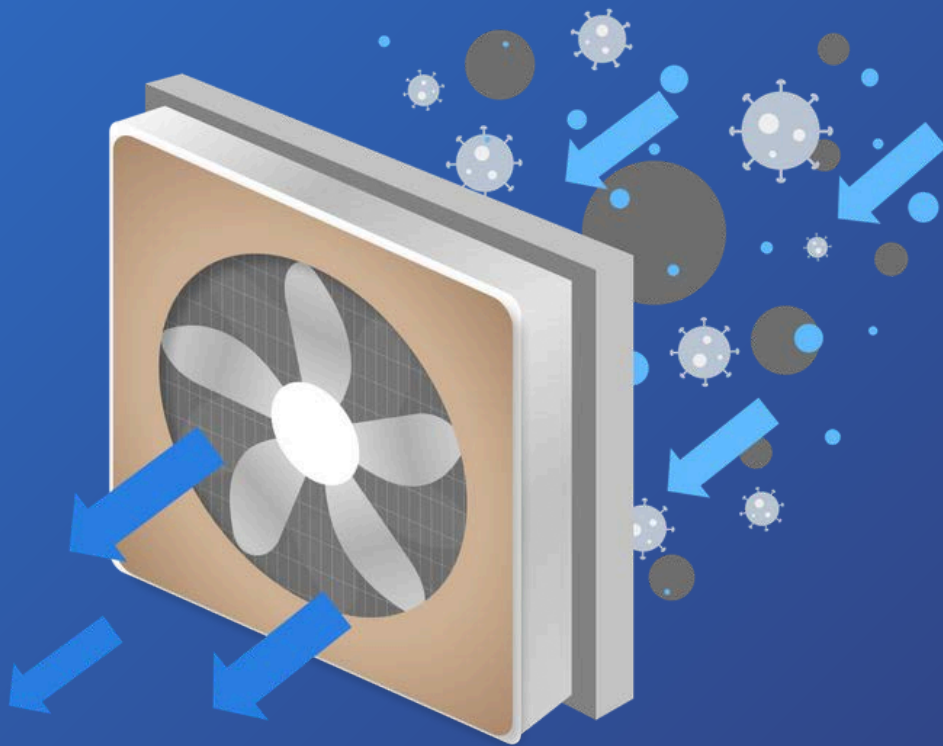


# **BREATHE**

Building Resilience to Emerging Airborne Threats and Heat Events

# ***IMPACT REPORT***

2023-2026



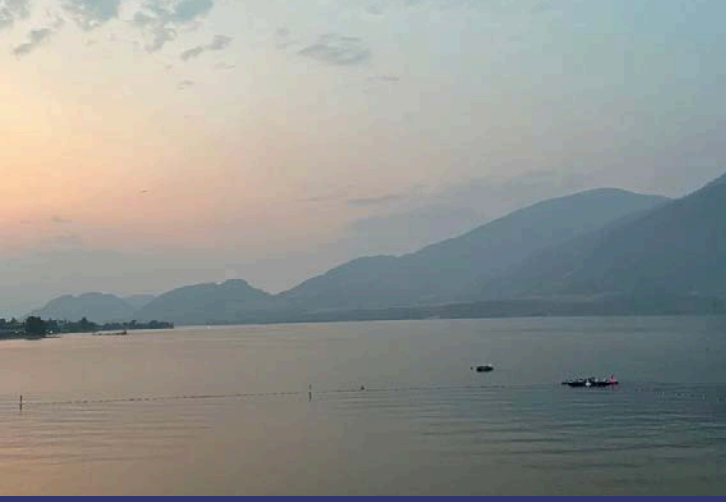


# Land Acknowledgement

We respectfully acknowledge the Indigenous peoples across British Columbia, who have cared for and stewarded the lands, waters, and air since time immemorial. Their deep connection to the environment continues to guide how we understand health, resilience and community care.

For generations, Indigenous communities across BC have practiced cultural burning, a tradition of small, carefully managed fires that help keep the land healthy. These traditional practices reflect deep ecological knowledge and respect for the land, serving as a foundation for modern efforts to protect community health and promote clean air. By combining this traditional knowledge with modern tools, we can work together to promote clean air, protect health, and build stronger, more resilient communities.





*“I'm glad you did this, I had no idea how easy and inexpensive it would be to clean the air in my house.”*

**2025 PARTICIPANT**

AGED 56-69 FROM FORT ST. JOHN



*“Good job working on ways to keep us all healthy as the climate changes.”*

**2025 PARTICIPANT**

AGED 70-79 FROM PENTICTON

# Background

## CLIMATE CHANGE & WILDFIRES

Since 2005, the number of forest fires in British Columbia (BC) has significantly increased, primarily due to climate change and land use practices that make the landscape more prone to wildfires. The number of wildfires burnt in an average year in BC has surpassed record levels, and our worst wildfire seasons have occurred in the past five years.

The increased number of wildfires in BC jeopardizes the health and well-being of individuals from wildfire smoke. It is the populations closest to wildfires who are exposed to the highest levels of wildfire smoke pollutants. However, wildfire smoke can also travel long distances depending on weather patterns, creating prolonged impacts on air quality that affect populations near and far.

