

# **Public Health Impacts of Climate Change in Toronto: A Path Forward for Responding to the Climate Crisis**

**Date:** November 13, 2023

**To:** Board of Health

**From:** Medical Officer of Health

**Wards:** All

## **SUMMARY**

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Climate change is not only an environmental problem – it is one of the most pressing health issues of the 21st century<sup>1</sup>. In 2021, the United Nations Secretary-General called the International Panel on Climate Change report a “code red for humanity”. In Toronto, each of the last four decades has been increasingly warmer than any decade that preceded it since 1850<sup>2</sup>. Toronto is susceptible to the impacts of national climate events as experienced by the 2023 Canadian wildfires that had smoke and particulate matter crossing municipal, provincial, and national boundaries. Residents are increasingly feeling these effects, with 89 percent of Torontonians believing climate change threatens their personal health and well-being<sup>3</sup>.

Direct and indirect health impacts of climate change include:

- Increased incidence of heat-related illness and premature death
- Increases in cardiovascular and respiratory illness from poor air quality
- Health effects from severe weather events such as injuries
- Increased incidence of water-borne diseases from contaminated water sources
- Food system impacts, including risks to food access and security, and increased food-borne illness
- Increases in vector-borne diseases from expanded vector habitats, and
- Worsening mental health.

Toronto Public Health (TPH) is an important partner in the City of Toronto’s (the “City”) work on climate change by incorporating human health impacts into the City’s climate mitigation, adaptation, and resilience actions. Understanding current and future climate change health impacts for Toronto residents relies on timely monitoring of surveillance data. This information is required to identify and drive priority actions for the City. A surveillance framework can help the City better monitor and assess how resident health is affected by climate change, including any changes or developments of inequities. This evidence can inform actions taken by the City of Toronto and partners to promote climate change mitigation, adaptation, and resilience.

## RECOMMENDATIONS

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The Medical Officer of Health recommends that:

1. The Board of Health request the Medical Officer of Health:
  - a. Develop a dedicated surveillance framework for systematically and routinely monitoring climate change health impacts for Toronto; and
  - b. Collaborate with Public Health Ontario, public health units and other partners to identify consistent climate change health indicators for use across the province; and
  - c. Use new and improved data and evidence to inform future priority actions for climate change and health for the City of Toronto.
2. The Board of Health request the Medical Officer of Health actively champion the application of a public health perspective to climate-related projects and decisions through collaborating with relevant City Divisions, including Environment and Climate and Social Development, Finance and Administration.
3. The Board of Health request the Medical Officer of Health engage with partners outside the City, including academic partners, the provincial and federal governments and community stakeholders, and contribute to action addressing emerging climate change and public health issues.
4. The Board of Health request the Medical Officer of Health report back on progress on the surveillance framework, collaboration efforts and climate change health indicators in the first quarter of 2025.

## FINANCIAL IMPACT

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There is no financial impact associated with the adoption of the recommendations in this report.

## DECISION HISTORY

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On February 21, 2023, the Board of Health adopted Item HL2.3 Toronto's 2022 Population Health Profile, which provided an overview of the city's health status using available local data and endorsed the proposal to report back on climate change and health impacts as a key issue outlined in the profile report.

<https://secure.toronto.ca/council/agenda-item.do?item=2023.HL2.3>

On October 10, 2019, the Board of Health adopted Item HL10.4 Strengthening Heat Resilience in the City of Toronto, which described the results of the collaboration among City divisions to implement a coordinated Heat Relief Strategy in 2019. The report also made recommendations for the City to continue to strengthen its response to hot weather.

<https://secure.toronto.ca/council/agenda-item.do?item=2019.HL10.4>

On July 16, 2018, the Board of Health adopted Item HL28.3 Climate Change Vulnerability Assessment of the Food System in Toronto, which provided a summary of recommendations aimed at reducing vulnerabilities and impact on food access.

<https://secure.toronto.ca/council/agenda-item.do?item=2018.HL28.3>

On December 5, 2016, the Board of Health adopted Item HL16.3 - Climate Change and Health Strategy: 2016 Update, that provided an update on progress in implementing the Climate Change and Health Strategy since June 2015.

<https://secure.toronto.ca/council/agenda-item.do?item=2016.HL16.3>)

On September 26, 2016, the Board of Health adopted Item HL14.5 Hot Weather Response for Vulnerable People in Toronto, which focused on access to cooling for vulnerable populations.

<http://www.toronto.ca/legdocs/mmis/2016/hl/bgrd/backgroundfile-96422.pdf>

On June 12, 2015, the Board of Health adopted Item HL5.4 Climate Change and Health Strategy, which identified specific actions and directions to better understand and respond to the health effects of climate change to be implemented from 2015 to 2019.

