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## **Clean Air Hamilton's Climate Change and Public Health Conference** *Look Forward, Imagine a Future and then Create it!*

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Clean Air Hamilton held its 5th bi-annual conference addressing air quality and public health. On February 25th and 26th, this year's conference addressed the theme of Climate Change and Healthy Cities. OPPI helped sponsor the event.

Our Healthy Communities Initiative addresses air quality related public health issues and land use and transportation patterns. Climate change aggravates this relationship and makes it more difficult to mitigate. These conference notes explain why and show what planners need to think about to address the additional complexity climate change will impose of the public health issues arising from poor air quality and the built environment.

The University of Toronto's Dr. Ken Chapman opened the conference with a presentation on asthma and Chronic Obstruction Pulmonary Disease (COPD). COPD isn't well known by the public and involves the constriction over time of the respiratory system and associated medical risks this involves. By 2020, epidemiologists predict COPD will be the third cause of death in Canada and throughout the world. While asthma can be diagnosed and treated, COPD develops gradually and isn't as easily diagnosed and treated. Dr. Chapman concluded both asthma and COPD are exacerbated by poor air quality and this situation will be further aggravated by climate change induced poor air quality events.

Dr. Michael Jerrett from the University of California, Berkeley, discussed his research into air quality and public health. Public health officials conclude there is a relationship between particulate matter in the air and increased incidence of cardiovascular diseases. Ozone also increases health risks. Especially concerning are tail pipe emissions along highways and arterials. He observed that in Los Angeles, approximately 45 % of the urban population lives within 500 m of a major highway and he believes the Toronto figure is comparable. While Europe has established stringent emissions standards to address this situation, he suggests that US and Canadian standards of 60 to 80 parts per billion (PPB) are much too high. More stringent standards and regulatory systems, especially for highways and heavily traveled traffic arteries are required to address these health risks.

Tailpipe particulate emissions are particularly problematic for young persons whose respiratory systems are developing as they grow and places them at much greater risk than their parents where they are exposed to these particulates.

Dr. Peter Berry, Health Canada, addressed the public health issues arising from projected climate changes. He suggested climate warming of greater than 2 to 3 degrees C will be too difficult to adapt to. Presently, we are warming at a rate of .2 degrees C per decade. Adaptive capacities need to be applied everywhere but there are limits because the climate induced changes which are taking place will continue for some time before these policies become effective because the climate is still adjusting to past carbon emissions. He suggested we need to know what information will help inform policy makers and the public and motivate positive adaptive measures because current information and measures have not been that effective. He also notes an assessment on the public health effects of projected climate change will be available shortly from the Federal Government and that this report will be applicable in each of the Provinces. Quentin Chiotti described this effort in greater detail later in the program.

Joanne McCallum, a Hamilton based architect described a range of design projects which included energy efficient approaches and reduced green house gas production. She highlighted a mixture of international and local designs. LEED design requirements address in part how to design building ventilation systems to address indoor air quality where ambient air quality is poor. Design is the first signal of human intention!

Blair McCarry, an engineer from Vancouver with Stantec, discussed design from the perspective of the mechanical systems which can reduce energy use and green house gas generation. He observed that the recent discussion of British Columbia's carbon tax system obscures some of the other innovative measures that have been introduced which include the retrofitting of existing public infrastructure to meet green house gas reduction targets. Those changes are equally impressive and relevant.

ASHRAE produces standards and various governments use these in their building codes and specifications. The 90.1 standard is an energy performance code. The 2004 version is in the process of being adopted by the Province of British Columbia as part of their Building Code. These codes embody a forward thinking approach in which energy use is reduced over time. British Columbia's Bill 44 sets these green house gas targets into law; a 30% reduction of green house gas emissions from 2007 to 2020 and an 80% reduction by 2050.

What does this mean for our existing building stock? As buildings become more energy efficient, older stock becomes less efficient and desirable and will devalue in the market place as a result. Municipalities will want to see these buildings be made more efficient. New York City's PlaNYC 2030 is one example of emerging municipal strategies to require existing building stock to be upgraded and made more efficient.

