GUIDANCE ON SETTING UP CLEANER AIR SPACES FOR COMMUNITIES DURING WILDFIRE EVENTS

Purpose:

This document provides practical guidance for communities who wish to set up and maintain cleaner air spaces to protect public health during wildfire events.

Background:

Wildfire smoke can make the air dangerous to breathe.

Wildfire smoke contains harmful pollutants such as fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs). Exposure to these pollutants can lead to lung and heart issues, especially among vulnerable populations such as young children, seniors, pregnant women and people with health conditions.

What are Cleaner Air Spaces:

Cleaner air spaces are designated indoor environments-such as libraries, community centres, schools, or malls-where measures are put in place to ensure air quality is improved to provide temporary relief from wildfire smoke.

Cleaner air spaces help people stay safe when the air outside is smoky.

What makes a good cleaner air space?

To keep the air clean inside, these places should consider the following:

- **Good air filtration:**
  - **Heating, Ventilation and Air Conditioning (HVAC) Systems**: HVAC systems capable of filtering very small particles from smoke (ie PM2.5). Filters should have a Minimum Efficiency Reporting Value (MERV) of 13 or higher.

    - **Air filtration** Use of portable HEPA air cleaners where HVAC upgrades are not feasible. Ensure appropriate equipment is selected according to the size of the air space being filtered.
- **Entryway Design**: Includes staging areas to minimize direct exposure to outdoor air during entry and exit.
- **Trained Personnel**: Assign facility managers who understand HVAC operations and can respond to changing air quality conditions.
- **Closed windows and doors**: Keep smoke from getting inside. If possible, windows may be sealed to prevent outside air from entering.
- **Limit activities that affect indoor air quality.** Avoid candles and smoking, as well as strong chemicals. For buildings with a kitchen or cafeteria, cooking and using exhaust fans should be avoided, or if required should be limited to periods when outdoor smoke levels are low. Gas stoves can deteriorate air quality if exhaust fans are not running, and their operation may increase the amount of outdoor air that enters the building through gaps in the envelope.
- **Cool and comfortable**: Keep the space below 26°C and not too humid.
- **Back-up power available**: This ensures that air systems continue to work during power outages.

Considerations:

- **Occupancy Planning**: Determine maximum safe occupancy in advance.
- **Check the air**: Use air quality monitors if possible. If air quality monitoring is conducted, target conditions are as follows:

    - $PM_{2.5}$ should be kept as low as possible. Indoor levels should be lower than outdoor levels.
    - Carbon monoxide (CO) should be kept below 10 ppm.
    - Carbon dioxide (CO_2) should be kept below 1000 ppm.
    - Temperature should be kept below 26 °C.
    - Relative humidity should be kept between 35 and 50%.
    - Other pollutants such as nitrogen oxides (NO_x), polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs), should also be kept as low as possible.

- **Filter Maintenance**: Since dirty filters don't function effectively, have extra replacements on hand and plan for frequent changes.
- **Ventilation Modes**: Switch between recirculation and fresh air intake based on outdoor conditions.
- **Cleaning Protocols**: Use wet cloths or mops to avoid stirring up dust. Limit the use of chemicals.

For more detailed information and guidance, please consult the following document:
Guidance for Cleaner Air Spaces during Wildfire Smoke Events, Health Canada, 2020.