



News for the Canadian Institute of Public Health Inspectors

Wildfire risks to safe drinking water

Juliette O’Keefe, NCCEH

Introduction

The [2023 wildfire season](#) was the most destructive in BC’s recorded history, with over 2000 wildfires burning approximately [3 million hectares of forest and land](#). In [2024](#), many BC communities have faced evacuations, disrupted transportation routes, loss of property, [exposure to smoke](#), and a diminished summer tourism season.

The [public health concerns during wildfire](#) are wide ranging - including immediate dangers from fire, exposure to smoke, ash, or debris, and loss or damage of homes and businesses. Wildfire can also cause the loss of access to safe drinking

water, with effects sometimes persisting for months to years. This article provides a brief overview of the effects of wildfires on water safety and supply, and where to find additional guidance.



Effects of wildfire on water safety and supply

Most [drinking water plants in BC](#) are supplied by lakes and reservoirs, many of which are located in forested areas that can be directly contaminated during a fire by ash, debris, [fire retardants](#) or runoff from burnt areas, including [legacy contaminated sites](#) in some catchments. Wildfires can also affect groundwater supplies through leaching of contaminants through burnt ground. Additional effects on the source-to-tap pathway can be [wide ranging](#). These could include:

Immediate effects:

- Loss of supply and distribution capacity from damaged or destroyed treatment plants, pump houses, distribution pipes, storage tanks or other key infrastructure.
- Contamination of supply caused by pressure losses or line breaks, infiltration of smoke or debris into storage tanks, damage to sewage infrastructure.
- Disrupted communication and access for personnel carrying out monitoring, treatment, or repairs, and delivery of treatment chemicals.
- Power outages impairing treatment, pumping, or monitoring.

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Longer term effects:

- **Changing baseline** water quality affecting treatability and **variable quality** that can persist for [months to years](#):
 - Increased sediment clogging intakes and filters, increasing the need for clarifying treatments (e.g., coagulants).
 - Increased organic matter reducing disinfection effectiveness and forming disinfection by-products (DBP); increased risk of biofilm formation.
 - Elevated nutrients increasing potential for cyanobacterial blooms at source.
 - Change in water quality affecting corrosion control for lead.
 - Need to treat for changes in taste, odour, and colour.
- **Unidentified leaks or damage** to pipework, connections, or storage tanks causing persistent supply and pressure losses.
- **Need to remediate** contamination in distribution network from microbiological or chemical contaminants, including volatile/semi-volatile organic compounds (VOCs/sVOCs).

Current areas of research

Current research on the [effects of wildfires on drinking water](#) ranges from understanding catchment characteristics and [topography](#), to the impact of the type of materials burned, and the [preparedness of the utility](#) to respond. One emerging area of study is understanding the potential for water systems to become contaminated with VOCs such as benzene following wildfires. Research following the [2017 Tubbs and 2018 Camp fires](#) in California and the [August 2023 Maui wildfires](#) found VOC contamination exceeding safe drinking water limits in some areas. VOCs may enter systems through burning or melting of plastic pipes, or via pressure losses drawing contaminants in from burning areas. Contaminants may adsorb to pipework and be released later. Greater awareness and access to testing for VOC post-fire may be needed, along with strategies for dealing with VOC contamination if found.



Building water resilience to wildfires

Water treatment plant operators and municipalities face numerous challenges in preparing and [protecting water treatment](#) and distribution infrastructure from wildfire impacts, and ensuring access to safe water is quickly restored following an event. Effects on treatment processes may have to be adapted for [years](#) following an event. For affected communities, there are several considerations to help build water system resiliency. Each community will face unique challenges based on their geography, size and intensity of a fire, types of materials burned, and local capacities.

Helping communities **prepare** can include providing frequent and clear information and updates, encouraging people to have emergency water supplies available, understanding how to reduce fire risks around their homes, private water tanks, wellheads, or other water infrastructure, and encouraging people on [private supplies](#) to routinely monitor baseline water quality to enable changes to be detected post-fire.

