

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

Look for a well-designed unit that utilizes secondary combustion. They burn more efficiently and can be a good home heating option in rural areas.

Look for a unit with a lot of firebrick inside the fire box. This allows the unit to burn at a higher temperature 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. Performance claims that seem to good to be true probably are.

Fuel right ... **ONLY** dry, seasoned wood should be used in wood burning units.

If you have a modest house that needs heating, a wood stove, heating fireplace or small basement wood furnace will probably be a better choice.

You'll burn a lot less wood, make a lot less smoke, and save yourself a lot of money in the long run.

Talk to your township official before purchasing an outdoor boiler to ensure that you are following any guidelines that may be in place.

Be Aware! Some states have already banned outside wood boilers from being used. Currently New Jersey does not have any set standards for outdoor wood boilers, however standards may develop at any time causing you to forfeit the time and money you have already spent on your equipment.

Some outdoor boiler manufacturers have made an effort to offer their customers a product with a proficient combustion system. It's worth the time to find the best manufacture for you.

Additional Resources

www.environmentalchemistry.org

www.outdoorfurnacefacts.com

www.burningissues.org

www.woodheat.org

www.lungusa.org

Smoke Gets in Your Lungs: Outdoor Wood Boilers in New York State

(Source: New York State Environmental Protection)

Check Us Out On The Web At

WWW.CSHEALTH.ORG



County Of Cumberland

790 East Commerce Street
Bridgeton, NJ 08302

Phone: 856-453-2165

Fax: 856-451-4139

E-mail: Noahne@co.cumberland.nj.us



Everybody,
Everywhere,
Everyday.

Outdoor Wood Boilers



Wood Boilers and Air Pollution, What's the Problem?

The top 5 pollution problems with outdoor wood boilers

1. Fine Particulate Matter: Due to incomplete combustion issues outdoor wood boilers emit a large quantity of fine particulate matter. The American lung association has estimated that fine particulate matter is responsible for thousands of premature deaths nationwide every year. They have linked fine particulate matter to aggravation of respiratory illnesses such as asthma, bronchitis, emphysema, chronic obstructive lung disease, and pneumonia; it is also linked to premature deaths from other causes, such as lung cancer and heart disease.

2. Incomplete Combustion: The firebox of most units is fully surrounded by a water jacket. While this might be good from a heat transfer point of view, it makes complete combustion of the wood just about impossible. Some outdoor boiler manufacturers compound the problem by running a series of water pipes right through the firebox so the exhaust has to sweep past them to reach the chimney. The flaming combustion of wood cannot occur below 1000°F. So those steel surfaces, backed up by water at 150°F, chill and put out the flames well before combustion is complete. This is good for heating water but it cools the escaping gases before combustion is complete, creating smoke rich in fine particulate matter.

3. Intermittent Heat Demand:

This not only causes more smoke but instead of the white smoke you would normally get, you now get a black plume. Here's why: When the boiler's water temperature falls below a set point, its combustion air damper opens and/or a small fan forces combustion air into the firebox. Once the water is heated back to the upper set point, the fan is turned off and/or the combustion air damper closes. During off cycles the fire smolders and much of the smoke condenses on the cold steel internal surfaces, forming creosote. When the thermostat again calls for heat and incoming combustion air rekindles the fire, the heat ignites the creosote clinging to the boiler walls. A plume of dark heavy smoke issues from the stack for about ten minutes, before the system settles back into its normal fire.

4. Distance and Size: The bad effects of combustion in a cold firebox and intermittent heat demand are made worse if the outdoor boiler is too big for the amount of heat needed by the building. This seems to be a common problem with outside wood boilers. An outdoor boiler connected to a modest-size house will spend most of its time in the off mode, particularly during fairly mild weather. So when it does fire it is likely to make a big smoke plume.

5. Efficiency: When it comes to outside boilers, manufacturers have been known to make exaggerated performance claims. Several manufacturers quote "combustion efficiencies" of over 90%. No responsible manufacturer of heating equipment will ever quote combustion efficiency because the figure is actually meaningless to buyers, and worse it's misleading. The only useful efficiency number for potential buyers is "net delivered" efficiency. And even then the conditions under which the tests were conducted and the agency that conducted them must be known. For example, the results from a universally recognized and government sanctioned test method show that advanced EPA certified stoves have net delivered efficiencies between 60-80% and conventional wood stoves between 40-65%.

Looking for a better choice?

Since heat transfer efficiencies for 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.

Is there any enforcement of wood boilers?

Health Departments are responsible for investigating public health nuisance complaints such as smoke traveling onto neighboring properties. If complaints are confirmed they can be taken to municipal court where responsible parties may receive penalties, a court order to alter their boiler, or possibly to remove it entirely.

New Jersey Department of Environmental Protection and their delegated agencies can enforce the Air Pollution Control Act.

- Complaints concerning the use of residential and commercial outdoor wood boilers will be subject to investigations that may lead to violations of N.J.A.C. 7:27-3 (Control and Prohibition of Smoke From Combustion of Fuel) or N.J.A.C. 7:27-5 (Prohibition of Air Pollution).
- The NJDEP enforces the Air Pollution Control Act with penalties between \$100.00 and \$50,000.00. These penalties are based on N.J.A.C. 7:27A and vary based on the nature of the offence.
- At this time the United States Environmental Protection Agency has not set any standards for testing or regulation of outdoor wood boilers. Since there is no testing requirements or standards for manufactures to meet, the State of Washington's Ecology Department has decided to prohibit the use of outdoor wood boilers in their State until federal standards are adopted. The state of New Jersey may also choose to set standards that will prohibit the use of outdoor wood boilers until federal standards are established.