

BC Lung Foundation Webinar

# PREPARING FOR EXTREME HEAT AND WILDFIRE SMOKE

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**July 20, 2022**

With acknowledgements to:

Dr. Sarah Henderson, BCCDC

Dr. Michael Schwandt, Medical Health Officer, VCH

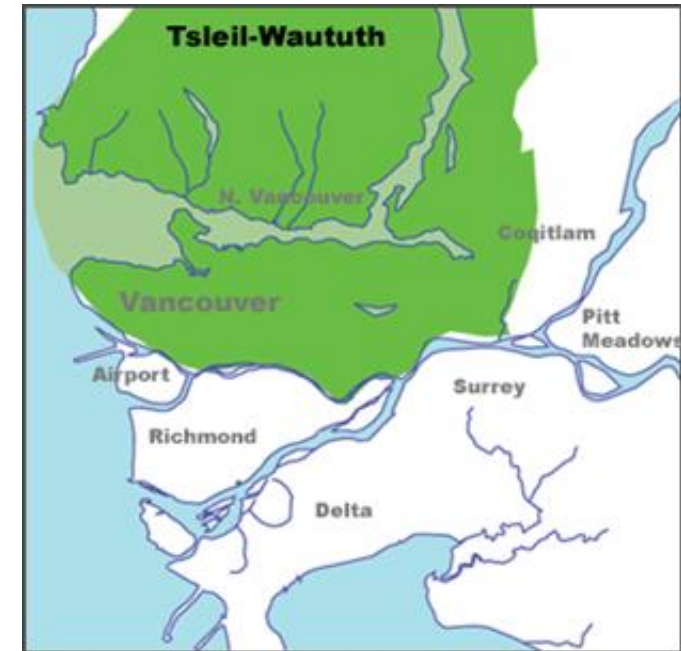
Emily Peterson, Environmental Health Scientist, VCH

**Vancouver  
CoastalHealth**

The logo for Vancouver Coastal Health, featuring a stylized white mountain range above the text "Vancouver CoastalHealth".

# Land Acknowledgement

We would like to acknowledge that we are gathered today on the traditional, unceded territories of the Musqueam, Squamish and Tsleil-Waututh peoples.



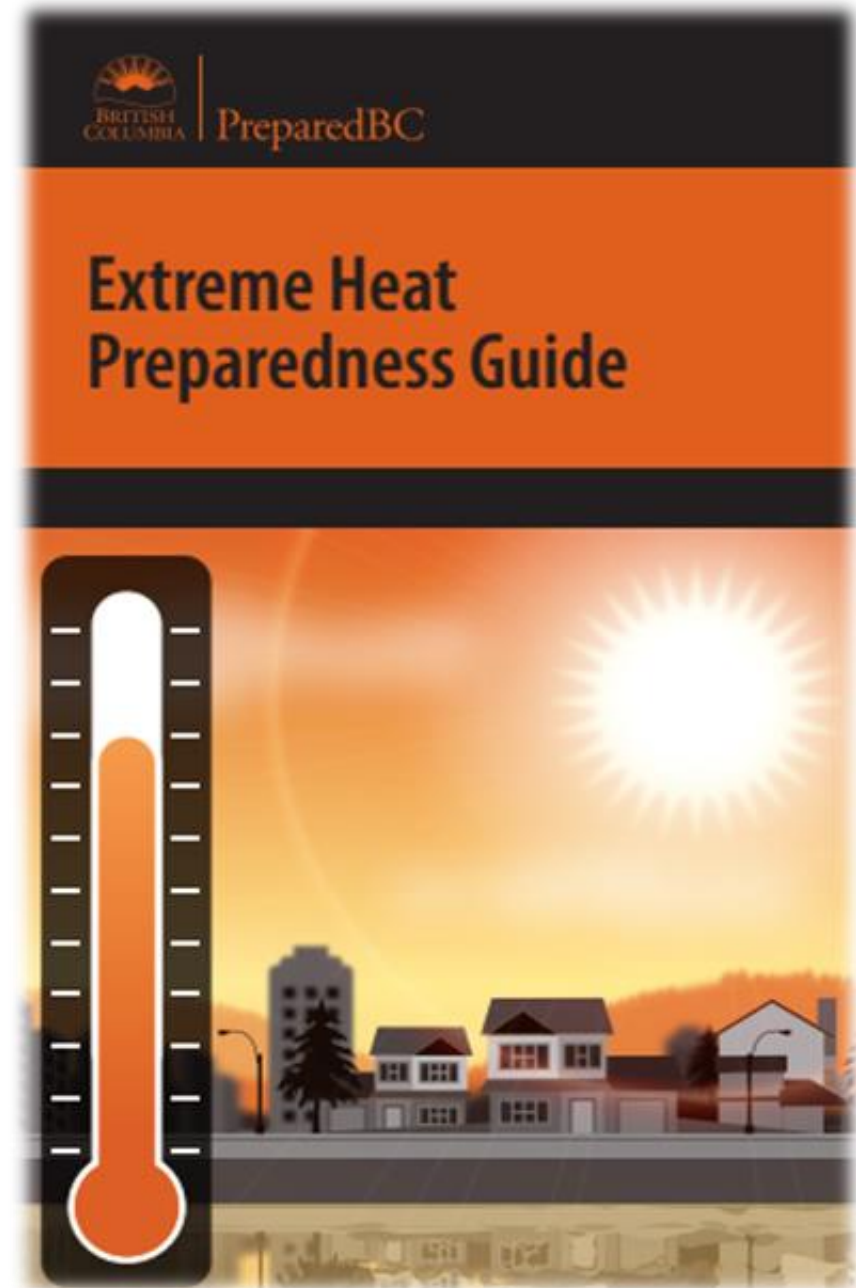
Source: [www.johomaps.net](http://www.johomaps.net)

# Agenda

- **Extreme Heat**
  - What did we learn last summer
  - Heat-vulnerable people and spaces
- **Heat and wildfire smoke related illness**
- **Actions and Resources**
  - Heat check-ins
  - How to cool people and spaces
  - Heat and smoke together

**Follow along and  
make a plan!**

[PreparedBC Extreme Heat  
Preparedness Guide](#)



# What is Extreme Heat?

All of these terms are used for hotter than normal temperatures.

Extreme Heat  
Heat Dome  
Special Weather Statement  
Heat Wave  
Heat Emergency  
Heat Warning

