

CABRA**Raising Community Awareness about the health effects of Burning wood in Residential Areas**29th October 2003

Environment and Heritage Committee
 House of Representatives
 Parliament House
 CANBERRA ACT 2600

Dear Committee Members,

Secretary:

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HOUSE OF REPRESENTATIVES
 STANDING COMMITTEE ON
 ENVIRONMENT AND HERITAGE

INQUIRY INTO SUSTAINABLE CITIES 2025

While there are many requirements for a sustainable and liveable city, this submission focuses on air quality and human health.

To begin with, CABRA was formed because of our own and other families' experiences with slow combustion wood heater emissions, the lack of government support, enforcement and planning to protect our health and the general lack of awareness of the toxic, carcinogenic and fine particle characteristics of wood smoke which bypass the body's defences and penetrate into the deepest parts of the lung.

We are also aware of increasing instances of burn-offs by state and local authorities, forestry, developers and people living on acreage (near high-density residential areas). While we recognise that all air polluting activities cannot be replaced by cleaner alternatives, it is essential to do so whenever possible.

BURNING OF VEGETATION**Our Recommendations are –**

- **Minimise burning practices for the benefit of clean air and human health** – as our waterways should not be used for waste disposal, neither should our air be used to dispose of waste from unnecessary burning activities.
- While controlled back-burning may always play a role in protecting life and property from bushfires, we suggest the use of machinery and manual labour to create fire breaks and for weed control/plant regeneration where possible (Work for the Dole could be involved). Many planned burn-offs have resulted in uncontrolled bushfires and loss of property.
- The practice by developers and landowners to burn waste should be banned.
- Greater use of mobile Mulchers for vegetation waste. Huge quantities of mulch are required to assist with weed control and improve and retain moisture in the soil.
- Reduce numbers of Permits to Burn and introduce fees.
- Eliminate Pit Burning – for mulching.
- Regular “house-keeping” (manual/machine methods) by people living on acreage to avoid build up of fuel.
- Better house design and construction near bushland areas.
- Better planning so that housing and other developments are not permitted next to, or amongst fire prone areas.

- Mowing/slashing/mulching in plantation areas to reduce fuel load.
- Prohibiting the lighting of fires in camping areas – many a campfire has escaped and caused a bushfire. Most campers have gas stoves for cooking purposes.
- Councils to work together to set up recycling/holding centres for vegetation/solid waste. This waste could be mulched, large pieces of timber used for housing, furniture or woodworking, or burned in a suitable power station fitted with effective pollution devices away from residential areas. N.B. Waste wood NOT to be used in domestic wood heaters as they are not fitted with pollution devices.
- Consultation undertaken so that all parties considering burning are made aware of the consequences regarding the impact on air quality and human health, the subsequent cost to the health care system, global warming and ozone depletion and **understand why minimal burning and alternative methods are required.**

SLOW COMBUSTION WOOD HEATERS

Government has legislated to ban cigarette smoke in government buildings, most work places and restaurants, however continues to allow wood heaters to be installed in residential areas without consultation or consideration for neighbours even though many cleaner heating alternatives are available. As a result, people are passively-breathing their neighbours' wood smoke in their own home and outdoor area for many hours of the day, for months at a time.

Energy efficient housing is now widely promoted to reduce the need for artificial heating (and cooling), yet here in semi-tropical Brisbane the sale of wood heaters is reportedly greater than Melbourne and wood heaters are now appearing in Display Homes.

The following information clearly demonstrates that wood heater use is impacting on air quality, human health, neighbourhood relations and the environment and is not conducive to sustainable and liveable cities.

Environment Protection Agency – South East Queensland Regional Air Quality Strategy 1999

- *“The most significant source of air pollution from domestic sources is the use of solid fuel for heating.”*
- *“Of the pollutant load contributed through human activity, domestic fuel use appears to contribute some 16% of the total particle load, 5% of VOCs and 6.5% of carbon monoxide. (There is a significant seasonal element to these emissions with winter emissions much higher than those in summer.) Clearly this is a substantial source of emissions and specific strategies are warranted to target domestic solid fuel appliances, such as solid fuel heaters and wood stoves. Smoke from these sources was also identified by the community as having significant local pollution impacts.”*
- *“The EPP (Air) makes compliance with AS4013 mandatory, but large numbers of older models (wood heaters) will remain in use for many years. Furthermore, emission standards might well be breached by consumers if they do not follow manufacturers' recommendations about fuel type and method of operation.”*

