

ENVIRONMENTAL Fact Sheet



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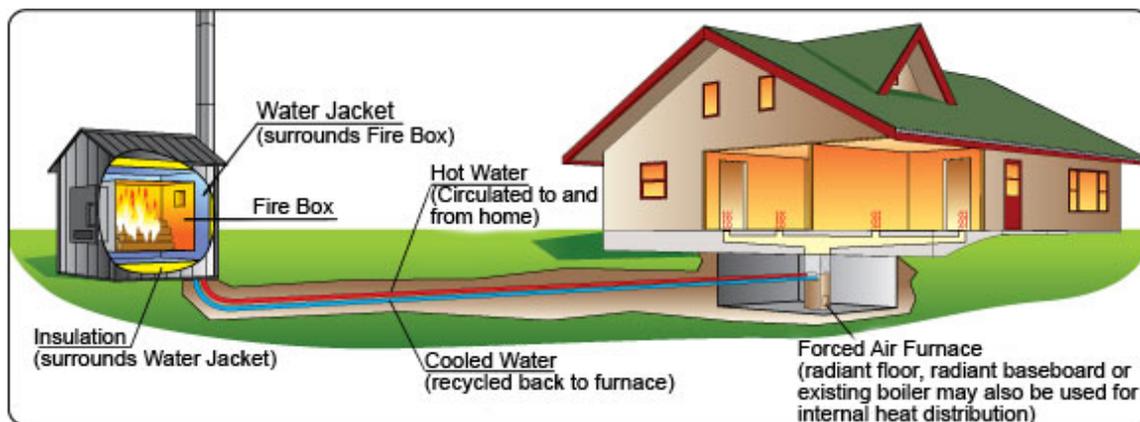
2015

Outdoor Wood-Fired Boilers and Air Quality *Installation and Best Management Practices*

Background

Outdoor wood-fired boilers (OWBs), also known as outdoor wood-fired hydronic heaters, are free-standing wood-burning devices that heat water, which is then pumped to one or more structures to provide heat. They resemble a small shed with a smokestack on top. OWBs may be used to heat homes and buildings, produce domestic hot water, heat swimming pools or hot tubs, and provide heat to agricultural operations such as greenhouses and dairies.

Wood is a renewable resource and a valuable fuel source because it is “global warming neutral” when harvested in a sustainable manner. With rising fossil-fuel prices, these wood-burning devices can offer a viable alternative heat source, if they are installed and operated properly.



Source: Hearth, Patio and Barbeque Association (from US EPA website)

Air Quality Concerns

A concern associated with certain OWBs is the air pollution they may produce. Smoldering fires and short smokestacks may create heavy smoke close to the ground that sometimes causes a neighborhood nuisance or an adverse impact on public health and the environment. Smoke from OWBs can contain emissions of fine particle matter, carbon monoxide and other organic products, such as formaldehyde, benzene and aromatic hydrocarbons, which form from incomplete combustion. When inhaled, fine particulate matter from smoke emissions is carried

deep into the lungs and can impair lung function and aggravate existing medical conditions such as asthma, lung or heart disease. Exposure to some pollutants in smoke can even cause cancer.

Fortunately, recent advances in OWB technology have resulted in cleaner-burning units. The use of these cleaner-burning units, in conjunction with best management practices, can reduce and minimize any adverse health and environmental impacts associated with using these devices.

Regulations

United States Environmental Protection Agency

The Federal Clean Air Act requires the United States Environmental Protection Agency (EPA) to set new emission standards for stationary sources of air pollution such as OWBs. These are called the New Source Performance Standards (NSPS). On February 3, 2015, EPA finalized its NSPS for OWBs which will provide important health benefits to communities across the country, and will build on the work that states and local communities have done to improve air quality. EPA last updated the NSPS in 1988, and the new emission standards reflect the significantly improved technology that is now available to manufacturers to make cleaner burning and more efficient OWBs. EPA's 2015 NSPS do not affect currently-installed OWBs.

Previously, EPA established a voluntary qualification program whereby a manufacturer could qualify their OWBs as meeting a certain particulate matter emission limit (e.g., Phase 1 or Phase 2 emission standards). This allowed consumers to make environmentally sound choices regarding purchasing, installing and operating cleaner burning units. Under EPA's 2015 NSPS, manufacturers can only sell OWBs in the United States that meet certain particulate matter emission limits. Consumers purchasing new models will also benefit from efficiency improvements, which means you will use less wood to heat your home.

EPA's 2015 NSPS will be a two-step approach, phased in over a five-year period, giving manufacturers time to adapt their product lines to develop the best next-generation models to meet these new standards. Consumers buying OWBs anywhere in the United States in the future will be able to choose cleaner-burning models. OWBs sold in the United States will be required to have a permanent label indicating they are EPA-certified to meet the following emission limits, and signal to consumers that the heater meets EPA standards:

Step 1: The Step 1 particulate matter emissions limit is 0.32 pounds per million Btu heat output (0.32 lbs/MMBtu's). The Step 1 limit is identical to the Phase 2 emission limit under EPA's voluntary program. Most OWBs that were Phase 2-qualified under EPA's voluntary program automatically will be certified as meeting the Step 1 limit. Under EPA's February 3, 2015 final rule, retailers have until December 31, 2015 to sell their existing inventory of OWBs that do not meet this limit. After December 31, 2015, all units sold in the United States must meet the Step 1 limit. Of note is that since April 1, 2010, NH Law (RSA 125-R) has prohibited the sale of any OWB that does not meet this particulate matter emission limit.

