

Kate Forster
Emerald Victoria

SUBMISSION

5. Are there particular areas of air quality (either pollution sources or geographic regions) you think the government should target for air quality improvement? Why?

The Dandenong Ranges (both Yarra Ranges and Cardinia Shire Councils).

I have lived in Emerald in the Dandenong Ranges for over 30 years. I moved to the area partly for healthy air. I cannot agree that air quality in my neighbourhood has improved over that time. Now that I am aware of the serious hazards of biomass smoke and my limited capacity to avoid it in this environment I am wondering if I should leave the community where I have made my life and a considerable contribution.

Wood fires and open air burning have been synonymous with the Dandenongs where wood is still plentiful on private properties which usually have large gardens or hobby farms. There is a strong culture of burning off to “clean up” gardens, encouraged for fire prevention over many years, but if observed frequently more about tidying. The whole Dandenong Ranges can be shrouded in a pall of smoke, particularly when open air burning restrictions are lifted in autumn and a huge number of residents take to burning off green, wet leaves and vegetation that would have rotted down into the soil if left until just prior to any bush fire risk in October. This is not in compliance with open air burning local laws, but information and education for the community is inadequate and so is enforcement.

The general community mostly believes this smoke is natural and basically no problem (even a sweet hills smell) and only a concern for asthmatics or washing of dense. They think it rises up in the sky quickly where it has no ill effect. Both Cardinia Shire Council and Yarra Ranges Council emphasise reducing fuel load for community safety from “devastating bushfire”, but do not inform their communities about the substantive devastating health impacts of biomass smoke. An adult cannot smoke in a children’s playground, but it may be smoky from a neighbour’s burning off all day long.

Open air burning in the Dandenong Ranges is a major issue that must be addressed.

Endorsed and adopted responses from the Australian Air Quality Group:

What do you think are the best value actions listed in the statement that are likely to help improve future air quality?

The best value actions are those with the greatest net benefit. The policy impact assessment of Victoria’s draft Waste Management Policy (Solid Fuel Heating, DWMP SFH) released in November 2017 concluded that the health costs of residential wood heating amounts to \$8 billion.

In a [New Scientist](#) article **We really must stop burning wood** (June 2018), air pollution expert Gary Fuller, King's College London, says: "*Having a neighbour with a wood burner is like having 8 trucks sitting in your street with the engines idling all night.... Oh, if you think that burning wood is at least better for the climate, you are wrong. In most cases, sticking*

with gas central heating and properly insulating your home is less harmful in global warming terms than switching to a wood burner."

Strengthening Victorian equipment standards such as wood heater emissions represents the best value action listed in the statement, but to be effective it needs to achieve a major reduction of at least 90% in *real-life* emissions.

The graph below, compiled from the data in Appendix 1 of the AAQG submission to the DWMPFSH, shows that the current AS4013 lab test for wood heaters bears virtually no relationship with real-life emissions.

Reducing emissions in a lab test that bears virtually no relationship with real-life emissions will create years of misery and ill health, especially for people who are unfortunate enough to live near to such installations. A moratorium is therefore needed on new installations until a test has been developed that accurately predicts real-life emissions. Moreover, all installations whose approval was based on the current ineffective lab test should be removed, especially when they are affecting the health of people living nearby.

New Heater standards are ineffective, as shown by the graph below, in which average emissions of heaters rated 0.6, 0.8 and 0.9 grams/kg firewood were all higher than those rated 1.2 g/kg.

How would you build on or vary these actions?

The Federal Government released a Consultation Regulation Impact Statement for Reducing Emissions from Wood Heaters' (CRIS) in April 2013. A majority (33) of the submissions on the CRIS either advocated banning or phasing out all wood heaters in urban areas (25 submissions) or not allowing new wood heaters to be installed (8 submissions). Nearly half of all submitters reported suffering from unresolved problems caused by neighbouring wood heater pollution, with 39% of all submissions reporting adverse health effects often requiring increasing medicinal solutions, including steroid use for asthma diagnoses in children.

Similar neighbourhood examples were also cited in submissions from other stakeholders, such as academic and community groups.

As noted above, a moratorium is needed on new installations is required until a test has been developed that accurately predicts real-life emissions. Moreover, all installations based on the current lab test need to be removed, especially when they are affecting the health of people living nearby. Until a new test is developed, the health cost in Melbourne of a brand new wood heater with lab test emissions of 1.5 g/kg is estimated to exceed \$6,500 per year – see Table 1 (right hand column) of <http://woodsmoke.3sc.net/submiss> This is totally unacceptable.

