National Environment Protection Council Service Corporation

Consultation regulation impact statement for reducing emissions from wood heaters

Comments and recommendations from South Australian EPA and Dept of Health and Ageing

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Comments on Woodheater C-RIS

1. Broad Observations and Recommendations:

(i) Data on actual replacements (both direct and indirect) from the Launceston Woodheater replacement scheme should be utilised to provide extrapolated estimates for other Australian cities.

(ii) The Launceston program also demonstrated that to be effective, education and behaviour change programs need to at least be collaborations between state and local governments. The success of the program over a relatively short period (~5years) also relied on combinations of science, direct education programs (including smoke patrols), effective monitoring and media publicity; in addition to the subsidy scheme for replacement.

(iii) A graph similar to Figure E.3 should be presented for urban airsheds (and rural/regional urban combined) as well to understand benefits and emission reduction from different options.

(iv) CO2 emissions calculation should have been performed and benchmarked against coal or gas based energy generation industry. It is presumed that figures that could underpin such calculations are available through the National Greenhouse Gas Inventory program and could be readily adapted here.

(v) Optimisation calculations with variables such particle emissions, costs, benefits, emission standard and efficiency should be performed to present the best case scenario. It is not clear if the options presented in C-RIS are the only or best options available. Where is the "Rolls-Royce" option?

(vi) Better justification needs to be made available on how options 1 to 9 are selected in this C-RIS.

(vii) The final national mechanism needs to drive technology development effectively to achieve the best practice emissions (<1 g/Kg) and efficiency (>80%) at 'real-world' operational level. Part of this is to establish and enforce long term emission & efficiency standards that reflect this best practice performance. The primary question that we should focus on is; what level of performance should we have achieved by, say 30 years?

Surely over that period, we can aim for the best technologies and practices that will eliminate much of the exposure to wood heater emissions and effectively utilise a renewable resource with minimal risks to Australian communities.

(viii) Scenarios modelled in Figure E.1 need to be extrapolated beyond the 20 year period to show long term optimal benefits. At this point, there is no indication of whether the graphs may flatten out as control mechanisms mature; also, we are concerned that the expanded scale on the Y-axis gives an unrealistic picture of the extent of improvement reflected by the chosen options.

It is also possible to imagine scenarios where steps or disjuncts could reflect the impacts of specific shorter term programs such as education/behaviour change programs, replacement programs, or implementation of legislated provisions for excessive smoke. As noted above, the changes wrought in Launceston occurred over some five years or so, much less than the lifetime of a wood heater.

It is recommended that:

- The graph be revised to cover at least 3 average lifetimes of an average woodheater (~15 years) to show where and whether it plateaus in terms of long term benefits.
- Those plateaus should provide a measure of the long term net annual health benefits.

(ix) Updated health risk assessments, as developed for National Plan for Clean Air, must be incorporated to validate the health benefit calculations for different options

2. Specific Issues:

Figure E3 it appears option 6 gives greatest benefits of emission reduction, but it is difficult to see how it differs from option 7 which has same standards as in table E1 for rural and regional areas. The same table for metro areas would be useful.

Option 9: Why is there a shorter phase in for option 7 but not option 9?

Figure E2 shows benefits and costs. If these are real then consideration should be given to some kind of incentive for people to uptake new technology as well

Table 2.2: EPA staff question whether the prices quoted for wood fuel may be too low – can these figures be supported by market information?

Questions

1) The wood heater industry in Australia needs to be pro-active in both a political and technological sense. It tends to support the status quo rather than improvements over time in a staged and considered manner

2) Emissions levels in Europe from pellet heaters are an improvement on what is being offered in Australia. They also improve control over fuel supply to the heater

P21
If NPI data is out of date and an underestimate to the extent that affects the conclusions of this study, then the likely effects on the study and any adjustments to bring the data up to date should be described.

Section
3.4 Summary
Adelaide is in the cooler region but is not mentioned in table 3.2

Questions

3) In regional cities such as Mt Gambier, domestic smoke has been shown to be a significant portion of particle loadings during the cooler months.

   EPA (2012). SmokeWatch Mount Gambier 2009-2011. South Australian Environment Protection Authority, www.epa.sa.gov.au. ISBN 978-1-921495-33-5

   It is noted that wood heaters have both a local direct impact on neighbours and a broader airshed impact; i.e.
   - Under low wind speeds, a few high-emitting heaters can markedly increase ambient smoke levels for hundreds of metres downwind.
   - Odour and smoke from wood heaters are annoying to people during winter, and direct impingement of a plume on a house may represent intermittent exposures many times greater than those in ambient air.
   - At present, household impacts of neighbouring wood heaters is addressed through nuisance provisions of the Environment Protection Act in South Australia.
4) Table 3.1 is PM10 data where available
5) PM2.5 data would be more relevant. If not available recommendations should be made to acquire it

Department of Health and Ageing South Australia response to questions – Dr Monika Nitschke

1. **What is your view of the wood heater industry in Australia? Are there specific aspects of the industry that require attention?**

   It would be useful to explore the Australian wood industry in comparison with overseas competitors. For example, have strict PM regulations overseas challenged the industry to come out with efficient models (including particle emissions and efficiency)? Further to this, if these overseas heaters are more efficient, have they been evaluated in relation to their in service performance taking into account that in Australia large variations in emissions due to heater operation and installation are observed or did they perform according to their engineering promises?

   Recently, similar discrepancies as those explored in the text, between technical achievements of low emissions and high exposures in-service, were found with low NOx emission unflued gas heaters. Ultra low emission unflued gas heaters essentially were able to create indoor exposures in excess of the Australian nitrogen dioxide hourly standard. Reasons for this were the same issues as those raised in 2.4.

