Public Health in a Changing Climate: Leveraging Connections and Knowledge for Action

Lydia Ma
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Established by the Public Health Agency of Canada in 2005 to promote the use of knowledge and evidence by public health practitioners and policy-makers in Canada.
The NCCEH Mandate: Knowledge Translation

**Synthesize & exchange knowledge**
- Incorporate evidence from research and experience to improve or develop policy/practice

**Identify gaps in knowledge**
- Catalyst for new research or application of research

**Build capacity**
- Provide tools, establish networks, foster partnerships

TARGET AUDIENCE: Medical health officers, environmental health officers and other public health practitioners and policy-makers.
There is no plan(et) B.

“Blue Marble” image of the Earth taken on January 4, 2012 aboard NASA’s earth-observing satellite, Suomi NPP.

*Image Credit: NASA/NOAA/GSFC/Suomi NPP/VIIRS/Norman Kuring*
August 2017: Second warmest on record

August 2017 was the second warmest August in 137 years of modern record-keeping, according to a monthly analysis of global temperatures by NASA scientists.
Paths and possibilities

Mitigation

Reduce and stabilize levels of heat-trapping greenhouse gases in the atmosphere:
- Reduce sources of GHGs – burning of fossil fuels
- Enhance “sinks” that remove/store these gases - oceans, forests, soil

Adaptation

Reduce our vulnerability to effects of climate change:
- sea-level encroachment; intense, extreme weather events; food insecurity

Capture potential beneficial opportunities associated with climate change
- longer growing seasons, increased crop yields in certain regions; less cold-related mortality

Delicate balance between human, ecosystem adaptability, and pace/intensity of climate changes!

Source: https://climate.nasa.gov/solutions/adaptation-mitigation/
Pan-Canadian Framework on Clean Growth & Climate Change

• Developed with provinces and territories, in consultation with Indigenous peoples

• To meet Canada’s emissions reduction target; economic growth

• Provincial and territorial key actions and collaborations opportunities with the Government of Canada

Government of Canada

- Hosted 46th session of the Intergovernmental Panel on Climate Change in Montreal, Sept 6-10, 2017; 195 countries
- Climate change impacts, future risks, adaptation & mitigation measures

Reports available at http://www.ipcc.ch/
Canada’s Climate Change, Impacts and Adaptation Programs

Climate Change Adaptation Platform (2012)

Natural Resources Canada

• National forum – reps from federal, provincial, territorial governments, industry, communities, academics, Indigenous, professional and not-for-profit organizations

• Collaborate on climate change adaptation priorities

• Working Groups: agriculture, coastal management, economics, energy, forestry, infrastructure and buildings, measuring progress, mining, Northern, RAC & tools, science assessment, water and climate information, enhancing uptake

• Health?

Source: http://www.nrcan.gc.ca/environment/impacts-adaptation/adaptation-platform/17176
Lots of resources
Climate Change: 
Global issues - local challenges

• Cities and local communities have to determine and implement local adaptation measures; various frameworks for action

• Examples:
  • build flood defenses
  • plan for heatwaves and high temps
  • considerations for urban vs rural vs coastal vs Northern Canada
  • emergency preparedness and evacuation protocols

• A need for multi- and cross-agency and cross-ministry collaboration, and to coordinate, share information and implement strategies bearing in mind regional-local adaptive capacities.
2017: A wild, wild summer … and it continues

Kamloops experiencing worst air quality in its recorded history

Photo credits: shaunl/Getty Images (top left); CBC.ca/news (bottom left); NASA/NRL (middle); rottadana/Getty Images (top right); Paul Chiasson/The Canadian Press (bottom right)
Fires, Floods, and Bugs: How Climate Change Impacts Drinking Water Source Quality

Dr. Angela Eykelbosh, NCCEH
In collaboration with:
Dr. Monica Emelko, University of Waterloo; Dr. Uldis Silins, University of Alberta; Dr. Mike Stone, University of Waterloo

September 28, 2016 | Edmonton, AB


Wildfires and Water Quality

- Canopy gone, roots present
- During a storm, more rain hits the ground.
- Soil is warmer and now water repellent – more water runs off
- More runoff, more erosion, more sediment & surface contaminants (ash, metals, pathogens)
- No water being transpired, so more GW, more DOC, more N+P, metals???
- Higher yields and peak flows increase.
- Snow melts faster; streamflow peaks earlier
NCCEH: what we do

• Synthesize knowledge on climate change and health that is relevant to public health practice

• Translate, disseminate knowledge – useful, accessible

• Identify critical knowledge gaps and stimulate research in what we don’t know about climate change & health on practice and decision making

• Link researchers and public health practitioners, building networks
NCCEH collaborations with researchers


- Research on impacts of different forest management strategies on drinking water source quality and treatability to assess suitability as source water protection technologies across major ecological/forest regions of Canada

- Principal Investigators: Dr. Monica Emelko, University of Waterloo; Dr. Uldis Silins, University of Alberta

- Team members (n>75): multidisciplinary institutes and organizations – universities, industry, government; Canadian Water Network; NCCEH
NCCEH collaborations with researchers

CIHR Team Grant: Environments and Health


• Research on fostering Indigenous leadership in renewable energy development has the potential to deliver positive community benefits and reach potential for reconciliation (Indigenous and settler communities, and with the environment.)

• Team Lead: Dr. Heather Castleden, Queen’s University

• Team members (n>60): universities, governments, industry, communities, non-governmental organizations from across Canada including NCCEH, international advisory committee
NCCEH/BCCDC collaboration:
Building Greater Public Health Capacity to Address Forest Fire Smoke in Theory and Practice

• Funded by Health Canada
• Focus is on public health (PH) response to wildfires
• Consult with PH practitioners across Canada re: perceptions, challenges with role during wildfire events
• Conduct in-depth needs assessment involving multiple PH jurisdictions in Canada to assess decision-making and implementation by PH practitioners.

➢ Synthesis of findings from literature review, document reviews of recent wildfire events and interviews
NCCEH collaborations in “CanDR2”

• CanDR2 (Disaster Research Response [DR2] Program)

• Gaps recognized during Feb 2016 Best Brains Exchange meeting - Canadian Institute of Health Research (CIHR), Health Canada, US National Institute of Environmental Health Science (NIEHS)

• Discussed integration of research and expertise in public health management of chemical emergencies/disasters in Canada

• Steering Committee Co-chaired by NCCEH Scientific Director and Health Canada Director General, Environmental and Radiation Health Science Directorate; Members include representatives of:
Public Health: Points for Action

Research

• Ground policy and actions in evidence-based research on climate change health impacts
• Identify the most vulnerable populations; consider and account for social determinants of health in adaptive actions
• Determine interaction of climate-change related hazards and other factors that impact health
• Investigate effectiveness of controls (protocols)
Public Health: Points for Action

Surveillance and Monitoring

• Determine health risks by subpopulations, location, and changes over time
• Enhance environmental monitoring
• Assess existing surveillance systems
• Utilize surveillance data to develop prevention programs and/or adaptation plans and strategies
Public Health: Points for Action

Risk Assessment

- Collect and track crucial information (need data)
- “Risk multiplier”
- A challenge and involves other disciplines
  - Can be simple or can be very complex

Risk Management

- Improve baseline health status
- Cross-sectoral partnerships; put health on “table”
- Enhance risk communication and public education/awareness
- Assure environmental health services and workforce are prepared
- Enhance capabilities to prepare for and respond to threats
CRISIS

Danger

Opportunity
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www.ncceh.ca || www.ccnse.ca

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