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| Supporting people when air quality is heavily impacted by bushfire smoke |
| Guidance for local government |
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The size and ongoing nature of the 2019-2020 bushfires created prolonged periods of very poor to hazardous air quality across several rural and urban locations, with many well away from the actual fires. In some cases, these prolonged conditions led to significant ingress of harmful fine particles (PM2.5) from smoke into homes and substantially reduced indoor air quality. These conditions were challenging but particularly so for vulnerable members of the community who had no practical options for temporary relief in the form of ‘cleaner air’ respite.

This guidance is to assist local government environmental health officers, building engineers and emergency management professionals, to plan for community respite to ‘cleaner air’ when local air quality becomes heavily impacted by smoke from large scale or prolonged bushfire activity. This could usefully build on planning and development of cool spaces earmarked for respite during periods of extreme heat.

Planning for and promoting cooler and cleaner air spaces or alternatively the designation of cleaner air rooms inside publicly accessible buildings is an important adaptation strategy as Victoria faces changes to its climate.

People most at risk from smoke exposure include those with existing heart or lung conditions including asthma, infants and young children, peoples over 65 years, pregnant women and people with diabetes. When air quality is continually poor, everyone needs to take care.

# Tips for optimising air quality at home when it is smoky outside

Australian homes vary in type of construction and age and some are better at sealing the interior from the outdoor smoke (or heat). Minimising the entry of smoke into one’s home is an important first step in managing smoke from bushfires. Personnel from home support programs and other council services could provide practical knowledge and information to help their clients maintain the best possible indoor air quality.

Residents can reduce their exposure to PM2.5 in their home by:

* When outdoor air quality is poor, keeping doors and windows closed as much as possible and covering gaps under doors leading to the outside with towels.
* Remembering to open the house up (open doors and windows) when outdoor air improves.
* Stopping activities that make indoor air quality worse such as smoking indoors, burning candles or incense, or stirring up dust by sweeping or vacuuming (unless the vacuum cleaner has a HEPA filter).
* Resting indoors in the coolest room(s) in the house.
* Keeping up to date with active bushfires in the area using Vic Emergency website or App, listening to radio or watching TV and where possible reviewing air quality information on the Environment Protection Authority’s Air Watch website https://www.epa.vic.gov.au/for-community/airwatch
* Staying with a friend or relative outside the smoke-affected area until air quality improves if you are in an at-risk group for smoke exposure (and it is practicable and safe to leave).
* If using an indoor air cleaner, following the manufacturer’s instructions and reading the Smoke and the use of portable indoor air cleaners ([EPA Victoria Publication 1809 January 2020](https://www.epa.vic.gov.au/about-epa/publications/1809) <https://www.epa.vic.gov.au/about-epa/publications/1809>)
* Taking a few hours’ break by visiting a local cleaner air space when the house gets too hot or smoky. This may be the local library, community health centre or other public building promoted by the local council. Shopping centres or cinemas are also useful where available.
* Given bushfires frequently occur during hot weather and it is important people drink enough water to avoid dehydration and if hot, use a fan or air conditioner (on recycle) to keep cool.

# Options for councils to consider when providing temporary cleaner air spaces in the community

## Community Cooler and Cleaner Air Spaces - buildings with suitable HVAC systems

Many communities will have buildings that are accessible and used by the public, which by virtue of their structure and their heating, ventilation and air conditioning system (HVAC system) have more superior air quality and temperature control than most private homes (eg libraries, shopping centres).

Where appropriate, these could be flagged as community cooler and cleaner air spaces (CCC air spaces) and become an option for respite for those whose homes are impacted by bushfire smoke (or extreme heat).

CCC air spaces require not only suitable buildings but accessible advice for maintaining and adjusting HVAC systems. Planning is best informed by a multidisciplinary approach including skills in building engineering, environmental health and HVAC systems.

When identifying buildings as possible candidates as a CCC air space, the following things should be considered:

* Choosing a building with tightly sealed windows and doors. As a rule of thumb, newer buildings are often more desirable than older structures.
* The building’s location with respect to bushfire risk (ie not on the edge of township or adjacent to areas with large fuel loads).
* The building’s capacity (number of people it can hold, cooling and air filtering capacity).
* Amenities, additional seating, child friendly, disability access, wifi capacity, and suitable garbage collection and disposal arrangements.
* Ease of public access and enough parking, including access for emergency service vehicles.
* Where possible, ability to run on alternative or back-up power generation if the power is interrupted.
* Proximity to a relief and/or information centre or other services (ie health or community services).

