



Progress Report 2000

Table of Contents

EXECUTIVE SUMMARY: A UNIQUE SUCCESS STORY	1
1.0 INTRODUCTION	4
2.0 BACKGROUND	5
2.1 HAMILTON-WENTWORTH AIR QUALITY INITIATIVE	5
2.2 CLEAN AIR HAMILTON	5
3.0 ACHIEVEMENTS.....	7
3.1 INTERNATIONAL AWARD FOR ENVIRONMENTAL BEST PRACTICES	7
3.2 INVESTMENTS IN AIR QUALITY MANAGEMENT.....	7
4.0 AIR QUALITY INITIATIVES	9
4.1 CLEAN AIR HAMILTON WORK PLAN	9
4.1.1 <i>Strategies to Reduce the Number of Single-Occupancy Auto Trips</i>	9
4.1.2 <i>Greening of Fleets</i>	10
4.1.3 <i>Fugitive Road Dust Study</i>	10
4.1.4 <i>Reduction of Transboundary Air Pollution</i>	11
4.1.5 <i>Development and/or Enhancement of Tree Projects</i>	11
4.1.6 <i>Development of a Community Smog Plan</i>	12
4.1.7 <i>Promotion of Public Awareness through Social Marketing</i>	13
4.1.8 <i>Transportation Emissions Modeling</i>	14
4.1.9 <i>Land Use/Transportation Issues and Planning</i>	14
4.2 LONG TERM MILESTONES	15
5.0 MEASURING AIR QUALITY IMPROVEMENTS	16
5.1 PROGRESS INDICATORS	17
6.0 HUMAN HEALTH RISK ASSESSMENT	30
7.0 RECOMMENDATIONS.....	32
8.0 CONCLUSION	33
APPENDIX A – CLEAN AIR HAMILTON MEMBERSHIP.....	34
APPENDIX B – CLEAN AIR HAMILTON ACTION PLAN.....	36
APPENDIX C - TREE PLANTING SITES 2000	49
APPENDIX D – HAMILTON AIR QUALITY MONITORING NETWORK.....	50

List of Figures

Figure 1: Organizational Structure of Clean Air Hamilton	6
Figure 2 : Inhalable Particulate (PM10) Trend	17
Figure 3: Total Suspended Particulate (TSP) Trend	18
Figure 4: Ground Level Ozone Trend	19
Figure 5: Sulphur Dioxide Trend	20
Figure 6: Nitrogen Dioxide Trend	21
Figure 7: Total Reduced Sulphur (TRS) Trend	22
Figure 8: Air Pollution Index Hours Above 20 - Trend	23
Figure 9: Benzene Trend	24
Figure 10: Benzo(a)pyrene (BaP) Trend	25
Figure 11: Canadian City Comparison by Pollutant 1995	26
Figure 12: Canadian City Comparison by Pollutant 1996	26
Figure 13: Canadian City Comparison by Pollutant 1997	28
Figure 14: Canadian City Comparison by Pollutant 1998	29

Executive Summary: A Unique Success Story

Clean Air Hamilton is the new name of the Hamilton-Wentworth Air Quality Initiative (HAQI) and its implementation committee. HAQI began in 1995 as a collaborative, multi-sectoral effort to identify and examine important air quality issues in Hamilton. This first phase focussed on collecting and evaluating data, including human health impacts, and making recommendations. An implementation committee was formed in 1998 as a multi-sectoral partnership to implement strategies to reduce many of the harmful emissions that lead to air quality related illnesses.

The year 2000 marked a number of achievements for *Clean Air Hamilton*.

The most important achievement has been the dramatic and visible improvement in air quality in the City, using a number of separate measures which are detailed in the following pages.

In addition, the prestigious Dubai International Award recognized *Clean Air Hamilton's* unique governance and community partnership process to improve living conditions. *Clean Air Hamilton* was chosen as one of ten environmental best practices from around the world. The new City of Hamilton received a substantial monetary reward (\$30,000 US) for this initiative from the United Nations Centre for Human Settlements (Habitat) and Dubai Municipality. This award recognized two key elements to the success of the process: maintained broad community involvement and a clear focus on health outcomes.

Clean Air Hamilton focused on 9 program areas in 2000 with an emphasis on reducing emissions from urban sources. Strategies were initiated to reduce single occupancy auto trips, to purchase low emission vehicles, to model transportation emissions, to reduce smog-causing emissions, to plant trees and to provide advice on air quality related land use and transportation issues for consideration in city-wide planning.

Members of *Clean Air Hamilton* have also promoted the Hamilton-Wentworth Air Quality Initiative process to other communities, not only in Ontario, but as far afield as Texas and even China. It is noteworthy that the methodologies used in the recent study of health impacts of air pollution in Toronto were derived from those developed in Hamilton.

Programs have also been initiated independently of *Clean Air Hamilton*, such as the provincial Drive Clean (vehicle emissions testing) program, federal/provincial smog plans, and industrial greenbelting projects. The *Clean Air Hamilton* committee is there to support and advise on these types of policies and programs.

With assistance from the Ontario Ministry of Environment, *Clean Air Hamilton* has established a number of indicators to measure the progress of our collective efforts to

improve air quality. Most indicators show significant improvement. On the whole, the results show a positive trend toward cleaner air. Examples include:

- Inhalable particulate (PM₁₀) levels have decreased by about 20% with a corresponding drop in sulphate levels since 1991 in most of the City; close to industries PM₁₀ levels have increased by about 10% in recent years.
- Sulphur dioxide levels have decreased by 40% since 1989 at industrial sampling sites, and 20% at the downtown sampling site although levels downtown have been relatively stable since 1990.
- Total reduced sulphur levels (TRS) have shown large decreases as evidenced by the reduced number of hours that odour thresholds were exceeded near the steel mills in 1999. These reductions are a direct result of improved coke oven controls and operating procedures. Odours are generally confined to the northeast industrial zone, including the Beach Strip area. A small number of odourous hours are annually measured downtown, but these numbers have also declined since 1996.
- The Air Pollution Index (API) has not reached the advisory level of 32 at any of the API stations in Hamilton since June 1996; thus, no requests for voluntary cutbacks on industrial emissions have been issued. This improvement can be attributed to an overall decrease in particulate levels across most of the city.
- In 1999, benzene levels in air decreased by over 50% near Dofasco compared to a 5-year composite average from 1994-98. This can be attributed to the improvements made to the No. 1 Byproducts Plant. Benzene emissions controls started full operation at the No. 1 Byproducts Plant in 2000. Dofasco has achieved an 83% benzene reduction since 1993. Improvements were also measured near Stelco, likely due to the coke oven control plan and other changes. However, benzene levels at the Ministry of Environment's Beach Blvd. sampling station have actually increased by 30% since 1992 despite significant emission reductions by both companies.

The recent improvements in air quality that have been made are the latest chapters in an astonishing success story, one not well understood by the residents of the City of Hamilton. No other city in Ontario has so far been able to duplicate the HAQI process or improve its air quality at the rate at which Hamilton has within the last five years. Hamilton is unique in that it is home to many people with expertise in air quality assessment and the drive to voluntarily contribute time and knowledge to this initiative. It will be key to recognize these contributions and to match these in-kind efforts in order to maintain the momentum in this work.

The following strategies are recommended to continue improvements in air quality and support and encourage the stakeholders who are involved in *Clean Air Hamilton*:

-
- Explore opportunities to establish a local Air Quality Office that would provide air quality monitoring information and manage programs of *Clean Air Hamilton*.
 - Seek increased financing and staffing for programs devoted to air quality improvement in Hamilton.
 - Continue to focus actions on reducing inhalable particulate and sulphates from transportation, industrial and long-range sources.
 - Introduce a module in *Clean Air Hamilton* to administer a local partnership in air quality monitoring between governments, industries and other Clean Air stakeholders.
 - Review and refine environmental priorities through an updated assessment of local air quality and human health risks.
 - Provide new perspectives on air quality issues based on current research and lead initiatives to pursue new research areas that will lead to air quality improvements.
 - Address land use and transportation issues to reduce particulate and other emissions.
 - Promote the new *Clean Air Hamilton* image and action plan through ongoing public consultation and involvement.

1.0 Introduction

The *Hamilton-Wentworth Air Quality Initiative*¹ report (1997) identified programs, policies and research priorities for immediate and long-term action in improving air quality. *Clean Air Hamilton*² represents the interim organizational structure that was formed to act on the recommendations of the HAQI report and to advise the City and the community at large of effective strategies to reduce and control air pollution.

The former Regional Council made its decisions concerning the first round of reports in June 1998. Specifically, Council directed *Clean Air Hamilton* to address the following initial activities:

- Promotion of a joint fleet greening pilot project among local industries, businesses and government;
- Modeling of truck emissions;
- Development of a vehicle emissions tune up promotion;
- Introduction of measures to remove barriers to alternative transportation modes;
- Research on vehicle use, public consultation, emission sources and factors which motivate people to use private vehicles;
- Planting programs;
- Community Smog Plan;
- Contact with other communities pursuing similar objectives, including an international twinning initiative; and,
- Urban land use planning including deliberately promoting development patterns and building standards, which effectively reduce air pollution.

This report demonstrates the progress of recent efforts to fulfil these expectations and improve air quality in the Hamilton area. It summarizes the projects that have been promoted by *Clean Air Hamilton* in 2000 and introduces a set of indicators to measure the success in achieving the goal of cleaner air in Hamilton.

The report is structured to meet the following objectives:

1. Highlight major accomplishments of *Clean Air Hamilton*;
2. Report trends in ambient air quality data;
3. Assess human health impacts of air quality, and;
4. Recommend strategies for further improvements.

¹ Hamilton-Wentworth Air Quality Initiative (HAQI) Summary Report. October 1997. Hamilton, Ontario Canada.

² Clean Air Hamilton was formerly called the Hamilton-Wentworth Air Quality Improvement Committee (HAQIC).

2.0 Background

2.1 Hamilton-Wentworth Air Quality Initiative

The *Hamilton-Wentworth Air Quality Initiative* (HAQI) was formed as a unique approach in combining community expertise and commitment to set new priorities and strategies in local air quality management. HAQI began in 1995 as a partnership between the Ontario Ministry of Environment, Environment Canada, and the Region of Hamilton-Wentworth³. It grew into a collaboration between all levels of government, academic institutions, local industries, non-government organizations, environmental firms and neighborhood associations.

The initial purpose of the HAQI study was to prioritize air quality issues in this community by:

1. Identifying and prioritizing air pollutants and sources of local air pollution;
2. Determining the impacts of air pollution on human and environmental health; and,
3. Identifying air quality issues that require research and policy development.

Two years of research and analysis was compiled into four working group reports and a summary report, which were published in October, 1997 and concluded that:

- there are between 90 and 300 premature mortalities per year in Hamilton-Wentworth as a result of air pollution;
- there are at least 300 hospital admissions per year in Hamilton-Wentworth as a result of air pollution;
- particulate matter is the leading pollutant to cause air quality related illnesses and has been identified as the number one priority pollutant to be managed; and,
- the three main sources of air pollution in Hamilton-Wentworth are long-range transport, transportation and industry. HAQI identified several strategies to reduce emissions from these three sources.

Regional Council received the reports in October, 1997, and approved a Regional Air Quality Program that includes a \$250,000 annual budget. This budget goes towards the continuation of the partnership, a tree-planting program, a street sweeping study and chemical sampling research.