**Weather terms used by  
Environment and Climate Change  
Canada.**

**Special Weather Statement  
Heat Dome**

Extreme Heat ↔ Heat Wave

Heat Warning  
Heat Emergency

**Terms for hotter than normal temperatures that last for longer periods of time.**

Special Weather Statement  
Heat Dome

**Extreme Heat ↔ Heat Wave**

Heat Warning  
Heat Emergency

Special Weather Statement  
Heat Dome

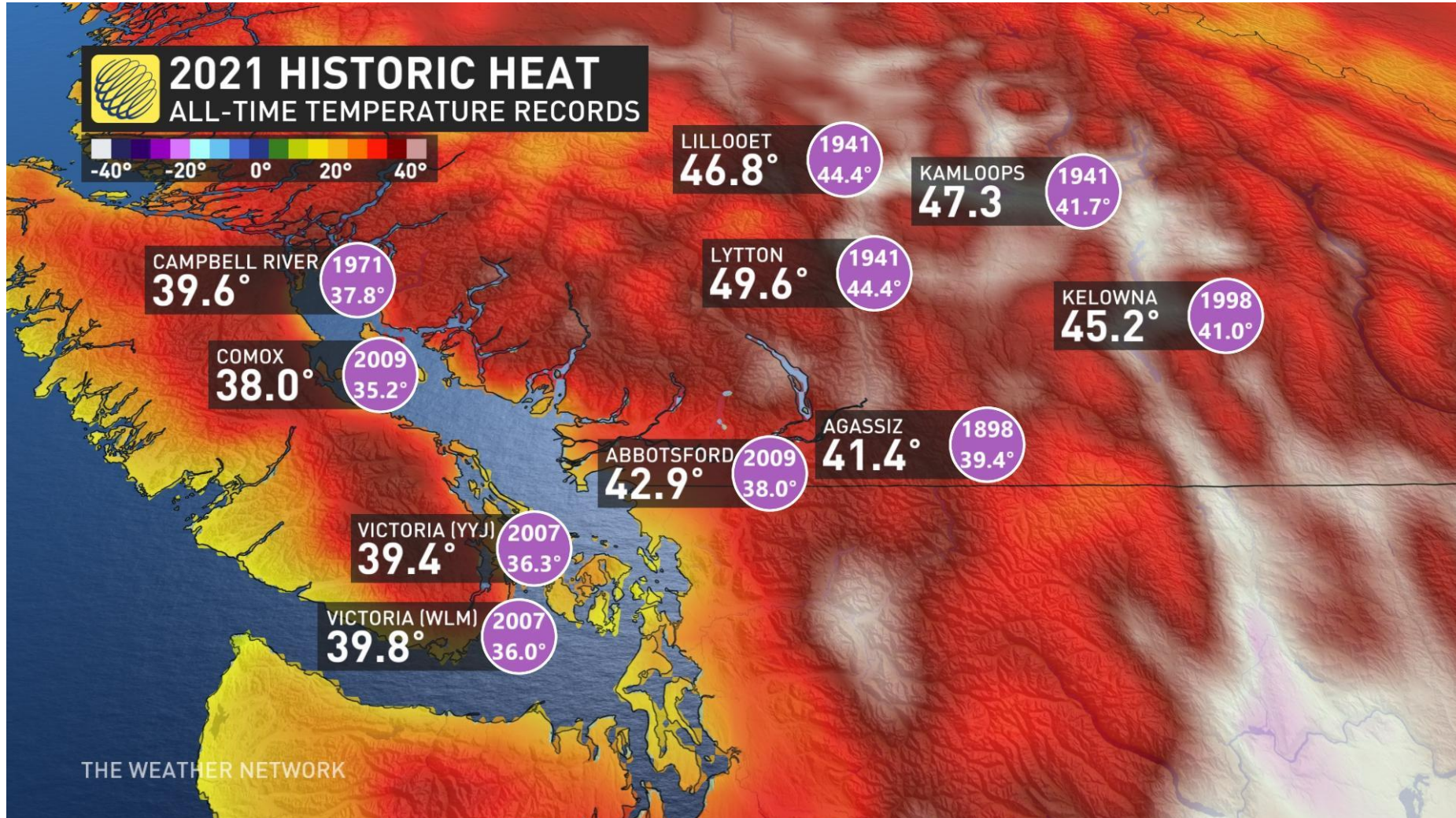
Extreme Heat ↔ Heat Wave

**New official terms in British Columbia for DANGEROUS hot temperatures.**

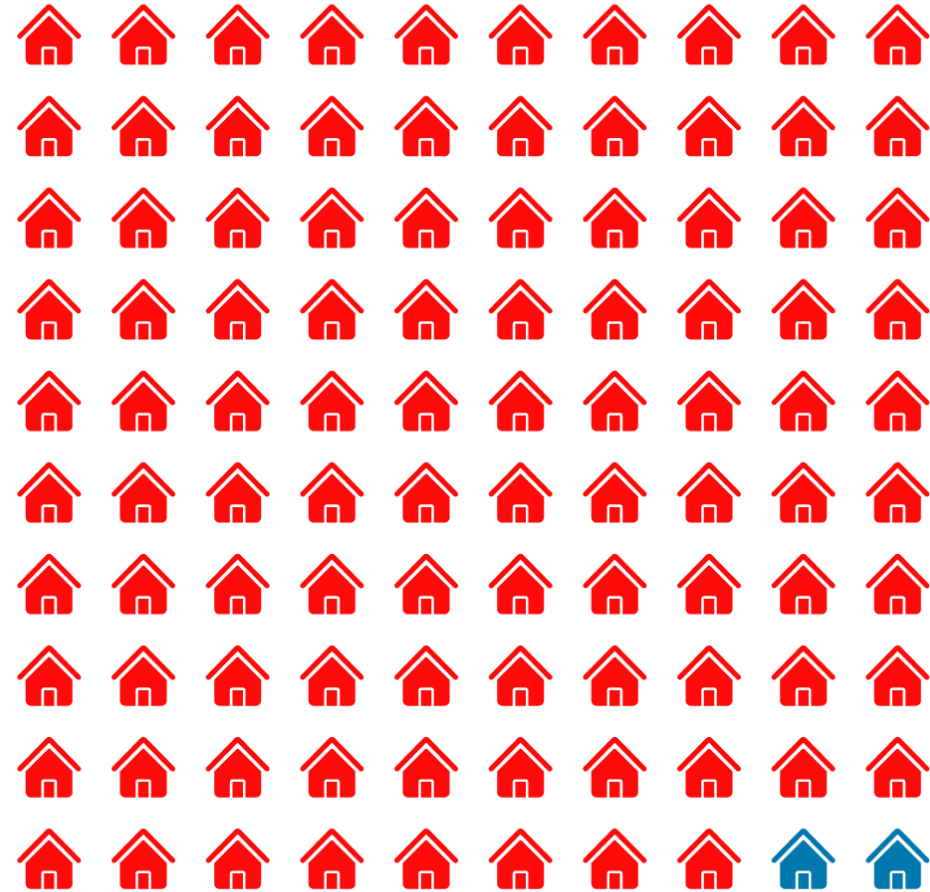
**Heat Warning**  
**Heat Emergency**



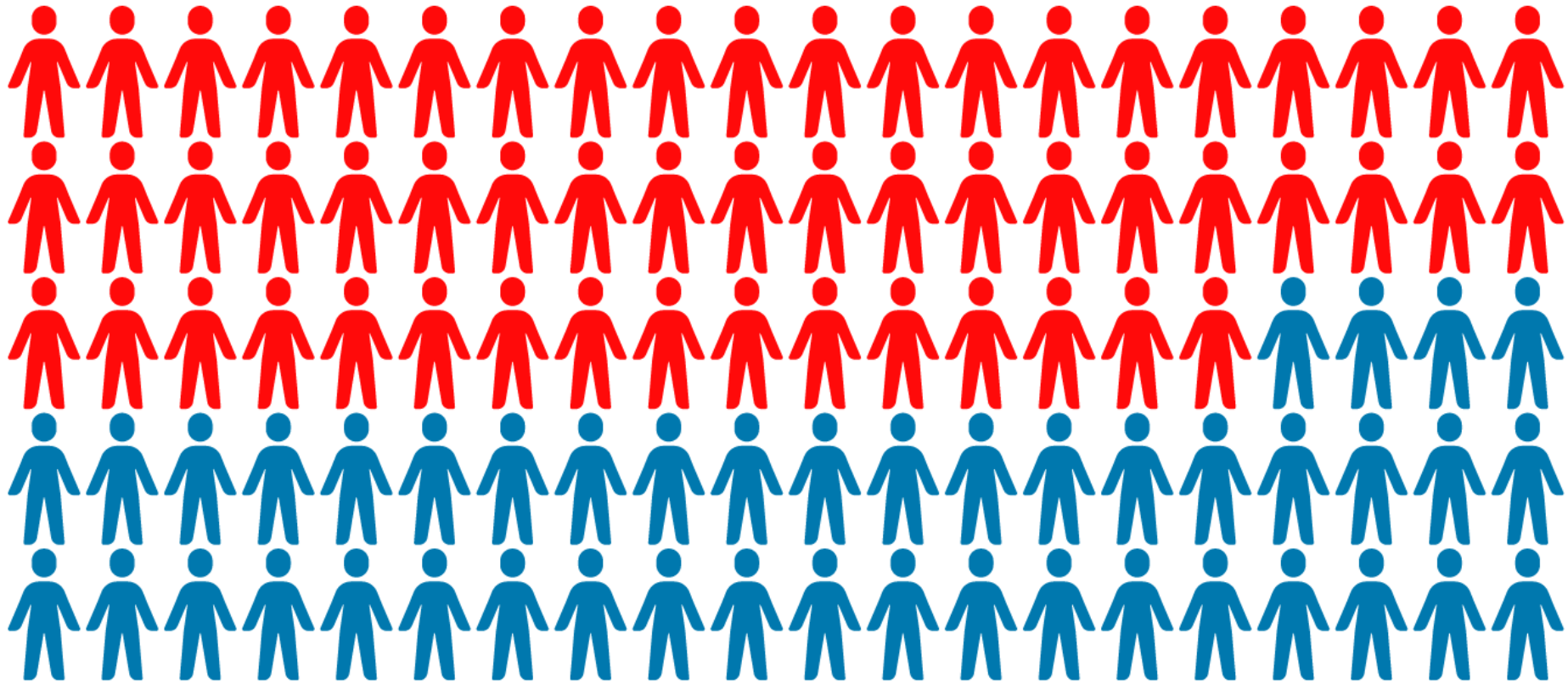
# What did we learn from last summer?