Wildfire smoke can cause respiratory problems, such as coughing, shortness of breath, and worsening asthma or COPD, as well as increase the risk of heart attacks and strokes. Long-term exposure to the toxic particles in smoke can lead to chronic lung diseases, reduced lung function, and even lung cancer. At-risk groups, including children, older adults, and individuals with pre-existing conditions, face greater risks, while the smoke can also contribute to stress, sleep disturbances, and mental health challenges.

# The **DIY** AIR CLEANER

This project followed a 2023 evidence review conducted by Dr. Angela Eykelbosh of the National Collaborating Centre for Environmental Health (NCCEH) titled “Do-It-Yourself (DIY) Air Cleaners: Evidence on Effectiveness and Considerations for Safe Operation.”

The study compared the performance of different models of DIY air cleaners to those available commercially, most of which use high-efficiency particulate air (HEPA) filters. Performance was based on clean air delivery rate (CADR), which measures how fast the air cleaners can remove particles in an enclosed room.

Most commercially available air cleaners filter particles as small as 0.3 to 1.0 micrometers (Eykelbosh, 2023). This range encompasses a wide variety of indoor air pollutants, including viruses, wildfire smoke, mold spores, emissions from indoor wood burning, pollen, and sources of outdoor pollution that penetrate indoors (Eykelbosh, 2023).

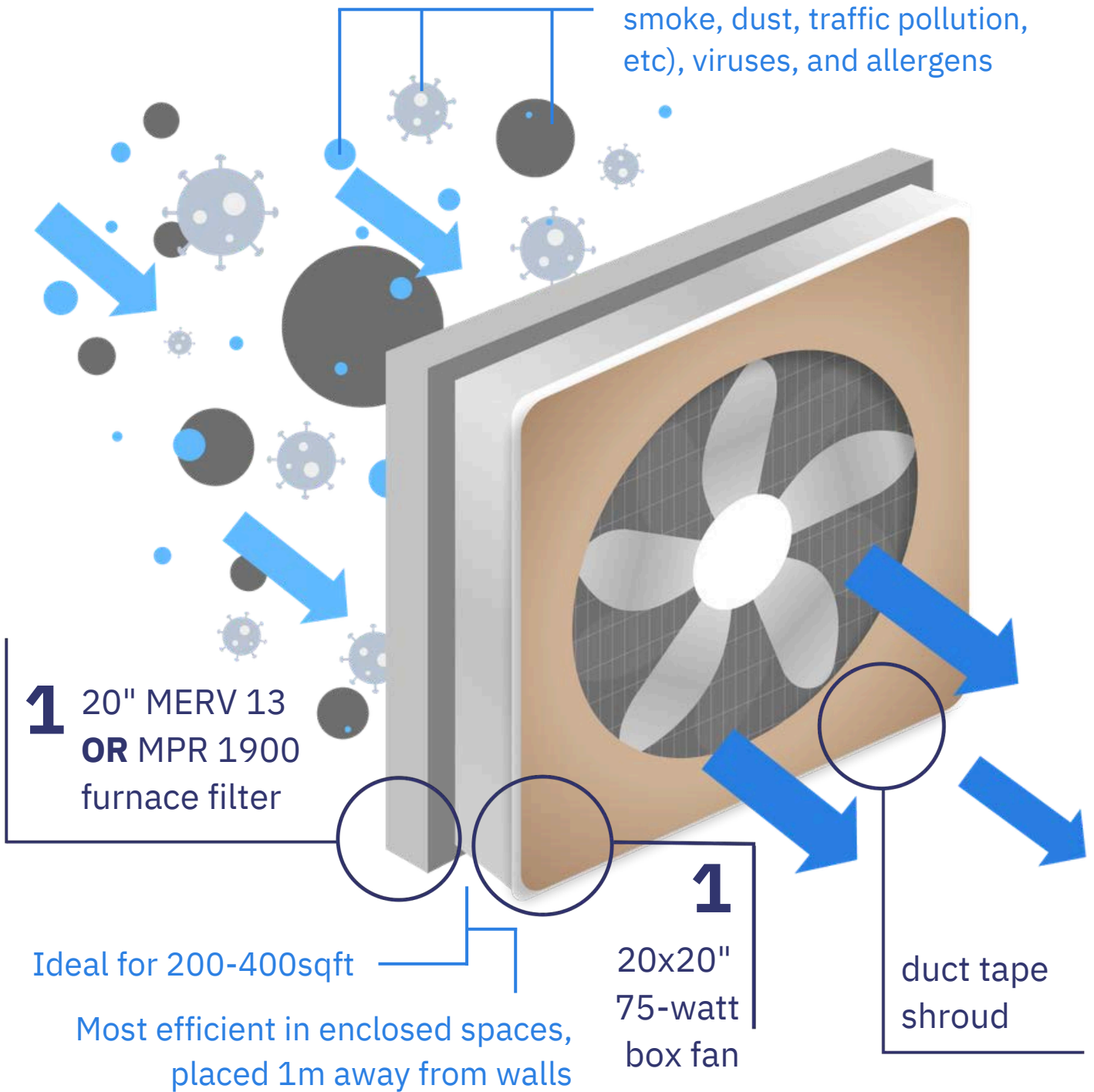
**The evidence review found that DIY air cleaners performed comparably to, or better than, some commercial HEPA units and were also less expensive to build than purchasing a commercial model.**

**DO  
IT  
YOUR  
SEL  
F**



# ABOUT THE 1 FAN x 1 FILTER AIR CLEANER

Cleans air of PM2.5 (wildfire smoke, dust, traffic pollution, etc), viruses, and allergens



## USE & LIMITATIONS

While DIY air cleaners can help to remove solid or particulate matter, the filter cannot trap gaseous pollutants, such as radon, Volatile Organic Compounds, and carbon monoxide. These units are also thought to work well for removing infectious aerosolized particulates such as COVID-19 and the flu, but the evidence has not shown whether this removal is sufficient or fast enough to reduce the risk of infection.

