

THE FOLLOWING TEMPLATE SUBMISSION, CIRCULATED BY **AUSTRALIAN AIR QUALITY GROUP**, WAS RECEIVED FROM 10 SUBMITTERS.

MANY OF THE SUBMITTERS VARIED THE TEMPLATE, AND/OR ADDED COMMENT ABOUT THEIR OWN WOOD SMOKE HEALTH CONCERNS. SOME ALSO COMMENTED ON OPEN BURNING OF VEGETATION.

NSW POEO (Clean Air) Regulation Consultation

Summary

- The proposed changes do nothing to alleviate the suffering of residents whose health is affected by other people's wood heater pollution.
- Governments have a Duty of Care to enact legislation that protects the health of all residents. The aim should be to meet World Health Organisation Air Quality Guidelines. The modelling in the RIS shows that business-as-usual for wood heating cannot achieve this, because 46% of population-weighted PM_{2.5} exposure in Sydney is from domestic wood heaters. Evidence shows that new wood heaters are only marginally less polluting in real life than older models.
- The NSW Clean Air Strategy incorrectly states that "*Significant improvements to promote more efficient wood heaters were made through the 2016 amendment to the POEO Clean Air Regulation, setting out minimum emission and efficiency standards for new wood heaters in New South Wales. These emission and efficiency limits were tightened further from 1 September 2019.*"
- The grey bars in Figure 7 (right, from [Pearce and Scott, CASANZ19](#)) illustrate the inadequacy of the current Australian standard. The average real-life emissions of the 37 heaters (6.6 g/kg) was 8 times worse than the average of 0.85 g/kg in the AS/NZS 4013 test. Figure 7 shows averages of 15.5 g/kg (2005), 4.6 g/kg (2006 & 2007) and 9.1 g/kg (2009). This is not a safe level of emissions.
- A [position paper by 11 experts from the Centre for Air pollution, energy and health Research](#) (CAR, an NHMRC Centre of Research Excellence) concluded that "*Current Australian wood heater standards are insufficient to protect health.*"
- Running costs (a few hundred dollars per year) of modern, efficient reverse cycle heater-air-conditioners pale into insignificance compared with the health costs of using wood heating. A brand new wood heater installed in 2022 has estimated health costs (over 15 years, based on the RIS's 2021 damage cost estimates for wood heater PM_{2.5} emissions, Table B2) of \$48,528 in the Greater Sydney Metro Region (GMR) if burning 2 tonnes of firewood per year. For Sydney's average firewood consumption of 3.43 tonnes per year (Table 2.2, Federal Government's Consultation Regulation Impact Statement, 2013) the estimated cost is \$80,844.
- Consequently, the NSW Government should take all necessary steps to ensure that new wood heaters are installed only where they are unlikely to affect the health of people living nearby. Research in New Zealand (where, for all installations on blocks less than 2 hectares, stricter requirements were introduced in the year 2005 than the current Australian Standard, as well as, in many cases, requiring all heaters that did not meet the stricter standard to be removed) showed that an increase of just 1 wood heater per hectare [increased by 7% the risk children under 3 would need hospital emergency treatment for everything except accidents](#). All neighbours living in the same hectare should therefore be consulted before a new heater is installed.

