



EXTREME HEAT AND WILDFIRE SMOKE EVENTS, OUTDOOR PUBLIC GATHERINGS AND PROTECTING HEALTH

STEPS FOR PREPARATION AND ACTION

VANCOUVER COASTAL HEALTH
FRASER HEALTH
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ACKNOWLEDGEMENTS

Vancouver Coastal Health (VCH) is committed to delivering exceptional care to 1.2 million people, including the First Nations, Métis and Inuit in our region, within the traditional territories of the Haítzaqv (Heiltsuk), Kitasoo-Xai'xais, St'at'imc (Lil'wat), x^wməθk^wəyəm (Musqueam), N'Quatqua, 'nu:hɔlk (Nuxalk), ʃə'mɑ:kwəm (Samahquam), Shishá7lh (Sechelt), Skatin, Skw̓xwú7mesh (Squamish), ʔəʔamən (Tla'amin), səliilwətaʔt (Tsleil-Waututh), Wuikinuxv, and Xa'xtsa (Douglas).

Fraser Health (FH) serves more than 1.9 million people from Burnaby to Boston Bar, including 32 First Nations communities. These 32 communities are associated with four language families: Hul'q'umi'num, Halq'eméylem, Nlaka'pamux and Sen'coten. The FH region is also home to six Métis Chartered Communities, as well as many Indigenous individuals living away from their home territories.

The office where this work was carried out is located on the unceded territories of the Musqueam, Squamish, and Tsleil-Waututh Nations.

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PURPOSE OF THE DOCUMENT

Climate change is increasing the frequency and severity of heat waves and wildfires around the world. Exposure to high heat can lead to heat-related illness and death, as well as impacting daily life. In 2021, an unprecedented extreme heat event in BC led some organizers of public events to reschedule, modify, or cancel their outdoor public gatherings. Smoke from wildfires, even those far away, can worsen air quality in communities and impact health. Both heat and smoke both put stress on the body.

Outdoor public gatherings such as farmers' markets, sporting events, music festivals and other temporary events are common in the summer months. During these times, event staff and attendees can be exposed to heat, direct sunlight, and wildfire smoke. This document is designed to support event organizers with recommendations to protect event staff, attendees, vendors and others from health harms of heat, sun exposure, and smoke.

Additional guidance on planning temporary events can be found at the public health [Temporary Event Coordinator's Planning Guide](#).

Vancouver Coastal Health and Fraser Health Healthy Environments & Climate Change (HECC) Teams

Please contact the HECC teams in your Health Authority region and/or visit our websites for additional guidance:



healthy.environments@vch.ca



healthybuiltenvironment@fraserhealth.ca



vch.ca/heat



<https://www.fraserhealth.ca/heatsafety>



HEAT AND SMOKE RISKS TO HEALTH

*Note that the following risk factors are particularly relevant to outdoor activities; these and other risk factors may apply in a variety of settings

Risks in the Physical Environment

Risks in the Outdoor Physical Environment

- » High temperatures
- » High humidity
- » Poor airflow
- » Large, densely-packed crowds
- » Lack of trees, umbrellas or other forms of shade
- » Poor air quality during smoky periods
- » Heat and smoke-generating cooking appliances (e.g. barbeques)



Potentially Vulnerable People

Heat

- » Older adults, aged 60 years or older
- » People with pre-existing health conditions such as diabetes, heart disease or respiratory disease
- » People with mental illness such as schizophrenia, depression or anxiety
- » People with substance use disorders, including alcohol
- » People with limited mobility and other disabilities
- » People who are socially isolated or may not leave their home frequently
- » People who work outdoors and/or in hot environments
- » People who are pregnant
- » Infants and young children
- » People who are unhoused or under-housed

Smoke

- » People with respiratory disease, including asthma and chronic obstructive pulmonary disease (COPD)
- » People with heart disease and other chronic conditions, such as diabetes
- » Older people
- » People who are pregnant
- » Infants and young children
- » People who work outdoors
- » People who are unhoused or under-housed

HEAT-RELATED ILLNESS

Heat-related illness is an umbrella term for conditions caused by heat, such as heat rash, sunburn, heat cramps, heat exhaustion and, the most severe, heat stroke. Extreme heat and smoke may also worsen pre-existing medical conditions, including heart, respiratory and kidney disease. Make sure staff and attendees know and look out for the signs and symptoms of heat and smoke exposure to keep each other safe.

