



Massachusetts  
Department  
of  
ENVIRONMENTAL  
PROTECTION

## f a c t s h e e t

# Outdoor Hydronic Heater Regulation

### Background

Outdoor hydronic heaters (also known as “OHHs” or “outdoor wood-fired boilers”) are located outside the buildings they heat in small, insulated sheds with short smokestacks (usually six to ten feet tall). They burn wood to heat water that is piped underground to provide heat and hot water to occupied buildings, and sometimes also heat greenhouses, swimming pools and similar structures.

Outdoor hydronic heaters can produce heavy smoke and release it close to the ground, where it can linger and expose people in the area to health risks and nuisance conditions. Wood smoke contains particles of varying sizes and a variety of toxic substances (including carbon monoxide, formaldehyde, benzene, naphthalene, and poly-aromatic hydrocarbons).

Particles that are 10 micrometers in diameter or smaller can pass through the throat and nose and enter the lungs. Fine particles, which are 2.5 micrometers in diameter or smaller (which are found in smoke), can penetrate deeply into the lungs and accumulate in the respiratory system. Particles have been linked to a number of health effects, including decreased lung function, increased respiratory irritation, aggravated asthma, chronic bronchitis, irregular heartbeats, heart attacks and premature death in people with heart and/or lung conditions. In addition, wood smoke contributes to the formation of haze that obscures visibility over large areas or regions.

Outdoor hydronic heaters are designed to burn dry, seasoned wood. However, some people have burned green wood (which increases smoke generation) and household trash or construction debris (which releases a harmful array of chemicals and is also prohibited by state law). Even when these units are operated according to manufacturers' instructions, they may create nuisance conditions that are prohibited by state air quality regulations.

MassDEP regulations governing OHHs take effect on December 26, 2008 to ensure that these units burn only clean wood, minimize their impact on air quality in the Commonwealth, and do not create air pollution problems for their neighbors. The regulations establish a stringent limit on total particle emissions from new units, and requirements for their location and operation. The regulation also limits operation of existing units to the winter heating season if they are close to other buildings and have short smoke stacks.

Requirements for New Units Sold for Installation in Massachusetts:

**Emission standard: All new units sold on or after December 26, 2008 for installation in Massachusetts must meet an emission standard of 0.32 lb/MMBtu output**, with no test run exceeding 18 g/hr for residential units or 20 g/hr for commercial size units. Units meeting this standard are known as “Phase II” units<sup>1</sup>.

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<sup>1</sup> MassDEP's draft OHH regulation (published for public comment in April 2008) included a proposal to implement emission standards in two phases, to ensure that units meeting the standard were available for purchase. However, at the time that the final regulation was promulgated, there were six OHH models that the U.S. Environmental Protection Agency had deemed to comply with the “Phase II” or more stringent emission standard, so MassDEP incorporated only the Phase II standard into its final rule.

Starting on December 26, 2008, only units that have been determined to meet this emission standard by the U.S. Environmental Protection Agency ("EPA) may be sold for installation in Massachusetts (even if the unit was purchased in another state or is moved from an out-of-state location and installed in Massachusetts). EPA lists models that it has determined to meet the Phase II emission standard on its web site: <http://www.epa.gov/woodheaters/models.htm>.

To continue selling EPA-accepted OHH models for installation in Massachusetts after April 1, 2009, manufacturers must file a certification with MassDEP by April 1, 2009, establishing that they are in compliance with all of the requirements of the regulations. If in the future EPA stops reviewing test data and determining whether models meet the Phase II emission standard, MassDEP will establish its own process for undertaking this review.

Manufacturers must attach labels to units sold on or after December 26, 2008 for installation in Massachusetts, which identify the manufacturer and provide purchasers with information on the model's heat output and particulate emission rate. The regulations establish requirements for labels that must be permanently attached to each unit, and also for temporary labels (that may be removed by an owner).

### **Siting & Installation Requirements**

New units must be located to minimize their impacts on neighbors:

- Residential-Sized Units: An OHH with a thermal output less than 350,000 Btu/hr output) must be located at least 50 feet from the property line and at least 75 feet from the nearest occupied dwelling that is not served by the unit.
- Commercial-Sized Units: An OHH with a thermal output equal or greater than 350,000 Btu/hr output) must be located at least 275 feet from the property line and at least 300 feet from the nearest occupied dwelling not served by the unit.

