STANDARDS AUSTRALIA CONSULTATION:

DR AS/NZS 4013:2024 Domestic solid fuel burning appliances – Method for determination of flue gas emission

Asthma Australia Submission, December 2024

Summary

Asthma Australia welcomes the opportunity to comment on the draft standard **DR AS/NZS 4013:2024 Domestic solid fuel burning appliances – Method for determination of flue gas emission**. This standard has the potential to meaningfully reduce air pollution from domestic solid fuel burning appliances, commonly referred to as wood heaters. Wood heaters are the single most important source of human caused air pollution in many parts of Australia, despite being used by a small minority of households. In these areas, wood heaters are the main source of particulate air pollution, which causes asthma exacerbations and is also linked to hundreds of earlier than expected deaths every year.[1] Asthma Australia's research has shown most people with asthma cannot reduce their exposure to smoke from wood heaters, with just 18% of people with asthma saying they were able to protect themselves from wood heater smoke.[2]

Asthma Australia is disappointed that the draft standard relies on a test procedure to determine wood heater emissions that fails to reflect real-world use of wood heaters. If implemented, this may mean that wood heaters compliant with the new standard would produce emissions above the maximum emission limit allowed under this standard when operated by consumers. Accordingly, the new standard is not suitable for the suggested purpose of informing consumer to make decisions and regulatory bodies to set emission limits for wood heaters.

Below, Asthma Australia provides an overview of the evidence concerning wood heater health impacts and community attitudes to wood heaters. We then comment on specific clauses in the draft standard, and we have also provided these comments via the Standards Australia online portal. We urge the CS-062 Solid Fuel Burning Appliances technical committee to consider the significant health damage caused by wood heater pollution, and the inability of people with asthma – and others affected by this pollution – to protect themselves from wood heater smoke. To ensure the new standard can meaningfully reduce pollution from wood heaters, and genuinely inform both consumer decisions and regulatory actions, the technical committee must consider how the test procedure can better reflect the way wood heaters are used by consumers. Alternatively, the new standard must appropriately acknowledge the limitations of the test procedure, test results, and the particulate emission limit.

About Asthma Australia

Asthma is a respiratory condition that affects nearly 2.8 million Australians, with children being the most impacted. Asthma is responsible for at least one Australian death every day, making it a serious health concern. More than 30,000 people are hospitalised each year due to asthma, yet at least 80% of these hospitalisations are considered potentially avoidable.

Despite the prevalence of asthma, it is often misunderstood, causing fear and anxiety for those living with the condition. Asthma Australia has been the leading charity for people with asthma and their communities for over 60 years.

The challenges of climate change, unhealthy air, and health inequity make it more important than ever for people with asthma to have a voice. We search for new and progressive approaches to challenge the status quo. Our work is grounded in evidence and centred on the experiences of people affected by asthma. We believe by listening to those living with asthma, designing solutions with them, and influencing change, people with asthma can live freely, unrestricted by their asthma.

Impacts of wood heaters on human health

Robust evidence documents the adverse impacts of wood heater smoke on human health.[3] Wood heater smoke contains harmful pollutants including fine particulate matter and known carcinogens. Adverse health impacts can occur at low levels of pollution, meaning there is no 'safe' level of air pollution.[4] Wood heater smoke is recognised as a trigger for asthma symptoms and exacerbations that should be avoided or reduced.[5] It is also a risk factor for other respiratory illnesses, certain cancers, cardiovascular disease, premature birth and premature death.[6] Unfortunately, the people suffering these health impacts are often unable to control their exposure to wood heater smoke.[7]

Despite being used by a small minority of households, wood heaters are a major source of air pollution in many parts of Australia. For example, wood heaters are the main human source of fine particulate matter in Sydney,[8] Tasmania,[9] and the Australian Capital Territory (ACT).[10] Addressing wood heater pollution would significantly improve air quality in many Australian communities, delivering a range of health, economic, and social benefits.