DIY air cleaners are not long-term solutions. Homes that have conditions that create indoor air pollutants, such as mold growth and wood-burning stoves, can use DIY air cleaners as a temporary, immediate response.

DIY air cleaners and fans in general are not cooling solutions. They can move air, but they do not directly cool the air or your core body temperature, and temperatures above 35 degrees can be dangerous, blowing hot air at you. If temperatures in your home are consistently above 31 degrees, you need to relocate to a cooler location. If you have to choose between immediately protecting yourself from high heat or air quality, you should **prioritize the heat**. Extreme heat carries a much greater risk of immediate injury and death compared to smoke.



Extreme Heat Observed in Rock Creek, July 2024



## HEAT PILOT PROGRAM

In response to increasing extreme heat events, the BREATHE program ran an Indoor Temperature Monitoring Pilot Program in 2025, which included an educational workshop and a follow-up survey. In partnership with the City of New Westminster, participants received a cool kit with a water bottle, towel, ice pack, and a large indoor thermometer. Participants were asked to monitor their indoor temperature throughout the summer to protect their health.

Heat Pilot Program Workshop, New Westminster



# The Workshop Model

The DIY air cleaner community engagement workshops allowed us to provide resources to at-risk populations. These workshops included both education and a hands-on DIY building portion.

The workshops were 1 to 2 hour sessions. This included a discussion on the health impacts of wildfire smoke and PM2.5, building DIY air cleaners, and addressing any relevant concerns or questions. Advertisement and recruitment were done in collaboration with our community partners through in-person advertising, word of mouth, and social media channels. Due to the high demand for these workshops, it was paramount to have an online registration system. We also found including a decoration portion (e.g. providing colourful tape, stickers, gems) was a great way to increase engagement between workshop participants and involve younger participants.



*“Im so glad I came, I will make one of these fans for my mother who is 102 years old.”*

**BREATHE PARTICIPANT, 2025**  
AGED 70-79 FROM RUTLAND, BC

*“I think this is the best workshop this year. This will really help me and my cat.”*

**BREATHE PARTICIPANT, 2025**  
AGED 70-79 FROM PENTICTON, BC

New Westminster, 2024

*“Excellent useful workshop, all research assistants patient and helpful. Now I have a fan and filter I can not otherwise afford.”*

**2024 WORKSHOP PARTICIPANT**  
AGED 70-79 FROM VANCOUVER, BC



Victoria, March 2025

## The Research

Alongside our in-person workshops, research was conducted. Our follow-up survey, approved by the SFU research ethics board, was designed to assess the effectiveness of our workshops in equipping participants to manage wildfire smoke, other airborne threats, and heat events. 6 to 8 months post-workshop, we sent a follow-up survey to participants who consented to the research component of the workshop, as participation was optional and not required to build an air cleaner.

The survey asks about their usage of the DIY air cleaner, the effectiveness of our knowledge mobilization through the workshops, and if participants had any resulting behaviour changes in their responses to air quality events, wildfire smoke, and extreme heat events.