Signs and symptoms of heat exhaustion include:

- » Heavy sweating
- » Dizziness
- » Nausea or vomiting
- » Rapid breathing and heartbeat
- » Headache
- » Trouble concentrating
- » Muscle cramps
- » Extreme thirst
- » Skin rash
- » Dark urine & less urination

Anyone with symptoms of heat exhaustion should move to a cool space, drink water, and apply cool water to large areas of the skin (cool shower or wet their clothes). Take these steps right away because heat exhaustion can quickly develop into heat stroke, which is a medical emergency.

Signs and symptoms of heat stroke include:

- » High body temperature
- » Fainting or drowsy
- » Confusion
- » Less coordination
- » Very hot and red skin

HEAT STROKE IS A MEDICAL EMERGENCY.

Seek medical attention immediately at an emergency room or urgent care centre. Call 911 if necessary. While waiting for help, cool the person right away by moving them to a cool space if possible, and apply cool water to large areas of the skin (submerge hands/feet in cool water or wet their clothes)



WILDFIRE SMOKE EXPOSURE

Exposure to smoke can cause both common and mild symptoms, as well as more severe ones. Anyone experiencing common symptoms listed below should be encouraged to move to a cleaner indoor location, if possible. Anyone experiencing severe symptoms should seek medical attention.

Common signs and symptoms of smoke exposure can include:

- » Sore throat
- » Irritated eyes
- » Runny nose
- » Cough
- » Coughing up thick, sticky phlegm
- » Headaches
- » Wheezy breathing

More severe signs and symptoms of smoke exposure can include:

- » Short of breath
- » Severe cough
- » Feel dizzy
- » Fast heartbeat
- » Chest pain

RECOMMENDATIONS FOR PLANNING AND OPERATIONS

What can event organizers do to protect attendees from extreme heat, sun, and smoke?

PHYSICAL ENVIRONMENT AND INFRASTRUCTURE

- » **Create shade.** Install outdoor canopies, tents, awnings, and umbrellas and use natural features such as trees to create shade to keep staff and attendees cool. Consider including additional seating in these areas so people can rest. Assess the shade orientation of the space beforehand (at the same time of day as the gathering) so that shaded areas can be used effectively.
- » **Increase toilet facilities on site.** Attendees may be reluctant to use toilet facilities due to long line-ups and inaccessibility, and may reduce fluid intake as a result. Consider increasing the number of toilet facilities on site and distribute them around the venue to minimize crowding and queuing problems.
- » **Reduce congestion.** Densely populated events such as concerts add to the risks of high heat. Consider using decongestion strategies such as social distancing in crowded areas and/or staggering ticket entries.
- » **Create stations with cleaner and cooler air.** These stations can include shaded areas, fans, water misters, and seating so people can rest and cool off. Each station could have emergency contact information and pre-written heat and smoke safety messages. Consider including built-in equipment to prevent heat-related illness and sun exposure, such as sunscreen dispensers, water bottle refill stations, and water features that support people to fill water bottles and dampen their clothing. If an indoor station is created, portable air cleaners/portable air conditioners can be used.



COOL TIP

IF YOU ARE A COORDINATOR OR VENDOR SHOWCASING EQUIPMENT THAT CAN GENERATE WATER AEROSOLS, THERE ARE [RECOMMENDATIONS TO PREVENT THE GROWTH AND SPREAD OF LEGIONELLA BACTERIA](#).