### HVAC systems – things to consider:

Ventilation systems in office or other commercial-level buildings are complicated. These buildings typically have HVAC systems that bring outside air into the building through filters, blending it with building-return air, and then thermally adjusting the air before distributing it throughout the building. There may also be exhaust air systems for restrooms and kitchens and local exhaust systems for garages or other operations. Switching off or heavily reducing the outdoor air supply can interrupt necessary positive air pressure and affect other essential functions of a building.

Building managers should ensure that the HVAC system is functioning properly[[1]](#footnote-1) and seek expert advice if necessary.

In some circumstances it can be helpful to reduce the amount of outdoor air coming into a building to reduce the amount of smoke entering the building, while also maintaining positive pressure in that building. Before deciding to temporarily reduce outdoor air flow rates in a building, building managers need to ensure that:

* A qualified HVAC technician has inspected the HVAC system and confirmed that: the filters are the correct filtration efficiency[[2]](#footnote-2) for the purpose and are functioning properly; the filter bank is in good repair, and the highest feasible level of filtration has been provided.
* A qualified HVAC technician or engineer has assessed the building’s mechanical systems and determined the amount of outside air necessary to prevent negative pressurisation of the building, and to sufficiently ventilate any hazardous processes in the building (such as enclosed parking garages).
* The HVAC systems are operated continuously while the building is occupied, to provide at least the minimum quantity of outdoor air needed, as determined by the HVAC technician or engineer.

During periods of prolonged poor air quality or extreme heat, consideration should be given to extending the normal opening hours of a CCC air space.

Community members, particularly those who are vulnerable, should be made aware of these sites through all practicable means.

## Designated cleaner air rooms in local community facilities

Not every township has access to public buildings with the level of HVAC system that can be used as a CCC air space. In these locations, consideration may be given to whether a designated cleaner air room could be established within a community facility or service. The room would have a portable air cleaner unit to offer short-term respite during very smoky conditions.

Things to consider when deciding whether to set up a designated cleaner air room in a local community facility:

* The availability and suitability (ie efficacy) of portable air cleaner units.
* The location of a designated cleaner air room will vary from town to town. Facilities that may be considered include a community health centre, maternal and child health centre, bush nursing service, aged care service, or neighbourhood house.
* Select a room that is comfortable to spend time in when the windows are shut and doors into the room can be kept shut as much as possible. The room (eg a meeting room or quiet room) should also not have a lot of foot traffic in and out. For example, a reception area may not be the best location.
* Choose a room air cleaner with enough capacity, ie a tobacco smoke clean air delivery rate (CADR) that is at least two thirds of the volume of the room. Use an air cleaner with a higher CADR in rooms with high ceilings (ie over 2.4 metres).
* The EPA Victoria publication - Smoke and the use of portable indoor air cleaners (Publication 1809 January 2020) - provides information on using portable air cleaner units in the home. This content is also useful in setting up a designated cleaner air room in a community facility.
* Check the air cleaner unit is designed to filter out fine particles in indoor air and fine particles in smoke.
* Always follow the manufacturer’s instructions. Ensure proper maintenance of air cleaners, keep spare filters on hand, and provide instructions to staff on changing the filter.

## Messages councils can use to help people protect their health during smoky conditions

Whenever it is smoky there are a range of things people can do to help protect their health, including:

**People with a heart or lung condition, including asthma** – have an up-to-date asthma action plan or treatment plan in place with your doctor. Follow these plans and carry necessary medication with you. When worried about symptoms seek medical advice or call Nurse of Call on 1300 60 60 24. Anyone experiencing chest tightness or difficulty breathing should call triple zero – 000 for an ambulance.

**Other sensitive groups** – infants and young children, people over 65 years, pregnant women, and people with diabetes should follow advice and information on what to do to protect their health in smoky conditions.