# What did we learn....

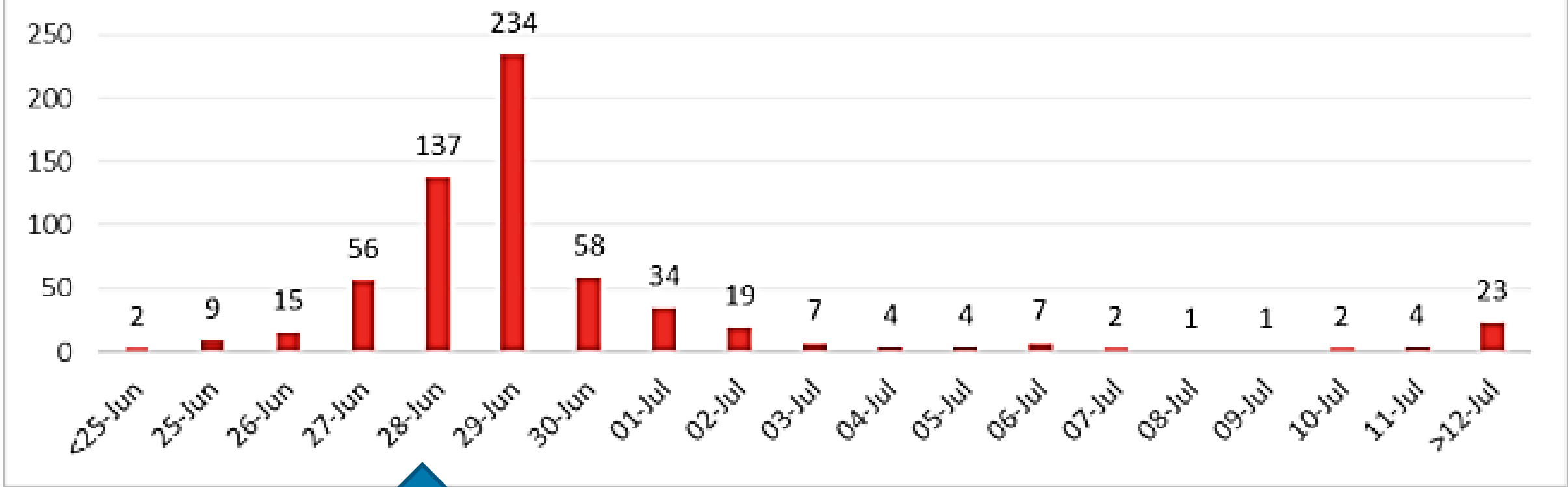


# What did we learn...



# What did we learn....

Figure 1: Heat-Related Deaths by Date of Death



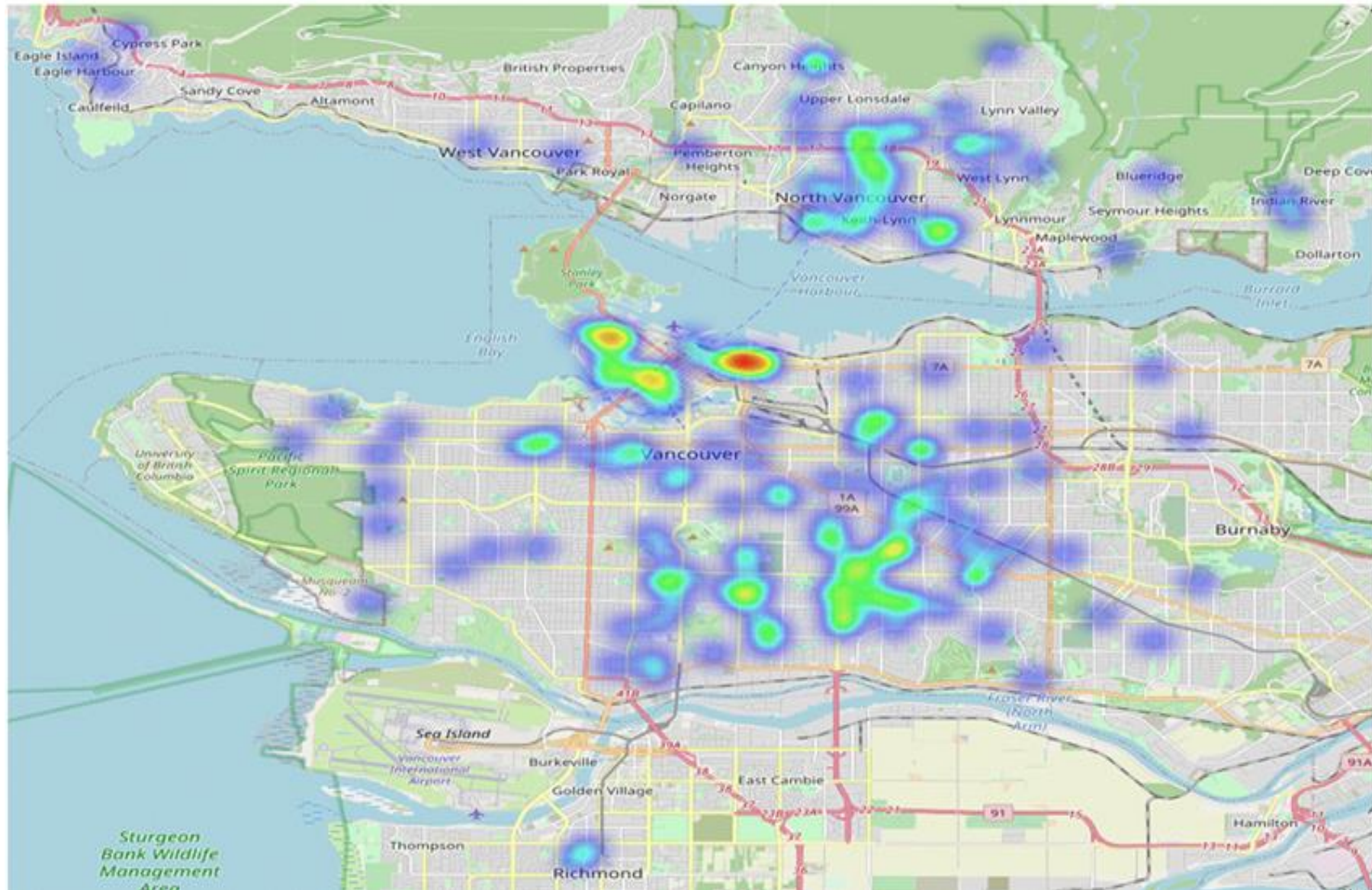
**HOTTEST DAY**  
**June 28**

BC Coroners Service, 2022



# VCH emergency department visits, 2021 heat dome

Figure 4. Heat Map of Heat-Related ED Visits



# Emerging themes in heat risk:

## Risk factors

- Deprivation
- Isolation
- Mental illness
- Substance use
- Comorbid diabetes

## Protective factors

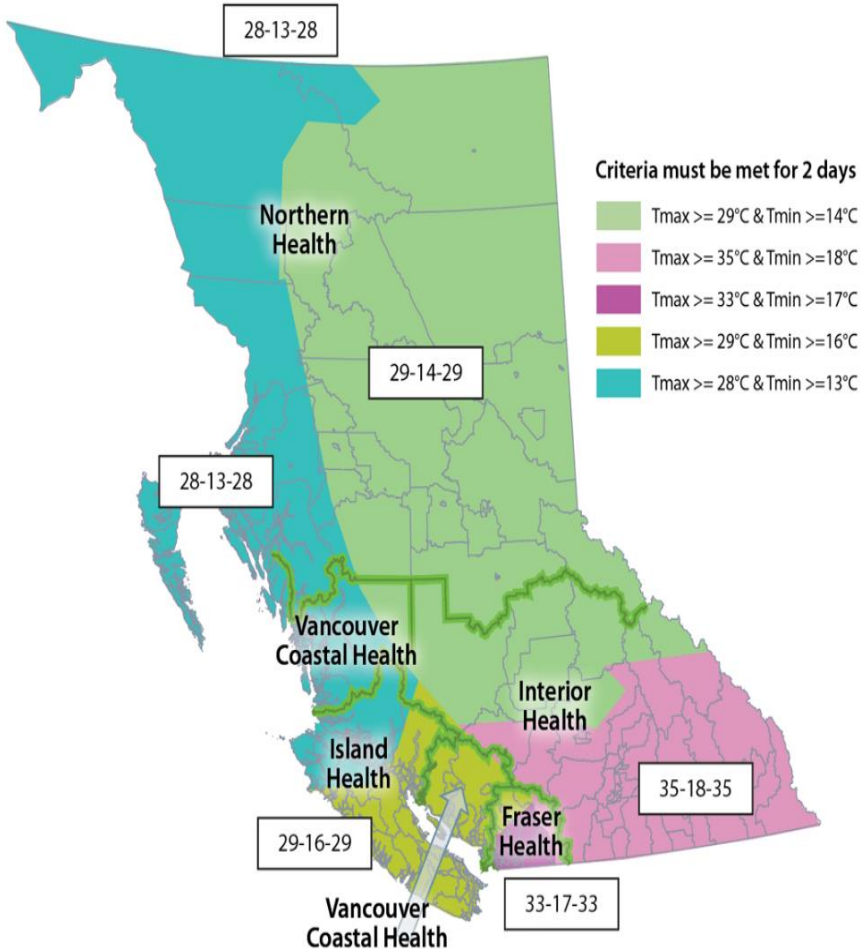
- Privilege
- Greenspace
- Being in care

BCCDC



# BC Heat Alert Response System: 2022

## BC Regions



Alert level	Heat Warning	Extreme Heat Emergency
Public health risk	Moderate (5% increase in mortality)	Very high (20% or more increase in mortality)
Descriptor	Very hot	Dangerously hot
Historic frequency	1-3 per summer season	1-2 per decade
Criteria	Southwest = 29-16-29* Fraser = 33-17-33* Southeast = 35-18-35* Northeast = 29-14-29* Northwest = 28-13-28* *(Daytime high, nighttime high, daytime high)	Heat warning criteria have been met and forecast indicates that daily highs will substantively increase day-over-day for 3 or more consecutive days