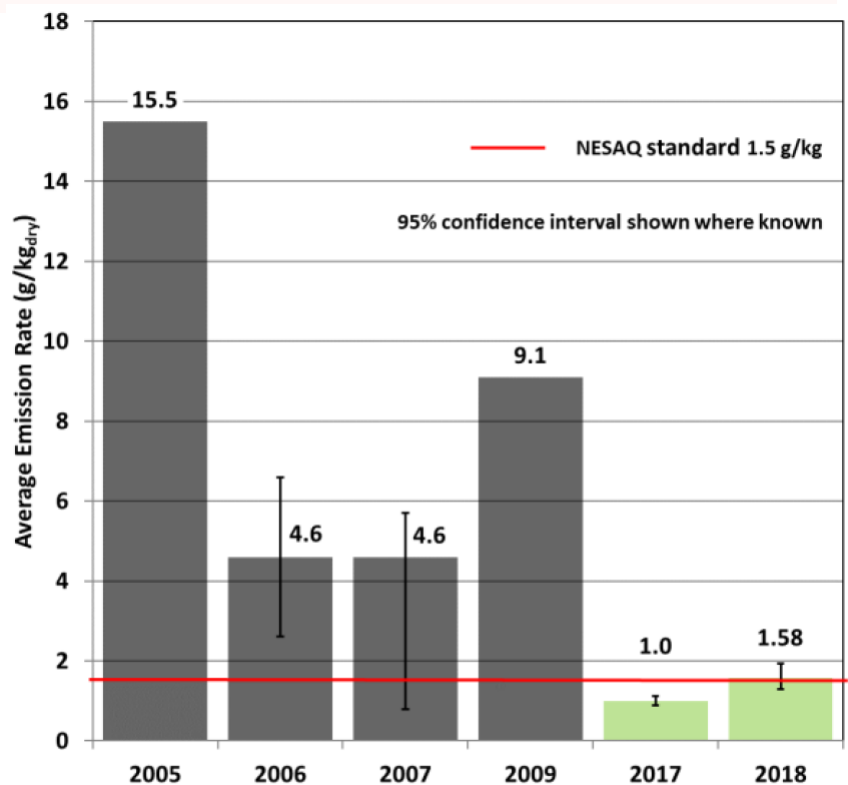
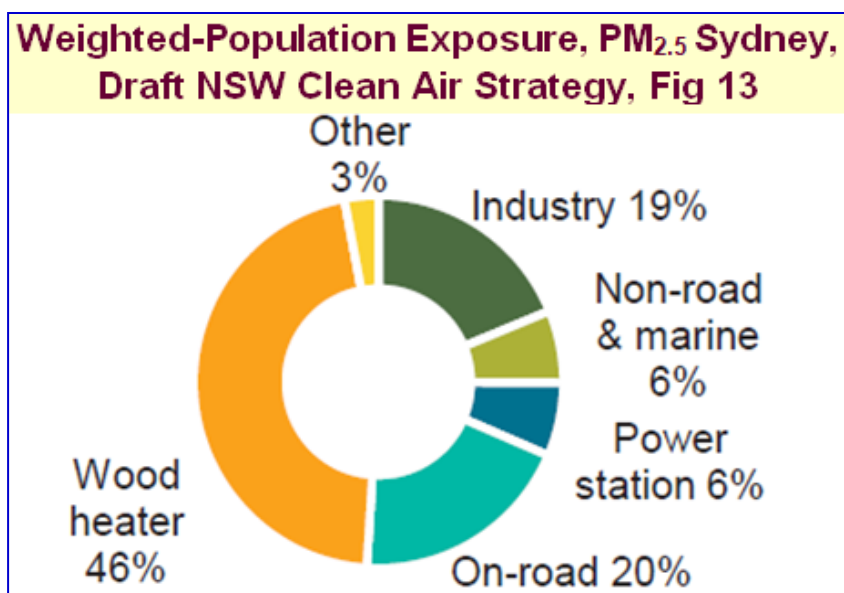


Figure 7. Summary of New Zealand real life testing studies.

- NSW residents whose health is being damaged by other peoples' wood heater pollution are largely unable to protect themselves ([Asthma Australia study](#)). The draft POEO needs major revisions to include effective provisions to assist residents who are currently suffering damage to their health or lifestyle because of other peoples' wood smoke. This should include use of modern technology (e.g. video cameras, accurately calibrated citizen science pollution monitors) to measure the level of exposure and subsidies to replace wood heaters with reverse cycle technology if the problems continue.
- [The answer to a Parliamentary Question in 2021 states](#): "All wood heaters must be installed in accordance with the Australian Standard for installation of wood heaters AS/NZS 2918, which requires the installation of the wood heater flue in such a manner as to prevent smoke penetration through windows or other openings of neighbouring residences." Sufficient evidence that the installation does not comply with AS/NZS 2019 includes videos of smoking chimneys and measurements of increased PM_{2.5} pollution at the victim's property when the offending wood heater is in use, adjacent to windows, doors or other openings that would allow the smoke to penetrate indoors. The POEO should therefore include guidance to local councils about the removal of wood heaters that do not comply with the AS/NZS installation requirements.
- Many people are confused by the failure of the National Pollutant Inventory (NPI) to report PM_{2.5} emissions from wood heaters. The NSW Government should work with the NPI to remedy this problem and avoid future confusion.