Kelowna, June 2024

# 825

RECRUITED RESEARCH  
PARTICIPANTS

# 2023

**25** workshops

**500** DIY air cleaners built

**2** health regions in BC reached

**150** research & follow-up participants



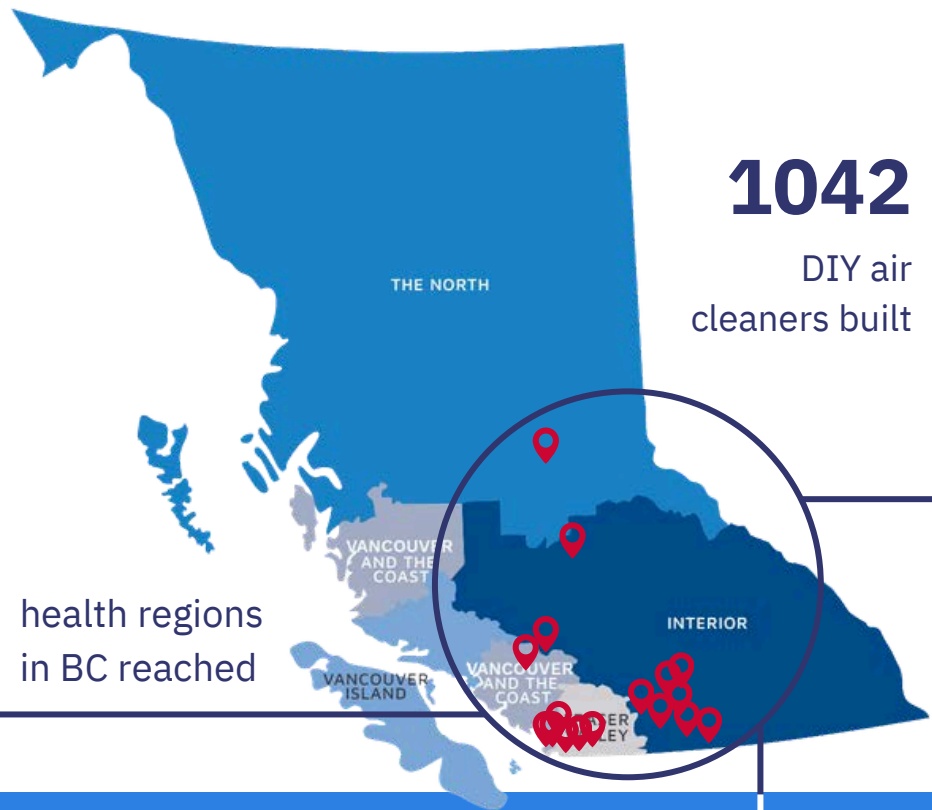
# 2024

**1042** DIY air cleaners built

**4** health regions in BC reached

**417**

total research & follow-up participants



# 2025

**93**

workshops held

**All**

**5** health regions  
in BC reached



**1675**

DIY air  
cleaners built

**825**

total research &  
follow-up participants

# 2023 RECAP

This project began in response to the increasing exposure to wildfire smoke and the gap in community engagement on the issue. With the findings of the NCCEH study, our team got to work on developing a workshop model to bring resources to those who needed them most. We set out with the idea that people should not be priced out of achieving a clean indoor airshed. Thanks to funding from the City of Vancouver, Fraser Valley Regional District, PIPPS, and Vancity, we were able to hold a pilot project in the Lower Mainland to test demand.



## RICK'S STORY



Rick attended a workshop in Abbotsford as part of the Better Breathers program. Living with a diagnosis of Pulmonary Fibrosis, Rick understood the importance of having a clean indoor air environment. Moved by the ingenuity of the DIY air cleaner, Rick took it upon himself to buy materials for 5 more DIY air cleaners and donated them to children with Asthma.

**He has continued to donate materials every year for the BC Lung Foundation's Asthma Camp for children.**

# 2023 BY THE NUMBERS

25

workshops  
hosted

in

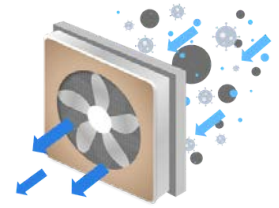
8

communities  
across B.C.

with

500

DIY Air  
Cleaners built



and

150

Research  
participants recruited



312 Main, Vancouver



Skwah Nation



*“This was a very fun workshop, educational, practical, healthy, and free! I will help a lot of neighbours with this information.”*

**2023 WORKSHOP PARTICIPANT**  
AGED 19-30 FROM HOPE, BC



# 2024 RECAP

Our pilot program had shown that demand for our workshops had far exceeded our resources. With this in mind, in 2024, we applied for additional funding and took our project to the Interior of BC, where wildfire smoke has become common most summers. Workshops were held across Summerland, Penticton, Kelowna, Keremeos, Oliver, and Rock Creek, in addition to workshops in the Lower Mainland and Fraser Valley. This year also marked our first event in Northern BC, with a workshop held in Prince George in partnership with Northern Health and the city of Prince George.

New Westminster



Social media graphic from July 2024

Oliver

JULY 22

JULY 23

YOUR AIR QUALITY CAN  
CHANGE QUICKLY



# 2024 BY THE NUMBERS

45

workshops hosted

in

20

communities across B.C.

1,043

DIY Air Cleaners built

with

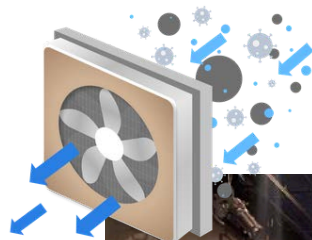
4

Community groups trained

and

415

Research participants recruited



Kelowna

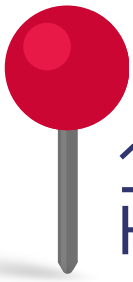


Japanese Community Volunteers Association



*“Great to work together with other seniors, really really appreciated all supplies given to us, excellent instruction, welcoming and pleasant.”*

**2024 WORKSHOP PARTICIPANT**  
AGED 56-69 FROM OLIVER, BC



100 MILE  
HOUSE



# CARTER'S PROJECT 2024

Launched by the **BC Lung Foundation** in 2024, the first town hall of Carter's Project was held in 100 Mile House, the hometown of Carter. Community members were given updates on the newly installed PurpleAir monitors and provided education about how to access this information to make decisions to protect their health. People went home with education, their own indoor air quality monitor, and a DIY air cleaner.

Students from Carter's school also came together to build and decorate DIY air cleaners, building enough for each classroom in their school to have one.



## ABOUT CARTER'S PROJECT

Carter's Project is an initiative in honour of Carter Vigh, a 9-year-old who sadly passed away due to an asthma attack exacerbated by wildfire smoke in July 2023. Launched by the BC Lung Foundation in 2024, the project hosts townhalls in rural and remote communities across BC that have inadequate air quality monitoring. In addition to installing outdoor air quality monitors, community members are provided a free indoor air quality monitor and DIY air cleaner.



# 2025 RECAP

This year was our largest yet, as we continued to expand and develop partnerships with all of BC's health authorities. Thanks to support from the provincial government, community foundations, non-profit organizations, credit unions, and municipalities across the province, we were able to host 93 workshops and build almost 1700 air cleaners for at-risk communities. These workshops took place in all of BC's health regions, including 15 rural and remote First Nations communities.