# Alert Ready

- Intrusive alerts on television, radio and compatible wireless devices
- Only for Extreme Heat Emergencies.



**ALERT READY**  
EMERGENCY ALERT SYSTEM

**STOP. LISTEN. RESPOND.**

# Heat-vulnerable people and spaces

# Physiological vulnerability to heat

The body's ability to cool is affected by:

- Age
- Pre-existing medical conditions (heart and lung disease, circulatory diseases, diabetes, neurological conditions)
- Acute illness
- Medications and drugs
- Acclimatization





(Ben Nelms/CBC)

# Social vulnerability to heat

- Less access to cooling facilities and equipment (e.g. A/C)
- Social isolation and barriers to reaching help
- ***Socially*** vulnerable groups may be more likely to live in neighbourhoods with ***environmental*** vulnerability



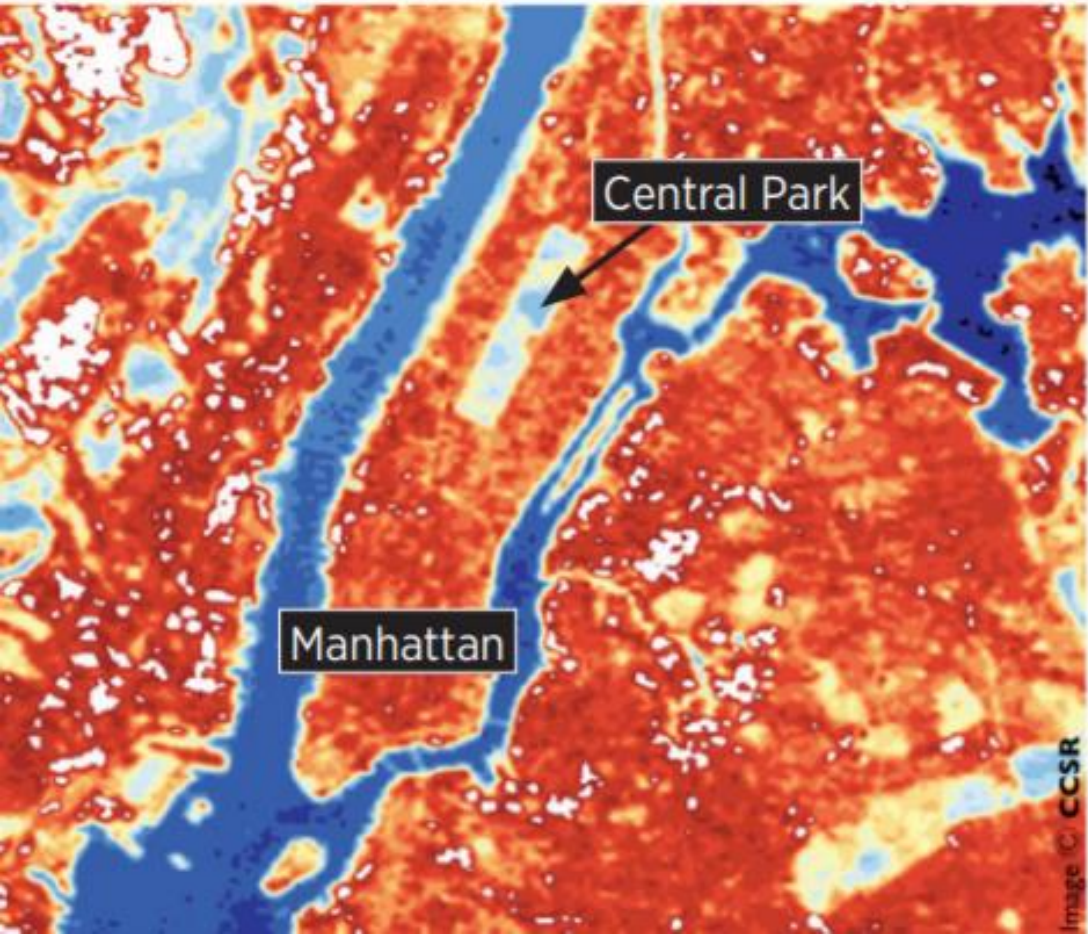
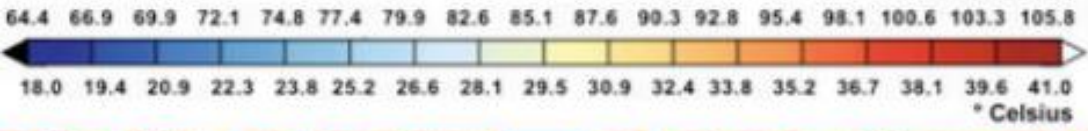
# Environmental vulnerability to heat:

- Sparse vegetation
- Dark roofing and paving materials
- Lack of cool neighbourhood spaces
- Higher heat load in urban areas: “urban heat islands”