**Keep informed about bushfire activity in your area** - via Vic Emergency – the app, webpage ([www.emergency.vic.gov.au](http://www.emergency.vic.gov.au)) or by calling 1800 226 226 - for real-time emergency warnings and information. Tune in to ABC Local Radio, commercial or designated community radio stations or Sky News TV.

**Check the latest air quality information –** onthe [Environment Protection Authority Victoria AirWatch](https://www.epa.vic.gov.au/for-community/airwatch) webpage < https://www.epa.vic.gov.au/for-community/airwatch> via Vic Emergency or tuning in to ABC Local Radio, commercial and designated community radio stations, or Sky News TV.

**Actions for reducing exposure to smoky air** – reduce time spent outside in the smoke; reduce or defer heavy exercise or physical activity until air quality improves; when driving switch air-conditioning to recycle air; where practicable (ie you are not under direct threat from bushfires) remain indoors. Visit air-conditioned public buildings (eg library, cinema or shopping centre) for a few hours’ respite from the smoke or heat. Refer to above for tips for optimising indoor air quality at home during smoky conditions. When air quality is continually poor, you may also consider staying with a friend or relative outside the smoke-affected area (if this option is available to you) until the air quality improves.

# Further Information:

* Bushfire warnings, relief and recovery – [Emergency Management Victoria](http://www.emergency.vic.gov.au) <www.emergency.vic.gov.au>
* Air quality monitoring and information - [EPA Victoria AirWatch](https://www.epa.vic.gov.au/for-community/airwatch) <www.epa.vic.gov.au/EPAAirWatch>
* [Smoke and your health (March 2023)](http://www.epa.vic.gov.au/for-community/environmental-information/air-quality/smoke/smoke-your-health) - EPA Victoria at <www.epa.vic.gov.au/for-community/environmental-information/air-quality/smoke/smoke-your-health>
* [Smoke and the use of portable indoor air cleaners](https://www.epa.vic.gov.au/about-epa/publications/1809) (January 2020, No. 1809), EPA Victoria <https://www.epa.vic.gov.au/about-epa/publications/1809>
* [Bushfires – Guidelines on the use of face masks](https://www.health.vic.gov.au/publications/bushfires-guidelines-on-the-use-of-face-masks) (January 2020) Department of Health at: <https://www.health.vic.gov.au/publications/bushfires-guidelines-on-the-use-of-face-masks>
* [Health risks of outdoor work in areas impacted by bushfire smoke](https://www.worksafe.vic.gov.au/health-risks-outdoor-work-areas-impacted-bushfire-smoke) (January 2020), Worksafe Victoria [<](file:///C:\Users\kcis0712\Downloads\%3c)https://www.worksafe.vic.gov.au/health-risks-outdoor-work-areas-impacted-bushfire-smoke>
* [United States EPA Wildfire Smoke - A Guide for Public Health Officials](https://www.airnow.gov/publications/wildfire-smoke-guide/wildfire-smoke-a-guide-for-public-health-officials/) (August 2019) <https://www.airnow.gov/publications/wildfire-smoke-guide/wildfire-smoke-a-guide-for-public-health-officials/>
* [Australian Standard 1668.2 (2012) - The use of ventilation and air-conditioning in buildings (mechanical ventilation in buildings](https://www.standards.org.au/standards-catalogue/standard-details?designation=as-1668-2-2012)) [<](file:///C:\Users\kcis0712\Downloads\%3c)https://www.standards.org.au/standards-catalogue/standard-details?designation=as-1668-2-2012>
* [Australian Building Codes Board](http://www.abcb.gov.au) and Australian Institute of Refrigeration, Airconditioning and Heating - Indoor Air Quality Handbook (March 2018; 2nd edition) <www.abcb.gov.au>

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1. Further information on adjusting HVAC systems to protect building occupants from smoke is available in Appendix B and D of the USEPA *Wildfire Smoke – A Guide for Public Health Officials August 2019*. An HVAC engineer can consider and adapt US guidance to Victorian requirements including Australian Standard 1668 (The use of ventilation and air-conditioning in buildings). [↑](#footnote-ref-1)
2. To filter air in the central air conditioning system during major smoky conditions (ie the fire season) with higher efficiency filters an HVAC expert will need to ensure that the system can handle an increased airflow resistance – also noting the power usage of the system my change. [↑](#footnote-ref-2)