Step 2: The Step 2 particulate emission limit is 0.10 lbs/MMBtu's heat output. Starting in 2020, all units sold in the United States must meet the Step 2 limit.

New Hampshire Law

On August 10, 2008, the New Hampshire statute RSA 125-R for Outdoor Wood-Fired Hydronic Heaters established by law certain requirements on the sale, installation, setbacks, and use of OWBs. RSA 125-R was based on the previous EPA voluntary program for manufactures to develop units that would “qualify” for a certain particulate matter emission rating (e.g., Phase 1 or Phase 2 emission standards). On April 1, 2010, New Hampshire began prohibiting the sale of any OWB other than a Phase 2 qualified emission rated unit. At that time, EPA’s voluntary Phase 2 emission limit was set at 0.32 lbs/MMBtu’s of heat output.

EPA’s February 3, 2015 NSPS now requires by law that all units manufactured and sold in the United States after December 31, 2015 meet the emission limit of 0.32 lbs/MMBtu’s of heat output. In addition, under EPA’s 2015 NSPS, starting in 2020 all OWB’s sold in New Hampshire must meet the particulate matter limit of 0.10 lbs/MMBtu’s of heat output.

EPA’s NSPS does not establish stack height or set back installation criteria. However, under New Hampshire [RSA 125-R](#), OWB installations must meet the following criteria:

Phase 1 Units:

- ✓ Must be installed at least 100 feet from nearest property line.
- ✓ Must have a stack height at least 2 feet higher than the peak of the roof of a residence or business not serviced by the unit located within 300 feet of the unit.

Phase 2 Units:

- ✓ Must be installed at least 50 feet from nearest property line.

Non Phase 1 or Phase 2 Units:

- ✓ Must be installed at least 200 feet from nearest abutting residence.
- ✓ Must have a stack height 2 feet higher than peak of the roof of residence or business not served by the unit located within 300 feet of the unit.

Tips to Reduce Air Pollution from OWBs

If you already own an OWB, you should install, operate and maintain it according to state/federal law, and the manufacturer’s instructions.

A few recommended best management practices for operation of all OWBs include:

- Have the unit installed by a professional.

PHASE 2 QUALIFIED
U.S. Environmental Protection Agency
2008 Hydronic Heater Program

Phase 2 Qualified models are cleaner and pollute less than those models that have not met this emission level. Exposure to smoke has been associated with respiratory illness and other health problems. Models that have lower smoke emissions may reduce your risk.

For more information go to www.epa.gov/woodheaters

**HYDRONIC HEATERS
SMOKE EMISSIONS RANGE**

Lower Emissions 0 Better
Higher Emissions 2.0 Worse

0.32 EPA PHASE 2 EMISSIONS LEVEL

0.26 THIS MODEL

Heaters with lower emissions produce less smoke when installed and operated properly.

MANUFACTURER: XXXX
MODEL NUMBER: XXXX
8 HOUR OUTPUT RATING: 112,000 BTU/HR
8 HOUR AVERAGE EFFICIENCY: 79% (using higher heating value)
FINE PARTICLE EMISSIONS: 0.17 GRAMS/HR (average)
0.26 GRAMS/HR (maximum test run)
0.26 LBS/MILLION BTU INPUT
0.26 LBS/MILLION BTU OUTPUT
0.09 GRAMS/HR 10,000 BTU OUTPUT

EPA has determined, based on testing by an accredited independent laboratory, that this model qualifies at the Phase 2 emissions level for U.S. EPA's Voluntary Program.

- When determining where to locate the OWB, take into consideration how close it is to neighboring properties, especially residences. Become familiar with setback requirements from property lines or structures as specified by [RSA 125-R](#) or local ordinances. Understand the wind direction and topography in the area so that the unit is installed in a location such that smoke from the OWB will not be a nuisance to neighbors.
- Become familiar with manufacturers recommendations for installation and best management practices for operation, and be sure to comply with stack heights as specified by New Hampshire law [RSA 125-R](#).
- Never start a fire with gasoline, kerosene, charcoal starter or a propane torch, unless the unit is designed with an auxiliary starting unit for this purpose.
- Burn only dry, seasoned wood. Avoid burning wet, rotted, diseased or moldy wood.
- **Do not burn** household garbage, pressure treated wood, painted wood, plywood, oil or chemical stained wood, or wood glued or treated in any way. It is against the law!
- Conduct routine maintenance to keep the unit operating at its peak efficiency. EPA and fire officials recommend that your OWB, chimney and vents be professionally inspected and cleaned each year to keep them in safe working order.

For More Information

For general information about OWBs in New Hampshire and state law requirements, contact the NHDES Air Resources Division at (603) 271-1370.

Other resources:

- New Hampshire's law regulating OWBs (RSA 125-R):
<http://www.gencourt.state.nh.us/rsa/html/X/125-R/125-R-mrg.htm>
- EPA website for information about OWBs:
<http://www.epa.gov/burnwise/woodboilers.html>
- EPA website for NSPS related to OWBs:
<http://www2.epa.gov/residential-wood-heaters/final-new-source-performance-standards-residential-wood-heaters>
- EPA list of certified OWBs:
<http://www2.epa.gov/compliance/list-epa-certified-hydronic-heaters>