As noted above, air pollution expert Gary Fuller said: "*Having a neighbour with a wood burner is like having 8 trucks sitting in your street with the engines idling all night.*" The deterioration in air quality from having even one truck idling all night should be considered unacceptable, let alone eight!

New installations should not therefore be allowed until a new standard has been developed that reduces real-life emissions by at least 90% and priority for funding to clean up the air given to phasing out existing wood heaters, because of huge \$8 billion health costs.

Are you able to provide any data or information that will help government assess the feasibility and cost-effectiveness of air quality management actions?

The policy impact assessment of Victoria's draft Waste Management Policy (Solid Fuel Heating) found that the health costs of residential wood heating amounts to \$8 billion.

Modern, efficient heat pumps have now superseded wood stoves and natural gas as the most cost-effective heating. They can deliver 5 or 6 times as much heat to the home as they use in

electric power and are effective at low temperatures, providing 3 to 4.5 times as much heat even when the temperature outside is -10 °C (10 degrees below freezing). They are affordable (cheaper than buying a wood heater), cause less global warming (zero in households that use green power) and have lower running costs than buying firewood. This implies that switching to non-polluting heating will save money, i.e. have a zero net cost and substantial environmental benefit.

The latest research raises extremely serious concerns about the health damage from woodsmoke pollution, including serious effects on children. For example, The "Growing up in New Zealand" study found that every additional modern woodstove per hectare increased by 7% the risk children under 3 would need hospital emergency treatment. Woodsmoke pollution also damages the lungs, hearts and brains of adults. We have seen that people who live in areas where wood-fire stoves are common run a greater risk of being affected (by dementia), and that also goes for people who live next to someone who uses wood-fire stoves." said Anna Oudin, a researcher in occupational and environmental medicine at Umea University's department of public health and clinical medicine. "The risk for residents living in areas with the highest rate of smoke from wood fires to be hit by dementia, or dementia-related diseases, was 30% higher compared to other residents in the town of Umea. "In households that had their own wood-fire stoves the risk was 70% higher." The abstract of the journal paper shows that exposure of just 1 ug/m³ of PM_{2.5} pollution increased the risk of dementia by 55%. In May/June 2018, woodsmoke pollution at the new OEH monitoring station in Armidale, NSW averaged 17 ug/m³, 17 times worse than the woodsmoke exposure found to increase dementia by 55%. In the USA, increased exposure of 10 ug/m³ PM_{2.5} increased the risk of dementia by 80%, Alzheimer's by 150% and the risk of Parkinson's diseases by 80% Increased exposure of 3.5 ug/m³ reduced the volume of white matter in the brain by 6.2 cubic centimeters. Exposure to PM_{2.5} pollution above the US EPA standard of 12 ug/m³ nearly doubles the risk of cognitive decline and all-cause dementia; exposure to this level of PM_{2.5} pollution quadrupled the risk for people with 2 copies of the APOE gene.

Researchers from the Menzies Institute for Medical Research showed that that hospital admissions for heart failure (HF, the leading cause of hospitalisation for adults aged over 65 years) started to increase as soon as PM_{2.5} from woodsmoke exceeded 4 ug/m³. They are now investigating the role of HEPA filters in reducing the risk.

What more data or information do you need to make this the top priority? What other clean air policy option will save \$8 billion in health costs for a zero net cost?

Please also consider the submissions on Victoria Waste Management Policy (Solid Fuel Heating, which closed 16 May 2018) as submissions for the current consultation – they are just as relevant now as last month

Suggestions for a Submission on Victoria's Waste Management Policy (Solid Fuel Heating) variation. Email to: solidfuel.heaters@epa.vic.gov.au Deadline: 16 May 2018

- 1) Given the \$8 billion estimated health cost of wood heater pollution, a 0.4% reduction is not acceptable.
- 2) The estimated net benefit of Alternative Policy 2 (increase existing wood heater replacement rate) was \$463 million, 14 times better than the proposed policy. This alternative had a very favourable benefit-cost ratio of 8.8. The policy with the greatest net benefit should have been chosen.
- 3) The assessment should have considered other policy options such as not allowing new heaters to be installed except as replacements for more polluting heaters. The policy assessment for Alternative 3 argues that if the installation of new heaters is not permitted 'a proportion of existing wood heaters would continue to be used beyond the time at which they would otherwise be replaced with a more efficient, 'low-emitting' new heater. Hence, while the total number of wood heaters would reduce over time, the average performance of in service

heaters would worsen in terms of PM output. This would not happen if new heaters were permitted only as replacements for more polluting models. This was the policy in Christchurch, New Zealand for many years until the region developed a new method of testing wood heaters that better reflects real-life emissions.