Any hand-fired OHH with a thermal output that is more than 1 million Btu/hr output must obtain a site specific permit from MassDEP before it is installed.

In addition, a new OHH that is located less than 150 feet from the nearest occupied dwelling that it is not serving must have a permanent smoke stack that is at least two feet higher than the peak of any roof located within 150 feet of the unit.

### **Operating Requirements**

Units meeting the Phase II emission standard may be operated at any time during the year.

#### *Existing Units*

OHHs installed or sold for installation in Massachusetts before December 26, 2008 do not have to meet the emission standard for total particle emissions. However, depending on how close they are to an existing residence and the height of their smoke stack, there may be limits on the times in which they can be operated. These limits (described below) are designed to reduce the effects of smoke on neighbors.

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Bureau of Waste Prevention,  
December 2008.  
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*Operating Requirements for Existing OHHs*

Distance to A Separate Residence	Height of Smoke Stack	Operating Limits
Less than 150 feet to another residence	Must be at least 2 feet higher than any roof structure within 150 feet	May only be operated during the "heating season", between October 1 and May 15. Use is not allowed during other times of year.
Between 150 and 500 feet to another residence	As specified by the manufacturer	May only be operated during the "heating season", between October 1 and May 15. Use is not allowed during other times of year.
More than 500 feet to another residence	As specified by the manufacturer	No limits on time of operation

Existing units that currently have smoke stacks that do not meet the required height must come into compliance by March 1, 2009.

A *variance* from the property line setback requirement may be available from MassDEP for a commercial-sized unit. Setback variances are not available for residential-sized units.

*Requirements for All (New & Existing) Units*

No OHH is allowed to cause a nuisance or a condition of air pollution.

Only clean seasoned wood (or other "biomass" approved by MassDEP) can be burned in an OHH. Garbage, tires, leaves and yard waste, construction or demolition debris (including plywood and particle board) glossy or colored paper, and materials containing hazardous constituents (such as plastic, asbestos, waste petroleum products, and metals such as lead or mercury) **CANNOT BE BURNED IN OHHs.**

Home heating oil that meets MassDEP's allowable limits for sulfur content or natural gas may be used as starters or may be burned in a "dual fuel" unit designed for this purpose.

Each purchaser of an OHH must receive an owner's manual (prepared by the manufacturer) and a copy of the certification that the particular unit meets the appropriate emission standard. The manufacturer's instructions for operating and maintaining the unit must be followed.

Each unit sold for installation in Massachusetts must be labeled in a readily visible location, to identify the unit's manufacturer, the unit's model and serial number, and the model's emission rate in terms of both heat output and particle emissions. Units must also have a temporary label (that may be removed by the unit owner) that describes the model's certification status, particle emission rate, efficiency and heat output, and includes a statement about the importance of operating and maintaining the unit in accordance with the manufacturer's instructions.

Owners must comply with all applicable local rules governing OHHs.

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## Enforcement

MassDEP has authority to enforce all provisions of the regulation. In addition, municipal Boards of Health may enforce the regulation's specific operational, visibility and setback requirements (including burning improper fuel), and may also enforce the manufacturers' labeling requirements.

## For More Information

- The full regulation is available at <http://www.mass.gov/dep/air/laws/regulati.htm>.
- Information about how to obtain a variance from setback requirements for commercial sized OHHs: call the Bureau of Waste Prevention Permit Section Chief in the appropriate MassDEP Regional Office. To find out which Regional Office should be consulted, visit <http://www.mass.gov/dep/about/region/findyour.htm>.
- To find out whether a municipality has adopted a local ordinance about OHHs, call the municipal Board of Health.
- The form for manufacturers' certifications is available at <http://www.mass.gov/dep/service/online/erpforms.htm>.
- If you have questions about MassDEP's OHH regulation, please contact Marc Cohen in the agency's Bureau of Waste Prevention ([marc.cohen@state.ma.us](mailto:marc.cohen@state.ma.us) or 617-292-5873).

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