Additional Details

A. Wood heater pollution is the major contributor to air pollution health damage and is responsible for an estimated 46% of population-weighted exposure to PM_{2.5} pollution in Sydney – least 100 premature deaths, with health costs of thousands of dollars per wood heater per year.



B. Health evidence (compiled by the Australian Air Quality Group) that pollution from one or two nearby wood heaters (even brand new ones) can have serious impacts on health.

1. One additional modern wood heater per hectare -> increase risk of hospital emergency treatment in children <3 yrs

Also, as noted previously, NZ research demonstrated significant harms from wood heaters meeting stricter requirements than the 2019 Australian 'standard'. The "Growing up in New Zealand" study found that even a single [additional modern woodstove per hectare \(an area 100 metres x 100 metres\) increased by 7% the risk children under 3 would need hospital emergency treatment for everything except accidents.](#)

2. Increased risk of hospital admissions for heart failure (the leading cause of hospitalisation for adults > 65 years

Tasmanian researchers found that hospital admissions for heart failure (the leading cause of hospitalisation for

adults aged over 65 years) started to [increase as soon as PM_{2.5} exceeded 4 ug/m3](#), a tiny fraction of the current Australian PM_{2.5} standard of 25 ug/m3. The researchers noted that the main cause of elevated PM_{2.5} in Tassie is biomass smoke from wood heaters during winter and from bushfires and planned burns at other times of the year.

3. A 1 ug/m3 in wood smoke pollution found to increase in the risk of dementia by 55% - Armidale's average was 7 times this level. A Swedish study estimated PM_{2.5} exposure from traffic and wood stoves (the major source of local emissions) to show that a 1 ug/m3 increase in wood smoke pollution increases dementia risk by 55%. In Armidale, [annual population-weighted exposure to wood smoke averaged 7 ug/m3 and 9.65 ug/m3 at one location in south Armidale](#), many times higher than the 1 ug/m3 found to increase the risk of dementia by 55%, suggesting that Armidale residents are likely to suffer a significant increase in dementia because of wood stove pollution.

4. Harvard review – 10 ug/3 PM_{2.5} increase during early childhood increases risk of autism by 64%

Other research shows significant detrimental impacts on unborn and young children. A review of the published evidence by Harvard researchers found that the risk of Autism Spectrum Disorder increased by 64% with exposure to 10 micrograms of PM_{2.5} per cubic meter of air (mcg/m³) during early childhood and by 31% during prenatal periods. During the prenatal period, the greatest risk was found during the third trimester.

5. Armidale Study – average life expectancy reduced by almost a year – 210 life years lost every year – estimated costs of over \$10,000 per heater per year. A peer-reviewed research paper, published in the Medical Journal of Australia, concluded that wood heater pollution increases population-weighted PM_{2.5} exposure by 7.0 ug/m³ with increased exposure of 9.65 ug/m³ in some locations (e.g. south Armidale). Using the Global Exposure Mortality Model, average life expectancy is reduced by almost a year. Those who died in 2018 would have been expected to live collectively for 210 more years if Armidale households used other forms of heating. The estimated cost of the lost years of life amounts to \$33 million annually, over \$10,000 per wood heater per year.[1]

6. Increased Covid Risk. Many studies show that all fine particle (PM_{2.5} pollution) increases the risk of Covid, including wildfire smoke. This includes studies in Northern Italy, where household wood heating is a major source of PM_{2.5} pollution, and wildfire smoke. The size of the effect is quite staggering. A [study published in 2022](#)[2] in a British Medical Journal (Occupational & Environmental Medicine) concluded that an increase of 1 µg/m3 in the annual average PM_{2.5} exposure increased the risk of Covid by 5.1%, implying a 36% increase in Armidale from wood smoke pollution.