2.2 Clean Air Hamilton

In 1998, Regional Council approved the establishment of an implementation committee to address the recommendations of the HAQI study and support local improvements to air quality. The Hamilton-Wentworth Air Quality Improvement

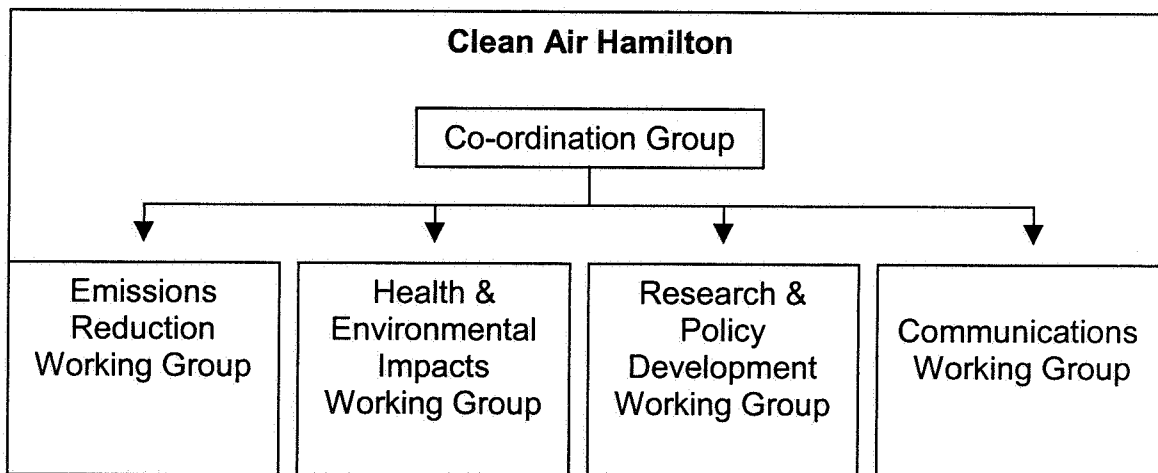
³ As of January 1, 2000 the former Region of Hamilton-Wentworth became the Corporation of the City of Hamilton and Region of Hamilton-Wentworth (City/Region) due to municipal amalgamation. As of January 1, 2001, the City/Region became the "new" City of Hamilton.

Committee (HAQIC) was formally launched to identify factors that affect human and environmental health and develop strategies to reduce harmful emissions. Recently, HAQIC changed its name to *Clean Air Hamilton*.

Clean Air Hamilton is now a community-based action committee that advises regional, federal and provincial governments. The Committee is composed of 40 members from 24 local organizations. A list of members and their affiliations are included in Appendix A. *Clean Air Hamilton* meets with the general public twice a year.

Clean Air Hamilton consists of a Co-ordination Group and four working groups. The Co-ordination Group acts as the executive decision making body, while coordinating the activities of the four working groups (see Figure 1).

Figure 1: Organizational Structure of Clean Air Hamilton



Each working group is responsible for delivering a work plan to improve air quality. The Emissions Reduction Working Group develops strategies to reduce emissions from transportation, industry and long-range sources. The Health and Environmental Impacts Working Group is responsible for updating health assessment data, and the Research and Policy Development Working Group fills in the research gaps identified in the HAQI study. A new Communications Working Group was formed in 2000 to formulate strategies that will effectively communicate key air quality messages.

In 2000, William Pearce of the Region of Hamilton-Wentworth completed his chairmanship of HAQIC (now *Clean Air Hamilton*) and Dr. Brian McCarry of McMaster University was elected to the role in April, 2000.

3.0 Achievements

3.1 International Award for Environmental Best Practices

Hamilton-Wentworth was recognized in 2000 with a prestigious international award for its community-based approach to air quality management. In November 2000, the Region of Hamilton-Wentworth received the Dubai International Award for Best Practices in Improving the Living Environment from Dubai Municipality of the United Arab Emirates, and the United Nations Centre for Human Settlements (Habitat). HAQI was jointly selected with VISION 2020, Hamilton-Wentworth's Sustainable Community Initiative, as one of ten best practices from around the world for strategies to improve living conditions. The two initiatives were chosen from nearly 800 submissions from more than 100 countries. Hamilton-Wentworth was the only North American municipality to win an award in 2000 and received a \$30,000 US cash prize and trophy at a ceremony in Dubai.

3.2 Investments in Air Quality Management

On an international scale, Hamilton has been recognized as providing a model for community leadership in sustainable decision-making. It is essential that support for this initiative continue and that the model is enhanced and implemented locally for the sake of building a healthy environment for our citizens and a positive image of the new City of Hamilton.

Most importantly, it should not be forgotten that continued leadership in air quality is highly regarded within our community. This is reflected in the success of HAQI to date, which could not have been accomplished if it were not for the invaluable, voluntary contributions that have come directly from the community at large. Initially, the Air Quality Initiative was perceived to cost a half a million dollars to the Region, but was offset considerably by in-kind commitments. Hamilton has been extremely fortunate to have so many citizens in the community who have expertise in air quality and consider air quality issues a priority for their own volunteer commitments.

The Ontario Ministry of the Environment and McMaster University have provided technical analysis of air quality and health data. Environment Canada, the Ontario Ministry of Environment, the City of Hamilton, and the Hamilton Industrial Environmental Association continue to contribute partial funding to Hamilton air quality initiatives. Numerous representatives from industry, environmental firms, non-government organizations and citizens' groups devoted time and energy to complete the air quality study, which has enabled them to act on more effective strategies to reduce emissions from transportation and industrial sources.

The following is a conservative evaluation of the volunteer time and in-kind work commitments that are offered by *Clean Air Hamilton* members each year. Commitments from the original HAQI study team are not included and significantly exceeded these estimates:

$$E = P * M * (H1 + H2) * D$$

$$E = 40 * 15 * (3 + 4) * 50$$

$$E = \$210,000 \text{ per year}$$

P = number of participants who attend regular meetings

M = number of meetings per year

H1 = number of hours spent per meeting

H2 = number of hours spent after each meeting per member

D = minimum dollar value per hour

E = equivalent dollar value to volunteer contributions

This contribution represents a serious investment by the community, deserving of comparable investments in resources and funding by the City. Additional funding support is critical if we are to continue to provide leadership in air quality on a local, national and global front. Tangible progress towards reducing air pollution and improving citizens' wellbeing has been made in Hamilton and these efforts will continue to reap rewards.

4.0 Air Quality Initiatives

4.1 Clean Air Hamilton Work Plan

The *Clean Air Hamilton* work plan (Appendix B) monitors the progress towards implementing each of the HAQI recommendations and Council directives. In 2000, *Clean Air Hamilton* focused on nine areas:

1. Strategies to Reduce the Number of Single-Occupancy Auto Trips
2. Greening of Fleets
3. Fugitive Road Dust Study
4. Reduction of Transboundary Air Pollution
5. Development and/or Enhancement of Tree Projects
6. Development of a Community Smog Plan
7. Promotion of Public Awareness through Social Marketing
8. Model Transportation Emissions
9. Land Use/Transportation Issues and Planning

4.1.1 Strategies to Reduce the Number of Single-Occupancy Auto Trips

a) Commuter Challenge

Hamilton held its first Commuter Challenge in June, 2000. Local organizations were encouraged to compete by challenging their staff to get to work by any means other than single-occupancy vehicle. HAQIC sponsored the one-week event through resources offered by Green Venture, Environment Canada and the City/Region.

Forty one (41) companies with a total of 25,140 employees registered for the challenge. Seven hundred forty (740) individuals participated for at least one day and thirty-eight percent (38%) of the participants normally commute only by single occupancy vehicle. The per capita participation rate for Hamilton-Wentworth was 0.11%.

The Commuter Challenge was successful in educating the community in the advantages of reducing the number of single-occupancy auto trips. Participants kept 9400 kilograms of pollutants out of the air and preliminary analysis suggests that Nitrogen Oxides and Carbon Monoxide levels were lower in downtown Hamilton during the challenge week than in previous weeks. The Hamilton Street Railway showed an increase in ridership of 4%.

Subject to funding, *Clean Air Hamilton* will continue the Commuter Challenge each year as a way to encourage Hamiltonians to reduce single-occupancy vehicle trips and to encourage local organizations to offer travel alternatives to their staff.

b) Travel Demand Management

Clean Air Hamilton co-hosted a Travel Options Workshop for local organizations in March, 2000. Cresswell Walker of Lanarc Consultants Ltd. facilitated the one-day workshop and offered tools for employers to implement an employee trip reduction program within their corporation. The *Clean Air Hamilton* committee members continue to advise local institutions of travel demand management and trip reduction planning.

4.1.2 Greening of Fleets***Normal Use Vehicle (NUvehicle) Partnership***

The Normal Use Vehicle (Nuvehicle) partnership involves six local organizations that are interested in purchasing new technology vehicles in their fleets to test performance in day-to-day operations and to reduce their vehicular emissions.

In 2000, three organizations in the community have purchased four low emission vehicles for their fleets. The Hamilton Street Railway purchased two Honda Insight vehicles, the Ministry of Environment purchased a Honda Insight and Hamilton Hydro purchased a Toyota Prius. The Honda Insight and Toyota Prius are recent developments from vehicle manufacturers and are not generally available. Other local partners, such as the local school boards, McMaster University, Police Services, and Dofasco, would consider purchasing large hybrid vehicles once they are made available in Ontario.

Over the next couple of years, the vehicles will be evaluated to test their performance and ability to reduce emissions. The evaluation would help organizations determine whether the hybrid vehicles are a viable addition to their fleet. The demand would generate more availability and local use of environmentally friendly vehicles.

4.1.3 Fugitive Road Dust Study***a) Street Sweeping Initiative***

Resuspended road dust was estimated to be a very significant source of inhalable particles in Hamilton air. Council approved an enhanced street sweeping proposal to combat this issue. It became clear that no reliable information was available on the most effective cleaning methods to reduce airborne particulate, as opposed to keeping streets looking clean. As a result, *Clean Air Hamilton* initiated a study that tested different combinations of street sweeping equipment as a potential strategy to control fugitive emissions of road dust in the north, industrial end of Hamilton. The findings of the study showed significant potential reductions in particulate emissions by using a combination of

mechanical/vacuum sweeping at least three times a week. The study teams recommended that enhanced sweeping continue, with monitoring, to determine its true effect on air quality.

In 2000, Belanger Inc. was contracted to continue the sweeping in the study area for six months. The Ministry of Environment offered to assess monitoring data in 2001.

4.1.4 Reduction of Transboundary Air Pollution

a) Southern Ontario Clean Airshed Network Initiative

In 1999, *Clean Air Hamilton* hosted a conference entitled, Upwind Downwind A Practical Conference on Improving Air Quality. One goal of this conference was to form a network of communities from Southern Ontario and the midwestern US. The Southern Ontario Clean Airshed Network Initiative (SO CAN I) was launched in January 2000, with 66 members from 34 organizations in 11 communities. The purpose of SO CAN I is to exchange information and come up with common solutions to air quality problems in an effort to reduce local and transboundary air pollution. SO CAN I meets for a workshop three times a year and shares information between meetings through a new website at www.socani.tripod.com, and a subscribers' email list.

