

CLIMATE CHANGE AND THE ROLE OF CANADA'S ENVIRONMENTAL HEALTH PROFESSIONALS

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In the last issue, we began a series of four articles on public health and climate change with an introductory overview, by Lea Berrang-Ford and David Noble, of some of the public health issues related to climate change. Ironically, 10 years ago this month I wrote about Climate Change being "The Urban Environmental Health Issue of the Next Century" (E.H.R., Spring 1997, Vol. 41, Issue #1, page 31).

In that article, I cited a commentary by Dr. John Last of the University of Ottawa, in which he stated "To control a public health problem, we must be aware that the problem exists; understand what causes it; be able to control it; believe that it matters; and have the political will to deal with it."

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Well, we've largely frittered away 10 years debating as a nation and globally over the last two points. We're now painfully aware that climate change exists and has massive implications for public health, and we have a much more intimate understanding of what causes it. We know about its implications for safe and reliable supplies of food and water, for air quality, for vectorborne and zoonotic infectious disease risks, and for threats from weather extremes. Yet we seem totally incapable or unwilling as a society to take the necessary steps to control it.

Fortunately, the tides are changing (in addition to the climate). Globe & Mail editor-in-chief noted the "remarkable surge of global warming as a political issue in 2007"¹, just as the environment ranked higher than health care and terrorism as the country's greatest threat². Journalist Brian Laghi found notable "the speed with which Canadians have accepted that global warming is a larger problem"³. We're not sure if he means they've accepted this fact quickly or slowly, but presume

the latter. Bizarre, given that we've been receiving increasingly dire warnings about the problem for over 20 years now.

Recently, Global TV and the Vancouver Sun ran a week-long series focusing on the different aspects and implications of Climate Change. The most recent installment focused on "Drinking Water at Risk in BC – Researchers" concluding that "Drinking water will become more scarce in BC, and threats to water quality more frequent, as a result of climate change, experts warned Friday."⁴

The high political and public attention to climate change creates a window of opportunity to take more of the steps we, as a society, need to take. In the last article, we outlined key steps for the health sector at large. Major responses include:

- Building our knowledge about how to respond appropriately, in terms of both mitigation and adaptation.

¹ Globe & Mail, Jan 27, 2007 It's crystal clear: The environment will be the single most important issue of 2007

² Globe & Mail, Jan 26, 2007 Climate concerns now top security and health

³ Globe & Mail, Jan 26, 2007 Climate concerns now top security and health

⁴ Vancouver Sun, April 7, 2007 ...And not a drop to drink – Drinking Water at risk in BC – Researchers.

- Encouraging much needed behavior changes by the general public and across different sectors,
- Promoting healthy public policy at all levels of policy and decision-making.
- Building adaptation and response capabilities, including by increasing surveillance activities, strengthening capacity for early intervention, and enhancing emergency preparedness.

These activities follow the traditional public health approach of prevention, monitoring and intervention.

But what is the role of EPH professional? That is the focus of this article - what we, as a profession, will need to do to prepare for the realities of climate change and the impacts on public health. It is about being aware of the potential impacts of climate change on our health, advocating for GHG emission reductions (which are the primary and ultimate preventive measure), and adapting to the realities of a warmer world.

For those of us operating under mandatory or core program frameworks, it becomes readily apparent that climate change is going to have an impact on most, if not all, of our “core program” areas. In fact, there might soon be a valid argument for making “Climate Change” a core program on its own, given the magnitude of its impacts on public health.

Awareness of Health Implications

Warmer temperatures and more extreme weather events will have serious impacts on drinking water. It's too early to tell whether the “boil water” advisory that, at its peak,

affected 2 million Greater Vancouver residents was one of the early warning signs of the impacts on what has been regarded as a fairly safe and reliable system. Heavy rainfalls generated turbidity levels approaching 100 NTU in the source water, challenging even the most modern of filtration and treatment systems. We have since had two more periods of rainfall that would have even worried Noah, and which once again generated turbidity levels exceeding 5 NTU in the treated water. What will we, in public health, do when these occurrences become more and more frequent? Will a “boil water advisory” suffice? Will the bottled water industry be ready to step in and provide a safe alternative to everyone? We need to ask (and be able to answer) these questions.