In **responding** to an event, recommendations from the [review of the Maui wildfires](#) included being proactive in issuing water advisories to allow utilities to focus on stopping water losses, protecting assets, and containing damages. Proactive advisories also circumvent challenges from subsequent losses of power, mobile service, internet, or transportation routes and prevent residents being exposed to contaminated water. Evacuation notices should include advice on how to safely shutdown building water systems to prevent pressure losses and contamination of the distribution network.

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Helping people **recover** and [return home safely](#) can include ensuring they understand the hazards and indicators of unsafe water. Pre-prepared factsheets distributed at the beginning of wildfire season, or at emergency response or evacuation centres, can include advice on identifying changes in quality (e.g., colour, turbidity, or odour), testing exterior faucets for pressure losses (e.g., bubbles, unsteady flow), and advising on the [appropriate parameters](#) for testing and how to access testing. Advice should also be provided for homes with private [wells](#) or [cisterns](#). Following fires, changing water flow in a catchment due to water repellent soils, loss of ground cover, changes to snow melt, and blocked drains and ditches, can present risks of flooding months to years after a fire. Building resilience requires anticipating some of these additional impacts and taking steps to mitigate them.

Further sources of guidance on preparation, response, and recovery from wildfires with specific advice on drinking water systems are listed below:

- [Wildfires in Canada: Toolkit for public health authorities](#) (Public Health Agency of Canada, July 2024)
- [Wildfire response: Guide for environmental public health professionals](#) (National Environmental Health Association, 2023)
- [Response and recovery to wildfire caused drinking water contamination](#) (Purdue University, 2022)
- [Colorado post-fire recovery playbook](#): Guidance for counties, tribes, municipalities. and water providers (2021)
- [Returning to your home after wildfires](#) (First Nations Health Authority, 2017)

Register Now! AEC 2024

The 2024 CIPHI National Annual Education Conference (AEC) is happening in less than a month! The 88th annual event will be held in downtown Regina, Saskatchewan at the Ramada Plaza by Wyndham Regina Downtown from September 22 to 25, 2024. A fantastic roster of keynote speakers, including Dr. Lisa Bélanger (Behavioural Change Expert & Researcher), Jill Heinerth (Explorer-in-Residence, The Royal Canadian Geographical Society), Aaron Tootosis (Office of the Treaty Commissioner), Lyndon J. Linklater (Office of the Treaty Commissioner), and Dr. David Dyjack (Executive Director, National Environmental Health Association) will join presenters in providing informative, entertaining, and educational presentations to environmental public health professionals joining either in-person or virtually.

Register now at https://form.jotform.com/registration_CIPHI/88th-CIPHI-National24AEC-Delegate

Keep up to date on the latest news at the BC Branch website:

www.ciphi.bc.ca

The page also contains information on membership, conferences, career opportunities, documents, and much more. Check it out regularly.

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Click on the icon and *Follow* the BC Branch on Instagram.

President's Report

Dear CIPHI BC/YK,

As we move through the latter half of 2024, I want to give appreciation to the ongoing support and dedication from our members and executive to our branch.

Key Highlights and Initiatives

Strengthening Our Executive: Over the past months, we have focused on expanding our executive and getting more participation from our members. We have been very successful this year in getting more participation on our CIPHI executive.

Advocacy Efforts: Our advocacy work has been more critical than ever. We have been actively engaging with the public to ensure that the role of public health inspectors, and environmental public health professionals is recognized and supported. Our newest advocacy campaign has been running nationally since July 31, 2024 and will continue into September.

Campaign website pages:

- Home page banner updated - <https://ciphi.ca/>
- Campaign landing page - <https://ciphi.ca/discover-a-career-in-environmental-public-health/>
- Downloadable resource - https://ciphi.ca/wp-content/uploads/2024/07/CIPHI_Recruitment2024_FactSheet.pdf

This campaign has been directed at recruitment of young people into the profession. We plan to maintain the momentum set by the National Advocacy Committee in continuing working towards recruitment and retention. The CIPHI BC/YK branch will continue to promote the materials provided by national and I encourage you to keep your eyes out for the advocacy campaign promotional materials throughout the summer. Please feel free to promote and share the advertisements to get more views!