Brisbane City Council – 2001 draft Brisbane Air Quality Strategy

- *“Wood heaters may contribute to overall air pollution but impacts are generally localised and can lead to serious health effects for owners of wood heaters and their neighbours. The health effects of wood smoke are well documented, with the primary concern surrounding*

the release of particles into the atmosphere, especially in the case of the very young, elderly and those with respiratory illnesses. Very small particles (PM2.5) have been identified as having the strongest link with daily mortality and morbidity and wood smoke is comprised almost entirely of PM2.5."

Redland Shire Council (Greater Brisbane area) – 1999 Smoke Nuisance from Combustion Stoves Report

- *"Australian Standard 4013 specifies testing methods for determining particulate emissions from wood heaters and specifies a particulate emission (smoke) criteria...It is important to note that this criteria applies to wood heaters when they are tested in laboratory conditions using specified test fuels and following the specified procedures of the Australian Standard. There is no guarantee that a householder will operate their wood heater in this same specified manner to achieve the particulate emission (smoke) criteria of the standard. The particulate emission criterion is also not a legislative requirement and cannot be enforced. Achievement of this criterion also does not guarantee the prevention of nuisance or annoyance."*

National Environment Protection Council

- **Impact Statement for PM2.5 Variation, October 2002** – *"Solid Fuel Heating. More than 90% of the smoke from solid fuel heating consists of PM2.5. Solid fuel combustion emissions also include other pollutants such as carbon monoxide, nitrogen dioxide, sulphur dioxide, volatile organic compounds (VOCs) a combination of toxic air pollutants, and other chemicals known or suspected to be carcinogens such as polycyclic aromatic hydrocarbons (PAHs) and dioxins."*
- **Impact Statement for the National Environment Protection (Air Toxics) Measure, 2003**
"Air toxics emissions, as a result of woodsmoke, are subject to significant seasonal variation associated with the greatly increased use of domestic solid fuel heating in the cooler months. NPI data (2000/2001) indicates solid fuel burning contributes approximately 53% of PAHs and formaldehyde and 11% emissions of benzene in Australia. These contributions are significantly higher in some regional air sheds, where woodheaters are the major source of emissions. One such example is Launceston, where solid fuel heating accounts approximately for around 46% of emissions of benzene, 87% of formaldehyde, 91% of PAHs, 15% of toluene and 9% of xylenes emissions, annually."

Associate Professor John Todd, University of Tasmania 2002

- *"With a wood heater, unlike many other appliances, if you use the heater badly you can produce up to 100 times as much smoke as using it really well, and this is a huge difference, and you can imagine if all it takes is perhaps 5 percent of the wood heater users to be using them badly and suddenly you've got a problem from just five percent."*

Papers from Firewood Conferences published by the Tasmanian Conservation Trust 2002

- **Woodheaters and Air Quality: A South Australian Perspective - Tom Whitworth, Manager, Atmosphere and Noise Section, Environment Protection Agency, Department for Environment and Heritage.** *"One could say that domestic wood burning is conducted on a broad scale amongst residential properties where the most health-sensitive of our community are gathered – the old, the young and the infirm. Furthermore,*

it is conducted by people with little or no training using appliances that may not be effectively maintained, with fuel that may not be suited to the appliance."

"The chemical species in woodsmoke were suspected to be potentially similar to those in cigarette smoke, particularly if potbelly or slow combustion type fires were operated with insufficient air for complete combustion. The process is essentially pyrolysis (heat-based decomposition) and partial oxidation of cellulose and hemicellulose in both bases. Journal articles by Cooper and others in the US detailed chemical species and emission factors determined from emission tests of fireplaces and slow combustion heaters. The tests confirmed that incomplete combustion of cellulose in wood results in a range of hazardous substances. They include small solid and aerosol particles, aldehydes, alcohols (primarily methanol), volatile organic compounds including polycyclic aromatic hydrocarbons (PAHs), carbonyls and furans."