<http://www.toronto.ca/legdocs/mmis/2015/hl/bgrd/backgroundfile-81508.pdf>

On July 6, 2011, the Board of Health adopted Item HL6.3 - Protecting Vulnerable People from Health Impacts of Extreme Heat, which, summarized key findings from the heat-related research, and outlining implications for heat-related planning and protection in Toronto

<https://secure.toronto.ca/council/agenda-item.do?item=2011.HL6.3>

## COMMENTS

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Toronto Public Health's 2015 report, [A Climate of Concern: Climate Change and Health Strategy for Toronto](#), clearly outlined that climate change was already having an impact on the health of Toronto residents. The implementation of that 5-year plan involved actions on heat, cold weather, food systems, and other issues<sup>4</sup>. In recent years, TPH's climate change work was paused as the organization focused on response to the COVID-19 emergency. The [2023 Population Health Profile](#) provided an opportunity to update the collective understanding of Toronto's population health status. The Population Health Profile reaffirmed that climate change presents a significant and growing health risk.

This report is coming at a pivotal time for public health. The 2023 [Ontario Provincial Climate Change Impact Assessment](#) clarifies the severity of the risks that will impact Ontario's communities, including Toronto. The report found that these risks are highest among Ontario's most vulnerable populations and will amplify existing disparities and inequities. Applying lessons from our experiences with the COVID-19 pandemic, it is important for Toronto Public Health to demonstrate leadership and work in collaboration with partners to re-establish our commitment to climate change and health actions that reduce health inequities.

## *Impacts of Climate Change on the Health of Torontonians*

Climate change impacts are evident across several areas of public health interest. Modelling suggests that by 2049, Toronto will experience over three times as many annual days where the temperature exceeds 30 degrees Celsius, growing from 20 days currently to 66 days, with consequent increases in the health burden of heat-related illness. In Ontario, between 1996 and 2010, each five degrees Celsius increase in temperature during the summer was associated with a 2.5 percent increase in death, with a particular link to respiratory deaths<sup>3</sup>. Other parts of the country have already seen this impact directly. The 2021 heat dome event in B.C. resulted in 619 deaths, with 56 percent of those dying alone and 98 percent of deaths occurring indoors. The event demonstrated the risk of high indoor temperatures, especially for seniors and individuals with schizophrenia<sup>5</sup>.

In addition to extreme heat, air pollution is a leading environmental cause of death and illness in Canada, resulting in an estimated 15,300 deaths a year, with an economic value of \$114 billion annually<sup>6</sup>. Specifically, it is estimated that between 570 and 2,700 premature deaths occur every year in Canada due to exposure to fine particulate matter from wildfire smoke. In addition to wildfire smoke, there are health impacts from traditional sources of air pollution (e.g., traffic, industrial) on Toronto residents. Currently, in Toronto, air pollution is estimated to give rise to over 1,300 premature deaths and 3,550 hospitalizations each year<sup>7</sup>. With climate change, some pollutants, such as ozone, may increase due to higher summertime temperatures. Efforts to reduce these local sources of air pollution, such as expanding and encouraging active transportation, have significant co-benefits for both health and the environment.

Toronto is also expected to see increased precipitation, heavy rainfall, and more extreme rainfall events that will increase flood risks<sup>2</sup>. Floods cause destruction to crucial infrastructure, including food supply chains, which can impair food access and food security. Sewage overflow due to heavy rainfall events can make it more likely that recreational lake users (e.g., swimmers and local beachgoers) are exposed to contaminants or pathogens that cause infections or illnesses. Increases in temperature and precipitation will continue to lead to changes in the distribution of disease-carrying insects, ticks and rodents and lengthen the transmission seasons for vector-borne diseases (VBDs). This includes three tick-borne illnesses, anaplasmosis, babesiosis and the Powassan virus disease, which were designated as reportable diseases of public health significance in Ontario summer 2023 to enable formal tracking. These VBDs can cause serious health impacts (e.g., anemia, loss of co-ordination/paralysis). These emerging VBDs are expected to increase as a result of climate change. This is an example of the relationship between Climate change and the One Health paradigm – that human health, animal health and healthy ecosystems affect one another.

Severe weather events are expected to increase in frequency adding to the potential for injury, illness, and death. These events can also impact health through isolation, disruption of infrastructure, property damage and evacuations. Associated displacement from homes and employment can also affect access to health services, food, and water supplies. These patterns show how climate change affects the social determinants of health.

The seriousness of the climate crisis is also impacting mental health, especially among youth. A Canadian survey found that more than half of youth (aged 16-25 years) surveyed say climate change leaves them feeling sad, anxious, powerless, and afraid, with 40 percent saying it affects their daily functioning<sup>8</sup>. In addition, the downstream consequences from climate change (e.g., loss of homes, habitat, loved ones, sleep, and other challenges) in turn cause or increase anxiety, depression, and post-traumatic stress.

For more information, the Selected Health Impacts of Climate Change and Toronto Public Health Activities (Attachment 2) includes a summary on select indicators of climate change and health impacts, as well as TPH activities on climate change for Toronto. The attachment includes select indicators currently available but is not necessarily what a new surveillance framework would include. The gaps/limitations of these indicators demonstrate the need for the surveillance framework included in the recommendations.

