

Fiona Ewings

YARRAMBAT VIC 3091

4 May, 2018

The Hon Liliana D'Ambrosio, MP
Minister for Energy, Environment and Climate Change
Minister for Suburban Development
Level 17, 8 Nicholson Street
EAST MELBOURNE VIC 3002

Dear Minister D'Ambrosio,

The issue of particulate matter reduction in Victorian communities is not being adequately managed because the contribution of wood heaters to the burden of air pollution in communities Victoria-wide is not being sufficiently recognised, measured or acted upon.

It is well documented that airborne small particles are a major cause of illness and premature death in communities (Naeher et al., 2007). Of particular concern to health is particulate matter with a diameter smaller than $2.5\mu\text{m}$ (hereafter referred to as $\text{PM}_{2.5}$). The World Health Organisation has classified particulate matter as carcinogenic to humans (IARC, 2013). The Environment Protection Authority (EPA) Victoria acknowledges the health impacts of $\text{PM}_{2.5}$ in the Community Smoke and Air Quality Standard assessment report (State of Victoria, 2015). An example of empirical studies linking particulate matter from wood smoke to disease and premature death include a 2011 study of 45 Canadians exposed to $\text{PM}_{2.5}$ mainly from wood smoke which associated exposure with cardiovascular disease (Allen et al., 2011); a study of personal exposure of 50 people to moderate levels of $\text{PM}_{2.5}$ which caused DNA damage and lung cancer (Sørensen et al., 2003); and a study finding a correlation between cardiac arrests and elevated $\text{PM}_{2.5}$ levels, in Melbourne during forest fires (Dennekamp et al., 2011). A report commissioned by the NSW Office of Environment and Heritage (AECOM Australia, 2011) estimated that health costs associated with wood heaters of \$8.8 billion over a 20 year period. There is no safe level of $\text{PM}_{2.5}$ exposure (Barnett, 2014).

One of the major contributors of $\text{PM}_{2.5}$ in many communities is wood heaters. In Armidale, New South Wales, a town with no large polluting industry, wood smoke contribution to $\text{PM}_{2.5}$ is estimated at above 85% in winter (DECCW, 2010) in Launceston, Tasmania prior to interventions, 85% (Ling, 2004). Even for a metropolitan city like Sydney where wood heater ownership is comparably low, wood heaters contribute 60% of winter

PM_{2.5} (DECCW, 2010). Therefore, action to reduce PM_{2.5} must have a large focus on the main cause for most communities which, particularly in winter, is wood heater emissions. The problem will grow as the proportion of residences burning wood as their main form of heating has been rising (Senate Community Affairs Committee, 2013), with the Australian Bureau of Statistics (ABS) figures revealing increased gas and electricity prices as being the reason for increased wood heating (cited by Senate Community Affairs Committee, 2013).

Beyond Victoria setting 24-hour reportable PM_{2.5} at 20 µm/m³ (Environment Protection Authority Victoria, 2016) Victoria is lagging behind other jurisdictions regarding working towards solutions for reducing wood fire emissions. There are no effective measuring programs assessing the levels of PM_{2.5} experienced by many communities, a lack of investigations or studies, there are no concrete programs within Victoria in place to reduce wood heater emissions in communities that experience raised PM_{2.5} levels particularly during wood heating season, nor effective jurisdictional powers in at local government levels. Yet other jurisdictions where incentive to change is provided, have shown that wood heater particulate levels can be effectively cut, with acceptance by communities, to achieve proven air quality improvements.