"Some sites would require a chimney of inordinate height to achieve protection against smoke penetration of a neighbours windows or ventilators. In such situation use of solid fuel fired appliances may cause irreconcilable justified complaints and should not be permitted."

- **John J Todd, University of Tasmania. Do Woodheaters have a future in Launceston?** *"if the firewood is being cut from forest that would remain uncut were it not for firewood demand, firewood is not Greenhouse neutral, in fact the emissions are similar to coal."*

"If householders took more care and were well informed on how to burn wood cleanly, smoke emissions could be significantly reduced. However community education programs on correct woodheater use have been tried in Launceston since about 1992 (McDonnell and Todd 1997) and they seem to have made little difference. Perhaps the education programs were poorly designed and better approaches are possible, but several different groups have tried, with different approaches and no clear success has been observed. So, it is likely that education programs alone will not solve the wood-smoke problem, although they probably are having some beneficial effect, but not influencing the majority of woodheater users."

Assessment of the Draft Environment Protection Policy (Air Quality) Tasmania –

- *"Associate Professor John Todd of the University of Tasmania was strongly in favour of regulatory provisions and stated at the hearings that "Ten years of community education efforts have not solved the woodsmoke problem so additional efforts are required." Associate Professor Todd further stated that he had received many calls over the years from people who were so desperate that they sought advice from the University on how to solve their nuisance woodsmoke problems. Such complainants he said gained no success from registering their complaint with the local authorities, the response often being, "there was little they could do."*

Additional Concerns with Slow Combustion Wood Heaters

We are very concerned at the use of terms "environmentally-friendly", "sustainable" and "renewable resource" to justify and promote the use of slow combustion wood heaters. Our reasons are as follows –

- *"The smoke from wood burning devices can cause serious health problems. Breathing air containing wood smoke contributes to cardiovascular problems, lung diseases like asthma, emphysema, pneumonia and bronchitis, irritation of the lungs, throat, sinuses and eyes,*

headaches and allergic reactions. Those with the greatest health risk from wood smoke include infants and children, pregnant women and people with lung and heart diseases." There is also increasing concern regarding long-term health effects, such as cancer. Refer *Health Effects of Wood Smoke* <http://www.ecy.wa.gov/biblio/92046.html> and *Wood smoke from Wood-fired home heaters* <http://www.health.nsw.gov.au/pubs/factsheet>.

- Contrary to perceived benefits, wood heaters are not "greenhouse neutral". At a global level the combustion of the fuels used in domestic solid fuel heaters contributes to the greenhouse gas problem (Australian Environment Review, September 1999).
- As well as fine particles, toxic and carcinogenic substances, wood heaters produce carbon dioxide, methane, carbon monoxide, oxides of nitrogen and non-methane volatile organic compounds, all of which appear in the National Greenhouse Gas Inventory.
- While some firewood plantations do exist, the majority of trees being burned in wood heaters are not being replaced. Environment Australia reported "*Up to 6 million tonnes of fuelwood is consumed in Australia each year (two thirds of which is used for domestic heating). This figure is double that of annual exports of eucalypt woodchips...In its present form this industry is unsustainable taking much more wood than is replaced and silently destroying remnant vegetation and wildlife.*" <http://www.biodiversity.environment.gov.au/firewood>.
- Wood heaters are a wasteful use of a precious resource because they are often used on a continual basis, overnight, when heat is not required and/or when the house is unoccupied. In these instances, the air supply is often restricted and the heater can smoulder for many hours at a time, for many months of the year, releasing greater amounts of toxins, methane and soot particles directly into neighbouring homes.
- Stanford University researcher Mike Jacobson found that soot particles in the air increase the amount of solar radiation absorbed in the atmosphere, thus adding directly to global warming. He called for measures to phase out burning solid fuels: "*The largest source of mortality from air pollution is indoor burning of biomass and coal...Reduction of such burning, therefore, will not only mitigate global warming but also will save lives.*" - New Scientist 3rd March 2001.
- Air pollution from wood heaters can force people to use significant, unnecessary amounts of electricity to run sophisticated air filtration systems because outside smoke permeates house interiors (one such instance costs a family an extra \$120 per quarter electricity charges). Clothes dryers are used because clothing on the line becomes smoky.
- Significant costs to the community and Government through medical expenses for wood smoke related illnesses and on-going reports and programs regarding wood heaters.