7. Increased risk of cancers. [Recent international research shows that PAH \(polycyclic aromatic hydrocarbon\) emissions from wood burning stoves cause almost half the cancer risk from air pollution in cities](#)[3]. The National Pollutant Inventory shows that wood stoves are also the major source of PAH in Australia. For example, the ACT, wood stoves (used as main heating by less than 5% of households) are the [largest source of PAH \(16,000 kg\)](#), with the [second largest motor vehicles emitting less than half the PAH \(7,300\)](#) and lawn mowing (690 kg) a distant third.

8. Lower birthweights, smaller head circumferences, increased carcinogen-DNA adducts (a biomarker associated with increased cancer risk) in umbilical cord blood, a 5 point reduction in IQ when the children started school, increased risk of behavioural problems such as anxiety and attention deficit and reduced inhibitory control and academic achievement from exposure to PAH (main toxins in wood smoke)

Another study by researchers at Columbia University, New York, measured exposure PAH in pregnant ladies and tested the children over the following years. Several PAH are listed as known human carcinogens, including benzo[*a*]pyrene (BaP), which is also found in cigarette smoke and was featured in TV adverts that claimed “every cigarette is doing you damage” adverts.

The study involved pregnant women recruited between 1998 and 2003. These women were between 18 to 23 years old, non-smokers, non-drug users, and in good health. Prenatal exposure to PAHs was determined from air

sampled in the women's home environment was during the third trimester of the pregnancy. The children were divided into two groups, based on the mother's PAH exposure during the third trimester of pregnancy. The low exposure group has PAH measurements below the median of 2.26 ng/m³ and the high group exposure above the median.

Children of mothers in high exposure group had lower birthweights, smaller head circumferences, increased carcinogen-DNA adducts (a biomarker associated with increased cancer risk) in umbilical cord blood, a 5 point reduction in IQ when the children started school, increased risk of behavioural problems such as anxiety and attention deficit, reduced inhibitory control and academic achievement as adolescents.

The NSW EPA report: 'Ambient Air Quality Research Project (1996–2001) Dioxins, Organics, Polycyclic Aromatic Hydrocarbons and Heavy Metals' reports PAH measurements for Armidale, showing a relatively safe background level of 0.28 ng/m³ in summer, but a whopping average of 8.62 ng/m³ and a maximum daily average of 24.0 ng/m³, much worse than the 2.26 ng/m³ in the Columbia University study. These results again imply that pollution from just one or two wood heaters can have significant and long-lasting impacts on the health of people living nearby.

8. **More information.** Two really good videos are: WHO: Breathe Life 80 sec video: [How air pollution impacts your body](#). Air pollution is an invisible killer that lurks all around us, preying on the young and old. Learn how it slips unnoticed past our body's defences causing deaths from heart attack, strokes, lung disease and cancer.[4] UNICEF 170-sec video: [What does Air Pollution PM_{2.5} do inside children's body and brain?](#)[5] Recent research shows air pollution affects every organ in the body and has been [associated with auto-immune diseases](#). [6]

"If you can see or smell smoke from your wood heater then you are causing a problem for yourself, your family and your neighbours." <https://www.epa.nsw.gov.au/your-environment/air/reducing-wood-smoke-emissions>

C. Example of problems caused by inadequate regulation of wood heater pollution (items 2-9 are from Asthma Australia's submission to on the draft NSW Clean Air Strategy, 10-12 from other independent submissions on the draft NSW Clean Air Strategy)

1) "I live in Armidale, the wood smoke capital of Australia. Our PM2.5 count goes through the roof each winter. But it doesn't matter. There's an entrenched group of wood fire diehards who refuse to listen to reason. **I despair of our wood smoke problem being resolved, and as a result I'll be leaving town because my lungs deserve better.**" RNDrive, 10 May 2022: 1 min 6 secs. <https://www.abc.net.au/radionational/programs/drive/should-we-be-phasing-out-wood-fires-at-home/13875610>

2) "I was hospitalised many times due to my Asthma when I lived in Armidale, but I thought once I moved to Sydney that things would be better. I moved several years ago into a unit block that is next to an old heritage house. I live on the second floor that looks out to their roof and during winter **the smoke from their wood-fire is unbearable.**"

3) "I have severe eosinophilic asthma and the woodfire smoke is just another unavoidable irritant that causes me flareups. I grew up in Armidale, NSW which is a synonymously cold place, it's in a valley on top of a mountain and the smoke from woodfires sits there in winter **creating a haze over the city and causing a lot of grief for asthmatics and those with respiratory issues.**"

4) "I don't know why they haven't been totally banned in residential areas in major cities and large towns, my mother lives in Tamworth and when I was there in July, the smoke from the wood-fire heaters was so bad, luckily I don't have asthma but **it still made me unwell with a headache and sore throat.**" Newcastle resident.

