

Brisbane City Council's guide for
**Operating a
wood heater
responsibly**



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Why it's important to avoid smoke

If you have a wood heater this guide can assist you to operate and maintain your wood heater to reduce the risk of smoke nuisance.

The advice in this guide does not guarantee to prevent smoke emissions from your wood heater.

All wood heaters produce some smoke. However wood heaters should not smoke excessively if they are operated correctly and are well maintained.

Using your wood heater incorrectly can cause ineffective heating, increased pollution and increased maintenance and operating costs.

Wood smoke contains a cocktail of toxic pollutants, similar to cigarette smoke, such as particles, dioxins and volatile organic compounds. These can irritate the eyes and throat, bring on an asthma attack and aggravate the symptoms of heart conditions, bronchitis and emphysema. Some of the toxins can cause cancer.

People most at risk are young children, the elderly and those already suffering from a respiratory or heart condition.

Smoke is more likely to affect your neighbours if the chimney is too close to their house or too low down. This may cause the smoke to go directly into their house, especially if the breeze carries the smoke towards their house.

Your responsibility

It is your responsibility under the *Environmental Protection Act 1994* to ensure you do not cause smoke nuisance. To do this you must install your wood heater correctly, locate your chimney away from neighbours and ensure correct fuel use, operation, monitoring of smoke emissions and maintenance.

When a smoke nuisance complaint is received, Brisbane City Council is legally required to investigate the complaint. If the smoke is determined to be an unlawful nuisance, Council may issue the residents causing the smoke problem with a direction notice.

A direction notice will detail what offence has taken place and the time frame that the offender has to rectify the problem. If the direction notice is not complied with, Council may issue an on-the-spot fine.

Save on your heating needs

No matter what type of heater you have, a well-insulated house won't need as much heating or use as much fuel, which will **save you money**. Examples of what you can do include:

- installing insulation in the ceiling and, if possible, in the walls
- placing heavy curtains over windows; pelmets over the windows also help to create an insulating layer of air between the window and the room
- opening curtains and blinds to let the sun in during the day and closing them as soon as it turns dark to keep the warmth inside the house
- fitting draught excluders to windows and doors
- insulating any skylight where heat can easily escape
- covering cold floor surfaces with rugs.



The correct heater for your room

It is important that the heater is **the right size for your room**. A heater that is too big will create too much heat. If you turn the heater down to reduce the heat, you will create smoke. If you find this is happening, you may need to convert to an alternative heater. A reputable wood heater retailer will be able to advise you on the best size heater for your room. This will also depend on whether your house is insulated or not.

Before buying a wood heater, check that it has an **undamaged compliance plate** to show that it is certified to the current *Australian Standard AS4013, Fuel Burning Appliances – Domestic Solid Fuel Burning Appliances – Method for Determination of Flue Gas Emission*. (Please call Council (07) 3403 8888 to check the current standard.) This will be a metal plate, usually attached at the back of the heater. This ensures that the heater's design emission levels are within reasonable limits. It is illegal to use or sell a wood heater if the compliance plate is missing, damaged or defaced or if the heater itself has been modified or tampered with.

Be extremely careful when buying a wood heater privately and be sure to examine the heater for a compliance plate before you agree to buy. If you are considering a replacement heater, please buy from a reputable supplier.

The Australian Home Heating Association website lists retailers who are members of the association www.homeheat.com.au and certified wood heater models www.certifiedwoodheaters.com.au

Correct heater installation

Wood heaters should be installed by an **experienced, professional tradesperson** to meet the current *Australian Standard AS/NZS 2918 Domestic Solid Fuel Burning Appliance – Installation*. (Please call Council on 3403 8888 to check which is the current standard.) This will ensure the heater is safe to use and minimises the risk of creating smoke nuisance.

The chimney, or flue height, not including the rain cap, must be appropriate for the size of the heater. It must also be high enough and located in a position to avoid creating a smoke nuisance for neighbours.