4) Another option that would be much better for our health is to allow only pellet heaters with emissions below 0.5 g/kg, or log-burning heaters that pass Christchurch's much stricter emissions test when burning Australian hardwoods.

5) Other important policy options to consider include the 3 options in the NSW AECOM consultancy report of 1) Not allowing new wood heaters 2) Requiring existing heaters to be removed when houses are sold and 3) licencing fees for wood heaters. Woodsmoke was estimated to be an \$8 billion health problem in NSW, but the combined effect of these 3 policies was estimated to reduce the health costs by more than 75%. Victoria's policy impact assessment should also have evaluated these options.

6) The summary of submissions to the '*Consultation Regulation Impact Statement for Reducing Emissions from Wood Heaters*' notes that nearly half of all submitters reported suffering from unresolved problems caused by neighbouring wood heater pollution, with 39% of all submissions reporting adverse health effects often requiring increasing medicinal solutions, including steroid use for asthma diagnoses in children. Similar neighbourhood examples were also cited in submissions from other stakeholders, such as academic and community groups. The policy assessment notes that the EPA has received several complaints about inaction by local councils, but provides no effective mechanism to protect neighbours whose health is adversely affected by other people's woodsmoke. This is unacceptable.

7) Tests in New Zealand found that real-life emissions bear little relationship to the AS4013 laboratory test. Estimates of health damage in the policy impact assessment should be based on the evidence from New Zealand that real-life emissions of wood stoves with AS4013 emissions ratings below 1.0 g/kg have real-life emissions of 6.6 g/kg.

In conclusion, the policy impact assessment should consider the alternatives to the current draft policy listed above; the one with the greatest net benefit should be adopted.

FURTHER COMMENT FROM KATE FORSTER

Hello

"Exposure to PM <2.5 µm in diameter (PM2.5) *over a few hours to weeks* can trigger cardiovascular disease-related mortality and nonfatal events" (my italics). (Particulate matter air pollution and cardiovascular disease: An update to the scientific statement from the American Heart Association, abstract, 2010, see in full below).

Why isn't the community being warned about this level of risk by government, health authorities and the EPA? Are those using or considering using wood burning heaters/stoves/fireplaces/barbecues which produce considerable PM2.5 being given this information? My new hot water bottle came with an Australian Government safety brochure. Where are the warnings on biomass smoke producing products, and for the broader community subjected to smoke from these products? Why are they being sold and used at all in light of the research evidence accumulated over the last 10 years?

Why isn't the full range of known and likely health impacts information being presented to inform the community during consultation for wood heaters standards and local government open air burning local laws? How can consultation be meaningful when key safety information is absent? How can decision making be seen as balanced when there isn't clear transparency about this information?

The Lancet Commission on Pollution and Health (2017) led by eminent world experts states:

“PM2.5 is the best studied form of air pollution and is linked to a wide range of diseases in several organ systems. The strongest causal associations are seen between PM2.5 pollution and cardiovascular and pulmonary disease. Specific causal associations have been established between PM2.5 pollution and myocardial infarction, hypertension, congestive heart failure, arrhythmias, and cardiovascular mortality. Causal associations have also been established between PM2.5 pollution and chronic obstructive pulmonary disease and lung cancer. The International Agency for Research on Cancer has reported that airborne particulate matter and ambient air pollution are proven group 1 human carcinogens.

Fine particulate air pollution is associated with several risk factors for cardiovascular disease, including: hypertension, increased serum lipid concentrations, accelerated progression of atherosclerosis, increased prevalence of cardiac arrhythmias, increased numbers of visits to emergency departments for cardiac conditions, increased risk of acute myocardial infarction, and increased mortality from cardiovascular disease and stroke.

Clinical and experimental studies suggest that fine airborne particles increase risk of cardiovascular dis-

ease by inducing atherosclerosis, increasing oxidative stress, increasing insulin resistance, promoting endo-thelial dysfunction, and enhancing propensity to coagulation.