5) "These wood-fire heaters don't have a place in a city where people live in close proximity, just a cluster of a few homes with one can have a large impact on a lot of people in the neighbouring area. I used to live in Kenthurst (suburb of Sydney) and **every winter people in the area would be affected and complain about the smoke to the local council.**" Macquarie Park (Sydney) NSW.

6) "The bushfires we had late last year and early this year were horrendous and I can think of a few people with asthma and a neighbour who had lung cancer who were all suffering terribly because of the smoke and down in Camden (suburb of Sydney) that happens to some people every year in the winter months because of number of homes that have wood-fire heaters, even if you have the flu it really affects you." Sydney, NSW.

7) "In my area there are some older homes that have wood heaters and sometimes the smoke is really thick and noticeable, I don't have a medical condition like asthma but **if I did I would be very upset having to live in that unhealthy environment during winter, so I agree with the last point, there should be regulations that new wood heaters can't be installed in metropolitan areas like Sydney, or if that is going too far, then only wood heaters that are approved by government and don't emit much smoke should be permitted.**" Sydney, NSW.

8) "I am sure there are some regulations in place now that I think local governments set and enforce, but I'm not exactly sure about them because I haven't bothered to check, but the way things are in my area **over the last 4-5 years, the smoke in winter is definitely getting worse and something needs to be done, like not allowing them (wood-fire heaters) to be installed in build up areas.**" Newcastle, NSW.

9) "We have blocked out the air vents in our unit and rarely open the windows during wintertime, **but the smoke is still unavoidable and unnecessary.** Sydney is a high-density city where heating is only required for a small portion of the year, yet we still allow people to burn wood fires, it's absurd." Sydney resident.

10) "My Council has been lobbied many times by people suffering from wood heater pollution and each time it claims it does not have the power to refuse the implementation of more wood heaters and it is in the hands of the NSW government.

"All the Draft Clean Air Strategy does is summarise the existing position which is a 100% failure for anyone affected by wood heater pollution. If your Council doesn't want to do anything about it and says it's up to the NSW government and the NSW government says it's up to the Council then you're well and truly stuffed which is the case for practically all wood heater pollution victims as there is no effective regulation, no effective remedies and nobody in power who cares enough about the real scientific facts of wood heater pollution to give it the attention it needs." Northern Beaches.

11) "Every year during the cooler months I am unable to ventilate my house or go outside to exercise due to woodfire smoke which hangs in the valley where I live.

"I am 65 years old and try my best to eat healthily and exercise. I enjoy long walks and push bike rides throughout the local area.

"Unfortunately, during the cooler months I have to stay indoors due to the smoke. I try to go out and ride the bike but my chest and lungs get really tight and I spend the rest of the night with a productive cough.

"I have heart failure and it is part of my maintenance program to record my activity level along with associated heart rate and provide this to my cardiologist.

"The smoke causes me considerable distress and being locked inside and out of routine with exercise make me miserable and unhealthy.

"I have a 100 year old house and have installed double glazed windows and doors which negates the need for heating provided I wear warm clothes.

"I feel the detrimental and expensive public health outcomes far outweigh the benefits of wood fires and legislation (and perhaps incentives) should be introduced to eliminate the unnecessary impost.

"Split-system air-conditioners are very cheap these days and are excellent for heating. They have COP values in excess of 4.5 meaning for every kilowatt used you obtain 4.5 kilowatts of heating.

"So environmentally with a warming planet and negative health outcomes surely wood fires are completely unjustified.

".... please mandate considerable clean-up of fuels for wood fires as many of the houses around this area use extremely green moisture-laden fuel (timber) which belches smoke out of their chimneys. This is a really

significant issue particularly in the suburb I live, and many residents I have spoken to have also mentioned it to me in passing without prompt.” Double Bay, Sydney.

