

# Wildfire Recovery: Essential Health and Air Quality Precautions During a Crisis

CHIANG MAI, THAILAND, September 1, 2024 /EINPresswire.com/ -- As summer approaches, natural events such as wildfires become increasingly inevitable. Recently, Canada has faced severe wildfires in Jasper National Park, the largest national park in the Canadian Rocky Mountains. These wildfires have caused significant disruption in surrounding communities. According to a [local official update](#), approximately 25,000 people were safely evacuated from the town of Jasper and Jasper National Park, ensuring the safety of all residents, visitors, and responders. However, damage within the townsite is estimated at around 30%, with 358 out of 1113 structures destroyed.

“The aftermath of a wildfire brings challenges, especially regarding health concerns due to lingering smoke and ash. As wildfires badly impact the air quality, it’s crucial for individuals and communities to stay protected. Therefore, access to reliable and safe information is necessary to help individuals take informed actions for recovery,” stated Achim Haug, the CEO and Founder of AirGradient.



## Carbon Dioxide

### Carbon Dioxide (CO2)

#### Key Take-Aways:

- **Carbon dioxide (CO2)** is a gas in our atmosphere and the **outside concentration is at around 430ppm**.
- When **we breath, we exhale CO2** and thus the concentration can increase in occupied rooms quite quickly.
- High levels of CO2 can cause **headaches** and also **impact our brain's performance**.
- To **reduce the CO2 concentration**, you can **open windows** or increase the fresh air rate of your HVAC system.
- Please note that normal wall based A/C systems do not reduce the CO2 concentration as they only circulate the **indoor air**.
- Most CO2 sensor do an **automatic baseline calibration (ABC)**. For these to work correctly, the room needs to be **ventilated frequently**, e.g. once a week. If this does not happen, these sensor might show too low readings.
- Make sure your CO2 sensor uses NDIR technology, as this type of sensors measure CO2 directly and accurately.

-  **Excellent**  
< 801ppm
-  **Acceptable**  
801 - 1000 ppm
-  **Not Ideal**  
1001 - 1500 ppm
-  **To be avoided**  
1501 - 2000 ppm
-  **Unhealthy**  
2001 - 3000 ppm
-  **Very Unhealthy**  
> 3000 ppm

While we recognize that inhaling smoke is dangerous, the hazard level depends significantly on the source. Wildfire smoke is particularly hazardous compared to other types of smoke, such as from cooking or traffic, as it contains a toxic mixture of gases, chemicals, and fine particles from

burning trees, shrubs, buildings, and vehicles. The diversity of materials consumed in wildfires dramatically increases the smoke's toxicity, making it one of the most dangerous forms of air pollution.

Wildfire smoke inhalation can have both short-term and long-term health effects, impacting people of all ages and health conditions. Some of the effects include:

Short-term effects: Eye, throat, and lung irritation, coughing, wheezing, trouble breathing, increased heart rates, risk of heart attacks, headaches, dizziness, and fatigue.

Long-term effects: Lung diseases like asthma and Chronic Obstructive Pulmonary Disease (COPD), heart disease and stroke, and the potential development of certain types of cancer. Continuous exposure can also weaken the immune system, making it harder for the body to fight infections.

### How to Stay Safe After The Wildfires

As individuals return home, it's crucial to prioritize safety and stay informed. Here are essentials to protect against the lingering effects of wildfire:

**Use Proper Masks:** The lingering smell of smoke and burn is a common aftermath of wildfires. Always be prepared with proper masks, such as N95 or P100 respirators, which help protect against harmful particles, especially outdoors or in areas with compromised air quality.

**Utilize Air Purifiers:** If staying indoors, use HEPA-based air purifiers to minimize smoke exposure. Air purifiers with HEPA filters can effectively remove fine particles in the air, such as allergens, dust, smoke, and chemical compounds. Place the air purifiers in the most-used areas for maximum protection.

**Check for Hidden Hazards:** When returning to the property, be cautious of hotspots, fallen power lines, and damaged structures. Wear protective gear, including gloves and boots, when cleaning up debris to avoid injury or exposure to toxic materials.

**Monitor Air Quality:** Lingering smoke can persist for days or weeks, especially without significant weather events like rain or substantial winds. Regularly monitor local air quality for indoor and outdoor environments to determine when it's safe to be outdoors.

**Particulate Matter**

**Particulate Matter (PM)**

**Key Take-Aways:**

- **Small particles** in the air, especially below  $2.5\ \mu\text{m}$  ( $0.0025\ \text{mm}$ ) are dangerous and can cause all kinds of **serious long term health consequences**. In heavy polluted countries, people can lose up to ten years of their life expectancy due to pollution.
- There are conflicting indexes and colors used across different countries. Make sure you know the PM<sub>2.5</sub> value in  $\mu\text{g}/\text{m}^3$ .
- **There are no safe levels of PM**. It should be as low as possible. The WHO recommends below  $5\ \mu\text{g}/\text{m}^3$  annual average.
- Use **HEPA based** air purifiers indoors or **N95** masks outdoors to reduce your exposure.

source: US Environmental Protection Agency

World Health Organisation: **Keep annual PM<sub>2.5</sub> below  $5\ \mu\text{g}/\text{m}^3$ . The closest to zero the better.**

**AQLI** Air Quality Life Index®

**Air Quality Life Index (AQLI)** life expectancy you lose due to PM air pollution.

## Understanding Key Air Quality Indicators

When checking the air quality by using an air quality monitor, it's essential to focus on the key indicator, as many monitors also record levels of other pollutants such as SO<sub>2</sub> and NO<sub>x</sub>. The levels of CO<sub>2</sub> and PM 2.5 are critical in assessing indoor and outdoor air quality. Various guidelines exist for acceptable levels of CO<sub>2</sub> and PM 2.5. The World Health Organization recommends that the average concentration of PM 2.5 particles should not exceed 15 micrograms per cubic meter (µg/m<sup>3</sup>) over 24 hours, a standard also followed by AirGradient. For CO<sub>2</sub>, AirGradient considers that levels below 801 ppm indicate safe and excellent air quality.

To further provide geographical context, AirGradient recently delivered a global and real-time air quality map that allows individuals and communities to monitor air quality in specific areas. This map is accessible for free, and no subscription is needed. It can help instantly identify the level of CO<sub>2</sub> and PM 2.5, ensuring timely and informed decisions about safety.

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