Staff from the City of Hamilton Planning and Development Department chairs the workshops and administers the website and email discussions. It is anticipated that the chairing and organizing role would rotate between communities each year. Members of SO CAN I will also be involved with the organization of the next Biennial Upwind Downwind Conference that is tentatively scheduled for Spring, 2002.

b) Emissions Trading Workshop

In 1998, the Region of Hamilton-Wentworth was approached by the International Council for Local Environmental Initiatives to participate in a pilot greenhouse gas emissions trading program. At the request of Council, *Clean Air Hamilton* provided comments on the proposal and facilitated a staff workshop on the concepts of emissions trading. The response to the proposal was submitted in October, 2000 by Report ENV95002(G).

4.1.5 Development and/or Enhancement of Tree Projects

a) Homeowner Tree Planting Program

Each year, the Region of Hamilton-Wentworth partners with Green Venture, a local non-profit environmental organization, to offer trees to homeowners at

reduced rates. The Region subsidizes half the cost of up to two trees for homeowners who live in residential districts that are less than six years old or within the industrial north end of Hamilton. To order a tree, the homeowner must sign up for a one-hour consultation with Green Venture staff. The consultation is an opportunity to discuss the effects of poor air quality and actions that could be taken around the home to reduce harmful emissions.

The program was available during the spring and fall, 2000. Altogether, Green Venture visited 212 homes and sold 228 trees. Green Venture estimates that the trees will keep more than 3 tonnes of carbon dioxide out of Hamilton's air every year.

b) Non-Profit Application Process

During the spring and fall, the Region formed partnerships with 17 local, non-profit organizations to plant over 500 trees at 18 sites throughout the region. The organizations were selected through an application process. The Regional Tree Planting Program provided funding of up to \$3,000 to enhance community projects that supported planting native trees over six feet tall. A list of tree planting sites is included in Appendix C.

4.1.6 Development of a Community Smog Plan

a) Corporate Smog Response Plan

Planning for a Corporate Smog Management Plan began in 1999 at the request of Regional Council⁴. A Smog Management Plan consists of a smog response plan, for days when the air quality index exceeds 50. A corporate smog team was formed to prepare the plan for the City/Region, while *Clean Air Hamilton* provided staff with research and advice on smog.

The City/Region Smog Response Plan was enhanced in 2000 to include individual action plans that commit each Department to implement a series of activities that will temporarily reduce pollutants leading to the formation of ground level ozone on smog alert days. Such activities include postponing the use of vehicles, solvents, oil-based paints and gasoline powered grass cutting equipment during a smog advisory.

A Communication Plan was enhanced to provide staff with key messages about smog and individual activities that they could take on a personal level to help alleviate smog. For example, posters and fact sheets were circulated to each

⁴ Due to municipal amalgamation, the former Regional Council has been replaced by the "new" City of Hamilton Council.

division and through pay stubs to employees. Smog messages were communicated to the general public via media releases and brochures.

A new feature that was recommended by staff this year, and implemented as a long term smog reduction strategy, is the launch of the Corporate Carpooling Registry on the new City of Hamilton employee (e)net. This registry encourages a reduction in single occupancy vehicles by providing an opportunity for ride sharing among employees at the new City of Hamilton.

b) Clean Air Commitment Pilot

Clean Air Hamilton has initiated a pilot program to help local organizations develop Clean Air Action plans that examine corporate policies and procedures from an air quality perspective, and educate employees about clean air choices. The program is administered through Green Venture and funding has been provided by the City/Region, Environment Canada and the Hamilton Industrial Environmental Association.

Two local industries, Vopak Inc. and CanAmera Foods, have been approached to prepare a Clean Air Action Plan. Green Venture is developing a strategy to assist the industries with program orientation and their customized action plans.

4.1.7 Promotion of Public Awareness through Social Marketing

a) Clean Air Hamilton Website

In 2000, *Clean Air Hamilton* launched a website at www.airquality.hamilton.on.ca. The website was developed to provide up to date information on Hamilton's air quality. The intent is to use the information on the website to produce brochures and other communication materials on Clean Air. Staff at the City of Hamilton administer the website and improvements are ongoing.

b) Public Awareness

Media releases have been issued to promote the smog plan during air quality advisories, the general air quality meetings hosted by *Clean Air Hamilton*, and the Dubai International Award for Best Practices.

c) Logo Development

A logo contest was initiated through local school boards earlier in the year, but was unsuccessful partly due to minimal promotion by the *Clean Air Hamilton* committee and lack of interest by high school students to participate.

The new Communications Working Group was formed shortly after the contest closed, and identified that, aside from a committee logo, it is important to provide a consistent image to link the results of the 1997 Air Quality Initiative reports with all of the clean air programs. The work group approached Palmese Design Company to help produce the new image that brands this report. The logo design work was provided pro bono.

4.1.8 Transportation Emissions Modeling

a) Truck Emissions Study

A truck emissions modeling study was completed at McMaster University⁵. The study analyzed traffic data during peak morning hours. The study concluded that trucks emit Particulate Matter (PM) 30 to 100 times more than passenger cars. With the inclusion of truck traffic, PM increased by 110% to 150% compared with the no truck scenario.

The study was the first ever to look at the impacts of emissions from truck traffic in stop and go situations. In 2001, *Clean Air Hamilton* plans to forward the final report to City Council and give recommendations on policies that will help reduce truck emissions in the Hamilton area. Some discussion has indicated a need to correlate the results with an analysis of local truck travelling patterns.

4.1.9 Land Use/Transportation Issues and Planning

Clean Air Hamilton provided advice to Regional Council on air quality related land use and transportation issues for consideration in regional (now City wide) planning and the proposed urban expansion. Furthermore *Clean Air Hamilton* has participated in local site-specific issues to further the consideration of transportation and land use strategies that address air quality issues locally. Examples include comments on the McMaster University/Main Street Entrance and the parking garage proposed for St. Joseph's Hospital. Last, *Clean Air Hamilton* has developed a bibliographic database of articles, books, reports and web sites that address these issues. This database is available to the community for public use and reference. With the exception of City staff time in each project, these services were provided without cost to the City of Hamilton.

⁵ Kanaroglou et al, June 2000, *The relative contribution of trucks to mobile source emissions in Hamilton*, McMaster University, Hamilton Ontario, Canada.

4.2 Long Term Milestones

a) Human Health Risk Assessment

In five years, *Clean Air Hamilton* plans to

1. Review the latest scientific literature on health effects of air pollution;
2. Re-establish a "target" list of air pollutants in the Hamilton airshed to determine their potential to cause adverse impacts on human health; and,
3. Undertake human health risk assessments on the target air pollutants.

Further assessment of local air monitoring data and using the results of recent studies will help estimate the health impacts of pollutants and help prioritize pollutants according to their health importance in Hamilton. The Ministry of Environment and McMaster University have done most of this research in the past and would be approached to reassess the data every five years. *Clean Air Hamilton* would compile all of the latest assessment information onto the website.

In the meantime, *Clean Air Hamilton* will continue to submit annual progress reports to City Council. The following projects will be developed and reported on over the next few years:

- Clean Air Awards that recognize community groups and individuals who make an outstanding contribution to air quality improvement;
- Anti-idling Campaign to educate the public of the impacts of idling on health;
- Long Term Smog Reduction Plan to reduce smog-causing pollutants; and,
- Official Clean Air Hamilton Newsletter and Video to promote air quality initiatives.

The ultimate long-term goal of the committee is to serve as an interim co-operative action team that will eventually transfer into a non-profit type entity or provincial/regional air quality district.

5.0 Measuring Air Quality Improvements

The HAQI study determined a list of priority air pollutants and pollution sources most affecting human health and the environment in the Hamilton area. Recommendations were made to further ongoing improvements in air quality by expanding the focus from industrial pollution sources to sources within the community at large.

Clean Air Hamilton initially recommended that air quality targets be established and that the gains made by the clean air programs be tracked in a scientific manner to determine their success. In 2000, the Health and Environmental Impacts Work Group established a set of targets to measure the success of clean air programs by:

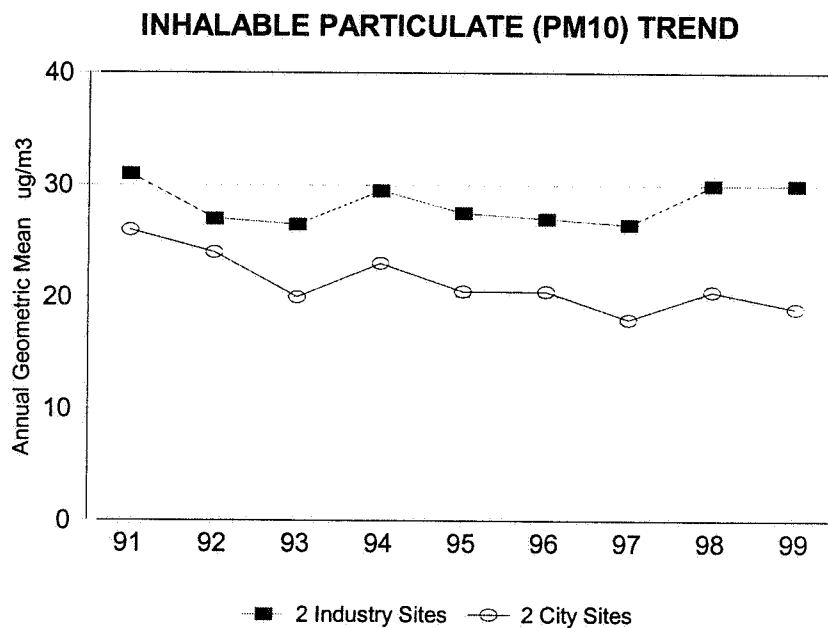
- Selecting priority air pollutants and other indicators to track trends and prepare updates for the annual *Clean Air Hamilton* progress report; and,
- Ensuring targets are within Ontario/Canada objectives and programs.

The targets and indicators are based primarily on trends of HAQI priority pollutants over the past ten years. The levels of pollutants are measured at Ministry of Environment monitoring stations throughout the Region. A list of monitoring stations in the Hamilton air quality network is attached in Appendix D. The air quality data is tracked, monitored, and analyzed by the Ontario Ministry of Environment, West Central Region.

5.1 Progress Indicators⁶

a) Inhalable Particulate (PM₁₀) Trend

Figure 2 : Inhalable Particulate (PM₁₀) Trend



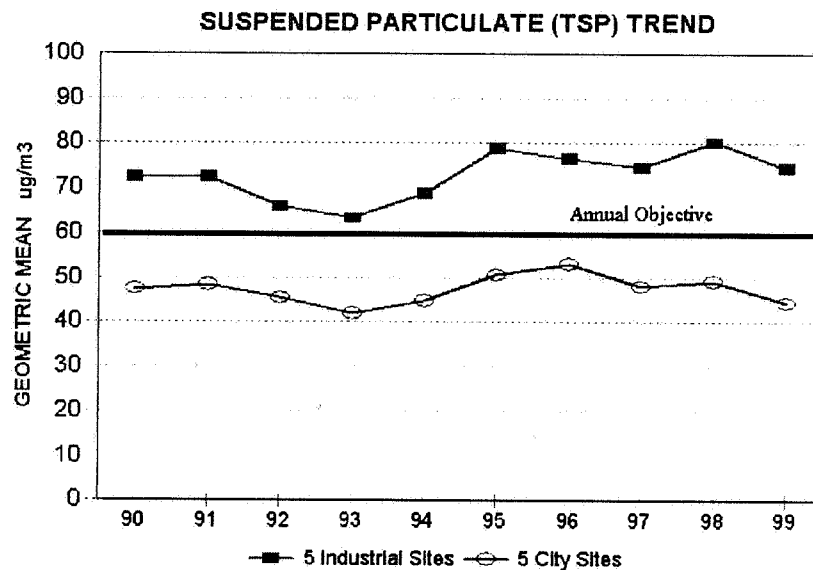
Inhalable particulate (PM₁₀) is defined as particles less than 10 microns in diameter. A micron is one millionth of a metre. These particles can be inhaled into the human respiratory system; research has shown a correlation between mortality and other health effects, and concentrations of these particles. A 24-hour interim criterion of 50 g/m³ was adopted by the Province of Ontario in 1997. Respirable particulate (PM_{2.5}) is defined as particles less than 2.5 microns in diameter. These particles can penetrate further into the human lung and are considered to be of greater health concern than PM₁₀. No exposure criteria exist at present. A 24-hour Canada-wide standard of 30ug/m³ has been proposed.

