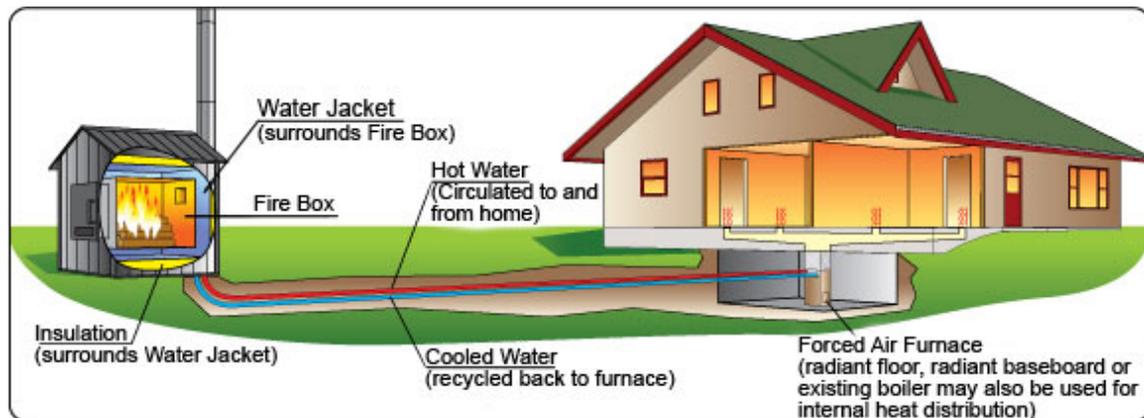


## OUTDOOR WOOD-FIRED BOILERS (OWBs)

### INTRODUCTION

Outdoor wood-fired boilers (OWBs), also known as outdoor hydronic heaters, are free-standing wood-burning devices that heat liquid (water or water-antifreeze) which is then pumped underground to provide heat and hot water to one or more structures. They are typically the size and shape of a small storage shed or mini-barn with a short smoke stack on top. OWBs may be used to heat homes, greenhouses and other buildings, produce domestic hot water, heat swimming pools or hot tubs, and provide heat to agricultural operations such as dairies.<sup>1</sup>



Source: Hearth, Patio and Barbeque Association [www.hpba.org](http://www.hpba.org)

### IMPACTS

The operation of outdoor wood-fired boilers has raised numerous environmental, health and nuisance issues. Following are some concerns that are unique to the operation of OWBs.<sup>2</sup>

- **Smoke** - Older model OWBs often employ a very primitive combustion technology that allows the unit to operate in “idle” mode for long periods of time. This type of operation causes very poor combustion and continuous, heavy smoke.
- **Short Stack Height** - OWBs are typically equipped with a very short smoke stack. The short stacks and reduced draft of OWBs fail to disperse emissions adequately and can cause smoky conditions at or near ground level.
- **Emissions** - The Northeast States for Coordinated Air Use Management has conducted stack tests on outdoor wood-fired boilers. Based on the test results, the average fine particulate emissions from one outdoor wood-fired boiler are equivalent to the emissions from 205 oil furnaces or as many as 8,000 natural gas furnaces. Cumulatively, the smallest outdoor wood-fired boiler has the potential to emit almost one and one-half tons of particulate matter every year.
- **Fuel Choices** - Because OWBs are designed with a large firebox and are located outdoors, some owners use them to burn household garbage, tires and other wastes, including hazardous waste. Burning these other substances in an OWB produces additional toxic and hazardous air pollutants.

<sup>1</sup> Pennsylvania Department of Environmental Protection Fact Sheet for Outdoor Wood-Fired Boilers, March 2009.  
[http://www.dep.state.pa.us/dep/deputate/airwaste/aq/openburn/docs/outdoor\\_wood-fired\\_boilers.pdf](http://www.dep.state.pa.us/dep/deputate/airwaste/aq/openburn/docs/outdoor_wood-fired_boilers.pdf)

<sup>2</sup> Pennsylvania Department of Environmental Protection Fact Sheet for Outdoor Wood-Fired Boilers, March 2009.

- **Year-Round Operation** - OWBs are used to heat houses, shops, domestic hot water, swimming pools, greenhouses, driveways and spas. This means that smoke may be emitted year round, even in the summer when owners and neighbors want to enjoy the outdoors.