If you know of any career events or educational sessions that you think could be beneficial for CIPHI to attend or host a booth at, please email me at president@ciphi.bc.ca

Looking Ahead

As we look to the future, our focus remains on advocating and strengthening the foundation of environmental public health in our communities. We may have to face emerging challenges in the field of Environmental Public Health in the future (ex: climate change related illness, zoonotic disease), however this will also bring more opportunities for our profession. By remaining steadfast in our commitment to protect public health and the environment, we can have an impact on creating a healthier future.

Wildfire Preparedness

As wildfire season is still upon us, it's crucial to prioritize our safety and preparedness. One of the most effective ways to stay safe during emergencies like wildfires is to have a "Go Bag" ready and an emergency plan in place. Here's a quick reminder on how to prepare:

Create Your Go Bag: Prepare a backpack or bag with essential items you might need to evacuate quickly.

[Build an emergency kit and grab-and-go bag - Province of British Columbia \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/build-emergency-kit)



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- Copies of important documents (ID, insurance papers, etc.)
- Non-perishable food and water for at least three days
- Medications and basic first aid supplies
- Clothing and sturdy shoes
- Flashlight, batteries, and a portable phone charger
- Whistle or signaling device
- Cash and credit cards
- Important phone numbers and contacts

Remember, preparedness is key to staying safe during wildfire season. By taking these simple steps to create a Go Bag and develop an emergency plan, you can help protect yourself and your loved ones in the event of a wildfire or other emergencies. Stay safe and be prepared.

I encourage all members to stay connected, participate in our upcoming events, and continue to share your experiences and knowledge. Together, we can ensure the strength of our profession and CIPHI Branch in BC/YK.

Thank you for your hard work and commitment to environmental public health and to our executives ongoing dedication to CIPHI. It is an honor to serve as your President, and I look forward to our continued collaboration.

Warm regards,

Valerie Jackson, CPHI(C)
BC/YK Branch President
Canadian Institute of Public Health Inspectors (CIPHI)

**YOU KNOW WHAT
REALLY GRINDS MY GEARS. . .**



When an operator says “we’ve always done it this way, and nobody’s ever gotten sick”

Please submit your “heard it a thousand time before one-liners” that you hear in the field over and over and your EPHP pet peeves to bcpageeditor@ciphi.bc.ca. Let’s all share in the hilariously annoying joys of our environmental public health experiences.

National President's Update

Submitted by Casey Neathway, CPHI(C) - CIPHI National President

As part of the ongoing collaboration between CIPHI and the National Environmental Health Association (NEHA), I had the privilege of attending the 2024 NEHA Annual Educational Conference and Exhibition in Pittsburgh, PA this July. This event served as an excellent platform for sharing knowledge, networking with environmental public health professionals, and advancing our collective efforts in environmental public health.

During the conference, and as part of my role on the NEHA Climate Change Committee, I had the honor of co-facilitating a workshop on one of the most pressing issues that we face: climate change and health. This workshop provided an interactive space for participants to explore the multifaceted impacts of climate change on public health and to discuss strategies for climate mitigation and adaptation in our health systems. The discussions were rich and insightful, highlighting the need for continued collaboration across geographic boundaries to build resilient systems that can withstand the threats of a changing climate.

In addition to the NEHA Climate Workshop, I was invited to provide a local context presentation at the EcoAmerica Climate Ambassador training, a session designed to equip public health leaders with the tools and knowledge necessary to advocate for climate action. My presentation focused on the critical role of environmental public health professionals in mitigating climate-related health risks, and emphasized the importance of leadership in driving systemic change.

I also co-presented, along with Kelsie Dale of the Saskatchewan Ministry of Health, a presentation on the impacts of climate change on food safety, a topic that is becoming increasingly relevant as our global food systems face new challenges. This presentation explored the pathways through which climate change affects food safety, including the increased risk of foodborne pathogens, changes in food production and distribution, and the implications for food safety systems.