Indicator: Annual average (downward) trend of PM₁₀ and PM_{2.5} comparing average population exposure and industrial impact zones.

Target: A decrease in the ambient air concentration of PM₁₀ and PM_{2.5}.

Progress: Inhalable particulate levels have shown a steady decline and have decreased by about 20% since 1991 in most areas of the City; close to the heavy industry, levels have remained unchanged since 1991. There is an insufficient amount of data on PM_{2.5} to determine trends yet.

⁶ Air quality data collection and analysis completed by the Ontario Ministry of Environment, 2000.

b) Total Suspended Particulate (TSP) Trend**Figure 3: Total Suspended Particulate (TSP) Trend**

Total Suspended Particulate (or TSP) refers to airborne particles with diameters less than 45 microns.

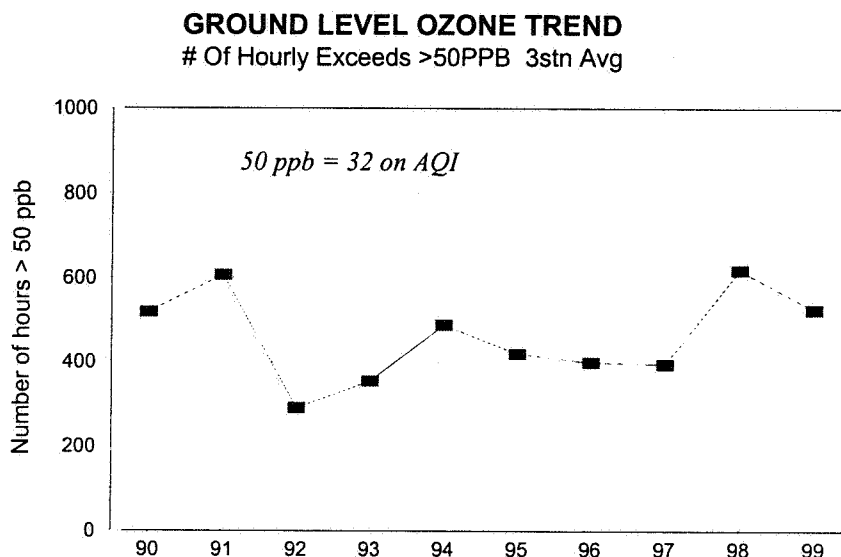
Indicator: Annual average (downward) trend of TSP comparing average population exposure and industrial impact zones.

Target: A decrease in the ambient air concentration of TSP.

Progress: Total suspended particulates have increased by 20% since 1993, primarily in the industrial zone, although levels across most of the City did not change during the 1990s.

c) Ground Level Ozone Trend

Figure 4: Ground Level Ozone Trend

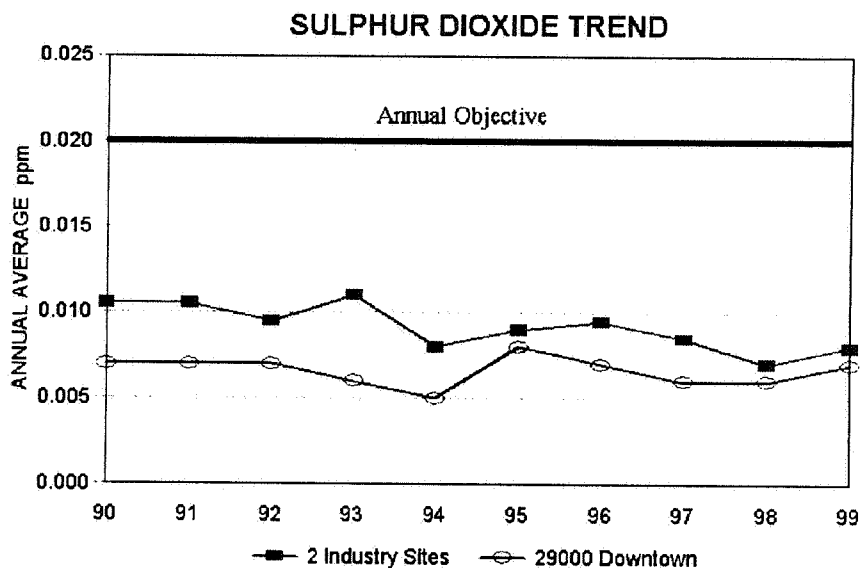


Ground level ozone (O_3) is generated when emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) react in the presence of sunlight. The major source of NO_x and VOCs is fuel combustion.

Indicator: Number of hourly exceedences of O_3 above 50 parts per billion (ppb) per year.

Target: A decrease in the ambient air concentration of O_3 .

Progress: The high ozone levels in the summer are associated with long-range transport of pollutants from distant sources, primarily coal-fired power plants in the Ohio Valley region. Ozone levels have been variable in the 1990s. Most annual fluctuations may be related to climatic effects rather than changes in emission rates.

d) Sulphur Dioxide Trend**Figure 5: Sulphur Dioxide Trend**

Sulphur dioxide (SO_2) is generated when sulphur-containing fossil fuels or ores are burned. Sources of SO_2 emissions include industrial, transportation and residential heating. Locally some industries are major sources of SO_2 .

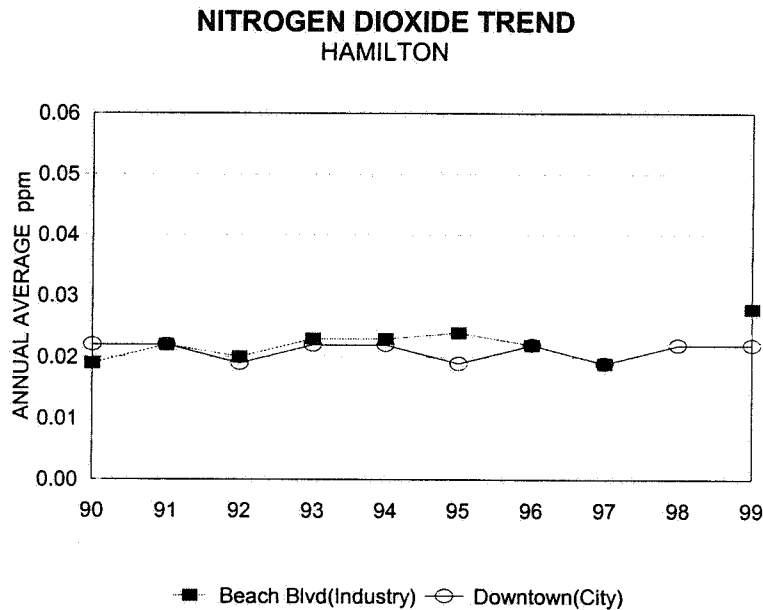
Indicator: Air concentration of SO_2 in parts per billion (ppb), comparing average population exposure and industrial impact zones.

Target: A decrease in the ambient air concentration of SO_2 is an improvement.

Progress: SO_2 levels have decreased by 30% since 1990 at industrial sites, and have been unchanged at a downtown site.

e) Nitrogen Dioxide Trend

Figure 6: Nitrogen Dioxide Trend



Nitrogen Dioxide is a major component of smog. The primary sources of oxides of nitrogen (NO_x) are high temperature combustion sources including cars and trucks.

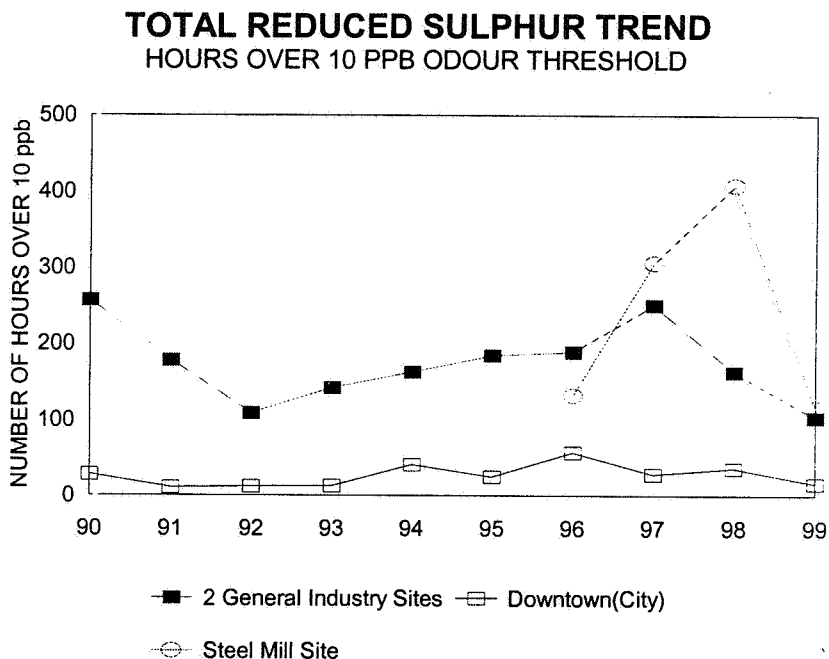
Indicator: Air concentration of NO₂ in parts per billion (ppb), comparing average population exposure and industrial impact zones.

Target: A decrease in the ambient air concentration of NO₂ is an improvement.

Progress: NO₂ levels have been constant during the 1990s.

f) Total Reduced Sulphur Trend

Figure 7: Total Reduced Sulphur (TRS) Trend



Compounds that contain sulphur come from industrial sources (particularly from coke ovens, coke byproducts and blast furnaces in Hamilton) and natural sources such as sulphur springs. TRS is not considered a health hazard, but can be a significant nuisance due to the associated "rotten egg" odours.