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Dr. Denis Corr, air quality consultant and McMaster University professor addressed the results of his mobile monitoring research. He observed we now understand there are no safe threshold values below which air quality contaminants represent no public health risk. Some portion of the population is at risk. He explained his research involves the measurement of air quality in cities, on highways and heavily traveled arterials using a mobile air quality measurement laboratory installed on a specially designed van.

The mobile air contaminants monitoring results are significantly higher than imagined, often up to 20-30 times higher than ambient conditions and we need to rethink our understanding of urban air quality. For instance, previously air quality mapping was generated by taking the results that monitoring stations produced and plotting these with the results collected by national industrial point source registries to produce maps of urban air quality.

He confirmed his monitoring results indicated the national data are often though not always comparable with real time data collected during mobile monitoring. Mobile monitoring records give quite a different picture when mapped and compared with stationary monitoring and national inventory data. Heavily utilized intersections, highways and arterials generated substantially higher levels of air quality contaminants and generalized air quality maps need to be significantly redrawn to reflect these results. Pollution buildups on low wind/calm days are also a serious concern and could require short term emission cutbacks.

How large an area might be affected by tail pipe emissions resulting from intersections, provincial highways and municipal arterials? It appears that roughly 500 m from a major highway, arterial or intersection, air quality levels approach ambient levels. So bands of elevated NO<sub>2</sub> and particulate matter exist near intersections, highways and arterials. Surprisingly, structures like noise barriers can improve this relationship by reducing downwind impacts.

Given the amount of time we spend in our vehicles we are exposing ourselves to levels of poor air quality which cause both respiratory and cardiac effects.

Rob MacIsaac, Metrolinx, provided the conference with the work Metrolinx is doing to address its mandate. A number of discussion papers have been released for public input. These will be finalized into a series of white papers from which a GTA Transportation Plan and budgeting recommendations will be presented in June. He sought advice and comments on this documentation. In response to a question on the potential conflicts between motorists and public transit, he observed that he would not be pitting motorists against public transit users because the latter would lose in such a political contest. Rather he was researching the costs and benefits which accrue from improvements to both systems for comparison purposes from which decision makers can make informed decisions.

Dr. Gordon McBean is a professor from the University of Western Ontario which has had a lengthy and distinguished research career in climate change and its practical effects on how we live. He provided a scientific background for the changes we are experiencing and what we may experience in the future. Our responses to climate change can be divided into two categories: mitigation and regulation; and adaptation for those changes which will occur notwithstanding our response. He observed some implications we don't often associate with climate change such as ecological refugees, those forced to flee their communities because changes preclude their ability to survive in situ.

Dr. Quentin Chiotti, Pollution Probe, described the work he has undertaken as an NGO official working primarily with government scientists to produce a report for Canadian application comparable to that produced by the IPCC this past year. He observed that Canadian temperature projections are for an additional 2 to 4/6 degrees C by 2050, somewhat in excess of those Dr. McBean suggested we could adjust too readily and in line with the changes being projected if one simply projects a change of .2 Degrees C per decade into the future.

This report has been completed and hopefully, will be released by the Federal Government very soon, perhaps next month, assuming an election and other political considerations don't intervene (The report was released on Friday March 7 2008 in the midst of a snow storm on the eve of March Break with little notice and can be found on the Natural Resources Canada web site.). While the report will not be prescriptive in terms of policy and programs, it will be sufficiently detailed to enable Provincial and municipal decision makers to develop and implement strategies.

He observed that Ontario has its own expert panel working on adaptation strategies for application. He also observed that the Canadian Institute of Planners is drafting a policy statement on climate change. He suggests all responses involve: stakeholder engagement; monitoring and surveillance; education and outreach; and partnership building.

Dr. Jennifer Penney is the Director of Research for the Clean Air Partnership and she provide useful guidance to the conference on what other municipalities are benchmarked successful venture to date. Issues that galvanize action on climate change include: bold leadership and execution; recent and looming crises; and access to climate change researchers with mandates to work with governments. Other important ingredients include academic and consulting researchers who have the ability to work effectively with municipalities.