This year was also Canada's second-worst wildfire season on record, emphasizing the importance of climate adaptation initiatives.



Chilliwack Seniors Recreation Centre



Wuikinux Nation



Fort St. John

# 2025 BY THE NUMBERS

93

workshops completed



42

Community groups trained

615

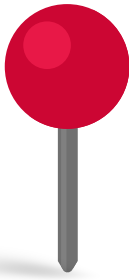
Research participants recruited

and



*“Great chance for families, super option for taking care of our health during summer.”*

**2025 WORKSHOP PARTICIPANT**  
AGED 19-30 FROM SURREY, BC



DAWSON  
CREEK &  
GOLD RIVER



# CARTER'S PROJECT 2025

The BC Lung Foundation brought Carter's Project to Dawson Creek and Gold River in 2025. These communities lacked local air quality monitoring stations, but thanks to this initiative, they now have access to real-time local data. These town halls brought together city councilors, health officials, and community members to discuss air quality concerns in their communities.

*A short documentary about the BC Lung Foundation & BREATHE Project's visit to Dawson Creek was created in 2025 by filmmakers Lyra Murphy and Teige Esler.*



Available to watch now on  
the BC Lung YouTube!



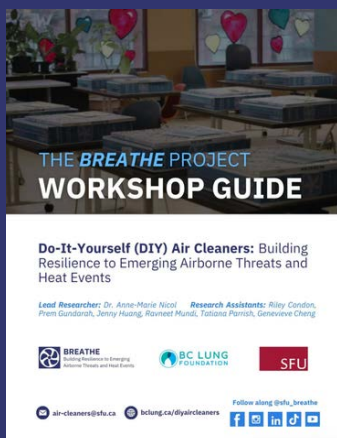
# TRAIN -THE- TRAINER

The Train-the-Trainer workshop model, with its accompanying guide, was created to equip community leaders to host their own DIY Air Cleaner workshops.

By connecting with emergency disaster management teams, environmental health experts, educators, public health officials, municipalities, and other leaders in communities, we are able to share our experience in hosting these workshops and empowering communities to build resilience to climate change.

Our project was ultimately designed to increase access to effective interventions against wildfire smoke and other airborne pollutants. By enabling leaders across the province to host their own workshops, more communities will benefit from this initiative.

Kelowna, 2024



## TRAIN-THE-TRAINER GUIDE

Written in iteration from 2023-2025.

Available for download on our website in 4 languages: English, Spanish, Punjabi, & Chinese.

# 2025 TRAIN-THE-TRAINER PARTNERS

In 2025, we expanded the Train-the-Trainer program significantly.

With funding from Vancouver Coastal Health, we were able to host **32 more training sessions** with many community partners across the province.

# 42

Groups have been trained to host their own workshops.

Sylix Nation



S.U.C.C.E.S.S, Vancouver



MOSAIC, Burnaby



West Vancouver



# MÉTIS NATION B.C.

MNBC is the Métis government in BC, representing the collective Section 35 rights of over 27,000 Métis Citizens registered with MNBC in thirty-nine (39) Métis Chartered Communities. MNBC advocates for the over 98,000 self-identified Métis in BC to participate fully in our rich democratic and governance traditions and activities. MNBC uses a Métis Social Determinants of Health model, which includes climate adaptation and mitigation as essential determinants of Métis health. As such, the BREATHE team trained several MNBC Health and Wellness staff in 2023 on how to host and provide an effective DIY air cleaner program to their communities.

In 2024, the Métis Nation of BC held 15 workshops, building 180 air cleaners in total. Workshops were held in Salmon Arm, Invermere, Grand Forks, and Fort Nelson, to name a few.

**15**

workshops  
completed

**180**

air cleaners  
built



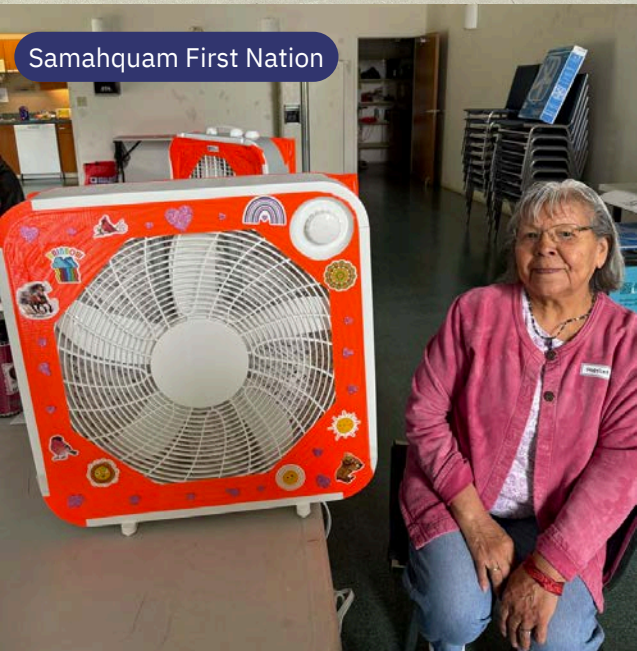
N'Quatqua First Nation



Xa'xtsa First Nation



Samahquam First Nation



First Nations Health Authority

## PARTNER SPOTLIGHT

# FIRST NATIONS HEALTH AUTHORITY

The FNHA is the health and wellness partner to over 200 diverse First Nations communities and citizens across BC.