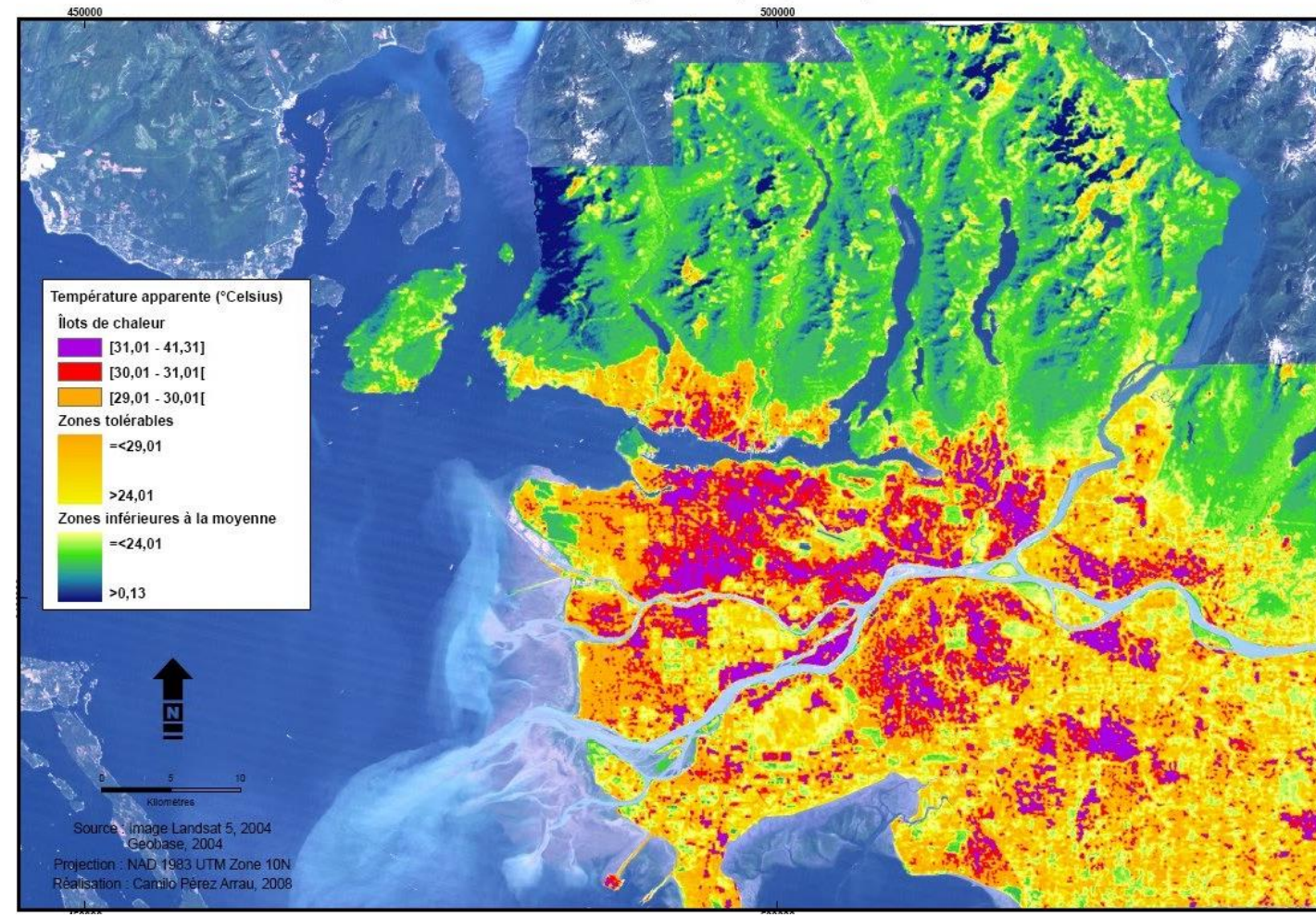




# Urban heat island effect



Température superficielle apparente dans la RMR de Vancouver le 17 juillet 2004  
Classification de température selon la moyenne (24,01°C)





# Heat plan: Step 1

## 1. IDENTIFY THOSE WHO ARE AT RISK

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While everyone can benefit from planning and preparing for Extreme Heat Emergencies, the following people are especially at-risk if they do not have access to air conditioning. They need to be prepared and supported:

- seniors aged 65 years or older
- people who live alone
- 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
- people who are marginally housed
- people who work in hot environments
- people who are pregnant
- infants and young children
- people with limited mobility

# Physical environment risk factors

- No mechanical cooling (A/C)
- Higher floors of buildings
- Directly under the roof
- South and/or west facing windows
- Large window surface area
- Singled pane windows
- No external window shading
- No evening cross breeze
- Low neighborhood greenness

BCCDC





# Heat plan: Step 2 + 3

## 2. EVALUATE IF YOU CAN STAY AT HOME

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If you are at risk and you live in a building or residence that gets very hot, with inside temperatures of 31°C or higher, plan to go elsewhere during an Extreme Heat Emergency.

## 3. EVALUATE YOUR HOME'S COOL ZONES

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Some areas of your residence may stay cooler than others. During an Extreme Heat Emergency, you should prepare to stay in the coolest part of the residence and focus on keeping that one location cool.

Start by identifying a room that's typically coolest and consider how you can modify the layout to support sleeping and day-to-day living for the duration of the heat event.

# Heat plan: Step 4

## Find a cooling centre near you!

### 4. IDENTIFY OTHER LOCATIONS TO GET COOL

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If it is not safe for you to stay at home, consider staying with friends or family that have air conditioning or cooler spaces. Alternatively, identify places in your community you can visit to get cool such as:

- libraries
- community centres
- shopping malls
- movie theatres
- religious centres
- parks and other shaded green spaces

You can also contact your First Nation or local government to find out if cooling centres will be available in your area.

### 4. IDENTIFY OTHER LOCATIONS TO GET COOL (CONTINUED)

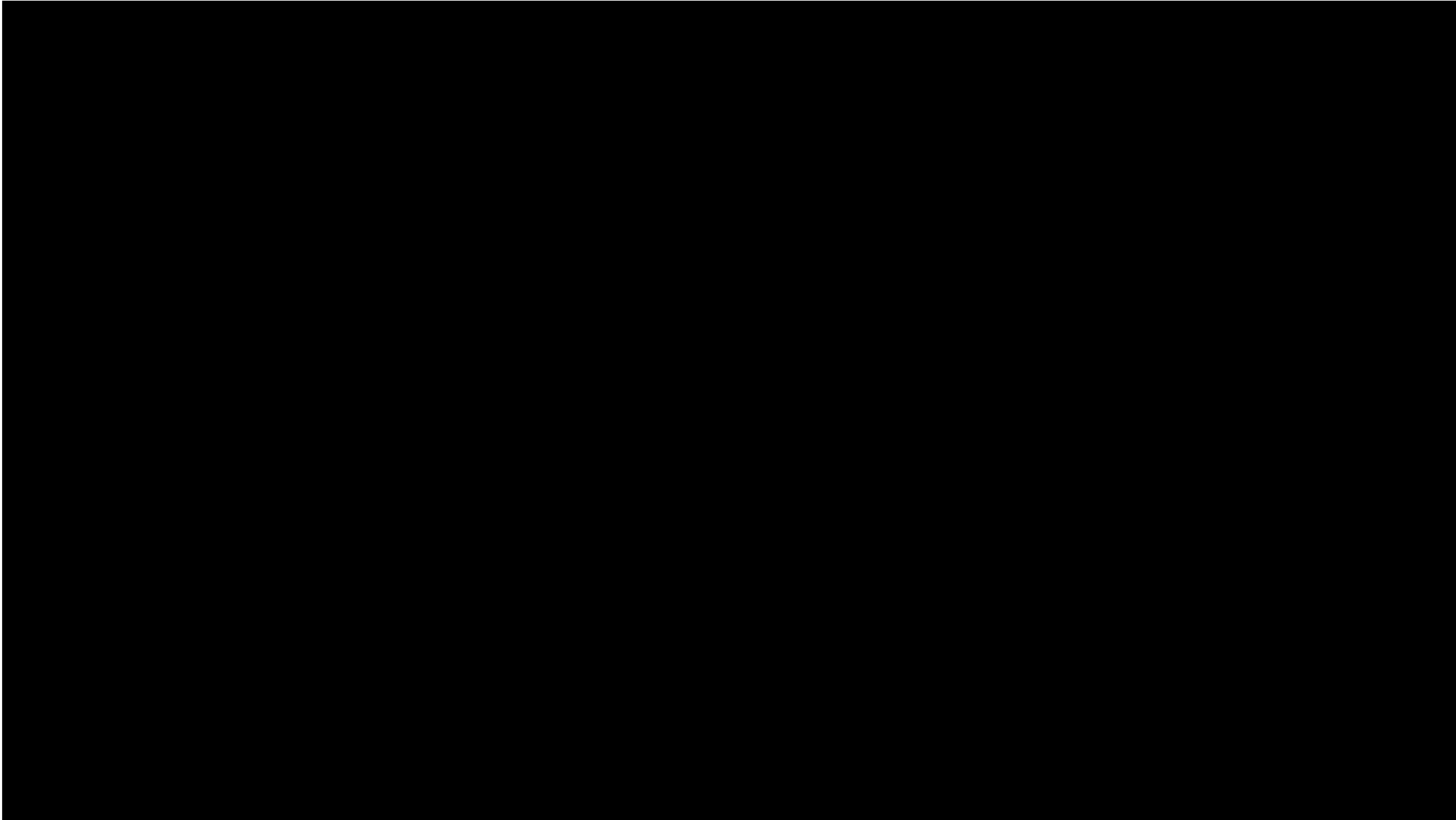
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Ideally, choose a location where you will enjoy spending time, as it can take a long time to cool off after getting overheated. Consider whether you will have access to water or if you should bring some with you to stay hydrated.