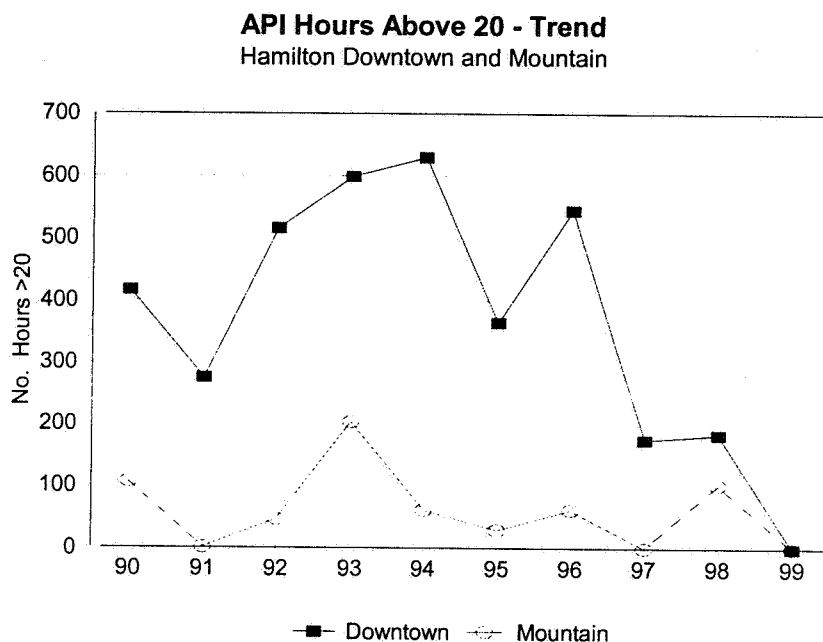
Indicator: Number of hourly exceedances TRS over 10 parts per billion (ppb) per year.

Target: A decrease in the ambient air concentration of TRS.

Progress: TRS levels have decreased significantly as measured by the reduced number of hours levels were above odour thresholds near the steel mills in 1999. Improved coke oven and coke byproducts controls and slag quenching procedures are responsible for these improvements. Odours are generally confined to the northeast industrial zone, including the Beach Strip area. A small number of odourous hours are annually measured downtown, but these numbers have declined since 1996.

g) Air Pollution Index Hours Above 20 – Trend

Figure 8: Air Pollution Index Hours Above 20 - Trend



The air pollution index (API) is available as a warning system to alert the public to elevated air pollution levels and as a trigger for voluntary cutbacks in industrial emissions. It is derived from 24-hour average concentrations of sulphur dioxide and particulate matter.

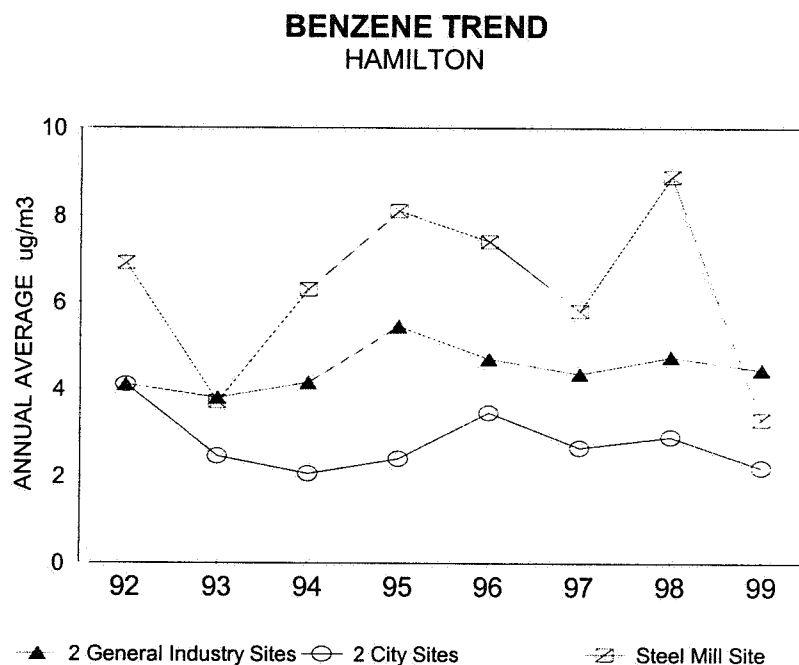
Indicator: Number of hours that API exceeds 20.

Target: A decrease in the number of API hours above 20.

Progress: The API has not reached the advisory level of 32 at any of the API stations in Hamilton since June 1996, and thus no requests for voluntary cutbacks by local industries have been necessary. These were the first years that this has occurred in Hamilton API history. The figure above shows that the downtown station did not exceed 20 in 1999, also a first for this site. This improvement can be attributed to an overall decrease in particulate levels across most of the city.

h) Benzene Trend

Figure 9: Benzene Trend



Airborne organic chemicals (such as benzene) are of concern due to their complexity and variety of potential toxic effects, including carcinogenicity.

Indicator: Annual average (downward) trend.

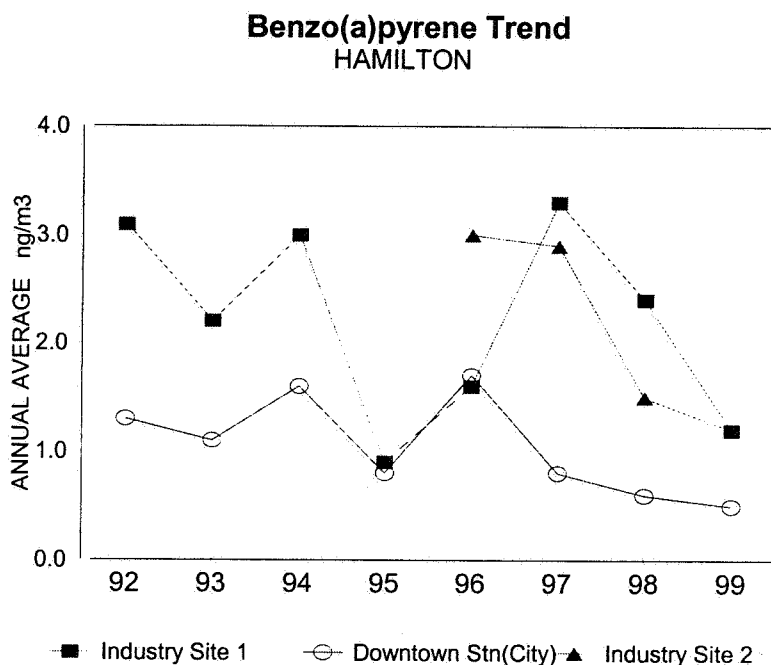
Target: A decrease in the ambient air concentration of benzene.

Progress: Benzene levels decreased in 1999 by over 50% near steel mills compared to a composite of 1994-98. Benzene levels at the Beach Blvd site have increased by 30% since 1992 despite significant emission reductions at the steel mills. In the main part of the City benzene levels have decreased by almost 50%.

This can be attributed to the improvements made at the No. 1 Byproducts Plant. Benzene emissions controls started full operation at the No. 1 Byproducts Plant in 2000. Dofasco has achieved an 83% benzene reduction since 1993. Improvements were also measured near Stelco, likely due to the coke oven control plan and other changes. However, benzene levels at the Ministry of Environment's Beach Blvd. sampling station have actually increased by 30% since 1992 despite significant emission reductions from both companies.

i) Benzo(a)pyrene (BaP) Trend

Figure 10: Benzo(a)pyrene (BaP) Trend



Benzo(a)pyrene (BaP) is a form of Polycyclic aromatic hydrocarbons (PAH). PAHs are a class of compounds, which are the product of incomplete combustion of fuels, and thus are emitted from a variety of sources including coke ovens, woodstoves, diesel engines and barbecues.

Indicator: Annual average (downward) trend.

Target: A decrease in the ambient air concentration of (BaP).

Progress: BaP has decreased by about 50% in 1999 from a composite 94-98 average both near industry and downtown.

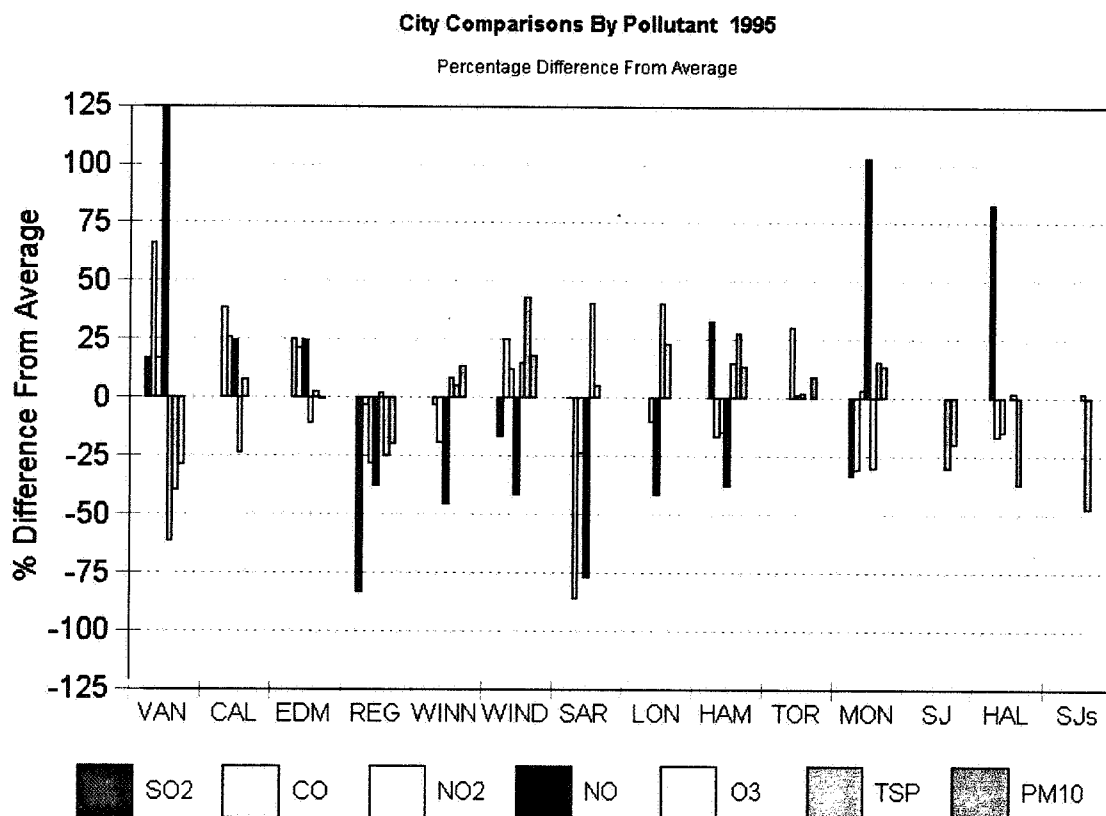
j) Canadian Cities Comparison 1995-1998

Environment Canada operates air sampling sites across Canada under the NAPS (National Air Pollution Survey) program. Representative cities across Canada were selected and a single downtown sampling site was selected in each city for comparison. The data for seven pollutants (sulphur dioxide, carbon monoxide, nitrogen dioxide, nitric oxide, ozone, total suspended particulate and PM₁₀) were averaged across all sites throughout each year. The following graphs illustrate a comparison of Hamilton air quality to other cities across Canada. The graphs show the difference in a pollutant's annual concentration from the national average.

Indicator: A decrease in the percentage difference from the average pollutant levels of all major urban centers across Canada.

Target: To achieve the best air quality than any other urban center.