In 2013, the FNHA began a new era in BC First Nations health governance and health care delivery by assuming stewardship for the programs and services formerly delivered by Health Canada. Since then, the FNHA has been working to address service gaps through new partnerships, closer collaboration, health systems innovation, reform, and redesign of health programs and services for individuals, families, communities, and Nations.

In 2024, we held a Train-the-Trainer workshop with members from FNHA teams. In 2025, this partnership brought BREATHE workshops to 15 First Nations communities across the province.

We want to reiterate our thanks to the FNHA for their continued support of the project and each of the communities that welcomed us onto their lands.

# MAJOR FUNDERS

## BC LUNG FOUNDATION

BC Lung Foundation's ongoing support and commitment to improving lung health, and its advocacy for policies that protect BC's air quality, have ensured the success of this project. The Foundation provided logistical and financial support through the project's entire existence.



## SIMON FRASER UNIVERSITY

Simon Fraser University and the Faculty of Health Sciences have continuously supported this project, lending their expertise and commitment to improving the health of individuals and populations in BC.



## City of Vancouver

The City of Vancouver's Resilience and Disaster Risk Reduction Department was our first major funder and partner. Since 2023, the city has hosted 15 workshops. They also provided in-kind support by translating all of our written materials, which significantly increased the accessibility of our program.



# CENTRAL OKANAGAN FOUNDATION

The Central Okanagan Foundation partnered with the BREATHE team and funded 5 workshops in the Central Okanagan region in 2025.



## PACIFIC INSTITUTE FOR CLIMATE SOLUTIONS

Thanks to funding from PICS, the BREATHE team was able to hire two Research Assistants who organized and facilitated workshops throughout Northern BC, an area heavily impacted by wildfire smoke.

## Fraser Valley Regional District

We're grateful for the FVRD's support for this project. Since 2023, the FVRD has funded 7 workshops across the region for older adults, low-income families, and people with lung conditions.



## *Thank you!*

To all our funders and partners who have enabled this project to continue this through 2025. Your contributions and commitment to community-level interventions enabled us to empower people across BC in dealing with wildfire smoke and other airborne hazards in the face of climate change.



# HEALTH AUTHORITY PARTNERSHIP

In 2025, we partnered with all of BC's Health Authorities to bring climate adaptation tools and resources to communities across the province. This partnership, led by the Fraser Health Authority, secured funding from the provincial government to increase our reach to more at-risk populations and rural, remote, and Indigenous communities impacted by climate change.



L-R: Matthew Edwards, Josh Dalmann [BREATHE], Fernanda Gutierrez Matos [Island Health Authority])

L-R: Deshpal Grewal and Amy Lubik [Fraser Health Authority], Matthew Edwards [BREATHE], Alyssa Roberts [Semiahmoo Family Place]

Dr. Angela Eykelbosh, middle [Island Health Authority]

Jade Yehia [Northern Health Authority]

**Thank you to all cities, First Nations, and organizations who have supported the project.**

Cowichan Tribes  
Fort St. John  
Hudson's Hope  
Kelowna  
Keremeos  
Lil'wat First Nation  
New Westminster  
N'quatqua First Nation

Oliver  
Peachland  
Penticton  
Prince George  
Prophet River First Nation  
Roberts Creek Community  
Samahquam First Nation  
Squamish First Nation

Summerland  
Tofino  
Town of Ladysmith  
Tseshaht First Nation  
Tumbler Ridge  
Vancouver  
Wuikinuxv First Nation  
Xa'xtsa First Nation

# SPECIAL THANKS

We wish to further extend our gratitude to the countless partners, sponsors, funders, volunteers, and staff from the many organizations, communities, and nations that made this work possible.

*312 Main  
All Nations Healing House  
Barclay Manor  
BC Centre of Disease Control (BCCDC)  
British Columbia Fire Smart  
Brittania Community Center  
BEEM Credit Union  
Chemainus Harvest House  
Fraser Region Aboriginal Friendship Centre Association  
Gibsons Senior Society  
Grand Forks Senior Society  
Hope and Area Resilience Team (HART)  
Interior Savings  
Kokanee Anglicans Nelson  
Kootenay Seniors  
Ladysmith Family and Friends  
Ladysmith Resource Centre Association  
Lake Country Health  
Lil'Wat Health & Healing  
Lower Fraser Valley Aboriginal Society  
Luther Court Community Health Centre  
Métis Nation British Columbia  
Midway Fire Department  
Mobile Meals Cloverdale*

*Northern Rockies Regional Municipality  
Okanagan Nation Alliance  
Oliver Seniors' Center  
Peace Hills Insurance  
Peachland Wellness Center  
PG Airshed Roundtable  
Quesnel Air Quality Roundtable  
Rotary Club of Nelson  
Semiahmoo Family Place  
Simon Fraser University's CERi  
Skwah First Nation  
SOICS  
South Vancouver Neighbourhood House  
S.U.C.C.E.S.S  
Sunshine Coast Regional District  
Thetis Island Community Association Committee  
Tonari Gumi  
Umbrella Multicultural Health Co-Op  
United Way Okanagan  
University of the Fraser Valley's Science Cafe  
Vancity  
West Kootenay Climate Hub  
Whistler Mature Action Community  
White Rock South Surrey Men's Shed*