Check that your flue height, not including the rain cap, meets the Australian Standard requirements, which include:

- there is a minimum flue height of 4.6 metres above the floor on which the wood heater is located
- the top of the flue is not near any windows or doors, so as to prevent expelled air from being pushed back into your home
- the top of the flue is at least one metre above roof penetration
- the top of the flue is at least 60 cm above the highest part of the roof within a three metre range
- the top of the flue is at least one metre taller than any neighbours' building within a three metre range.

Council also recommends that the flue height is at least one metre above any structure within a 15 metre horizontal radius. Please note, this is a guide – not a rigid rule – and high buildings or steep hills beyond 15 metres should also be considered.

In hilly neighbourhoods, smoke from your chimney may travel directly to neighbours' windows higher up the slope. If this is the case, it will be very difficult to avoid creating smoke nuisance and home owners should consider alternatives to wood heaters.

If you feel you need to check the quality of your installation, the Australian Home Heating Association website lists installers who are members of the association www.homeheat.com.au



Maintain your wood heater diligently

Check your heater air inlets and flue/chimney are not blocked and in good working order before your first use each winter.

- Inspect the flue for a build-up of soot or creosote. If a ringing sound is heard after the flue is tapped lightly using a screwdriver, it is likely to be clean. If a dull thud is heard, the flue needs cleaning.
- Check the flue for birds' nests, holes or leaks. Also check the condition of the door glass, seals, baffles and where the chimney passes through the ceiling cavity and above the roof-line.
- Remove excessive ash build-up, but wood heaters work well with a shallow layer of ash on the bottom of the heater.
- At least every two years, lubricate the airslide control with high temperature grease, available from your local retailer or hardware store.

Before each winter, have the flue and heater professionally inspected, and if necessary, serviced and cleaned to remove built up soot and creosote. Creosote is a thick, black, tar-like substance, which is difficult to clean. While it may be cheaper to attempt to do this yourself, the safest option is to call a professional.

Failure to regularly check and clean your wood heater and flue/chimney can lead to:

- a chimney fire, as built-up creosote on the walls of the flue can catch alight and burn intensely
- inefficient heating, as the flue cannot draw properly
- back drafting, which is when pollutants are drawn back through the flue into the home, with potentially serious health impacts, such as carbon monoxide poisoning
- corrosion to the flue or damage to the heater, which may allow pollutants to escape or result in a fire in your house.

The Australian Home Heating Association lists local service providers www.homeheat.com.au/manufacturers-suppliers-and-services/local-suppliers-and-service-providers

Use the correct wood

Only ever burn dry, well-seasoned wood, with a moisture content less than 20%. The dryness of firewood makes a significant difference to the amount of smoke emitted from a chimney. Damp or green wood that has been freshly cut off the tree causes excessive smoke and doesn't generate as much heat. Dry, seasoned wood will burn better, ignite faster and produce more heat than unseasoned wood.

Ask your supplier for wood that has been air-dried for at least 12 months. The supplier should be able to test the moisture content of the wood with a meter. You can usually tell dried/seasoned wood by looking at the ends of cut sections.

Dried/seasoned wood will have large cracks running across the grain. When you hit two pieces of dry wood together, there should be a loud, hollow cracking sound. A dull, muffled sound indicates that the wood is wet.

Buy split timber, preferably without bark. Split timber has a greater surface area that allows the wood to dry out and become seasoned more quickly. Split wood should not be thicker than 15 centimetres.

Softwoods are easier to ignite, burn faster and produce less coal. They are best used for starting the fire. As softwoods burn very quickly, the air inlets of the wood heater are often closed to reduce the intensity of the fire, but starving the fire of air can increase the amount of smoke produced.

Hardwoods are usually harder to ignite, burn at slightly slower rates and produce better coals. As hardwood takes a longer time to ignite, it can lead to higher smoke emissions on lighting or refuelling. Hardwoods, however, produce fewer emissions during the slow charcoal burning stage. Use hardwoods after achieving a good, hot fire with kindling and smaller wood pieces.

Follow the manufacturer's instructions. Check the compliance plate as it may specify the best fuel type for the heater.