Figure 11: Canadian City Comparison by Pollutant 1995



Keynote: Van(Vancouver), Cal(Calgary), Edm(Edmonton), Reg(Regina), Winn(Winnipeg), Wind(Windsor), Sar(Sarnia), Lon(London), Ham(Hamilton), Tor(Toronto), Mon(Montreal), SJ (Saint. John, NB), Hal(Halifax), SJs(St. Johns, NFLD)

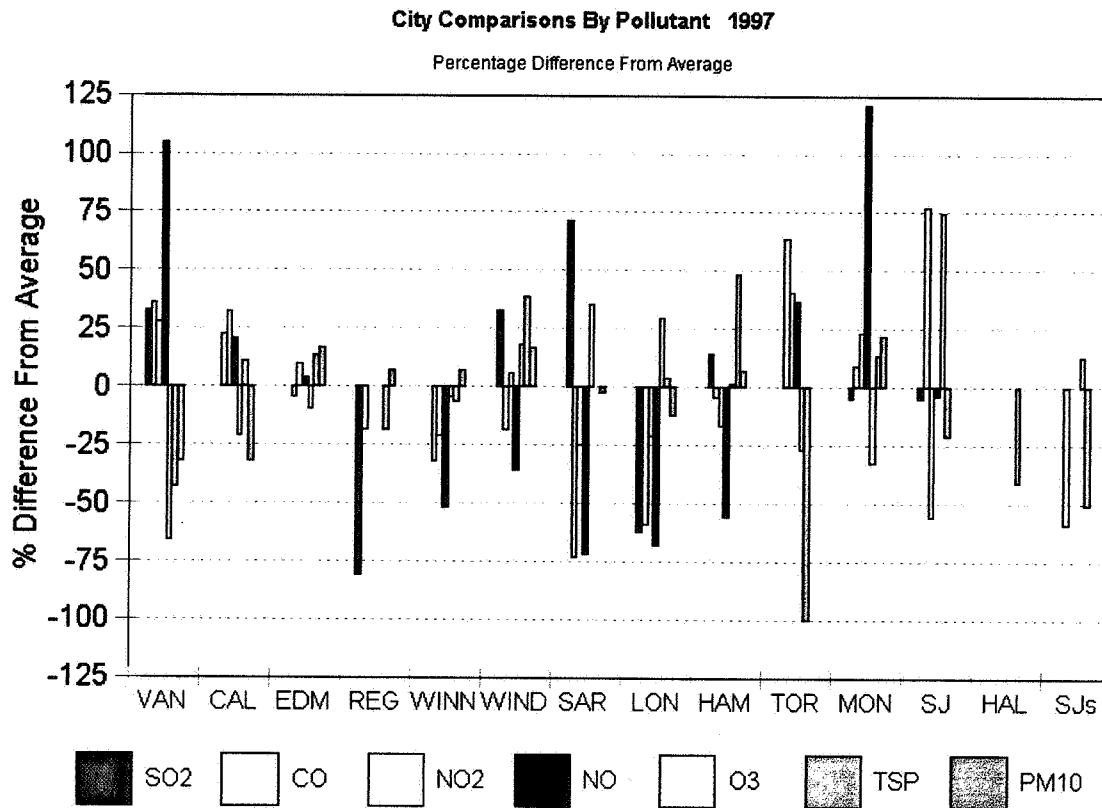
City Comparisons By Pollutant 1996

Percentage Difference from Average

% Difference From Average

VAN CAL EDM REG WINN WIND SAR LON HAM TOR MON SJ HAL

SO2 CO NO2 NO O3 TSP PM10

Figure 13: Canadian City Comparison by Pollutant 1997

City Comparisons By Pollutant 1998

Percentage Difference From Average

% Difference From Average

VAN CAL EDM REG WINN WIND SAR LON HAM TOR MON SJ HAL SJs

SO2 CO NO2 NO O3 TSP PM10

6.0 Human Health Risk Assessment

The Health and Environmental Impacts Work Group has been working on two principle tasks since the last reporting. The first involves the design and dissemination of an environmental health promotion tool for the community of Hamilton. This has culminated in the production of a pamphlet entitled *Breathing Ain't Easy* using grant funding from the Hamilton Community Foundation. Its production involved essentially three steps: a critical review of existing health promotion tools; a series of focus groups with local environmental groups (including youth); and a pilot test of the pamphlet for community feedback. The pamphlet is now being distributed through *Clean Air Hamilton* and the Lung Association as well as other local relevant groups.

The second task relates to the human health risk assessment. That is, in December 1997, the HAQI Human Health Work Group (HHWG) produced a report entitled "Human Health Risk Assessment for Priority Air Pollutants"⁷ which estimated the burden of illness and death associated with air quality in Hamilton-Wentworth. The primary results indicated approximately 90 excess deaths and 300 hospital admissions per year attributable to poor air quality.

The HHWG indicated its commitment to update the risk assessment on a regular basis in order to monitor the nature of the relationship between exposure and outcome over time as local information/circumstances change.

Prior to undertaking the update, Dr. David Pengelly of the Institute of Environment and Health presented results from a new risk assessment he had completed for the City of Toronto⁸ at the *Clean Air Hamilton* annual general meeting on November 8, 2000. Dr. Pengelly also used this method of assessment to update the Hamilton-Wentworth numbers.

"Air pollution in Hamilton produces more adverse health effects then predicted three years ago. By applying the new literature and revised methodology to the HAQI study, Dr. Pengelly has shown increased estimates of 279 premature mortalities versus 90, and 2054 admissions to hospital versus 291 per year"⁹. These results were covered by the Hamilton media¹⁰.

Dr. Pengelly's results from Toronto were incorporated into a summary report released by Toronto Public Health *Toronto's Air: Let's Make it Healthy* in December 2000¹¹. This report, based on the May 2000 technical report, "used results from studies across the world and applied these to calculate the number of people who died or were admitted".

⁷ David Pengelly, Alos Szokolcai, Brendan Birmingham, Pavel Muller, Donald Cole, Stuart Bailey, Ronald Bell, Adam Socha

⁸ *Air Pollution Burden of Illness in Toronto*, May 2000, Toronto Public Health

⁹ Minutes HAQIC AGM

¹⁰ Hamilton Spectator November 14, 2000

¹¹ Ronald Macfarlane, Monica Campbell and Sheila V. Basrur

"Since we are exposed to more than one pollutant at a time this method can over-estimate the impact of air pollution. Toronto Public Health therefore also calculated effects using a multi-pollutant method. However, since this method considered fewer types of health problems, it probably underestimated the total impact. The numbers reported by the Toronto Public Health for the total impact are halfway between the low and high values given by each of these methods."¹² Its release was met with mix of responses including a critique reported in the Toronto Star "Why Toronto's smog deaths are greatly exaggerated" (2001/01/04).

In short, there are a number of methods available to measure the impact of air pollution on health. The commonly used methods are ones that use models to estimate outcomes using exposure data and evidence from the scientific literature that links exposure to outcomes. These methods make certain assumptions about the interactions between components of air quality and about the relationship between levels of the components and the outcomes. This scientific area of investigation is constantly expanding such that the assumptions can be tested and the confidence in the predictions strengthened. These methods do not actually count deaths or health care use of actual local residents. A more challenging method is one in which local health information is carefully tabulated at the same time as local exposure (air quality) data and direct relationships are measured.

The Health and Environment Impacts Working Group (HEIWG) is aware of a number of risk assessment models available or under development, as well as work being done on collection of health information. Two examples are the Ontario Medical Association's model using ozone as the indicator¹³ and Health Canada's model under development¹⁴.

The HEIWG is well resourced with expertise from McMaster and the new City to evaluate these models and apply them to the Hamilton situation.

In addition, at the *Clean Air Hamilton* annual general meeting Neil Buonocore from the Ministry of Environment presented the HEIWG indicators including "health-based targets, for example, hospital admissions during extreme events, zone analysis by geographic areas and rate of hospital discharges for respiratory illness per 100,000 people per year (the rate of hospital discharges is referenced from the VISION 2020 set of indicators for air quality)"¹⁵.

The HEIWG has expanded its membership to include experts interested in developing the health based indicators. Over the next twelve months, the HEIWG plans to update the literature since the last review done in 1997 and recommend the model to be used for the next HHRA.

¹² p. 4 *Toronto's Air*

¹³ www.oma.org

¹⁴ Rick Burnett personal communication, Sept. 2000

¹⁵ Minutes HAQIC AGM

7.0 Recommendations

The key to continued success of *Clean Air Hamilton* is to maintain the interest of various stakeholders along with the momentum of clean air projects. In its first three years as a committee sanctioned by Council, *Clean Air Hamilton* has had the opportunity to develop a complete action plan and to build credibility in the community. *Clean Air Hamilton's* initiatives are expanding rapidly and more energy is needed to enhance overall co-ordination. Now is the time to follow up on management strategies that will lead to further improvements in air quality.

Co-ordination

- Explore opportunities to establish a local Air Quality Office that would provide air quality monitoring information and manage programs of *Clean Air Hamilton*.
- Seek increased financial assistance and staffing for programs devoted to air quality improvement in Hamilton.

Emissions Reduction

- Continue to focus actions on reducing inhalable particulate and sulphates from transportation, industrial and long-range sources.

Health and Environmental Impacts

- Introduce a module in *Clean Air Hamilton* to administer a local partnership in air quality monitoring between governments, industries and other Clean Air stakeholders.
- Review and refine environmental priorities through an updated assessment of local air quality and human health risks.

Research and Policy Development

- Provide new perspectives on air quality issues based on current research and lead initiatives to pursue new research areas that will lead to air quality improvements.
- Address land use, transportation issues to reduce particulate and other emissions.

Communications

- Ongoing public consultation and involvement to promote the new *Clean Air Hamilton* image and action plan.

8.0 Conclusion

When the Hamilton Air Quality Initiative was originally proposed, all the odds seemed to be against it.

A previous pilot study in Windsor had cost over \$1 million but, due to fiscal constraints of governments, no significant budget was available for a study in Hamilton. Furthermore, the proposed Hamilton initiative was to focus only on air toxics because of significant public concerns in this area. A meeting with physicians and researchers in the Faculty of Health Sciences at McMaster University revealed that they strongly disagreed with this approach. They recommended that traditional pollutants such as airborne particles, sulfur dioxide, oxides of nitrogen and carbon monoxide also needed to be included in the study. This required further extension of the scope of the study for which no funding was available.

Rather than admit defeat, all involved took up the challenge and the Hamilton Air Quality Initiative was born as a broadly based, voluntary initiative, drawing upon the goodwill, professional expertise and commitment of the numerous participants, both in Hamilton and elsewhere.

The outcome has been the development of a process that has gained worldwide recognition, including a United Nations award, while resulting in very significant improvements in the air quality in Hamilton.

It is fair to say that none of the participants expected the initiative to be so successful. In the end, what has made this project so worthwhile is the knowledge that inhalable particles in air have gone down by 20% in the city, there have been no Air Pollution Index incidents for the last four years and benzene has dropped by 50%, as have Polycyclic aromatic hydrocarbons (PAHs). Odorous total reduced sulfur incidents have also dropped dramatically.

Given these improvements and given the original health evaluations performed for the Hamilton Air Quality Initiative, participants in *Clean Air Hamilton* believe that there are concomitant reductions in the health impacts and stress on those suffering from asthma in our city. This makes the efforts to date worthwhile, and confirms the need to continue.