# REACH

2025



HOW TO BUILD A  
**DO-IT-YOURSELF  
AIR CLEANER**

BREATHE



**8,035**

website visitors

**47,923**

social media  
views

**3,680**

resources  
downloaded

on

Instagram, Facebook  
and LinkedIn

**1,841**

YouTube video  
views in 2024/25

**3**  
countries

in

**6**

conferences  
attended from  
2023-2025



**1,695**

AIR CLEANERS BUILT



BREATHE

Bricoler un purificateur  
d'air abordable / DIY an  
affordable air purifier



BREATHE

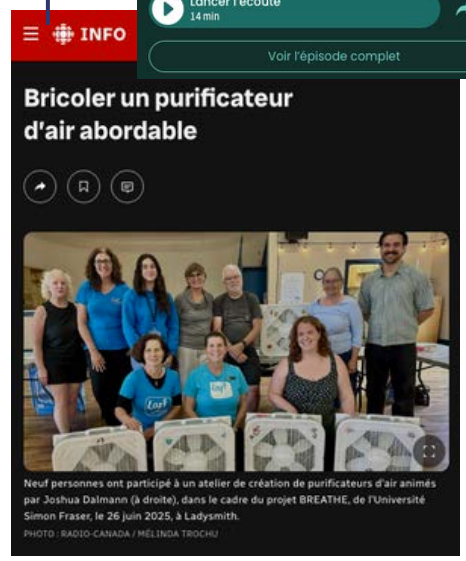
Workshop with Prophet  
River First Nation



**32** — from — **21**  
media hits  
(articles & videos) sources



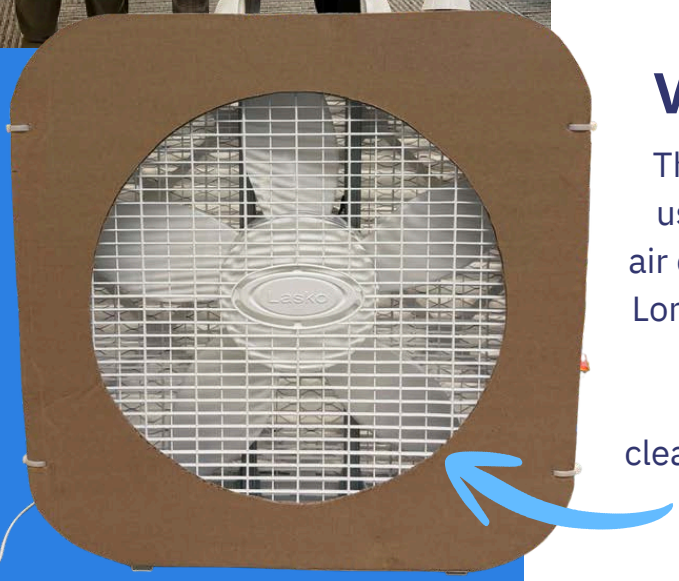
including interest from  
**3** Francophone  
journalists!



M  
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## SUBMISSION TO THE VANCOUVER ARCHIVES

The Museum of Vancouver reached out to us in the fall of 2024 about building a DIY air cleaner to be placed in their “Living with Long COVID” exhibit and then stored in the Vancouver Archives for decades and centuries to come. We built a DIY air cleaner and the shroud using materials that will last: cardboard and zip ties.



# RESOURCES



## DIY AIR CLEANER INSTRUCTIONS

Written and edited iteratively over 3 years.

Translated with the help of the City of Vancouver and now available in **11 languages**.

## OTHER RESOURCES

- DIY Air Cleaner Shopping List
- Safety Considerations
- Filter Replacement Instructions

## VIDEO GUIDES



**567**  
newsletter  
subscribers

[bclung.ca/diyaircleaners](https://bclung.ca/diyaircleaners)

[sfu.ca/fhs/breathe-project](https://sfu.ca/fhs/breathe-project)