Sometimes too much water will be the problem, at other times, it will be too little. One has to only look at the effects on everyday life that a seven-year drought is having on many parts of Australia. Those of us reliant on mountain snow-packs and glaciers for drinking water, better start thinking about and articulating what happens when the snows don't come for an entire winter (European mountain snow went missing most of this winter) or a series of winters. The Vancouver Sun article noted that “Reservoirs and lakes that have been substantially drawn down in dry weather can also expose users to elevated risk from gastrointestinal illness as both domestic and wild animals deposit feces along receding shorelines.”⁵

And then there is wastewater. Most of our wastewater treatment plants are located on low-lying land next to rivers, river mouths or bays. Many of these locations will be impacted by water level rise and may be damaged or put out of service if these increases in water

level happen faster than predicted. For those of us who use rivers as a source of drinking water, we might want to ensure that our neighbours upstream are capable of treating their wastewater on a continuous basis!

What a nice segue into disease impacts! Vector-borne and zoonotic infectious disease risks will increase under climate change, this we know. We don't know by how much, but we may already be getting a sneak preview. We are already witnessing the beginning of the impacts on the broader spread of infectious diseases into temperate climates in Canada. The introduction of *Cryptococcus gattii* into parts of British Columbia has been blamed by some on the creation of acceptable temperature ranges. According to the B.C. Centre for Disease Control website, “It is not clear why *Cryptococcus gattii* appeared in B.C. It may have been imported or it may have always existed on Vancouver Island and increased in prevalence due to climate or environmental change.”⁶ The same newspaper article postulated that other disease-causing organisms, such as West Nile Virus, Hanta Virus and Eastern Equine Encephalitis have become or will become more prevalent with changes to the local climate.

Ten years ago the Vancouver Sun warned that “The W.H.O. says climate change will be one of the greatest influences on disease in the decades ahead. Illness once common only in hot climates are moving northwards, and Canada has already been hit with such previously rare pathogens as hantavirus and Eastern equine encephalitis.”

What will public health's response be if we see the spread of malaria north of the 49th parallel, if we see an explosion in hanta virus cases or if we

⁵ Vancouver Sun, April 7, 2007 ...And not a drop to drink – Drinking Water at risk in BC – Researchers.

see new vector-borne diseases in the temperate zones of Canada?

The increasing temperature in our oceans is having an impact on the safety of our shellfish. Organisms such as *vibrio parahaemolyticus* tend to thrive at elevated water temperatures. Will we see more frequent occurrences of “red tide” over more months of the year?

Higher temperatures during the summer months in many of our urban areas will tend to exacerbate local air quality impacts such as ozone events and increases in fine particulates. Urban heat island effects will be exacerbated, further straining public health’s ability to respond to its most vulnerable citizens during a heat wave. Heat waves will be longer and temperatures will be hotter.

The effects of higher temperature will not be limited to urban areas. For example, higher ambient temperatures and prolonged hot summers will touch off algal blooms that can degrade water quality, making it taste bad and even introduce the risk of algal toxins.

Prevention

Greenhouse gas emission reductions are the ultimate preventive measure. We, as environmental health professionals, can promote GHG emission reductions through a number of short and longer-term actions:

- Changing our own fossil fuel footprint (leading by doing) by planning our daily trips with fuel efficiency in mind; switch to more fuel efficient (e.g. hybrid) vehicles; walk more frequently within your assigned districts. Car pool or take transit to meetings.

- Working within our health agencies to ensure they have adopted a climate protection program. Health agencies are some of the largest institutional emitters of greenhouse gases, yet many haven’t adopted GHG reduction/energy conservation plans. Ask a hospital administrator what a 100% increase in natural gas costs would do to their annual operating budget – that should get them motivated.