Community attitudes around wood heaters

In 2020, Asthma Australia commissioned research to better understand the prevalence of wood heaters, health impacts of wood heaters, and attitudes to wood heaters in Australia. The research included 15 focus groups across Australia and a national survey of more than 25,000 people.[11] The survey results demonstrated the majority of the general population understands wood heaters can be harmful to health, with 75% agreeing wood heaters can cause health impacts for certain people, and 55% recognising wood heaters cause health problems for the general population. The results also showed most people with asthma are not able to reduce their exposure to wood heater smoke, with just 18% of respondents with asthma saying they were able to protect themselves from wood heater smoke.

In addition to Asthma Australia's consumer research, the organisation regularly hears from people around Australia who are struggling with the impacts of wood heater smoke on their health, the health of their children, and their amenity. Many people express their frustration that despite documenting and reporting wood heater smoke to local governments, inadequate action is taken, and they continue to be exposed to harmful pollution.

The following comments were provided by participants in Asthma Australia's 2020 research:

> "People who have asthma and other respiratory conditions are very badly affected by the smoke from these heaters, my neighbour has asthma and suffers terribly because here in Canberra and in surrounding areas, there are a lot of these wood-fire heaters." Canberra, ACT
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> "…I've lived next door to people who used to have [their wood heater] going constantly and the days when there is no wind or it was blowing over our place were terrible, I can remember seeing ash cover our patio and having to re-wash clothes we hung out, my wife used to complain it made her feel sick and it probably caused her health problems in hindsight." Adelaide, SA
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> "People with asthma like my sister-in-law suffer the most in terms of health impacts [from wood heaters], she lives in the Lenah Valley (Hobart) and basically has to live in the house with all the doors and windows shut from May-September because it induces asthma attacks." Hobart, TAS
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> "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
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> "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, NSW
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> "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
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> "It gets pretty bad here (Bendigo) because even in the new housing areas where we are, a lot of people have installed wood-fire heaters, I would say at least half of the homes built in the last five years that I know would have one." Bendigo VIC

Comments on draft clauses – DR AS/NZS 4013:2024

Section: Preface

The Preface section of the new standard should recognise the limited value of the described test procedure and its lack of suitability to inform decisions by consumers or regulators. The Preface should state the test procedure excludes the most polluting phase of the burn cycle, the start-up phase, and does not reflect the way wood heaters are used by consumers in their homes. Further, the Preface should indicate the emissions produced by wood heaters in consumers' homes may be significantly higher than the emissions produced during laboratory testing. Asthma Australia understands a new protocol is currently being developed which aims to incorporate the start-up phase and reflect real-world use of solid fuel burning appliances. AS/NZS 4013 should be revised upon finalisation of this protocol.

Proposed changes:

1. Edit by adding "in a laboratory setting" as follows: "The objective of this document is to set out comprehensive specifications and instructions for the appropriate test equipment to determine the flue gas emissions of solid fuel burning appliances *in a laboratory setting.*"

2. Delete the following sentence: "**Results of testing using the described method are also intended for use by consumers when selecting a domestic solid fuel burning appliance, and regulatory bodies when setting allowable emission limits for domestic solid fuel burning appliances.**"

3. Add the following text: *"Test results based on the procedure described in Clause 7 are unlikely to reflect the emissions produced when consumers operate domestic solid fuel burning appliances in their homes. The test procedure excludes the most polluting phase of the burn cycle, the start-up phase, and does not reflect the typical operation of domestic solid fuel burning appliances by consumers, meaning test results are likely to significantly underestimate emissions. Test results should not be used to inform consumer choice nor regulatory decisions concerning emission limits."*

Section: 1.1 Scope

The Scope section should recognise the limited applicability of the test procedure to the emissions produced by the typical operation of domestic solid fuel burning appliances by consumers and the likelihood of higher emissions when consumers operate the appliances. Further, the word "allowable" should be used to describe the particulate emission criteria for consistency with the wording in Section 8 (Maximum allowable appliance particulate emission factor). Additionally, the word "acceptance" wrongly implies the limit is acceptable.