The NEHA AEC underscored the strong ties between CIPHI and NEHA, two organizations committed to advancing the practice of environmental public health. As part of our reciprocal agreement, I had the opportunity to represent CIPHI as National President at this event, continuing our tradition of mutual support and knowledge exchange. We are eagerly anticipating welcoming our NEHA colleagues to the CIPHI AEC in Regina in September, where we will continue these valuable discussions and further our collaborative efforts.

A special thanks to Dr. Gary Brown, past-president of NEHA, who spearheaded our initial collaborative efforts three years ago, and continues to be a strong supporter of CIPHI and an international approach to environmental public health.



NEHA Climate Change & Health Workshop facilitators. From left: Kelsie Dale (MoH, Saskatchewan); Chris Manley (Larimer County, CO); Lt. Justice Lambon (Indian Health Services, Phoenix, AZ); Casey Neathway (FNHA, BC)

Get ready—the 2025 National AEC will be in Kelowna, B.C.!

Recent Publications

A new article published in *The Lancet Planetary Health* titled “Seasons of Smoke and Fire: Preparing Health Systems for Improved Performance Before, During, and After Wildfires” highlights the escalating threats posed by wildfires to global health systems, including those in B.C. and the Yukon. Co-authored by two B.C. public health professionals (Dr. Sarah Henderson of BCCDC, and Jeffrey Tochkin of HEMBC with Interior Health), the article speaks to the impact of an increased frequency, intensity, and duration of wildfires on health systems, including direct trauma and smoke-related health issues to the broader impacts on mental health and emergency management.

The article emphasizes the need for health systems to develop robust, climate-resilient frameworks that integrate disaster management principles. Key considerations include preparing for the health impacts of wildfire smoke, which is more complex and hazardous than other forms of ambient air pollution, and addressing the psychological toll on both affected populations and healthcare workers. The review highlights the importance of interdisciplinary collaboration, improving training, and breaking down the silos between health systems and governance at all levels.

Additionally, the article outlines practical steps for health systems to take before, during, and after wildfires, such as enhancing infrastructure resilience, ensuring adequate staffing and resources, and implementing comprehensive mental health strategies. The authors call for a proactive, integrated approach to health systems preparedness and response, urging for innovation, coordination, and sustained funding to protect public health in a world that is increasingly more fire-prone.

This article serves as a critical resource for environmental public health professionals in B.C. and the Yukon, providing insights into the challenges and necessary adaptations of managing risks associated with wildfires, and can be found here: <https://www.sciencedirect.com/science/article/pii/S254251962400144X>.

This summer, the B.C. Centre for Disease Control (BCCDC) released a report titled “Food Costs and Climate Change Impact Stories”, as a special supplement to the 2022 Food Costing in BC report. This supplement shed light on the growing challenges faced by remote Indigenous and non-Indigenous communities in the province, and amplified the voices of community members from eight remote regions, revealing the significant impact of climate change and rising food costs on food security.

The project, which was driven by the urgency to understand food costs and the effects of climate change in remote areas, engaged community members in storytelling sessions to provide narrative reporting, which underscored five major themes: the high costs and difficulty of accessing food; the availability of and preservation of food; the unpredictability of climate change; community leadership and food programs; and the broader impacts on community health and well-being.

The report from BCCDC emphasizes that remote communities are experiencing a heightened vulnerability to food insecurity due to factors such as escalating transportation costs, limited income, and the unpredictable effects of climate change on traditional food sources. The stories illustrate the resilience and creativity of these communities, which are adopting innovative, Community-driven solutions to enhance food security.

As CIPHI members and environmental public health professionals working in B.C. and the Yukon continue to grapple with the complex challenges posed by climate change, the insights from this report highlight the need for cross-sector collaboration and the importance of supporting rural and remote communities in their efforts to secure a stable, affordable, and culturally-relevant food supply.

The summary of the report can serve as a valuable resource for environmental public health professionals in B.C. and the Yukon, encouraging informed action and fostering a deeper understanding of the unique challenges faced by rural and remote communities in the region. The report can be downloaded from the BCCDC website, here: http://www.bccdc.ca/Documents/Food_Costs_and_Climate_Change_Impact_Stories_Report_Final_June_2024.pdf.

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