Emerging evidence suggests that additional causal associations may exist between PM2.5 pollution and several highly prevalent non-communicable diseases. These include diabetes, decreased cognitive function, attention-deficit or hyperactivity disorder and autism in children, and neurodegenerative disease, including dementia, in adults. PM2.5 pollution may also be linked to increased occurrence of premature birth and low birthweight. Some studies have reported an association between ambient air pollution and increased risk of sudden infant death syndrome. These associations are not yet firmly established, and the burden of disease associated with them has not yet been quantified”.

(The Lancet Commission on Pollution and Health, updated November 2017, p. 14 of 51, available at no cost at

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32345-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32345-0/fulltext))

The current Yarra Ranges Council (Victoria) consultation on their Open Air Burning Local Law 2018, informed by EPA advice I was told, does not appear to be taking this into account. Under ‘Key issues’ in the Special Committee Agenda 20 June 2018 for hearing submissions, health impacts are not listed as a heading, and under ‘Social Impacts’ safety is linked to fire risk, then: “Council’s responses to the submissions must attempt to reach a balance between fire prevention and health and wellbeing, by considering the health implications of *excessive or offensive smoke*” (p. 7, my italics). Does this reflect an outdated law under which the local law is being created? It certainly doesn’t reflect the consolidated health research evidence over the last 10 years, unless offensive and excessive refers to any smoke at all. Council’s qualified health officers have had no input on the review of this local law I was told.

Similar circumstances existed with Cardinia Shire Council’s review of open air burning local law in recent years. What health evidence are councils using to decide on allowing extensive community exposure to biomass smoke, which is also known to contain many toxic components besides PM2.5? How are they accountable to their communities for death, disease and disability burdens that on an individual basis cannot be directly attributed? Should they only be concerned with directly attributable causes such as bushfire?

Within the interface councils residents are being subjected to regular, extensive biomass smoke due to fuel reduction burns, industrial forestry burns, open air burning by residents, crop burning (orchards, vineyards), and wood fueled heating/cooking, as well as occasional wild fires, many started by burning off. There is little recent consideration for environmental conditions in these areas caused by valleys and cold air inversion leading to smoke remaining close to the ground where it seeps into houses. Previous restriction of open air burning hours with regard to these issues has been lifted in Cardinia with 24 hour open air burning, and now this is proposed in Yarra Ranges.

The risk of harm caused by smoke to citizens of all ages must be recognised, quantified and reduced. The right to clean, healthy air must be respected. The sweet smell of wood smoke must be recognised, like cigarette smoke, for the toxic miasma it truly is.

Sincerely,
Kate Forster

Copy of full abstract and link below:
Abstract

In 2004, the first American Heart Association scientific statement on "Air Pollution and Cardiovascular Disease" concluded that exposure to particulate matter (PM) air pollution contributes to cardiovascular morbidity and mortality. In the interim, numerous studies have expanded our understanding of this association and further elucidated the physiological and molecular mechanisms involved. The main objective of this updated American Heart Association scientific statement is to provide a comprehensive review of the new evidence linking PM exposure with cardiovascular disease, with a specific focus on highlighting the clinical implications for researchers and healthcare providers. The writing group also sought to provide expert consensus opinions on many aspects of the current state of science and updated suggestions for areas of future research. On the basis of the findings of this review, several new conclusions were reached, including the following: Exposure to PM <2.5 µm in diameter (PM_{2.5}) over a few hours to weeks can trigger cardiovascular disease-related mortality and nonfatal events; longer-term exposure (eg, a few years) increases the risk for cardiovascular mortality to an even greater extent than exposures over a few days and reduces life expectancy within more highly exposed segments of the population by several months to a few years; reductions in PM levels are associated with decreases in cardiovascular mortality within a time frame as short as a few years; and many credible pathological mechanisms have been elucidated that lend biological plausibility to these findings. It is the opinion of the writing group that the overall evidence is consistent with a causal relationship between PM_{2.5} exposure and cardiovascular morbidity and mortality. This body of evidence has grown and been strengthened substantially since the first American Heart Association scientific statement was published. Finally, PM_{2.5} exposure is deemed a modifiable factor that contributes to cardiovascular morbidity and mortality.”

<https://uncch.pure.elsevier.com/en/publications/particulate-matter-air-pollution-and-cardiovascular-disease-an-up>