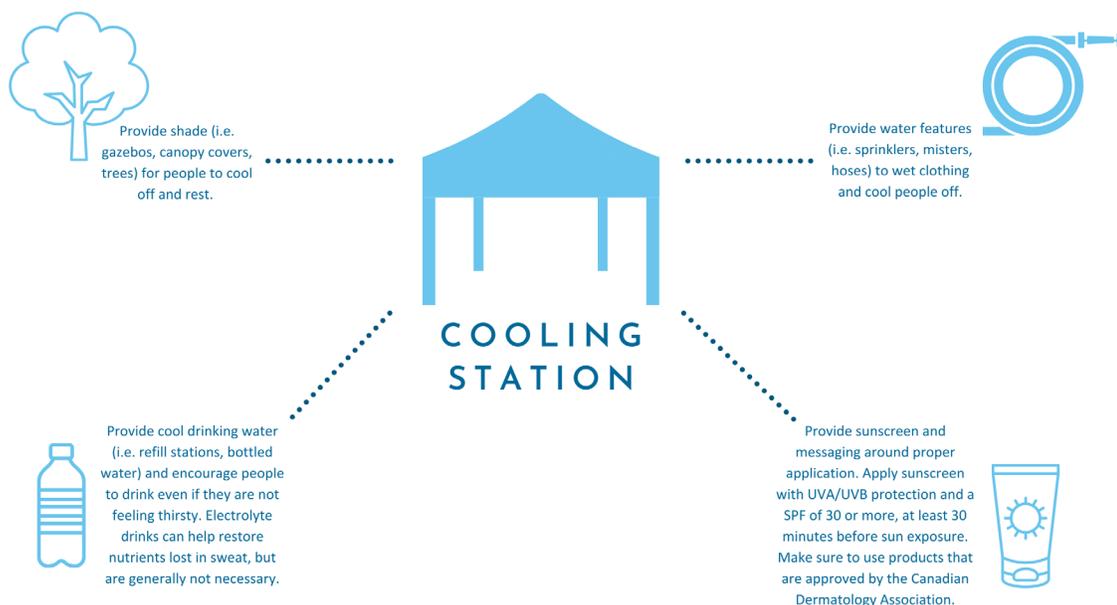


FIGURE 1. EXAMPLE OF A COOLING STATION

SCHEDULING AND OPERATIONS

- » **Create a heat and smoke plan.** Organizers and vendors should consider developing specific practices in case of a heat wave or smoke event. For example, detailing what to do if a piece of equipment is malfunctioning (e.g. fridge/freezer) or if a staff member or attendee is experiencing signs and symptoms related to heat or smoke-exposure.
- » **Include scheduled breaks.** If the gathering involves performances or activities, consider including scheduled shaded breaks and announcements about the heat and/or smoke conditions so that attendees can find shade, rehydrate, and cool off.
- » **Increase the number of staff trained in first aid.** During heat waves and smoke events, consider increasing the number of first aid attendants on site that can identify the signs and symptoms of heat-related illness and smoke exposure and take action. BC Emergency Health Services (BCEHS) Planned Events can provide [contracted paramedic services](#) in a limited capacity for large events. Consider having a designated first aid station and a trained medical event team that can provide care for anyone suffering from heat-related illness or smoke exposure.
- » **Give out sunscreen.** Consider handing out free sunscreen to prevent sunburns.
- » **Encourage attendees to wear hats.**
- » **Schedule the gathering when temperatures and the Ultraviolet (UV) Index and Air Quality Health Index (AQHI) are lower.** UV is normally highest during the middle part of the day, so consider scheduling the gathering before 11:00 am or after 3:00 pm. The hottest time of the day is typically from 2:00 pm to 4:00 pm.
- » **Use assigned seating.** For outdoor gatherings with seating, consider using assigned seating. Attendees may be hesitant to leave their seats to rehydrate, cool down, or use the toilet facilities if they risk losing their spot.
- » **Reduce the need to line up.** If attendees need to line-up for long periods of time without shade and water, they can be at risk of heat-related illness. Consider having additional staff for checking in attendees, staggered ticket entries, and creating shade along queue areas.
- » **Move indoors.** Consider moving the entire or part of the gathering to an indoor location that has cooler and cleaner air.
- » **Reschedule or cancel the gathering.** If there is an extreme heat or smoke emergency, consider moving the date, time, location, or cancel the gathering.