Identify and write down any locations you can visit to get cool:

Location	Address
.....	

# Heat and wildfire smoke related illness



# What is heat-related illness?

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

Some people are impacted by the heat more than others. People over 60, people who live alone, people with certain health conditions or disabilities, people who use substances, people on certain medications, people who are pregnant, infants and young children may need extra care.



## HEAT EXHAUSTION SYMPTOMS

- Skin rash
- Heavy sweating
- Dizziness
- Nausea or vomiting
- Rapid breathing & heartbeat
- Headache
- Difficulty concentrating
- Muscle cramps
- Extreme thirst
- Dark urine & decreased urination

Anyone with these symptoms should be moved to a cool space, given plenty of water to drink, and cooled down with water applied to the skin (see "Cool Off" section below)

## HEAT STROKE SYMPTOMS

- High body temperature
- Fainting or decreased consciousness
- Confusion
- Lack of coordination
- Very hot and red skin

Seek medical attention, call 911 if necessary. Submerge some or all of the body in cool water, remove clothes and apply wet towels.





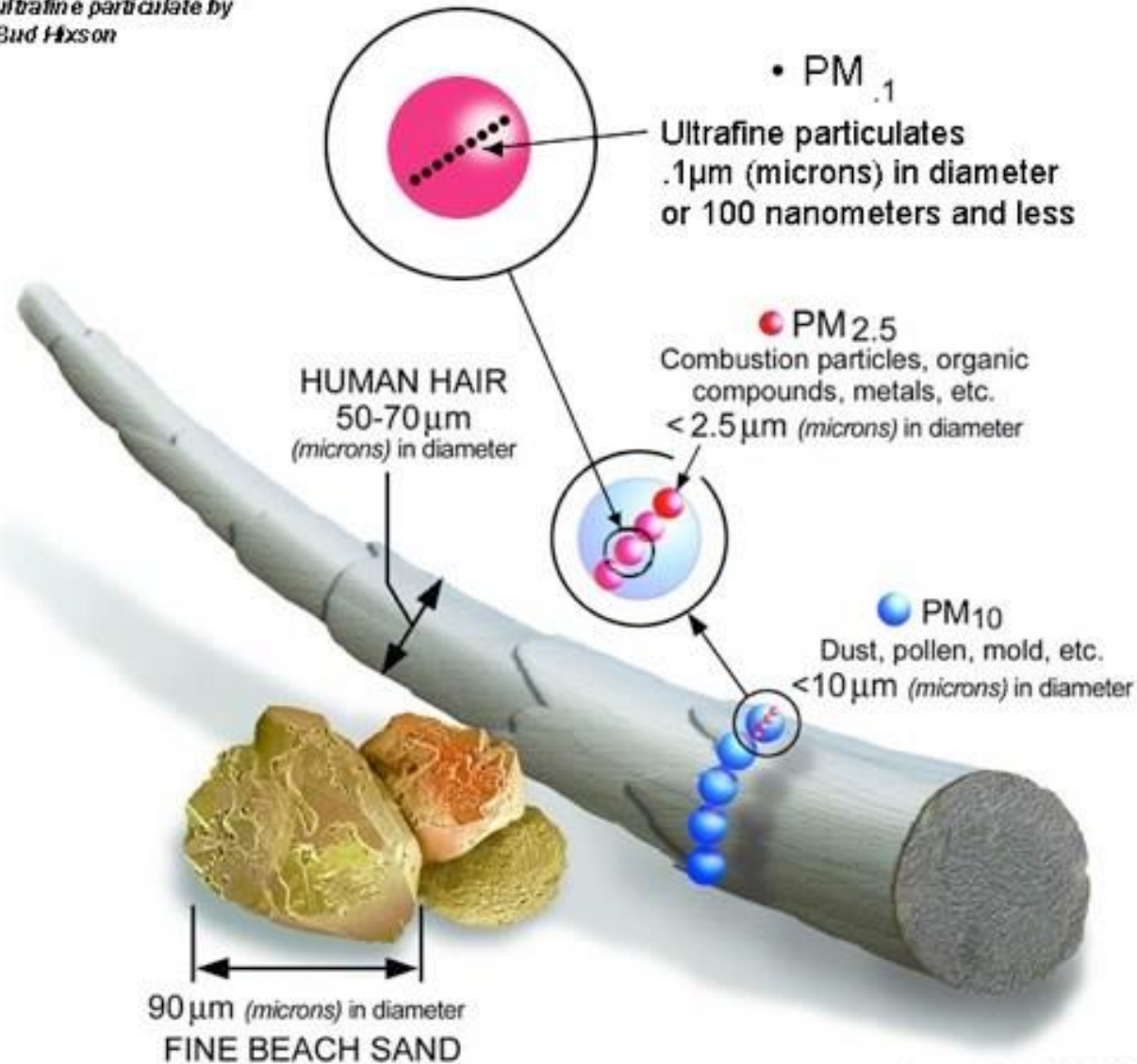
# Wildfire smoke related illness and impacts

- Respiratory issues (shortness of breath, severe cough, chest pain)
- Increased risk of some infections (pneumonia, COVID-19, ear infections)
- Limited and emerging research on longer-lasting health effects, but good body of evidence from other sources of fine particulate matter PM<sub>2.5</sub>

Matz CJ, Egyed M, Xi G, Racine J, Pavlovic R, Rittmaster R, Henderson SB, Stieb DM. Health impact analysis of PM<sub>2.5</sub> from wildfire smoke in Canada (2013-2015, 2017-2018). *Sci Total Environ.* 2020 Jul 10;725:138506.

# PM<sub>2.5</sub> poses the greatest risk to health

*image modified to show  
ultrafine particulate by  
Bud Hixson*



*Image courtesy of the U.S. EPA*



# WILDFIRE SMOKE

Older adults, infants, young children, pregnant women and people with chronic conditions are especially sensitive to health effects of wildfire smoke and should take extra care.



