agreement
- **Local Scale –** All Sources Combined– **Unclear**
- **Local Scale –** Transportation, Commercial, Agricultural, Residential – **unclear**
- **MOE** – has not seen itself having regulatory authority for many of the emission sources within a community.
- **PHUs/Municipalities** - Do not see themselves having the expertise or the resources needed

Gap in MOE Authority? PHU Perspective

- **MOE Role** - All PHUs thought MOE should be taking a greater role in the assessment of local airsheds & micro-environments
- **MOE Support** - Some PHUs noted that MOE AQ support appears uneven across the Province; reflecting older realities (i.e. when point sources represented the primary concern)
- **MOE Focus** - MOE air quality expertise needed to:
  - Assess and address air quality in a cumulative way
  - Move beyond focus on point sources
  - Include mobile and area sources
  - Inform land use and transportation planning processes

Trinity of Interests & Expertise Urban Airsheds

- **Public health Units**
  - Raising concerns about cumulative AQ
  - Responsible for community health
  - Advancing healthy public policies
- **Planning –**
  - Regional & Local Planners influence land use & transportation planning patterns
  - Which influences AQ locally and regionally
- **MOE**
  - Expertise in AQ assessment
  - Authority for AQ re: Point sources
  - Authority for EAs & CofAs

Recommendations to the MOE

- **Provide technical support & financial resources** to PHUs/Municipalities that are seeking to **assess airsheds**.
  - Giving priority to those expected to grow rapidly over the next 20 years;
  - Have, or are expected to achieve, high population densities; and
  - Have stressed airsheds because of transboundary air pollution and/or local emission sources.
- **Work with PHUs/Municipalities** to identify, coordinate, and conduct air monitoring studies that assess **micro-environments** of common concern.
- **Provide technical support & resources** to those PHUs/Municipalities that are doing air monitoring/air modelling studies to **assess micro-environments** that are of common concern.

Recommendations to MOE Continued

- Actively work with PHUs/Municipalities to **build an understanding of the air monitoring & modelling tools, technologies, and strategies** that can be used to assess local airsheds and micro-environments, along with their strengths, limitations, and applications.
- **Conduct research on policies and protocols** that can be used to address both regional and local air quality issues through the **land use and transportation planning processes** that are conducted by local, regional and provincial levels of government

Contact Information & Access to Report

kim.perrotta@cogeco.ca
905-628-9437
http://perrottaassociates.com/

http://eco.on.ca/eng/index.php/pubs/background-discussion-roundtable-documents.php