Community Education

It is very important for the community to be made aware of full, unbiased information about wood heaters. **Correct information is essential in obtaining community acceptance of health problems resulting from wood heater use.** We have found that concentrating on advising people how to use wood heaters sends out a message that burning wood is acceptable, whereas the message should be clear about the health effects of wood heater emissions and their very real potential to affect the health of neighbours.

What Happens in the "Real World"

As can be seen from some examples on our website <http://www.rag.org.au/cabra> people's health and lifestyles are being ruined by the use of slow combustion wood heaters.

The NSW State Pollution Control Commission (now NSW EPA) pointed out in a 1986 report on Solid-fuel Home Heaters "*because it is possible to restrict the quantity of combustion air and slow the combustion speed, their potential for serious emissions of air pollutants is far greater than for an open fireplace*". That point is still very relevant. The smouldering problem is also compounded because the emissions are not well dispersed and tend to go in a horizontal and downward direction into nearby homes because of insufficient draught up the flue, topography and temperature inversion.

People have kept records of smoke, provided witness statements, Medical Certificates, videos and photographs. One Council wrote back "*the information supplied in your letter does not contain the evidence necessary to allow Council to take legal action under existing legislation*". Councils say the law is not strong enough to take action, yet State Government says the opposite and consequently no authority is acting to protect people's health.

It is interesting to note that Waverley Council in Sydney was forward-thinking and banned new installations of wood heaters three years ago. Their report *Pollution from Wood Fired Heaters* showed that only 5 complaints had been recorded. The Council adopted an Energy Smart Homes Policy (DC 13) and determined that "*given the temperate maritime climate experienced in this area of Sydney, most new dwellings that comply with the DCP would not require the additional thermal output of a solid fuel heater.*"

Queensland State and Local Governments are also promoting energy efficient housing, however wood heaters installations and complaints are increasing. It was reported in the media last year that Brisbane City Council "*receives about 400 complaints about chimney smoke each year*". Redland Shire Council reported in 2002 "*Last winter Council received over eighty complaints about smoke nuisance....This number is increasing every year.*"

Even so, QLD EPA advised that the law has never been challenged in Queensland. Government also acknowledges "*people use wood heaters because they like the feel – being cold is not an issue*". Government has shown a complete disregard for the rights of people to breathe clean air in their own property. People have had to leave their homes on many occasions – even in the middle of the night – to get some relief from intrusive smoke and odours, yet they have been treated as neurotic, super-sensitive individuals.

Our Recommendations are -

It is inconceivable to think that backyard incinerators have long been banned in residential areas, yet Government is allowing increasing numbers of slow combustion wood heaters which are used for far longer periods of time and are also used as incinerators.

There is an urgent need for Government to fully inform the community of the health effects of wood heater emissions, especially those produced in the home situation rather than laboratory testing (very little has been reported in the Queensland media) and legislate to reduce wood heater emissions by -

- Banning new installations,
- Regulating existing wood heater use by prohibiting overnight burning, prohibiting burning when heat is not required, introducing and enforcing On-the-Spot fines, removing consistently smoky wood heaters,
- Removing wood heaters on sale of a property,
- Creating Smokeless Zones,
- Phasing out existing wood heaters.

While some may consider these measures an intrusion on their private life, surely the basic right of people to breathe clean air in their own property must over-ride the increasing "right to burn" attitude, which is particularly inappropriate considering that our population density continues to increase and a high percentage of the community suffer from serious respiratory, cardiovascular and allergic conditions which are exacerbated by wood smoke.

Cleaner heating alternatives are readily available, even electric and gas imitation log-fires (easily operated at the flick of a switch) for consumers who wish to create a special effect.

Home insulation and energy conservation is essential and hopefully in the near future we will be using a greater percentage of "green" electricity from clean renewable sources such as solar and wind power, thereby reducing our consumption of coal. However, if wood must be used for energy, then a better health and environmental outcome would be obtained by burning plantation timber in suitable power stations fitted with effective pollution controls and away from residential areas.

Thank you for the opportunity to raise this issue.

Yours faithfully,



Diane McGill
Spokesperson

CABRA – raising Community Awareness about the health effects of Burning wood in Residential Areas

Website: www.rag.org.au/cabra