## COMMON SYMPTOMS

- Lung Irritation
- Eye Irritation
- Runny Nose
- Sore Throat
- Headaches
- Mild Cough

## MORE SEVERE SYMPTOMS

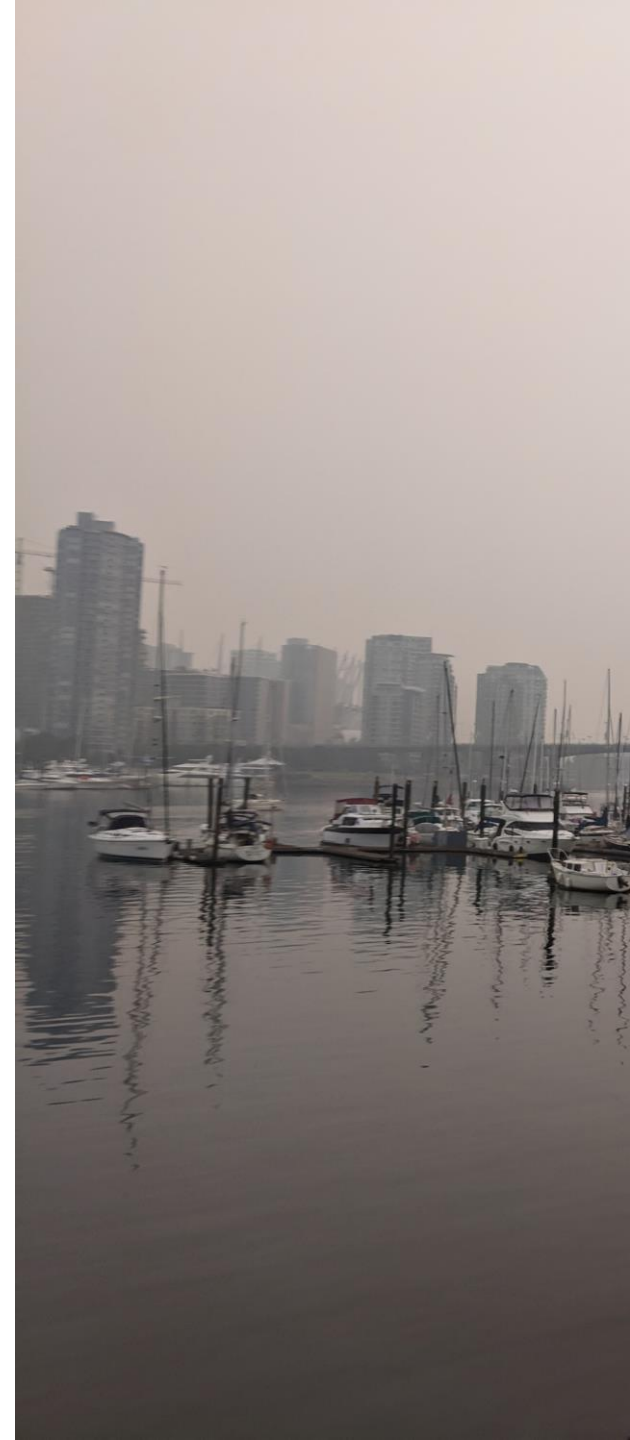
- Shortness of breath
- Severe cough
- Dizziness
- Chest discomfort
- Heart palpitations
- Wheezing

Anyone with these symptoms needs medical attention

# Considering heat and air quality together

Key for both heat and smoke events:  
**COOL (A/C), CLEAN (HEPA Filter) indoor air**

- Heat and air pollution affect your body in different ways, but some people have vulnerabilities that make them susceptible to both
- **Heat is a greater immediate health risk than smoke for most people, so cooling should generally be prioritized**
- Speak with a healthcare provider and check out the BCCDC Smoke Webpage for more information



# Actions to prepare and respond



# Heat plan: Step 5

## 5. IDENTIFY AN EXTREME HEAT BUDDY

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If you live alone, find an extreme heat buddy to check in on you when it gets hot, and who you can also reach out to for help.

Your buddy should be someone who can take you to cooling centres or help with cooling measures in your residence:

Name	Contact info
.....	

# Heat Check-Ins

## What is a Heat Check-In?

Visit, call or text to a heat-vulnerable person to assess the heat-related safety of their home environment, if they show signs of heat-related illness and if they need help.

## Who can do Heat Check-Ins?

**Anyone!** No health training is required.

## Who to Check on?

Heat-vulnerable people, especially those who have multiple risk factors and are socially isolated.







# Heat Check-Ins Continued...

## Starting Check-Ins:

When Heat Warning or Extreme Heat Emergency is declared.

## Ending Check-Ins:

Keep in mind that heat-vulnerable people may be at risk even after a heat alert has ended.

## Frequency:

**At least once a day, regardless of the time.**

Increase the frequency of check-ins to multiple times a day for those most at risk, especially if an Extreme Heat Emergency is declared.



# How to check on family, friends and neighbours



## Health checks during extreme heat events

A guide for doing in-person or remote health checks

1

Extreme heat events can lead to dangerous indoor temperatures in homes without functioning air conditioning. Health checks are used to assess how people at high risk of heat-related illness are doing during extreme events. In-person health-checks are best, but a remote health check is better than no health check.

This guide has five pages with important information for doing health checks during extreme heat events.

**PAGE 1**  
Rapid risk assessment checklist

**PAGE 2**  
Recognizing and responding to heat-related illness

**PAGE 3**  
In-person health checks

**PAGE 4**  
Remote health checks

**PAGE 5**  
Measuring body and room temperature



### Rapid risk assessment checklist

To assess whether someone is at risk, check all the personal factors that apply on the following list. The more boxes checked, the higher the potential risk.

- |   |  |
|---|--|
| <input type="checkbox"/> Older adult (60 years+)                | The body's ability to cool itself is impaired as people age.   |
| <input type="checkbox"/> Mental illness or cognitive impairment | Conditions such as schizophrenia, depression, anxiety, and dementia can reduce awareness of heat-related risks.                        |
| <input type="checkbox"/> Chronic disease                        | Chronic diseases such as diabetes, heart disease, respiratory disease, and cancer can limit the body's ability to cool.                |
| <input type="checkbox"/> Living alone or socially isolated      | People who live alone or do not have strong social connections are at higher risk because they have fewer people looking out for them. |
| <input type="checkbox"/> Substance dependency or use            | The ability to sense and respond to heat can be affected by use of drugs or alcohol, especially for those who are dependent.           |
| <input type="checkbox"/> Impaired or decreased mobility         | People with impaired or reduced mobility might be less able to take protective measures during extreme heat events.                    |
| <input type="checkbox"/> Medication use                         | Some prescription medications for common conditions can cause dehydration and affect the body's ability to cool itself.                |
| <input type="checkbox"/> Poor physical fitness                  | People who are not engaged in regular physical activity are less able to keep cool in the heat.  |



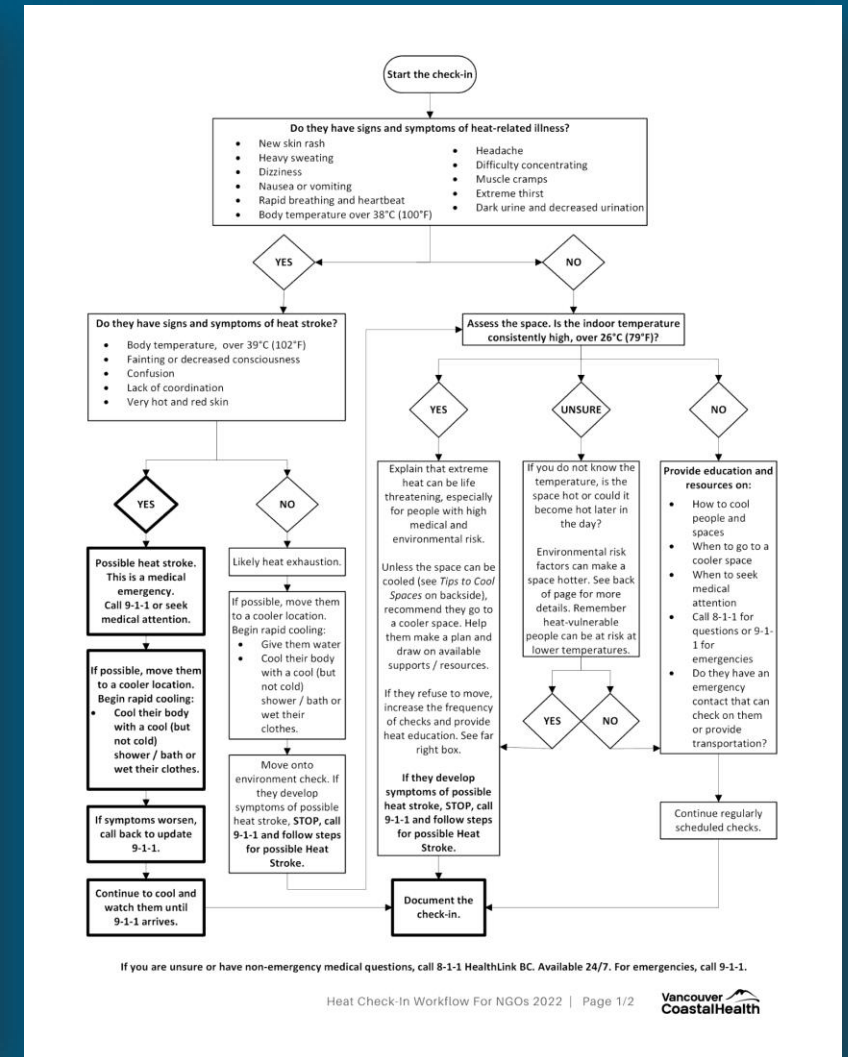
National Collaborating Centre for Environmental Health  
Centre de collaboration nationale en santé environnementale