Proposed change:

Edit by adding "*in a laboratory setting*", replacing "**associated**" with "*allowable*", deleting "**acceptance**", and adding "*The test method does not reflect the typical use of the appliances by consumers and particulate emissions are likely to be significantly higher when the appliances are operated by consumers.*", as follows:

"This document specifies a test method for determining the particulate emission factor from batch-fed domestic solid fuel burning appliances *in a laboratory setting* and the *allowable* particulate emission criteria. *The test method does not reflect the typical use of the appliances by consumers and particulate emissions are likely to be significantly higher when the appliances are operated by consumers.*"

Section: 7 Test procedure

The proposed test procedure does not accurately reflect the amount of pollution domestic solid fuel burning appliances produce during real-world use. The test procedure excludes the start-up phase, which is the most polluting phase of the burn cycle, and does not reflect the way consumers typically use wood heaters in their homes. As a result, domestic solid fuel burning appliances compliant with this standard may produce emissions significantly greater than those produced under test conditions. In many parts of Australia, domestic solid fuel burning appliances are the main source of particulate air pollution, which causes asthma exacerbations (1). The health burden of pollution from domestic solid fuel burning appliances is considerable, with an estimated 269 early deaths annually in Greater Metropolitan Sydney alone (2). A new protocol is currently being developed which aims to incorporate the start-up phase and reflect real-world use of solid fuel burning appliances. AS/NZS 4013 should be revised upon finalisation of this protocol.

1. Vardoulakis et al. 2024. Wood heater smoke and mortality in the Australian Capital Territory: a rapid health impact assessment. MJA 220 (1): 29-34.
2. Department of Planning and Environment (New South Wales). 2023. Sydney air quality study. Program report: stage 2. Health impact assessment. https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Air/sydney-air-quality-study-program-report-stage-2-230226.pdf

Proposed change:

Add the following text: "*AS/NZS 4013 will be revised upon finalisation of a new test procedure that incorporates the start-up phase of the burn cycle and reflects real-world use of solid fuel burning appliances.*"

Section: 8.1.1 Appliances without catalytic combustors

The inadequate test procedure relied on to determine the maximum allowable appliance particulate emission factor means reducing the emission factor from 1.5g/kg to 1g/kg is unlikely to significantly reduce air pollution from domestic solid fuel burning appliances, or improve health outcomes. This update could even worsen these outcomes if it is used by retailers and industry representatives to increase sales by making representations that domestic solid fuel burning appliances do not contribute to air pollution. Recent examples of these claims include:

> *"Modern wood heaters are not the cause of winter air pollution. In fact, they're part of the solution!"* (https://www.homeheat.com.au/queanbeyan-sayno/)

"These modern units produce little more than a heat haze, delivering warmth from the original renewable fuel source – wood." (https://www.homeheat.com.au/queanbeyan-sayno/)

"Wood heating stands as one of the cleanest domestic heating options available" (https://www.homeheat.com.au/act-sayno/)

To protect consumers from potential misrepresentations concerning domestic solid fuel burning appliance emissions, Clause 8.1.1 should clearly state the particulate emission factor resulting from the test protocol is likely to be significantly lower than that resulting from real-world use by consumers.

Proposed change:

Add the following text: "*The particulate emission factor resulting from the test protocol is likely to be significantly lower than that resulting from real-world use by consumers.*"

References

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[3] See e.g.: Borchers-Arriagada N et al. 2020. Health Impacts of Ambient Biomass Smoke in Tasmania, Australia. International Journal of Environmental Research and Public Health. 17(9): 3264
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[4] Zosky, G. et al. 2021. Centre for Air pollution, energy and health Research-CAR Position paper: There is no 'safe' level of air pollution: https://8a9fccf2-785f-43a0-af75-f07582c6bf73.filesusr.com/ugd/d8be6e_52cdc24df1e24a9497a967faf6e633f4.pdf
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Naeher, L. et al. 2007. Woodsmoke Health Effects: A Review, Inhalation Toxicology, 19:1, 67-106.
[7] Asthma Australia. 2021. Woodfire Heaters and Health Survey Key Findings Report (n=25,039), available online: https://asthma.org.au/about-us/media/public-would-support-a-phase-out-of-woodfire-heaters/.
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[9] Borchers-Arriagada N et al. 2020.
[10] Vardoulakis S et al. 2024. Wood heater smoke and mortality in the Australian Capital Territory: a rapid health impact assessment. Med J Aust; 220 (1): 29-34.
[11] Asthma Australia. 2021.