COOL TIP

FOR DAILY SUNSCREEN USE, CONSIDER A PRODUCT WITH AN SPF OF AT LEAST 30. IF YOU SPEND TIME OUTDOORS, CONSIDER A SUNSCREEN PRODUCT WITH SPF 60 OR HIGHER. GENERALLY, SUNSCREEN SHOULD BE REAPPLIED EVERY 2 HOURS.



COOL TIP

THE UV INDEX FORECAST IS AVAILABLE IN YOUR WEATHER REPORT ON CANADA.CA/WEATHER, WHEN THE INDEX IS 1 OR HIGHER. UV INDEX VALUES ARE GROUPED INTO FIVE LEVELS OF RISK: LOW (0-2), MODERATE (3-5), HIGH (6-7), VERY HIGH (8-10), AND EXTREME (11+). THE HIGHER THE NUMBER, THE STRONGER THE SUN, AND THE GREATER THE NEED TO TAKE PRECAUTIONS.

SUBSTANCES AND ALCOHOL

Some symptoms of heat-related illness can be mistaken for intoxication, and certain substances can make individuals more sensitive to heat. Stimulants (e.g. cocaine, meth) can increase body temperature and make it harder to cool off. Opioids (e.g. heroin, fentanyl) can make it harder for individuals to feel the effects of heat and recognize when to take action to protect themselves. Alcohol is dehydrating, can lower blood pressure, and make it harder to cool down during extreme heat. Below are tips that can assist with safe substance and alcohol use during a heat wave:

- **Limit or discontinue alcohol sales.** Limit the overall supply of alcohol based on number of attendees, or limit the number of drinks purchased at one time.
- **Offer low/zero-alcohol drinks.** Alcohol can cause dehydration, impair judgement, and make people less able to self-monitor for heat illness. Options with low/zero alcohol content (e.g. dealcoholized beer and cocktails) give people a safer option in the event context. Avoid mixing alcohol with caffeine as this may cause dehydration.
- **Increase messaging around drinking water.** Consider including messaging on flyers, pamphlets, and verbal announcements around drinking water. For example, “drink water between alcoholic beverages and even when you do not feel thirsty”.
- **Offer drinking water separately from alcohol.** Providing separate drinking water stations ensures staff, vendors, and attendees always have access to drinking water and do not have to wait in the alcohol queue.
- **Offer drinking water for free or at a reduced cost.**

EDUCATION

- » **Post signage and distribute information.** Post heat, smoke and wayfinding signs for staff, vendors, and attendees, and consider novel ways of sharing information, such as printing information on fans, stickers, pamphlets, lanyards, and other items. Have staff standing at entry points hand out maps/flyers of dedicated cooling stations around the gathering as well as heat and smoke guidance. For example, staff can post [wildfire smoke posters](#) prior to the event. Encourage staff, vendors, and attendees to bring their own hats, sunglasses, and sunscreen.
- » **Make it easy for people to come and go.** Let attendees know they should move to an indoor space with cool and clean air if they are experiencing any signs and symptoms related to heat or smoke. For all day gatherings, let people know they are welcome to attend at different parts of the day when temperatures may be cooler.
- » **Educate staff.** Staff should recognize the signs/symptoms of heat and smoke exposure and know when to seek medical care from first-aid attendants as well as when to call 9-1-1 when it is an emergency. Staff should be aware of all the resources available to help them to keep cool in the heat and protect themselves from smoke. Hold meetings before the gathering so staff know what to do and who to contact.
- » **Keep up to date.** Sign up to receive the latest heat, air quality, and weather alerts and inform vendors and attendees of the forecast. You can sign up to receive heat, air quality and weather alerts using the WeatherCAN app. You can also sign up to receive air quality advisory alerts in the Metro Vancouver region, as well as monitor air quality in your community using the Air Quality Health Index. Keep attendees up to date on any changes to heat and smoke conditions via social media platforms, websites, and other channels.
- » **Use announcements.** Inform staff and attendees of relevant heat and smoke related health information through digital screens, audio speakers and announcements, and other means.