12) “As a moderate asthmatic, the only choice I have is to close the doors all night long. This doesn't stop the smoke from getting in altogether, however. When this happens, I really struggle to breathe and am quite often scared that a severe attack may be triggered due to their chimney smoke. I'm on both preventative asthma medication and I keep a Ventolin inhaler nearby. The medication helps me cope, but they are no substitute for my lungs having to work extra hard just to get enough oxygen in my body.

“Many times over the years, my partner and I have made contact with Sydney City Council Rangers to get them to come out and witness the billowing smoke. Of course, it could be days or weeks before they come to our flat to see for themselves and it's always during the day when they come -- even though we tell them the fires are normally used in the evening/night. The time or two we've recorded video and sent it to the Council or when the ranger has witnessed the smoke in person, they tell us the only thing they can do is give the fire-burners literature about the types of wood they can use because it is still legal to use chimneys here. I understand that a 2020 Asthma Australia Survey found that [people exposed to wood-fire heaters said they are largely unable to protect themselves from the smoke](#). We certainly feel this way in our flat. We endure sore throats, eyes and noses for an entire third of the year in addition to my compromised lung function due to the chimney smoke.

“In Sydney, the draft NSW Clean Air Strategy shows that wood heater pollution accounts for 46% of population-weighted exposure to PM_{2.5}, the most hazardous air pollutant. This is despite only 4.4% of Sydney-siders using wood as main heating. New wood heaters are almost as polluting and existing models. Any increase in wood heater pollution will counteract the benefits of reduced power station and vehicle pollution.” Sydney City Council.

D. Local councils lack powers & resources to manage wood smoke pollution

The draft POEO needs a major revision to include effective provisions to assist residents who are currently suffering damage to their health or lifestyle because of other peoples' wood smoke. The first three items in C above highlight Armidale Council's inability to manage the health damage from wood smoke pollution. It is driving people away, as well as reducing average life expectancy by almost a year – 210 life years lost every year, with estimated costs of over \$10,000 per heater per year (B, item 5).



Armidale Pollution, August 2021

Other important information (compiled by the AAQG)

Reduced wood heating -> Less Global Warming



Compared with the alternative of letting trees grow, chopping down trees and burning them in enclosed wood heaters speeds up global warming, as explained in this 30 second video from the prestigious New Scientist magazine: '[Log-burning stoves are harming our health and speeding up global warming](#)'. In fact, the ability to reduce the oxygen flow in an enclosed wood heater results in the emission of short-lived climate pollutants (SLCP) including methane, black carbon and carbon monoxide, which, in the 20 years after emission, will cause many times the global warming than heating an identical house with an efficient reverse cycle system. According the Climate and Clean Air Coalition the [best path to net zero is to cut Short-lived Climate Pollutants](#). Even the CO2 emitted by burning the wood causes more harm than other forms of heating: "[Throughout the](#)

[many decades before the replacement forests can grow enough to remove the extra carbon dioxide from the atmosphere, the previously added gas will thaw more permafrost and melt more ice, make ocean acidification worse, accelerate global warming, speed sea-level rise, increase the incidence of extreme weather, worsen drought and water stress, and hurt crop yields—effects that will persist for centuries or longer.](#)"

As well as being more environmentally-friendly, reverse cycle heater-air-conditioners have lower running costs than buying firewood



Heat pump water heater:
1 part of electricity produces
4.5 parts of hot water.

How? **3.5** parts of renewable heat
go in here.



In Australia, heat pump
water heaters receive
renewable energy certificates,
just like solar PV.



Energy Expert Dr Tim Forcey explains in [this webinar](#) in February 2022 that heat pump hot water systems are eligible for renewable energy certificates because it takes just 1 unit of electricity to generate 4.5 units of hot water. Modern, efficient, reverse cycle air conditioners (also called heat pumps) can do even better. They, too move the sun's warmth from outside to inside homes, and can deliver 5 or 6 times as much heat to the home as they use in electric power. They are now the cheapest and most environmentally friendly heating option, with substantially lower running costs than buying firewood.

Some years ago, the Christchurch Clean Heat Project replaced wood heating in 1973 households with heater–air conditioners (and improved insulation when needed); the average increase in electricity use was just 1%.