There are insufficient monitors in place to identify the communities worst-affected by wood smoke across Victoria. First of all, current measuring of PM_{2.5} only occurs through eight permanent beta attenuation monitors, none of which are situated at outer suburban limits where natural gas is unavailable and wood heater usage is higher (Environment Protection Authority Victoria, 2017), and nine portable monitors sites capable of measuring PM_{2.5}, with regional locations mainly limited to townships with coal industry. Therefore many communities with high PM_{2.5} burden caused by wood heaters aren't being recognised and responded to. This concern is shared by the NEPC Review (National Environment Protection Council, 2011) and the Australian Medical Association submission (cited by Senate Community Affairs Committee, 2013). PM_{2.5} can drastically affect individual communities with even low to moderate wood heater usage (AECOM Australia, 2011), especially where topographical and meteorological features cause concentrations of PM_{2.5} to linger (COAG, 2015). Secondly, targets are for average means across a region and averaged over 24 hour timespans, not actual hourly or peak levels of exposure at community level. Studies have shown that harmful health effects can be caused by short term as well as long term exposure (Senate Community Affairs Committee, 2013).

At a federal level, the opportunity to set standards for emissions from new wood heaters at 1g particulate matter per kilogram of wood burned (1g/kg) in line with best practice and the expectations of health and environmental experts and the community (Senate Community Affairs Committee, 2013) was unable to be achieved because of standards being rejected by wood heater industry. The subsequent change to 2.5g/kg, however, affects only newly purchased compliant wood heaters and not current wood heaters. Additionally, studies have shown that actual wood heater usage differs vastly from laboratory testing of emissions (AECOM Australia, 2011).

EPA Victoria, the body responsible for protecting people from pollution (Environment Protection Act, 1970) has no programs which effectively investigate or control wood heater PM_{2.5} emissions. A jurisdictional comparison of wood heater emissions management (COAG, 2015) reveals Victoria does not manage regulation of used heaters, does not regulate modifications to heaters, does not regulate firewood and is the only state reported to have no recent community awareness or education programs relating to wood heaters. Victoria is listed as having no buy-back programs compared to New South Wales, Western Australia, Tasmania and the Australian Capital Territory which have had a variety of such programs (COAG, 2015). Victoria's lag behind New South Wales on wood heater attention is evident from the material available on each state's parallel EPA website. The New South Wales EPA website cites an initiative entitled the "Wood Smoke Program" which "provides the community and local council staff with the information, resources and policy options for managing emissions from woodheaters" (Environment Protection Authority NSW, 2017), and provides details of various research and action plans being implemented (Environment Protection Authority NSW, 2016). In contrast, EPA Victoria's website, makes very little reference to wood smoke, and mainly discusses PM_{2.5} in terms of industrial and vehicle sources. The EPA Victoria publication 'Community smoke, air quality and health standard' (State of Victoria, 2015) singles out significant or prolonged events, completely ignoring the equivalent exposure levels in communities with ongoing excessive wood heater problems.

The management of household pollution is delegated to local councils (Senate Committee on Community Affairs, 2013). While the 2013 Senate Committee report on air quality in Australia (Senate Committee on Community Affairs, 2013) recommended local councils control wood heater emissions through use of bans, buy-back schemes or other programs "as appropriate to protect the health of local communities" (p.64), however without data from measurements of pollution levels within communities experiencing wood smoke problems it is difficult to see how they can develop appropriate programs or standards. The media release from your office dated 27 July, 2017, entitled "Helping Council's Deliver a Healthier Environment" announcing a pilot program with selected Victorian councils, fails to include residential sources of pollution and waste by specifying response to complaints relating to small business and industry only. An opportunity for the Victorian government to assist councils address smoke and particulate emissions from wood heaters is thereby bypassed. Provision in the Public Health and Wellbeing Act (2008) for local councils to address neighbourhood complaints relating to nuisance is the only available reporting option for a resident concerning wood fire emissions. One may make complaint to the Magistrates Court only if Council has failed to investigate, but there is no recourse if dissatisfied with the Council Officer's decision as to whether nuisance has occurred. Local councils reported they often do not have adequate resources, personnel levels or scientific expertise to respond appropriately to resident concerns about pollution (COAG, 2015). For this reason, action on pollution is unlikely to be able to be managed by local councils unless they have motivation to act as in the cases of Launceston (Ling, 2004) in Tasmania, and Muswellbrook and Camden in New South Wales where community concerns investigated, and federal or state level assistance or programs put in place (AECOM Australia, 2011).