RECOMMENDATIONS TO PROTECT STAFF

What actions can you take to protect staff against extreme heat, sun and wildfire smoke exposure?

CLOTHING AND ACCESSORIES

The type of clothing worn during heat waves can impact a person's ability to cool off. Below are measures that staff can take to prevent overheating:

- » **Dampen clothes.** During heat waves, allow staff to wet and/or mist their clothes to cool themselves off.
- » **Wear light, loose clothing and avoid thick, heavy clothing.** Opt for breathable fabrics like cotton or linen, and short-sleeved clothing. Avoid wearing thick waterproof aprons and unbreathable fabrics (e.g. polyester, nylon, and acrylic). If staff are working outside, consider providing sunscreen, brimmed hats and long-sleeve breathable shirts to protect them from sun exposure.



STAFF AWARENESS

Make sure staff are aware of the signs and symptoms of heat and smoke exposure, including who may be most vulnerable.

- » **Meet with staff.** Before the gathering, share information related to the signs and symptoms related to heat and smoke, and actions staff can take to protect themselves.
- » **Post information** about signs and symptoms of heat and smoke exposure in spaces where staff and attendees can easily see the information.

STAFF SCHEDULING AND DUTIES

Certain populations are more vulnerable to heat and smoke and may require additional considerations. Changing work schedules and duties can protect staff and vendors from extreme heat and smoke. Below are measures that you can take to keep staff and vendors safe:

- » **Be mindful that some staff may be more vulnerable to heat and smoke.** Be flexible in assigning duties, especially when they involve spending time in direct sunlight or during periods of heavy smoke.
- » **Rotate staff and duties.** To make sure staff are not working in a hot area for long periods of time, consider rotating job duties and/or work stations where exertion and exposure to high heat are expected (i.e. staff that are stationed outside with no shade). Schedule more physically demanding or flexible tasks for cooler parts of the day or when hot equipment is not running.
- » **Look out for each other.** Staff can check up on one another to make sure they are not experiencing signs/symptoms of heat or smoke exposure. Keep in mind that workers should not work alone in conditions where heat-related illness is possible.
- » **Acclimate new staff to heat.** Newer employees can be at higher risk for heat related illness because they may not be used to hotter working conditions. Slowly increase exposure to the hot environment and teach and role model preventive steps to stay cool for new staff. It can take several weeks to fully acclimatize to hotter weather.

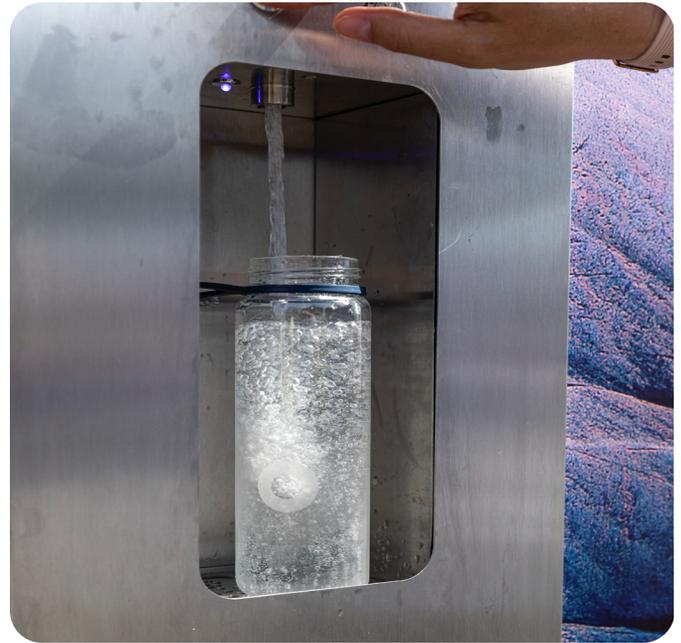
COOL TIP

HEAT ACCLIMATIZATION CAN BE DEFINED AS GRADUAL IMPROVEMENT IN HEAT TOLERANCE THAT RESULTS FROM TIME SPENT IN A HOT SETTING.