Renewable energy in the home: 3 forms of solar energy



1) Solar PV
(20%)

2) Hot-water
heat pump
(30%)



3) Space-
heating heat
pump (50%)



Reverse cycle heater-air-conditioners create comfortable, convenient homes

Reverse cycle units have other advantages, such as thermostatic control, timers and even remote control via the internet, enabling the unit to be turned off after leaving home and turned on again at an appropriate time to take advantage of low-cost solar energy and ensure the home is at a comfortable temperature when the occupants arrive at the house.

As well as the traditional wall mounted units, there are floor mounted units, including some that provide radiant heat as well as warm air.



Reverse cycle unit with radiant heat + warm air



Reduced wood heater pollution -> reduced risk of Covid, Flu & other Respiratory Infections

Wood smoke exposure reduced the ability of the lungs to fight infection.[7] [Many studies also show that all fine particle \(PM_{2.5} pollution\) increases the risk of Covid](#), including wildfire smoke. This includes studies in Northern Italy, where household wood heating is a major source of PM_{2.5} pollution, and wildfire smoke. The size of the effect is staggering. A study published in 2022 in the British Medical Journal concluded that an increase of 1 µg/m³ in the annual average PM_{2.5} exposure increased the risk of Covid by 5.1%[2]. Armidale was noted above to have a significant wood heater pollution problem, which is therefore expected to increase Covid cases by 36%. Even mild Omicron infections can result in debilitating long Covid, as shown by this example of [a double-vaccinated 28-year old male](#).

[Observational studies show that air pollution worsened the 1918, 1957-58 and 1968-69 flu pandemics. In China, the risk of dying from SARS more than doubled at high levels of air pollution.](#)

Reduced wood heater pollution -> Increased Bushfire Resilience

The [2019-20 bushfires were associated with 417 excess deaths in Eastern Australia](#) [1] Tackling this pollution would result in a healthier population at the end of winter, with healthier lungs and appropriate knowledge (e.g. the benefits of HEPA filtration) and consequently increased resilience to face future bushfires.

The New South Wales parliamentary inquiry into the health impacts of the recent bushfires and drought was told about the tragic death of 19 year old Courtney Partridge-McLennon. *"...we don't have air quality monitoring the same way that metropolitan areas do. You can look outside and use common sense and go, it's pretty smoky out there but the understanding of what the levels are, if they're hazardous don't exist for regional NSW."*

<https://www.9news.com.au/national/asthma-bushfire-season-inquiry-family-whose-daughter-died-give-evidence/dadc3d8a-1686-4c4e-9f95-4f720f82dd9f>

If [Low-cost air-pollution monitors](#) such as those used in Armidale in 2018 are used by councils to check compliance with AS/NZS 2019, though could also provide accurate warnings of hazardous bushfire smoke and help prevent such tragedies in future. Alerting residents to the presence of bushfire smoke would allow them to reduce the penetration of harmful smoke into their homes by closing doors and windows and switching on HEPA filtration.

Reduced wood heater pollution -> Increased Productivity

In cities such as the ACT, domestic solid fuel burning (used as main heating by less than 5% of households) is the [major source of PAH, accounting for 16,000 kg of PAH per year, over twice the 7,300 kg of PAH emissions of all vehicles in the ACT](#). Box 1 describes the research linking exposure to PAH to a 5 point reduction in IQ when the

children started school, increased risk of behavioural problems such as anxiety and attention deficit, reduced inhibitory control and academic achievement as adolescents.

Dr Tedros Ghebreyesus, director general of the World Health Organization drew attention to the problem of long-lasting impacts, advising in October 2018 that: “*exposure to air pollution during pregnancy can damage a developing baby’s vital organs including the brain, heart and lungs and lead to a range of conditions including asthma, heart disease and cancers ... Air pollution also negatively affects brain development during childhood, lowering children’s chances of success in school and employment possibilities later in life*”.

