

# Outdoor Wood Boiler & Air Quality Fact Sheet

The rising price of fuel may tempt people to seek alternative home heating options. Outdoor wood boilers are an option some are considering. The boilers heat water in an insulated shed and underground pipes carry the heated water to one or more buildings for heat and for hot water use. This tempting choice doesn't involve the bother of handing wood inside a home, but outdoor wood boilers can be a major problem because they emit a lot of air pollutants.

## TOP THREE REASONS TO AVOID OUTDOOR WOOD BOILERS

1. Incomplete combustion = smoke: Many outdoor wood boilers generate a lot of smoke! A large water jacket usually surrounds the firebox. This is good for heating water, but it cools the escaping gases before combustion is complete.
2. Intermittent heat demand is the second reason the units are smoky. There are long periods of time when the wood just smolders. During periods of low airflow, creosote collects on the water jacket walls. When the fire is rekindled, the creosote burns off and creates black soot.
3. Worst of all, the exhaust stacks of these units are short. Smoke and soot are released close to the ground where it can drift into your neighbor's yard.



Most outdoor wood boilers create more pollution than a wood stove because they are designed to burn wood at lower combustion temperatures.

## SMOKE IS UNHEALTHY TO BREATHE

Outdoor wood boilers generate much more particle pollution than an indoor wood stove because the units are built to burn wood at lower combustion temperatures. Wood smoke releases particles ("soot"), carbon monoxide, and other toxic air pollutants. Nuisance complaints are justified by valid health concerns. Children (whose lungs are still developing) and people with health heart or lung problems such as coronary artery disease, asthma, or emphysema are especially affected by wood smoke.

For these reasons, some state and local municipalities have banned the use of outdoor wood boilers. Michigan and many of the Northeast States joined New York in petitioning the EPA to better regulate wood boilers. New York published a detailed report in 2005 that documents health problems associated with wood boilers.

Don't believe us? Read more about it from Wood Heat Organization Inc., a nonprofit, nongovernmental agency dedicated to the responsible use of wood as a home heating fuel: <http://www.woodheat.org/outdoor-boilers.html> They report, "There are problems, though, which is why conventional outdoor boilers have been so controversial. The big problem is the smoke. Boy, do they smoke." and "Another of the problems with outdoor boilers has been the outrageous performance claims made by their manufacturers ..."

## A BETTER CHOICE FOR YOUR HEALTH, YOUR WALLET AND THE ENVIRONMENT

Since heat transfer efficiencies for in-use outdoor wood boilers are as low as 20-30%, a better wood burning option is to install an EPA certified wood stove. They burn a lot less wood, make much less smoke, and have a longer unit "life expectancy". You'll save money in the long run. While researching heating alternatives, keep in mind the impact of your choice on the environment.

### If you're still thinking about installing an Outdoor Wood Boiler, we recommend you:

- Look for a well-designed unit that utilizes secondary combustion because they burn more efficiently and can be a good home heating option in rural areas. A few newer models, such as those by GARN, Greenwood Technologies and Tarm USA have added technology to more fully incinerate particulate and gas emissions. Due to higher heating efficiencies, they use one-half to one-third the amount of wood to generate the same amount of heat... and demonstrate *much* cleaner operation than most current models. [Better units are initially more expensive, which can make them less appealing to residents looking for a short-term "cheap" energy fix.]
- Look for a unit with a lot of firebrick which allows the unit to burn hotter with better combustion.
- Be a good neighbor. Make sure the stack is at least as high as the chimney on your home.
- Ask for proof if the unit's performance claims seem exaggerated.
- Fuel right ... ONLY dry, seasoned wood should ever be used in wood burning units.

For more information, go to [www.michigan.gov/air](http://www.michigan.gov/air) and click on Woodburning and Air Quality located under "Spotlight" or call the DEQ Environmental Assistance Center at 1-800-662-9278.