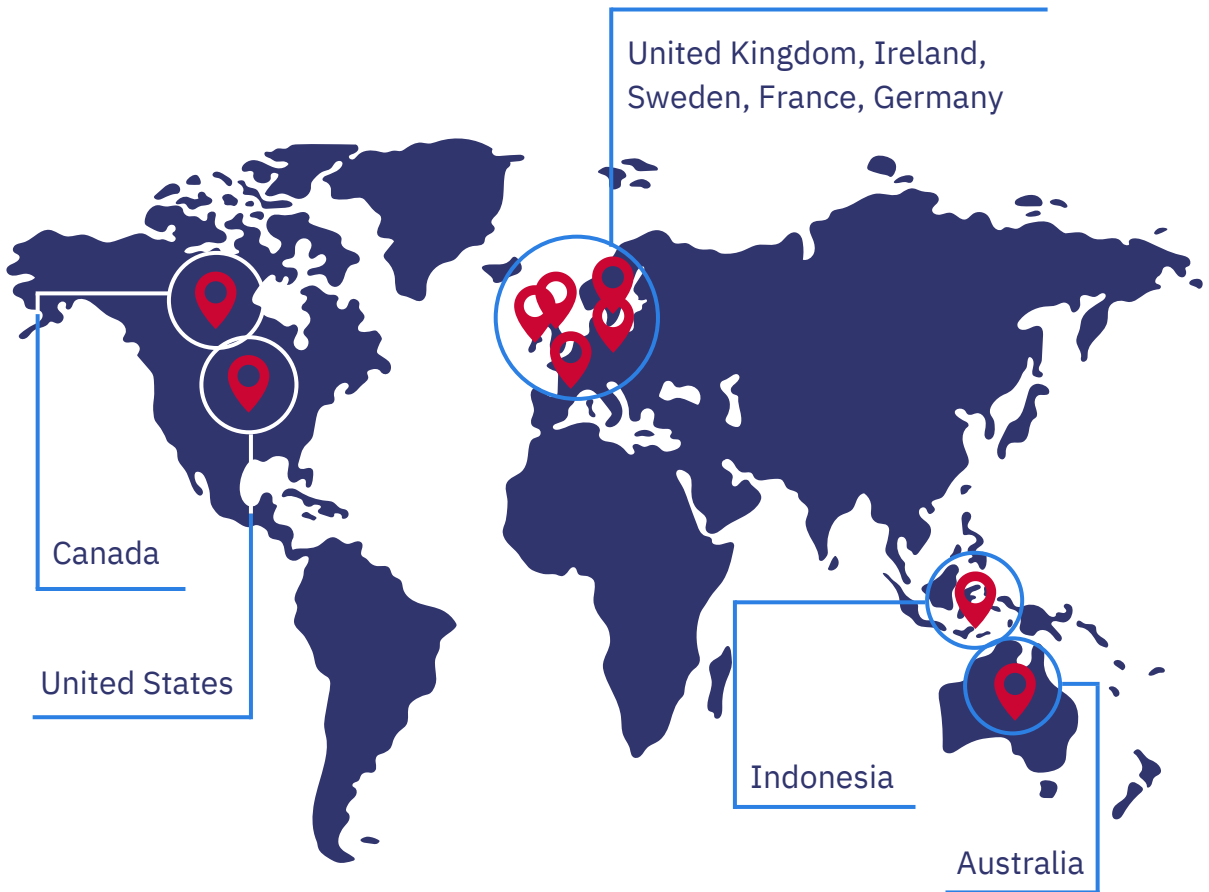


# WEBSITE VISITORS

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# TEAM CREDITS

**Dr. Anne-Marie Nicol**, Principal Investigator and Lead Research

Avery Bressette  
Genevieve Cheng  
Riley Condon  
Josh Dalmann

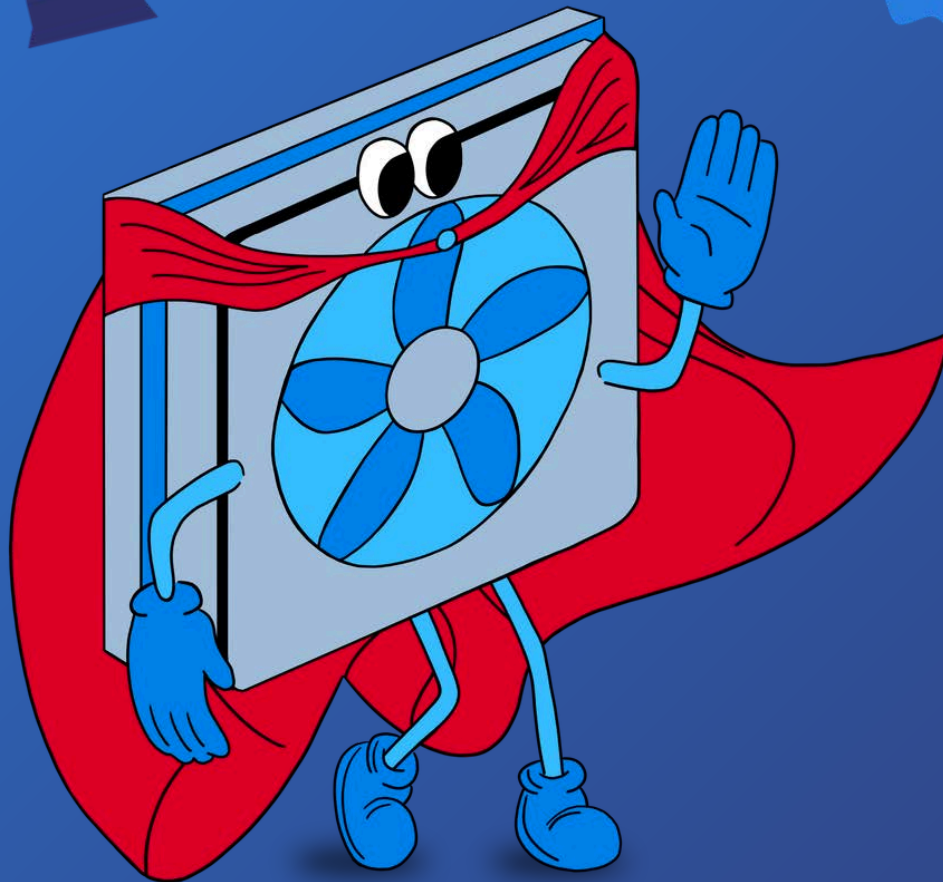
Matthew Edwards  
Sameen Fatima  
Prem Gundarah  
Jenny Huang

Kendyl Livingston  
Lisa Mizuno  
Ravneet Mundi  
Tatiana Parrish





I'm in the **clean  
indoor air club**



If you have further inquiries about The BREATHE Project, please reach out to [info@bclung.ca](mailto:info@bclung.ca). All project resources are available for free at [bclung.ca/diyaircleaners](http://bclung.ca/diyaircleaners).