Appendix A – Clean Air Hamilton Membership

Coordination Group

Brian McCarry, Chair – Department of Chemistry, McMaster University
Esther Bobet – Environment Canada
Ed Cocchiarella – Dofasco Inc.
Denis Corr – Ontario Ministry of the Environment
Heather Donison – Green Venture
Susan Elliott – School of Geography and Geology, McMaster University
Bill Janssen – Planning and Development Department, City of Hamilton
Sonya Kapusin – Planning and Development Department, City of Hamilton
Mark Nazar – Environmental Consultant, City of Hamilton
Patricia Thiessen – Homeside Environmental Committee
Glenn Weston – Stelco

Communications Working Group

Heather Donison, Chair – Green Venture
Rick Day – Ontario Ministry of the Environment
Larissa Fenn – Brickworks
Bill Gair – Dofasco Inc.
Janice Joseph – Environment Canada
Sonya Kapusin – Planning and Development Department, City of Hamilton
Sarah Wakefield – McMaster University
Tom Wallis – Corporate Secretariat Department, City of Hamilton

Health and Environmental Impacts Working Group

Susan Elliott, Chair – School of Geography and Geology, McMaster University
Burke Austin – Ontario Ministry of the Environment, West Central Region
Neil Buonocore – Environment Canada, Ontario Region
Sam Daggupaty – McMaster Institute of Environment and Health
April Eby – School of Geography and Geology, McMaster University
Johy Eyles – School of Geography and Geology, McMaster University
Murray Finkelstein – Ontario Ministry of Labour
Mike Jerrett – School of Geography and Geology, McMaster University
Mark Nazar – Environmental Consultant, City of Hamilton
David Robinson – Western Lake Ontario Environmental Coalition
Fran Scott – Environmental Health and Research, Health Science Centre
Jamie Skimming – Dofasco Inc.
Patricia Thiessen – Homeside Environmental Committee

Emissions Reduction Working Group

Ed Cocchiarella, Co-Chair - Dofasco Inc
Robert Barlow-Cash, Co-Chair – Archer Daniels Midland Company
Neil Buonocore – Ontario Ministry of the Environment, West Central Region
Jen-Shih Chang – Department of Engineering, McMaster University
Denis Corr – Ontario Ministry of the Environment
Jennifer Dawson – Green Venture
Frank Dobroff – Ontario Ministry of the Environment
Roy Duncan – Hamilton Street Railway
Peter Dunn – Transportation, Operations and Environment, City of Hamilton
Torb Frederiksen – Ontario Ministry of Transport
Gord Gilmet - VFT Ltd.
Janice Joseph – Environment Canada
Tahir Khan – CEMS
Sue Malle – Ontario Ministry of the Environment
Debbie Manningham – Transportation, Operations and Environment, City of Hamilton
Brian McCarry – Department of Chemistry, McMaster University
George McKibbin – McKibbin Wakefield Inc.
Hossein Naghdianei – Environment Canada
Ishwar Singh – Mohawk College of Applied Arts
Suzanne Spicer – Environment Canada
Simon Wong – Ontario Ministry of the Environment
Vince Zingaro – Transportation, Operations and Environment, City of Hamilton

Research and Policy Development Working Group

Brian McCarry, Chair – Department of Chemistry, McMaster University
Quentin Chiotti – Environment Canada
Sam Daggupaty – Environment Canada
Hari Gill – Columbine Chemicals Canada Ltd.
Pavlos Kanaroglou – School of Geography Department, McMaster University
Andrew Muller – Department of Economics, McMaster University
David Pengelly – McMaster Institute of Environment and Health
Bill Snodgrass – Ontario Ministry of the Environment
George Vance – Products that Matter

Appendix B – Clean Air Hamilton Action Plan

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
Reduce Industrial Sources					
Implement Code of Best Practice Guidelines					
{HAQI Recommendation 1}					
Develop Best Available Control Technology and Practices for Major Sources	ERWG	MOE Industries	<ul style="list-style-type: none">Developed website registry for companies and their fine particulate reduction projects	<ul style="list-style-type: none">Promote and utilize emissions reduction registry	<ul style="list-style-type: none">Reward companies for the air pollution reduction projects through a series of local Clean Air Awards
{HAQI Recommendation 2}					
Implement Strategic Options Process (SOP) Recommendations	ERWG	EnvCan MOE Stelco Dofasco VFT. Ltd. Columbian Chemicals	<ul style="list-style-type: none">A review on the effectiveness of the SOP was planned for 1999		<ul style="list-style-type: none">Monitor progress on implementation
{HAQI Recommendation					

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
3}		Other Industries			
Continue Permitting Programs {HAQI Recommendation 4}	ERWG	MOE Dofasco Stelco	<ul style="list-style-type: none"> Stelco with commitment to meet the terms of the Strategic Options Process or better, plans to refurbish or shut down coke oven with high emissions Voluntary Agreement with Dofasco 		<ul style="list-style-type: none"> As the MOE continues to develop and enforce air quality/source performance standards, the team will comment on the programs as required.
Establish Industry-Local Resident Liaison Committee {HAQI Recommendation 5}	CG ERWG RPD HEIWG CWG	HIEA	<ul style="list-style-type: none"> The Hamilton Industrial Environmental Association (HIEA) has established a Community Advisory Panel, the Air Quality Stakeholder Committee with three industrial representatives 		<ul style="list-style-type: none"> Communications will be ongoing between the Air quality Stakeholder Committee and Clean Air Hamilton
Reduce Emissions from Private Vehicles					
Reduce the Number of Single-Occupancy Auto Trips <ul style="list-style-type: none"> Enhance HSR Bus Services Design Accessible 	ERWG	Green Venture City of Hamilton EnvCan	<ul style="list-style-type: none"> Staff Transportation Alternatives Plan presented to Council, referred to City with recommendation for joint action. City Council has referred it to staff for a report – currently on hold Free Regional staff parking 	<ul style="list-style-type: none"> Commuter Challenge in Spring 2001 	<ul style="list-style-type: none"> Support for Commuter Challenge to continue each year

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
HAQIC	Other				
Urban Development • Promote Cycling • Promote Walking • Discourage Parking Downtown {HAQI Recommendation 6}		HIEA	ended as benefit on grandfathered basis • Hamilton-Wentworth Community Challenge successful in June 2000 • HSR Campaign to show transit use a "green" alternative to the private automobile, especially during Smog Alert Days • Travel Options Workshop hosted by the City in 2000 for local organizations • City of Hamilton Bikeways System – Waterfront Trail		
Minimize the Emissions of Private Vehicle Use • Promote Carpooling • Offer Discounts on Vehicle Tune-Ups • Minimize Discretionary Trips	ERWG	City of Hamilton Green Venture	• Hamilton-Wentworth Community Challenge successful in June 2000	• Staff Carpooling Registry at the new City of Hamilton	

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
{HAQI Recommendation 7}					
Establish Standards for Vehicle Emissions and Implement Vehicle Emissions Testing	ERWG	MOE Drive Clean Office EnvCan	<ul style="list-style-type: none"> Ongoing support to the Ontario Drive Clean program, implemented in Hamilton-Wentworth in 1999 Ongoing support to the Drive Clean pilot program for heavy duty vehicles introduced in 1999 Ongoing support to the fuel economy tax MOE Smog Rover monitors tailpipe emissions of cars and light duty trucks in the Greater Toronto and Hamilton-Wentworth area. 		
{HAQI Recommendation 8}					
Anti-idling By-Laws	RPDWG ERWG CWG	City of Hamilton	<ul style="list-style-type: none"> Anti-idling By-law drafted and on hold Anti-idling signage designed for railway crossings and industrial properties 	<ul style="list-style-type: none"> Complete Research and Educational Packages for anti-idling campaign Launch anti-idling signs in Spring 2001 	<ul style="list-style-type: none"> Expand anti-idling signage campaign to include additional sites
{HAQI Recommendation 9}					

Recommendations	Responsibility HAQIC Other	Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
Reduce Emissions from Commercial/Fleet Vehicles				
Enact Commercial Vehicle Maintenance Standards {HAQI Recommendation 10}				
Achieve more Efficient Commercial Vehicle Flow {HAQI Recommendation 11}				

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
Greening of Fleets	HAQIC	Other			
<ul style="list-style-type: none"> Schedule Off Peak Trucking Shipments Replace Old Trucks Alter Fleet Technology Specify Trucks that meet Standards in Purchase Contracts Switch to Rail {HAQI Recommendation 12}	ERWG	City of Hamilton MOE EnvCan Hamilton Hydro	<ul style="list-style-type: none"> Workshop was held in 1999 with 13 fleet managers in attendance, where a commitment to further meetings and information sharing was made Literature review initiative, focused on greening, strategies of other fleet replacement alternatives for retired vehicles Nu Vehicle considerations ongoing: MOE, City of Hamilton, and Hamilton Hydro have altogether purchased three Honda Insight hybrid vehicles and one Toyota Prius in 2000. 	<ul style="list-style-type: none"> Evaluate the performance of hybrid vehicles purchased in the Nuvehicle program 	<ul style="list-style-type: none"> Partners will purchase additional hybrid vehicles as they become available, and as they are evaluated
Reduce Overall Community Emissions					
Control Fugitive Dust <ul style="list-style-type: none"> Establish Paving Bylaws Establish Fugitive Dust Control Bylaws Establish 	RPD ERWG	City of Hamilton	<ul style="list-style-type: none"> Street Sweeping Study is complete. Enhanced street sweeping and monitoring in the north end to continue until December 2000 	<ul style="list-style-type: none"> Report on progress of enhanced street cleaning monitoring and recommendations to new Council. 	

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
Operating Standards for Trucks <ul style="list-style-type: none"> • Use Best Available Control Technology {HAQI Recommendation 13}					
Reduce Transboundary Pollution <ul style="list-style-type: none"> {HAQI Recommendation 14} 	HEIWG	City of Hamilton SO CAN I members	<ul style="list-style-type: none"> • Upwind Downwind: A Practical Conference on Improving Air Quality was held on September 30 and October 1, 1999 • Southern Ontario Clean Airshed Network Initiative (SO CAN I) was established in January 2000 	<ul style="list-style-type: none"> • Next Upwind Downwind Conference, Fall 2001 • City of Hamilton to chair SO CAN I in 2001 	<ul style="list-style-type: none"> • Air Quality Conference to address transboundary air pollution to be held biennially
Develop and Implement Energy Conservation Measures <ul style="list-style-type: none"> • Municipal Energy Reduction Programs 	RPDWG	City of Hamilton Green Venture	<ul style="list-style-type: none"> • City to promote Energuide program in buildings approval process • District Energy Project • Energy Management Program • City a Member of Partners 		<ul style="list-style-type: none"> • City to develop and implement energy reduction action plan to reduce greenhouse gas emissions and air pollutants

Recommendations	Responsibility	Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
<ul style="list-style-type: none"> Industrial Energy Reduction Programs Alternative Energy Pilot Program Subsidies for Energy Audits District Heating and Co-generation {HAQI Recommendation 15}	<div>HAQIC</div> <div>Other</div>	for Climate Protection Campaign; developing action plan to reduce energy consumption		
Develop and/or Enhance Community Tree Projects {Regional Council 1999}	<div>ERWG</div> <div>City of Hamilton Green Venture HIEA</div>	<ul style="list-style-type: none"> The City of Hamilton Tree Planting Program includes partnerships with non-profit groups to plant trees on school grounds and near industries Green Venture, in partnership with the City and HIEA, offers subsidized trees to residents in new homes and in the industrial north 	<ul style="list-style-type: none"> Review, evaluate and continue tree planting programs underway 	