- Educating the public about the realities of climate change, focusing on the health impacts, thereby promoting climate friendly choices. Medical health officers and environmental public health professionals have relatively high levels of public trust especially when it comes to health messaging.

- Working with local government, developers and others to promote energy-efficient, healthy communities where walking, cycling and transit are the primary modes of transport and where our fossil fuel footprint is as small as possible.

- Support Idle Free initiatives to further reduce release of carbon dioxide and local air pollutants.

- When we’re asked for input on community plans, major redevelopment, environmental assessment applications, subdivision proposals, and air quality management plans, climate impacts should be top of mind. Will it make sense (i.e. is it sustainable, is it wise) to approve more and more development on flood plains or coast lines (Yes, I know, that’s where the property sales are the hottest!)? Do we just consider the primary air pollutants when we’re reviewing an air quality permit application or do we think more holistically and consider

the GHG emissions as well?

Advocacy

Just as we have been strong advocates of safe drinking water, clean indoor air and safe food, we must now take on a more daunting task – advocating for climate friendly policies, regulations and international agreements. The public health voice is a strong voice, especially when it is voiced collectively. Let’s use some of what we’ve learned from our other advocacy work to begin to change our community’s energy consumption patterns, using the health of our children and grandchildren as our leverage.

Working within our own national association and, through CIPHI, with the International Federation of Environmental Health, Canadian Public Health Association and others, we can collectively be a strong voice for public health protection through climate protection.

Adaptation

Yes, the “Other A” word, which might mean, to some, that we have thrown in the towel and accepted the inevitable – sea level rise, more frequent weather events, more disease and death, and unmanageable waves of environmental refugees.

Unfortunately, no matter how effectively we mitigate additional climate change, the GHGs that we have already emitted to the atmosphere are going to cause some warming. Our world is going to continue to get warmer. Just as we work with communities and public health workers to prepare for disasters (natural and otherwise), we need to start planning for what inevitably will be a very

⁶<http://www.bccdc.org/topic.php?item=109>

different way of life in the decades to come. “The Canadian Red Cross urged Canadians to ‘dramatically increase their investment in disaster preparedness’, both at home and in support of efforts abroad to cope with the consequences of global warming.”⁷

In 2006, 30 Medical Officers of Health and other local-level health practitioners elaborated on the role of local-level public health in responding to climate change. In addition to advocacy for GHG emission reductions, they pointed to the need to:

- Increase environmental health surveillance activities
- Enhance health emergency preparedness
- Inform, advise and influence others

This final point is important, since many of the health interventions fall outside of the decision-making authority of public health. Whereas we have the knowledge and expertise, the decision-making authority rests with others. Municipalities often have the authority in respect to many climate change adaptations (e.g. land-use planning, source water protection, emergency preparedness), but provincial and social service agencies are also in the mix. This is the ever-important need to work intersectorally, with those that have the mandate.

We can work with these partners to begin to promote thinking around adaptation and contingency planning for a changing climate. This is far more than building dykes higher or fortifying treatment plants. As Brown et al. (2005) describe, it is about being innovators and change agents, “to work with individuals, groups, organizations and communities, to build capacity and

to create and embrace innovation in working toward sustainability and health.”

Conclusion

That should sound like a tall challenge, because it is! But as a profession, we have a history of rising to the occasion, of persevering, and of delivering tangible results and positive public health outcomes. Environmental public health professionals seldom respond to a challenge by asking “Why are you assigning this thankless task to me?” Instead we ask “How are we going to tackle this one?” and “When do we get started?”

The “When” is ten years ago; the

“How” is by using our core competencies, especially those around communications, contingency planning and health promotion. The “Who” is all of us!

REFERENCE

Brown, VA., Grootjans, J., Ritchie, J., Townsend, M. and Verrinder, G. (2005). Sustainability and health: supporting global ecological integrity in public health. London: Earthscan.



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⁷ Vancouver Sun, April 7, 2007 ... “World’s poorest will be hardest hit by climate change”