### *Public Health's Role in Responding to the Climate Crisis*

The [Public Health Agency of Canada's call to action](#) recommended that public health could address the health impacts of climate change through activities that align with its core functions, including:

- Health promotion: Promoting healthy policies across sectors, such as advocating for and supporting active transportation initiatives
- Health protection and disease prevention: Helping communities reduce health impacts, for example, the recently released Wildfire Smoke Response Strategy
- Population health assessment: Understanding health risks and future impacts, as was done in Toronto's Population Health Profile: Insight on the Health of Our City (2023)
- Health Surveillance: Collecting data to track and monitor changes in diseases and their related environmental conditions, for example the West Nile surveillance and reporting program; and
- Emergency preparedness and responses: Preparing for and responding to extreme weather events, for example, serving as a partner and collaborator on the City of Toronto's Heat Relief Strategy.

The Chief Public Health Officer of Canada's [Report](#) on the State of Public Health in Canada 2023 further highlighted the importance of working with communities and partners across sectors to build healthier and more resilient communities as emergencies increasingly become a part of our lives. Toronto Public Health can meet its climate change roles by working with key partners and representing public health perspectives at climate change tables. TPH collaboration can be leveraged to promote healthy policies, reduce health inequities, and support extreme weather responses. Public health can bring existing tools to support this work, including health promotion. The recommendations of this report support the collaboration role for TPH.

A core function of local public health is monitoring and surveillance of health events and health determinants through the collection, analysis, and reporting of data on the health

status of the city's population. A dedicated surveillance framework can facilitate a Toronto Public Health focus on the assessment of climate change impacts on population health. A systematic and routine surveillance approach would enhance understanding of climate change health impacts on Toronto residents and advance strategic actions. Currently, TPH does not have a climate monitoring approach. To avoid duplication of effort, TPH would need to work with partners in the City, public health, and academia.

There is also a gap in identifying current priorities for Toronto Public Health in fulfilling its climate change role, largely because TPH's 2015 strategy on climate change was a 5-year action plan that ended in 2019. The public health focus on response to the COVID-19 pandemic prevented TPH from updating the plan. TPH would need to review the current state of evidence, City priorities, and the lead roles of other City divisions in climate change response to identify specific actions for TPH to take in contributing to the City's climate initiatives.

### *Climate Change Inequity and Vulnerability*

This report recognizes that the impacts of climate change are not experienced equally by all populations. Climate change disproportionately affects those who are precariously housed and living in poverty, as well as other factors that impact vulnerability. The [Ontario Public Health Standards](#) guide public health units to reduce the negative impact of social determinants that contribute to health inequities such as climate change impacts.

The concept of vulnerability can be stigmatizing, and communities or people can have dynamic vulnerability related to climate change. When assessing climate change impacts, there are three general factors in vulnerability:

- *Exposure* refers to the nature and degree to which a system or individual is exposed to significant climatic variations.
- *Sensitivity* is the degree to which a community or individual is affected (positively or negatively) by climate variability or change.
- *Adaptive capacity* refers to the ability of a system or community to adjust to climate change (including climate variability and extreme to moderate potential damages) and take advantage of opportunities, or to cope with the consequences.

Indigenous peoples in Canada are uniquely sensitive to the impacts of climate change. Many Indigenous communities have spiritual, moral, educational, economic, and personal ties to the land and environment, regardless of geographic location. Therefore, the direct and indirect impacts of climate change on the health and well-being of First Nations, Inuit, and Métis in Toronto are interconnected and far-reaching. Engagement and incorporation of Indigenous communities' knowledge and lived experiences in climate change research, policy, and implementation are necessary to support Indigenous self-determined solutions for the consequences of climate change.

## Next Steps

With endorsement of the recommendations in this report, Toronto Public Health would re-establish its focus on climate change and collaborate with partners within and outside the City for inclusion of public health and health equity considerations into climate change research, policy, and action.

To support this focus, Toronto Public Health will build on existing work and develop a surveillance framework for climate change and health impacts, that can inform population health planning and resilience efforts in the city. Toronto Public Health will report back to the Board of Health in the first quarter of 2025 on the status of these actions.

## CONTACT

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## SIGNATURE

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Dr. Eileen de Villa  
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## ATTACHMENTS

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Attachment 1: References

Attachment 2: Selected Health Impacts of Climate Change and Toronto Public Health Activities

## Attachment 1: References

1. L. Atwoli, et al. (2021). Call for Emergency Action to Limit Global Temperature Increases, Restore Biodiversity, and Protect Health. *The New England Journal of American Medicine*, 385:1134-1137.  
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8. Galway, L.P.; Field, E. Climate emotions and anxiety among young people in Canada: A national survey and call to action. *J. Clim. Chang. Health* 2023, 9, 100204. Retrieved from: [Many young Canadians think humanity is doomed | Lakehead University](#)