Action to reduce wood heater particulate emissions in other states and overseas prove that effective changes can be made and results achieved. A Launceston wood smoke reduction program which included replacing wood heaters with electric heating and educating residents to improve operation of wood heaters, along with visual monitoring and fines for excessive smoke emissions, reduced wood heater use from 66% of heating to 30% (Johnston, Hanigan, Henderson, & Morgan, 2013). Corresponding winter death rates in Launceston from respiratory causes fell by 28% and from cardiovascular causes fell 20% (Johnston, Hanigan, Henderson, & Morgan, 2013). In Christchurch New Zealand a 76% reduction in open fires and old style fuel burners was effected between 2002 and 2009, resulting in emissions reduction of over 70% (Scott & Scarrott, 2011).. In Libby, Montreal, measured improvements in the rate of children's respiratory infections were very significant after a one quarter reduction in winter PM_{2.5} following interventions to replace wood stoves with lower particulate-emitting options (Noonan, Ward, Navidi, & Sheppard, 2012).

It must become a priority of the Victorian State Government to initiate programs based on the research done in other jurisdictions for effective and substantial wood heater emission reduction. Where this must be delegated or shared with local government, the appropriate resources, training, expertise and funds must be provided by the Victorian Government. An education campaign for all Victorian communities relating to the health hazard of wood heater usage could be initiated promptly. As the Launceston initiative showed, education can result in some reduction in wood heater ownership and better management of existing heaters, but primarily education can prepare the community for acceptance of subsequent stringent wood heater initiatives (Ling, 2004).

Identifying the extent of wood smoke problems throughout Victoria could be achieved through initiating school or community projects to set up measuring devices to upload PM_{2.5} records for analysis by EPA Victoria. This would have the benefit of an education component about effects of wood smoke and PM_{2.5} exposure. Starting with those communities identified as having largest PM_{2.5} burden, reduction in wood heater usage should be achieved with such measures as buy-back programs for wood heaters, a ban on installation of wood heaters in new homes, and a requirement to remove wood heaters on sale of a home. The NSW Office of Environment and Heritage Report (AECOM Australia, 2011) showed that these three measures when applied to the NSW figures, had the highest monetary and health benefits of various options to reduce wood heater emissions, with each option amounting to billions of dollars in savings. Where cost incentives for households were factored in, net benefit still amounted to \$867 million (AECOM Australia, 2011). As highlighted earlier, all of these solutions have been achieved in other jurisdictions and have shown impressive reductions in PM_{2.5} and associated health burden.

Evidence of emissions of substances from wood heating, known as short-lived climate pollutants, linked to climate change (Scovronick, Dora, Fletcher, Haines, & Shindell, 2015) which add to the mounting concerns over wood heating have not been discussed here, but the enormous cost to human health alone and the proven benefits in health outcomes from reducing PM_{2.5} levels through reduced wood heater usage strongly presses the need to in time ban wood heaters entirely. It is not therefore surprising that phasing out of wood burning

heaters in developed countries is a recommendation of the United Nations Environment Program.

Yours faithfully,

Fiona Ewings

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Legislation

Environment Protection Act 1970 (Vic)

Public Health and Wellbeing Act 2008 (Vic)

SUBMITTED IN SEPARATE EMAIL

First Name

Fiona

Last Name

Ewings

What organisation are you from?

Private individual

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

Phase out wood heaters
Ban open air burning
Ban smoking in all public spaces
Measurement and reporting of PM_{2.5} in outer suburban Melbourne areas

How would you build on or vary these actions?

Much more stringent controls
Completely phase out wood heaters
Completely ban open air burning

Do you have any suggestions for further actions?

Are there any air quality actions you believe should be avoided? Why?

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

Outer Melbourne suburbs without natural gas availability where wood smoke from woodheaters and open fires is causing extreme PM2.5 and smoke issues.

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

Do you have other suggestions on how to secure a clean air future?