A critical review of 69 studies of the effect of air pollution on cognitive function concluded that: “*the evidence reviewed has been consistent in reporting associations between chronic exposure to air pollution and reduced global cognition, as well as impairment in specific cognitive domains including visuo-spatial abilities. Cognitive decline and dementia incidence have also been consistently associated with exposure to air pollution.*”

Even short-term increases in PM_{2.5} pollution have been shown to affect cognitive performance and productivity, including the [probability of making a wrong move in chess](#) and football player performance.

Reducing wood smoke pollution will therefore lead to improved performance and productivity at work.


Reduced wood heater pollution -> Safer Community

PM_{2.5} air pollution, including wildfire smoke pollution, is also linked to [increased violent crime rates](#). Reducing woodsmoke PM_{2.5} pollution will therefore contribute to lower violent crime rates and a safer community.


Informed Communities are needed for informed decisions

Good information is required for good decisions. The Centre for Air pollution, energy and health Research (CAR) report ‘[Cleaner air for Australians](#)’ (CAFA) (11 March 2022) noted that “*In the community, little is known about the significant pollution and health issue of wood heater smoke.*”

For example, PM_{2.5} is generally considered the most hazardous air pollutant. Despite the information in the draft NSW Clean Air Strategy, many people have no idea that a very small proportion of Sydney households using wood heating are responsible for nearly half of population-weighted exposure to PM_{2.5} pollution.



Australian Government
 Department of the Environment and Energy

National Pollutant Inventory
 

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2019/2020 data within Australian Capital Territory - Polycyclic aromatic hydrocarbons (B[a]Peq) from All Sources

A list of emissions of the chosen substance by source. Click on a source to add it to the current search criteria. Industrial sources are indicated by their three digit ANZSIC Group code. Diffuse sources are indicated by [*].

Source	Air (kg) ^[1]	Land (kg) ^[1]	Water (kg) ^[1]
Solid fuel burning (domestic) [*]	16,000		
Motor Vehicles [*]	7,300		
Lawn Mowing [*]	690		
Cutback Bitumen [*]	280		
Petroleum and Coal Product Manufacturing [170]	15		
Barbeques [*]	3.2		
Gaseous fuel burning (domestic) [*]	1.0		

NPI

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Search Criteria

- Source Type = All
- Include subthreshold facility data = Yes
- Reporting year = 2019/2020
- State = Australian Capital Territory
- Substance = Polycyclic aromatic hydrocarbons (B[a]Peq)
- Destination type = All

[Edit Criteria](#)

Similarly, PAH are considered some of the most toxic chemicals in our air. Several are listed as known human carcinogens. Despite National Pollutant Inventory data, many wood heater users have no idea that domestic solid fuel burning (i.e. wood heating) is the major source of PAH polluting our air.

1. Robinson, D.L., et al., *The effects on mortality and the associated financial costs of wood heater pollution in a regional Australian city*. <https://www.mja.com.au/journal/2021/215/6/effects-mortality-and-associated-financial-costs-wood-heater-pollution-regional>. Medical Journal of Australia, 2021. **n/a**(n/a).
2. Veronesi, G., et al., *Long-term exposure to air pollution and COVID-19 incidence: a prospective study of residents in the city of Varese, Northern Italy*. Occupational and Environmental Medicine, 2022: p. oemed-2021-107833.
3. The Six News. *Wood burning stove cause almost the cancer risk from air pollution in cities*. Available at: <https://thesixnews.com/wood-burning-stoves-cause-almost-half-the-cancer-risk-from-air-pollution-in-cities-study-air-pollution/>. 2021.
4. WHO:, World Health Organization: *Breathe Life - How air pollution impacts your body*. <https://www.youtube.com/watch?v=GVBey1jSG9Y>. 2018.
5. UNICEF, *What does Air Pollution PM 2.5 do inside children's body and brain?* <https://www.youtube.com/watch?v=QcS3ovdsqNI>) 170 sec video 2018.
6. Coules, C. *Long-term exposure to air pollution linked to heightened autoimmune disease risk*. Air Quality News. Available at: <https://airqualitynews.com/2022/03/16/long-term-exposure-to-air-pollution-linked-to-heightened-autoimmune-disease-risk/>. 2022.
7. Stone, R., *Environmental toxicants under scrutiny at Baltimore meeting*. (March 1995 Society of Toxicology conference). Science, 1995. March 24, v267 n5205 p1770(2).