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
Develop a Community Smog Plan {Regional Council 1998}	ERWG CWG	City of Hamilton Green Venture	<ul style="list-style-type: none"> end of Hamilton HIEA, in consultation with the citizens, are devoting \$50,000 to tree planting in the north end of Hamilton on industrial sites Provincial Anti-Smog Action Plan City of Hamilton Corporate Smog Response Plan Community Anti-Smog Campaign 	<ul style="list-style-type: none"> City of Hamilton Long Term Smog Reduction Plan Corporate Smog Plan Policies at two local organizations 	<ul style="list-style-type: none"> City of Hamilton Smog Management Plan Corporate Smog Plan Policies at five local organizations
Public Awareness					
Promote Public Awareness through Social Marketing <ul style="list-style-type: none"> Videos Pamphlets Updates in Print Media Combine with High Profile Municipal Initiatives Website 	ERWG HEIWG RPDWG CWG	City of Hamilton Green Venture	<ul style="list-style-type: none"> Research results are publicized and explained through verbal presentations and visual displays Reports are linked to the Clean Air Hamilton website Smog brochures, fact sheets and posters produced for the City's Corporate Smog Response Plan Promotional materials produced by Green Venture and the City of annual Commuter Challenge 	<ul style="list-style-type: none"> Promote results of research Additional materials produced for the Community Anti-Smog Campaign and Commuter Challenge in 2001 Anti-Smog Campaign remains as an agenda item for every ERWG meeting Launch the NuVehicle program 	<ul style="list-style-type: none"> Continue promotion of research and developed policies Activities to be incorporated into a Clean Air Hamilton newsletter and video

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
{HAQI Recommendation 16}	HAQIC	Other	<ul style="list-style-type: none"> ERWG Work Plan has been incorporated into the Clean Air Hamilton website (www.airquality.hamilton.on.ca) Received 2000 Dubai International Award for Best Practices in Improving the Living Environment 	with the Clean Air Hamilton Annual progress report in 2001	
Monitoring, Research and Development					
Expand Capability for Inhalable/Respirable Particulate Monitoring	HEIWG	MOE	<ul style="list-style-type: none"> MOE maintains monitoring network in Hamilton 		
{HAQI Recommendation 17}					
Maintain Current Monitoring System	HEIWG	MOE	<ul style="list-style-type: none"> Provincial monitoring network in Hamilton 		
{HAQI Recommendation 18}					
Expand Mobile/Portable	HEIWG	MOE	<ul style="list-style-type: none"> MOE looking for partners to strengthen the monitoring 		

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
Monitoring Capabilities {HAQI Recommendation 19}			<ul style="list-style-type: none"> MOE has enhanced the telemetry network 		
Maintain Government Scientific/Laboratory Capabilities {HAQI Recommendation 20}	HEIWG	MOE	<ul style="list-style-type: none"> MOE has requested lab allocations for air quality in 2000 MOE is working on a self monitoring program for industry 		
Research about the Origins, Characteristics and Health Impacts of Particulates {HAQI Recommendation 21}	HEIWG RPD WG	McMaster University City of Hamilton	<ul style="list-style-type: none"> Discussion with McMaster University to create a research chair in Air Quality has begun Canada-Wide Standards Sub-Agreement committees to the development of national standards for ozone and fine particulate. The process for developing the standards is on target. 		
Analyze and Model Transportation	RPD WG	EnvCan City of	<ul style="list-style-type: none"> Truck Emissions Modeling complete Support reductions in 	<ul style="list-style-type: none"> Conduct a truck industry survey to determine truck travel 	<ul style="list-style-type: none"> Implement policy recommendations from the Truck

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
HAQIC	Other				
Emissions {HAQI Recommendation 22}	Hamilton McMaster University				
Research on the Impact of Air Toxins on Ecosystems {HAQI Recommendation 23}	RPDWG City of Hamilton McMaster University				
Develop an Emissions Inventory and Carry out Atmospheric Modeling {HAQI Recommendation 24}	ERWG RPDWG RWDI Ltd. MOE				
Review and Continued Refining of Environmental Priorities {HAQI	HEIWG City of Hamilton McMaster University				
sulphur content of fuels and diesel fuel regulations	<ul style="list-style-type: none"> Research on the impacts of air toxins ongoing at McMaster University 	<ul style="list-style-type: none"> MOE is establishing a mandatory emissions reporting program ERWG is following the stages of mandatory reporting Hamilton data sets can eventually be extracted for RWDI airshed modeling 1997 Air Quality Initiative used to identify priority pollutants, sources and management strategies. 	<ul style="list-style-type: none"> Protocol for Human Health Risk Assessment will be selected in 2001 	<ul style="list-style-type: none"> patterns and come up with policy recommendations for reducing transportation emissions Chemical Analysis of pollutants to be completed 	Emissions Modeling project
<ul style="list-style-type: none"> Environmental Priorities will be introduced through the results of the Health Assessment 					

Recommendations	Responsibility		Progress to Date	Short Term Plans (1 year)	Long Term Plans (5 years)
	HAQIC	Other			
Recommendation 25}		McMaster Institute of Environment and Health			
Land Use/Transportation Air Quality Issues {HAQI Recommendation 26}	ERWG	City of Hamilton	<ul style="list-style-type: none"> Initial issues identified for City wide planning and case studies addressed electronic database established on land use/transportation/air quality references 	<ul style="list-style-type: none"> monitor secondary planning studies and development of City official plan and provide comments where appropriate 	<ul style="list-style-type: none"> monitor secondary planning studies and development of City official plan and provide comments where appropriate

Keynote:

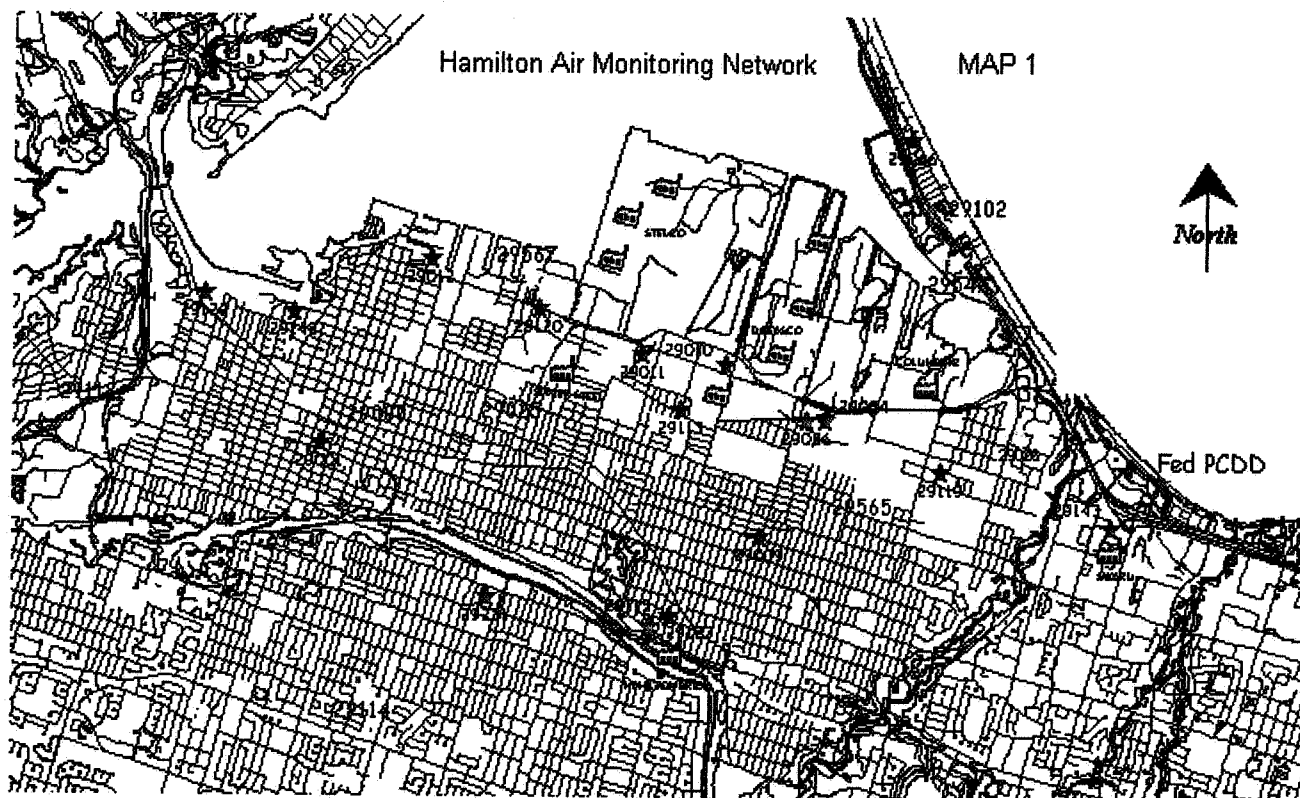
HAQI – Hamilton-Wentworth Air Quality Initiative
 ERWG – Emissions Reduction Working Group
 RPDWG – Research and Policy Development Working Group
 MOE – Ontario Ministry of the Environment
 Mac – McMaster University
 SO CAN I – Southern Ontario Clean Airshed Network Initiative

CG – Co-ordination Group
 HEIWG – Health and Environmental Impacts Working Group
 CWG – Communications Working Group
 EnvCan – Environment Canada
 HIEA – Hamilton Industrial Environmental Association

Appendix C - Tree Planting Sites 2000

North Hamilton	Labourer's International Union of North America Training Centre, <i>James St. N</i>
Downtown Hamilton	Hamilton Urban Core Community Health Centre, <i>Rebecca St.</i> VON Adult Day Centre, <i>Victoria Ave North</i>
Hamilton Mountain	St. Jerome's School, <i>Limeridge Rd. W</i> St. John Council for Ontario, <i>Upper Wellington</i> Paramount Family Centre Inc., <i>Paramount Drive</i>
East Hamilton	A.M. Cunningham School, <i>Wexford Ave. S</i> Holy Family Britannia School, <i>Britannia Ave.</i> Our Lady of Assumption, <i>Highway #20 E</i> Centennial School, <i>Simcoe St. E</i> Sam Manson Park
West Hamilton	Cootes Paradise Waterfront Trail
Stoney Creek	St. David's School, <i>Owen Place</i> Mountain View School, <i>Barton St. E</i> QEW and Industrial Corridors
Flamborough	Courtcliffe Park
Ancaster	St. Anne's School, <i>Fiddler's Green Road</i> St. Michael's School, <i>Hester St.</i>

Appendix D – Hamilton Air Quality Monitoring Network



The Ontario Ministry of the Environment operates a network of ambient air monitoring stations throughout Hamilton. The network centers on eight automated stations that continuously monitor a variety of pollutants and telemeters hourly averaged data to a central computer facility in Toronto. These stations include:

- 29000 - Elgin/Kelly, downtown
- 29025 - Barton/Sanford, between downtown and the industrial zone
- 29102 - Beach Blvd, normally downwind of the industrial zone
- 29114 - Vickers/East 18th, on the mountain
- 29118 - Main West/Highway 403, in the west end
- 29567 - Niagara/Land (formerly Hillyard St.), industrial zone
- 29547 - Pier 25 (Beach), industrial zone
- 29565 - Strathearn Ave N. (formerly Vansitmart Ave), industrial zone

Some of the monitoring equipment in Hamilton was provided by Environment Canada under the National Air Pollution Surveillance (NAPS) program. The Ministry maintains and operates the equipment and reports/receives this data to/from Environment Canada.

Clean Air Hamilton, March 2001

Production: Planning and Development Department
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