2. **Can you provide evidence of new or different operational or marketing paradigms that would affect the stated view?**

No

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3. **Do you consider wood heater emissions to be a significant issue relative to other forms of air pollution?**

   It is agreed that particulate matter (PM) pollution from wood heaters impacts heavily on winter exposure to PM.
   For example, in metropolitan Adelaide in winter, we observed increased exposure to PM and increased cardiovascular-related (cv) hospital admissions. During the cool season, cv-related admissions (increase in PM2.5 by 10 $\mu g/m^3$) increased by 4.5% compared to all season effect of 2.7%.In the cool season, respiratory admissions were also significantly increased by 3% in the 15-64 age group for an increase in PM10 by 10 $\mu g/m^3$. Similar results for higher health effects in the cooler season alongside higher PM2.5/10 emissions have been experienced in other cities in Australia and New Zealand.

Hansen, A. L., Bi, P., Nitschke, M., et al. Particulate air pollution and cardiorespiratory hospital admissions in a temperate Australian city: A case-crossover analysis. *Science of The Total Environment* 2012;416:48-52.

4. **Do you agree with the conclusions provided in this section?**
   Agree

5. **Are there other variables that have not been considered or not been attributed sufficient weight in the discussion?**
   It would have been worth while writing a paragraph on the health studies that specifically looked at the contribution from wood heaters. For example, a New Zealand study shows increased mortality associated with wood heaters.
   In a very recent study conducted in Tasmania, the reduction in PM due to the wood heater intervention indicated an 11.4% decrease in annual overall and a 17.9 decrease in cv mortality. In winter the cv mortality reduction increased to 19.6% showing very clearly the benefits.+

   Fisher, G., Kjellstrom, T., Kingham, S., Hales, S., Shrestha, R., et al. Health and Air Pollution in New Zealand, Final Report: Health Research Council of New Zealand & Ministry for the Environment & Ministry of Transport, 2007.

   Johnston, F. H., Hanigan, I. C., Henderon, S. B., Morgan, G.. Evaluation of interventions to reduce air pollution from biomass smoke on mortality in Launceston, Australia: retrosopective analysis of daily mortality, 1994-2007. *BMJ* 2013;345.

6. **Do you agree that the current policy measures for the abatement of wood heater emissions are not successful in realising the policy objectives?**

So far, there are some examples of heater replacement schemes and campaigns, i.e. Launceston, which were successful. May be there were other examples in other jurisdictions, but they may have not been evaluated.

7. **Which policy delivery method do you believe should be adopted by government and why?**

A national regulatory approach led by NEPM –like process in conjunction with campaigns or even installation bans on heavily impacted areas by local government. So, a combination of national, state and local policies would be helpful.

8. **Do you agree that the policy measures listed for the abatement of wood heater emissions will be successful in realising the objectives?**

Yes, these measures could be adopted by a NEPM-like national approach. As pointed out in later comments, local government has to be included into the mix for more radical solutions for local areas that are heavily impacted.

9. **Do you believe that the "nudge" programs will be helpful in reducing wood heater emissions?**

Education programs have been conducted in SA, for example in Mount Gambier; probably also in other jurisdictions. It would be interesting to find out whether their evaluation of the campaigns suggests positive evidence.

10. Are there other measures that are not listed in the document that should be considered?

If a wood heater NEPM were to be introduced it would be enforced by the states. This would have a positive benefit for local councils as they would be supported by federal standards and measures.
In the report, the connection to the local government and the importance of their work at the local level would be extremely helpful. For example, education of Environmental Health Officers (EHOs) in spotting polluting sources and having the means to change behaviours or even to fine polluters would add considerably to the measures and outcomes. To this extent, local government would be empowered by NEPM and state environmental legislation, so would be public health legislation.

11. Which of the listed policy combinations do you favour in addressing a reduction in wood heater emissions? Why do you favour these measures?

There is no reason not to have the No 9 combination if the industry would have time to develop the new measures to be effective from 2020/30. There would be enough lead time to develop state of the art wood heaters that are desirable to buyers. The wood industry association has already indicated that they can plan for a 2.5g/kg emission and 55% efficiency standard. That is an improvement above what has been suggested in option 6-8 apart from the efficiency standard (60%). So, there seems to be a good platform for negotiation.

12. **Are there policy combinations that you would not support? Provide reasons**

Considering the health effects and the contribution to air pollution, option 1-5 are not going far enough. But, it is important to factor in feasibility, cost-benefit analysis and considerations of social impact and equity of the various options before making a definite decision.

13. **Do you believe the base case has been correctly identified, or are there other variables that need to be considered?**

Yes

14. **Have all health, environmental, economic and social impacts been identified? If not, please suggest others that need to be included. Has sufficient weight been given to these impacts within their relationship to the policy options being proposed?**

It may be necessary to include considerations of proper fuel. It is important to include whether people are able to buy "safe" wood (distribution). Are the new heaters able to work at their efficiency/emission level with inadequate wood? Non-compliance with appropriate wood use could be associated with socio economic disadvantage.

15. **Have all key assumptions been correctly identified and included in the analysis? If not, please suggest others that need to be included.**

- On the international market there are much more efficient heaters on the market. This was achieved through introduction of new industry standards resulting in high achieving wood heaters. Therefore, setting high emissions and efficiency standards may actually be good for the industry if not better for competing on the international market.
- It was suggested in the report that the renewal process of more efficient heaters will have mainly an impact in rural areas as the heater turnover will be greater in rural areas. Some metropolitan areas may reap the benefit as well as the exposure from rural wood heating exposure can also impact the metro area.
- In Canada and US (some areas/states that are heavily impacted) old heaters or wood heaters in general have to be upgraded when properties are sold. This is another type of legislation which would fasten the process of wood heater rejuvenation or reduction.
- Has the fire place use impact been evaluated?