Never burn treated or painted timber, plastics, rubbish, rubber, paints, fabrics, petrol, oils, solvents, rags or drift wood as they will release toxic chemicals that are dangerous to your family and neighbours.



Store your wood correctly

To avoid smoke, be sure to keep your firewood dry.

- Buy your wood in spring or summer from a reputable wood merchant.
- Split the wood into pieces of about 15 cm in width before stacking in a heap.
- Wood is best stored in an undercover area on pallets or raised on blocks, not on the ground or the wood will adsorb moisture and increase the amount of smoke when burnt.
- Stacking the wood loosely, or in a crisscrossed manner, will allow air to circulate through the wood heap. A narrow heap, less than 50 cm, will also assist in air movement.
- Do not cover the wood heap with a tarp as this will trap moisture and prevent air circulation.
- You may wish to purchase a moisture meter to be confident in the dryness of your wood.

Operating a wood heater correctly

Smoke comes from a fire that is not burning hot enough. The low temperature means the wood is not being completely burned, causing the unburnt particles to create visible smoke. To create a good, hot fire, you need plenty of oxygen and no moisture.

Getting started

- Start with air intakes/inlets fully open and the heater door slightly open to allow air to circulate and help create a good fire. Build the fire using kindling wood, loosely crumpled paper and/or firelighters.
- Keep the fire compact and in the middle of the combustion chamber. This will allow air to circulate around the fire, increasing the speed of ignition and ensuring a good, even fire is achieved.
- Leave the air controls open for at least 20-30 minutes to start the fire burning. You can expect some smoke from your chimney when you first start, but it should not last longer than 15 minutes.
- **Never use petrol, oil or kerosene to help light the fire. This could cause an explosion.**

Fuelling the fire

- Once the fire has started, gradually increase the size of the wood you add, until the fire is fully established.
- Once a hot bed of coals has formed you can add larger pieces of dry, clean, seasoned wood.
- Do not overload the firebox. Most heaters burn better with three or four small logs than one or two large ones. Logs should not be too big; about two to four kilograms for a 40 cm log is ideal.
- To obtain complete burning, you need a high temperature and enough air flow so coals and flames glow brightly. Dark, smouldering wood and a lot of smoke are signs of poor and incomplete burning and insufficient air intake.



- If your heater has a fan fitted, do not turn the fan on until the firebox has reached the optimum temperature. Turn the fan off when refuelling.
- Every time you add fuel to your fire, leave the air inlets fully open for 15-20 minutes to start wood burning properly, then keep your fire burning at a steady rate.
- Heaters without a grate will work best with a layer of ash on the base of the firebox. When cleaning out the ash, always leave a layer of 10 mm or so behind.

Check and monitor the amount and direction of smoke

When operating your wood heater, you are responsible for ensuring that the smoke does not affect others in the community.

Monitor the amount of smoke coming from your chimney to ensure it is not causing a smoke nuisance. Have a look next time your heater is working and see where your smoke is going.

Overnight wood heater operation

Your heater has the potential to produce smoke and cause a nuisance while you sleep. Here are some tips for when you go to bed.

- Load the heater at least half an hour before going to bed.
- Only turn the air supply down once all the wood is charred (about 20 minutes).
- Leave the air inlet and flue/chimney damper open. This will ensure that the wood is well ignited and a hot fire is maintained.
- Ensure flames can be seen if unburnt wood is present in the combustion chamber. If there is no flame, the fire will smoulder and produce excessive smoke.
- You might find that if you have a good lighting method worked out and your house is well insulated you won't need to burn overnight.
- Make sure you turn the fan off before leaving the heater overnight.
- If in doubt, have a look outside before you go to bed to check for smoke.

Remember it is the responsibility of the operator of a domestic wood heater to ensure that smoke from their heater does not affect others living in the community.

More information

For more information on reducing smoke pollution or other air quality initiatives

- visit www.brisbane.qld.gov.au
- phone Council on (07) 3403 8888.

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