[www.ncceh.ca](http://www.ncceh.ca)

[NCCEH Health Checks During Extreme Heat Events](#)

# How organizations can run heat check-ins

## HEAT CHECK-IN SUPPORT FRAMEWORK FOR NON-GOVERNMENTAL ORGANIZATIONS



If you are unsure or have non-emergency medical questions, call 8-1-1 HealthLink BC. Available 24/7. For emergencies, call 9-1-1.



# Actions to cool people

- ✓ Seek cooler spaces
- ✓ Take a cool shower or put part of body in cool water
- ✓ Wear a wet shirt or apply damp towels to skin
- ✓ Drink plenty of water and other liquids
- ✓ Wear loose fitting, light colored breathable clothing
- ✓ Limit physical activity
- ✓ Monitor indoor temperature and watch for symptoms





## Actions to cool spaces

- Use A/C or heat pumps
- Use external window shading and/or external window films
- Close shades/blinds to block sun
- Close windows during the day (approx 10am to 8pm) and open windows overnight
- Increase site tree coverage if possible

# Fans...

- **Fans do not directly cool the air and should not be used as the primary source of cooling for heat-vulnerable people in hot indoor environments.**
- At night, use fans to bring cool air inside. Kitchen and bathroom fans vent outside of living spaces and can be used to move hot air outside.







# Dangerous Indoor Temperatures

- **Indoor temp over 26 °C (78 °F):**  
Increasing risk of heat-related illness for heat-vulnerable people.
- **Indoor temp over 31 °C (88 °F):**  
Significant risk of heat-related illness for heat-vulnerable people.
- Without A/C or other mechanical cooling, heat-vulnerable people in consistently high indoor temperatures are advised to move to a cooler space.

# Heat plan: Step 6

## 6. PREPARE YOUR HOME

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A few modifications can make a big difference during periods of extreme heat. Options include:

### INDOORS:

- Install a window air conditioner in at least one room
- Install thermal curtains or window coverings
- Keep digital thermometers available to accurately measure indoor temperatures (31°C or higher is dangerous for vulnerable people)
- Have fans available to help move cooler air indoors during the late evening and early morning hours

**TIP:** Fans cannot effectively reduce body temperatures or prevent heat-related illness in people at-risk. Do not rely on fans as your primary cooling method during an Extreme Heat Emergency.

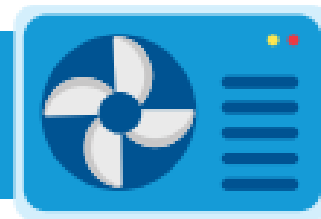
- Install a heat pump (for info: [betterhomesbc.ca/heatpumps](https://betterhomesbc.ca/heatpumps))

### OUTDOORS:

- Install exterior covers or reflective films that block the sun from hitting the windows. This can be as simple as applying cardboard to the outside of the window



## REDUCING EXPOSURE to wildfire smoke is the best way to protect health.



### STAY INFORMED & PLAN AHEAD

- Check the latest local air quality readings and advisories regularly.

### CHECK-IN

- Pay attention to how you feel, and watch for symptoms in those around you.

### HYDRATE

- Drink plenty of water, and offer water to those in your care.

### RELOCATE

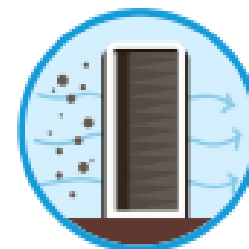
- Go to local libraries, community centers or other public spaces that have central air conditioning and cleaner air.

### REDUCE EXPOSURE

- Reduce outdoor physical activities and stay indoors when smoke is heavy.

### COOL & FILTER

- Filter indoor air using portable HEPA air filters.
- Keep windows and doors closed during high smoke times; but on hot days, make sure the indoor temperature is at a comfortable level because heat can be dangerous.
- Use energy efficient, mechanical cooling in addition to portable air cleaners to create cool spaces with clean air for hot days.



# Additional resources

- [VCH/ FHA heat poster \(translations available\)](#)
- [VCH heat webpage](#)
- [VCH wildfire smoke webpage](#)
- Vancouver indoor air temperature survey (see VCH heat webpage)

## EXTREME HEAT

Some people are impacted by the heat more than others. People over 65, people with multiple health conditions, people who use substances, people on certain medications, people who are pregnant, infants and young children may need extra care.

**HEAT EXHAUSTION SYMPTOMS**

- Skin rash
- Heavy sweating
- Dizziness
- Nausea or vomiting
- Rapid breathing & heartbeat
- Headache
- Difficulty concentrating
- Muscle cramps
- Extreme thirst
- Dark urine & decreased urination

**HEAT STROKE SYMPTOMS**

- High body temperature
- Fainting or decreased consciousness
- Confusion
- Lack of coordination
- Very hot and red skin

Anyone with these symptoms should be moved to a cool space, given plenty of water to drink, and cooled down with water applied to the skin (see "Cool Off" section below)\*

CALL 911 OR SEEK MEDICAL ATTENTION  
Submerge some or all of the body in cool water, remove clothes and apply wet towels.

Spending time in a COOL SPACE is the best way to prevent heat-related illnesses.

**COOL OFF**

- Go to a cool space (e.g. community center, library, café, home of a friend or family, sites with air conditioning).
- Use water to cool off. Take a cool shower, sit or put legs in a cool bath, wear a wet shirt, apply damp towels to the skin.
- Fans may not effectively reduce body temperatures or prevent heat-related illness in people at risk. Do not rely on fans as your primary cooling method during an Extreme Heat Emergency.

**KEEP THE SPACE COOL**

- Keep shades and blinds closed during the day. If you don't have air conditioning, close windows during the day to trap the cooler air inside and open windows at night to let the cooler air in. Use circulating and exhaust fans to move cooler outdoor air into the space overnight.

**CHECK-IN**

- Pay attention to how you feel, and watch for symptoms of heat illness in those around you. Monitor indoor temperature. Check-in multiple times a day on others who are at increased risk.

**DRESS FOR THE HEAT**

- Wear loose-fitting, light-colored, breathable clothing.

**STAY INFORMED & PLAN AHEAD**

- Check the weather forecast and heat alert information. Take it easy during the hottest times of the day.

**HYDRATE**

- Drink plenty of water, and offer it to those in your care.

For more information on the symptoms of heat-related illness, how to prepare for the heat season and stay healthy in the heat: [www.vch.ca/heat](http://www.vch.ca/heat)

During the summer months both heat and wildfire smoke can be a health concern. Find out more about wildfire smoke: [www.vch.ca/wildfiresmoke](http://www.vch.ca/wildfiresmoke)

2023

Fraser Health  
Vancouver Coastal Health  
With support from:





# Official weather information

Environment and Climate Change Canada  
Resources:

- [Public Weather Alerts for British Columbia](#)
- [WeatherCAN App](#)
- [Hello Weather – automated telephone service](#)
  - English: 1-833-794-3556 or 1-833-79HELLO
  - French: 1-833-586-3836 or 1-833-58METEO



**Heat plan:  
Ready to activate!**



# Thank You! Questions?

[healthy.environments@vch.ca](mailto:healthy.environments@vch.ca)  
[www.vch.ca/heat](http://www.vch.ca/heat)