What do you do: build public and political will; engage staff and stakeholders; conduct vulnerability assessments; identify adaptive options; set up the institutional mechanisms for the development of adaptive strategies; and help everyone implement adaptation plan.

Locally, we need to link our community histories with the results of climate change modeling. That should become more effective and possible with the release of the Federal report Dr. McBean and Dr. Chiotti mentioned. We need to analyze our vulnerabilities from extreme climate change events because these will present us with a better sense of where our vulnerabilities are and the costs we need to budget for to address these risks.

What do we do now? Here are her suggestions: build capacity through education and research and monitoring; reduce pressures on our most vulnerable systems such as energy and water use; increase the resiliency of our urban systems through development of local sources of power and food; relocate or fortify our vulnerable systems such as additional buffering where flood plain management is concerned and strengthening our storm water management systems; and strengthen our emergency response systems with more and better forecasting and emergency response where required.

What risks require consideration in Ontario's urban and rural communities? Here are the suggested risks gleaned from the various presentations: storm water and flood plan management and structures and the incidence of more frequent and severe weather events; more frequent extreme heat and poor air quality events; the expansion of health risks associated with diseases which previously were not present in Ontario; land use and transportation patterns and their energy use implications; the stability of food and energy supplies; and rural land use patterns and their carbon sequestration implications.

In terms of institutional adaptations, we need to make better use of stakeholders in developing responses and incorporate more detailed and specific measures, where appropriate in our municipal planning instruments such as official plans. Change is in the air, she concluded, and she hopes to train planners on this topic and to recommend specific policies with which these

challenges can be met!

Anne Evens is a Director of the Center for Neighbourhood (CNT) technology's Energy Division. CNT is a 30 year old NGO with offices in Chicago and Washington and it provides research and programming intended to develop and strengthen community's ability to improve the environment and save money for households and address various issues including energy efficiency.

She described the research and programming she has been involved in, including an energy audit for the City of Chicago and measures the City is considering for adaptation and mitigation strategies. The Chicago emissions baseline inventory showed how the majority of emissions result from energy consumption in buildings and from the transportation sector. Ms. Evens described the open planning process that identified the more than thirty major mitigation strategies that were further researched.

The mitigation strategies were focused on energy, transportation, efficient urban design, and waste reduction among others. City wide regulatory programs are being considered in Chicago for the upgrading of building stock to more energy efficient standards. One option being considered is the requirement that retrofitting of existing building stock should occur to certain specified targets going forward and that these targets will be required to be met at the point at which a property was sold. Future property sales will be contingent on retrofitting standards being met on a sliding scale adjusted to time going forward.

Chicago's Climate Action Plan energy plans will be released shortly and should be available on the City's web site. Look for it there or go to CNT's web site for links and updates.

David Noble chaired a panel of five municipal employees from various municipal departments who were responsible for developing and implementing, with others, municipal climate change policies. Many of the panelists have been involved in a municipal climate change series David has been organizing for the Journal Municipal World.

The five panelists provided background on what their municipal organizations were doing and the personal challenges each faced as they undertook their programs. Most were not specifically assigned to planning departments and while some were trained as planners, few were OPPI members. Emerging responses to climate change are being developed throughout municipal organizations and not necessarily within planning departments.

David introduced the session by observing we need to reframe partnerships and to allow municipal organizations to re-invent themselves to address the challenges arising from climate change. We also need a capacity to do lots of re-imagining the futures we need to plan for in light of the challenges we face!

*Members are invited to e-mail questions and responses to Loretta Ryan, Manager, Policy & Communications and Editor of the e-newsletter at [policy@ontarioplanning.on.ca](mailto:policy@ontarioplanning.on.ca). All responses are welcomed but we will respond to only those letters that don't address specific applications before Councils, the Ontario Municipal Board and other tribunals.*

*At the end of the year, we will organize and edit the monthly articles and letters into a larger publication with an appropriate introduction and conclusion and place this on the OPPI web site for the public.*

*Copies of the Healthy Communities, Sustainable Communities report, call to action, press release, brochure and other information are posted online: [healthycommunities](#)*

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