## REGULATION

Unlike indoor wood stoves that are regulated by the United States Environmental Protection Agency (EPA), OWBs are not required to meet a federal emission standard. Instead, EPA initiated a voluntary partnership program with manufacturers to design and market cleaner-burning, more efficient OWBs. Through this voluntary effort, OWBs are certified and labeled to meet EPA emissions performance standards in two phases. OWBs qualifying for the Phase 1 emission standard of 0.60 pounds of particulate matter (PM) per million British thermal units (BTUs) of heat input are labeled with an orange tag. OWBs qualifying for the Phase 2 emission standard of 0.32 pounds of PM per million BTU of heat output are labeled with a white tag. Additional information about the EPA voluntary OWB program is available on EPA's Web site at <http://www.epa.gov/burnwise/woodboilers.html>.<sup>3</sup>

The Pennsylvania Department of Environmental Protection (DEP) recently enacted regulations for outdoor wood-fired boilers. These regulations became effective upon publication in the Pennsylvania Bulletin on October 2, 2010. The final regulation can be found online at <http://www.pabulletin.com/secure/data/vol40/40-40/1876.html> and include the following provisions:

- Any OWB sold, distributed or installed for use in the Commonwealth after October 2, 2010, must meet the EPA voluntary program Phase 2 emission standard of 0.32 pounds particulate matter per million BTU output (or lower) and be labeled accordingly. Following are exemptions to the Phase 2 emission standard:
  - Permanently installed OWBs transferred as a result of a real estate transaction.
  - Sell-Through Provision – A non-Phase 2 OWBs may be installed in Pennsylvania through May 31, 2011, provided that:
    - The non-Phase 2 OWB must be installed a minimum of 150 feet from the nearest property line.
    - The non-Phase 2 OWBs must have a permanently attached stack that extends a minimum of 10 feet above the ground and is installed according to the manufacturer's specifications.
  - OWBs sold or distributed for use out of the Commonwealth.
- Any new Phase 2 OWB installed after October 2, 2010, must be installed at least 50 feet from the property line.
- Any new Phase 2 OWB installed after October 2, 2010, must have a permanently installed stack that extends at least 10 feet above the ground and is installed according to manufacturer's specifications.
- All OWBs operating in this Commonwealth after October 2, 2010, must meet certain fuel requirements.
- All OWBs operating in the Commonwealth must comply with applicable Commonwealth, county and local laws and regulations.

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<sup>3</sup> Pennsylvania Department of Environmental Protection Fact Sheet for Outdoor Wood-Fired Boilers, March 2009.

## ORDINANCE CONSIDERATIONS

Municipalities have the authority to enact ordinances to regulate the operation of OWBs locally. Such regulations may be stricter than those enacted by the DEP, but may not be less stringent. Following are considerations for enacting an ordinance regulating the use of OWBs:

- **Definitions** – include appropriate definitions to clarify unique terminology including, but not limited to Clean Wood, Stack, Outdoor Wood-Fired Boiler and Phase 2 Outdoor Wood-Fired Boiler
- **Zoning District/Use Standards** – Which zoning districts should allow OWBs? Are OWBs permitted by right or by conditional use or special exception? Are OWBs considered an accessory use? The zoning districts that allow the use of OWBs vary by municipality depending on the nature of the community. Generally, OWBs are permitted in zoning districts with lower densities and larger lot sizes as an accessory use.
- **Types of OWBs Permitted** – All OWBs installed after October 2, 2010 must meet EPA Phase 2 emission standards. Exemption: Unit installed under Sell-Through Provision - A non-Phase 2 OWB may be installed through May 31, 2011 provided it meets certain installation criteria (see Regulation).
- **Existing OWBs** – Existing OWBs acquired through a real estate transaction are exempt from EPA emissions standards under DEP regulations. Municipalities may enact regulations more stringent than DEP.
- **Number of OWBs** – Should there be limitations on the number of OWBs permitted on a property?
- **Location/Setbacks** – Where on the property should OWBs be located? Should they be permitted in front, rear or side yards? Should they be setback from: property line, rights of ways and inhabited structures?
  - New Phase 2 OWBs must be installed at least 50 feet from the property line.
  - Non Phase 2 OWBs installed under the Sell-Through Provision must be setback at least 150 feet from the property line.
- **Stack Height** - All OWBs installed after October 2, 2010, must have a permanently installed stack that extends at least 10 feet above the ground and is installed according to manufacturer's specifications.
- **Types of Fuel Permitted** – All existing and new OWBs shall operated using the following fuels: 1) Clean wood (DEP definition) 2) Wood pellets made from clean wood 3) Home heating oil, natural gas or propane that complies with all applicable sulfur limits and is used as a starter or supplemental fuel for dual fired outdoor wood-fired boilers 4) Other types of fuel approved in writing by DEP upon receipt of a written request.
- **Use of Starter Fluids** – Lighter fluids, gasoline and chemicals to start an OWB is not a best burning practices and is generally prohibited.
- **Safety** – OWBs should be equipped with a properly functioning spark arrestor.
- **Months of Operation** – Should there be limitations on months permitted for operation?
- **Nuisance** – Operation of an OWB shall not cause a nuisance to other properties.
- **Administration** – Will a permit or registration be required? What is the permit/registration process?
- **Enforcement** – How will the ordinance be enforced? Who will enforce the ordinance? What are the penalties for violations?