STAFF BREAKS

By making sure that your staff are physically resting and cooling off on their breaks, you are helping them reduce their risk of heat-related illness.

- » **Rest.** Allow staff to take time to physically rest and avoid over-exertion. Staff can use this time to reapply sunscreen.
- » **Find a space with cleaner and cooler air.** Move the gathering to a cooler environment with shade or air conditioning. This could be an outdoor area with shade or a dedicated staff cool space (e.g. air-conditioned room)
- » **Pay attention to signs and symptoms:** If staff are experiencing symptoms related to heat or smoke exposure, encourage them to move to spaces that have cooler and cleaner air. If any staff use rescue medication (such as inhalers), make sure they have it ready to use as needed.
- » **Drink water and eat regularly.** Staff should have access to cool water, meals, and snacks throughout the day. Staff should drink plenty of water, regardless of whether they feel thirsty. Avoid sugary and alcoholic drinks as they may cause dehydration.



COOL TIP

WORKSAFE BC HAS GUIDANCE ON PREVENTING HEAT STRESS IN THE WORKPLACE. FIND THEM HERE: [HTTPS://WWW.WORKSAFEBC.COM/EN/HEALTH-SAFETY/HAZARDS-EXPOSURES/HEAT-STRESS](https://www.worksafebc.com/en/health-safety/HAZARDS-EXPOSURES/HEAT-STRESS)

RECOMMENDATIONS FOR FOOD AND DRINKING WATER

What can you do to ensure that there is safe food and drinking water for staff and attendees?

FOOD

During a heat wave, you can take additional measures to ensure food is safe for consumption:

- » **Bring extra ice and back-up coolers.** Food vendors should consider creating a back-up plan in case their fridges or freezers malfunction on the day(s) of the gathering. Store any potentially hazardous foods in a sealed cooler with ice as an alternative.
- » **Provide water-rich foods.** Foods such as fresh fruit, yogurt, and salads can help with hydration.
- » **Create a heatwave menu.** Temporarily alter the menu by removing as many hot food items from service as possible. This can also help reduce heat exposure to staff. Serve meals that do not need to be cooked in an oven or stove. Some examples include summer salads, open sandwiches, and cold soups. All potentially hazardous cold foods must be kept at 4°C (40°F) or less.

COOL TIP

EVENTS WITH BBQ COOKING CAN GENERATE EXCESS HEAT AND SMOKE. EVENT ORGANIZERS SHOULD LOOK AT WAYS TO IMPROVE AIR CIRCULATION EVEN OUTDOORS. CONSIDER STRATEGIC PLACEMENT OF INDUSTRIAL COOLING FANS WITH MISTING CAPABILITIES.



DRINKING WATER

You can reduce the risk of heat-related illness by providing an adequate supply of water. Below are tips that can keep staff, vendors, and attendees hydrated during the gathering:

- » **Provide water.** Set up potable drinking water stations throughout the area so people can easily drink, cool off, and refill their water bottles.
- » **Determine how much water is needed.** There should be an adequate supply of drinking water, potable water to support food vendors and caterers, and an appropriate number of drinking water stations. These drinking water stations should be accessible, clean, clearly marked, located throughout the area, and have adequate water pressure.
- » **Allow attendees to bring their own water.** You can require the water to be in factory-sealed bottles prior to admission.
- » **Arrange for water-hauling.** If necessary, arrange for a water-hauling contract or another back-up water purveyor in case of water shortages.
- » **Sell bottled water at cheaper prices.** In order to make water an accessible option for attendees, consider selling bottled water at prices that reflect cost recovery rather than profit.