United States
Environmental Protection
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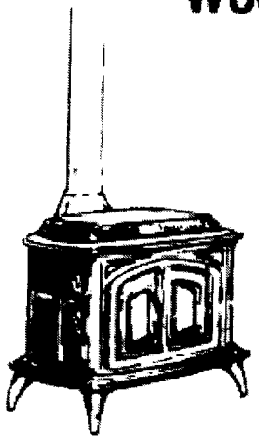
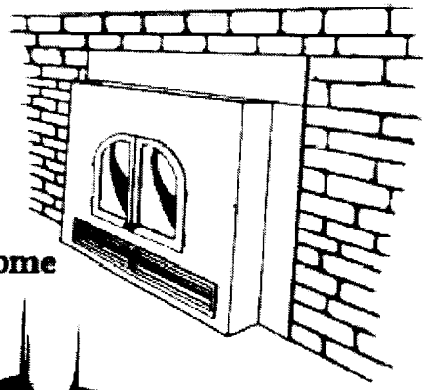
EPA

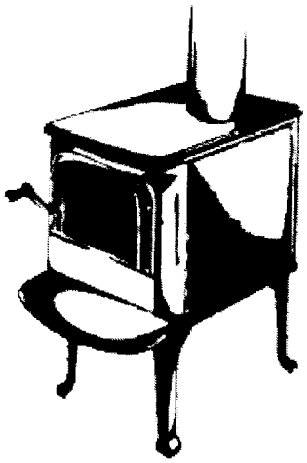
Buying an EPA-Certified Woodstove



Answers to Your Questions About EPA's Regulation



Sizing a Woodstove for Your Home



Where You Can Get More Information

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Answers to Your Questions on EPA's

Q. Why is EPA regulating woodstoves?

A. *Residential woodstoves are one of the nation's largest sources of particulate matter air pollution (smoke). Woodsmoke also contains significant amounts of carbon monoxide, hydrocarbons, and many other organic compounds. These pollutants are known to cause respiratory and cardiovascular illness and contribute to atmospheric visibility problems and property damage. The EPA regulation requires manufacturers to produce new stoves that emit less pollution. As consumers replace their old woodstoves with cleaner, more efficient, new stoves, the quality of the air will improve--particularly in residential neighborhoods where woodstoves are popular.*

Q. What appliances are regulated?

A. *In general, the regulation applies to new fireplace inserts and freestanding woodstoves having air supply controls and tight-fitting doors. The regulation does not apply to furnaces, boilers, cookstoves, coal-only stoves, open fireplaces, or existing woodstoves.*

Q. What makes a woodstove clean burning?

A. *Woodsmoke is unburned fuel, some of which accumulates in your chimney as creosote while the remainder exits the stack as smoke. The key to reducing air pollution from woodstoves is to burn fuel more completely. Three things make a stove clean burning: how it is designed, how it is installed, and how you operate it.*

Let's look at what the manufacturer does to design a clean-burning model and then what you can do. Some stoves use catalytic combustors to burn fuel more completely while others use a variety of design features such as baffles, secondary combustion chambers, and introduction of secondary air. The particulate matter emissions from EPA-certified stoves are at least 70 pecent, and in many cases 90 percent, less than those from a conventional stove, based on laboratory testing.

EPA's certification program ensures that the certified stoves burn cleanly in the test lab. However, it is up to you, the consumer, to install and operate your new stove so that it burns cleanly and efficiently where it matters--in your home and your neighborhood.

Be sure to follow your owner's manual carefully when installing your new woodstove. Proper chimney size and height are important for creating sufficient draft. Consult an expert if in doubt.

Your owner's manual will also describe the operation and maintenance necessary for clean and efficient burning, such as fire-building and wood-loading suggestions as well as mechanical adjustments.

In addition, you will need to make periodic inspections and replacements. For example, catalytic combustors should be visually inspected as prescribed by the owner's manual at least three times per heating season (or more, depending on how often the stove is in use) and replaced as necessary. The regulation requires that manufacturers provide unprorated two-year multiple replacement warranties for the catalytic combustor.

Remember, by operating your stove in ways that reduce pollution, you also save fuel and chimney-cleaning costs and reduce the chances of chimney fires. The best indicator that you are realizing these benefits is that little or no smoke will be coming from your chimney after the fire is well established and the stove is operating properly. Your owner's manual will provide additional details on monitoring catalyst performance and proper stove operation.

Q. What does the regulation do and when does it take effect?

A. *Essentially, the regulation requires manufactures to produce clean-burning woodstoves. The regulation establishes limits on the amount of particulate matter (smoke) a new stove can emit.*

Woodstove Air Pollution Regulation

(By controlling particulate matter emissions, other pollutants are also reduced). Woodstove manufacturers will have a single stove within each model line tested at an EPA-accredited laboratory. If the tested stove meets the emission limits and other certification requirements, all stoves within the model line will be certified. Manufacturers and retailers must ensure that the stoves are properly labeled and include manuals that provide appropriate operation and maintenance instructions.

The regulation takes effect in two phases. With a few exceptions, all woodstoves produced on or after July 1, 1988, or sold on or after July 1, 1990, must meet the Phase I emission limits. All woodstoves produced on or after July 1, 1990, or sold on or after July 1, 1992, must meet the more stringent Phase II emission limits.

Q. How does the regulation affect me, as the operator of a new stove?

A. *You, as the woodstove operator, are prohibited from (1) removing the stove's permanent label; (2) tampering with the pollution control features on the stove; or (3) operating a stove designed for use with a catalytic combustor if the combustor is missing or deactivated.*

More generally, the regulation also prohibits you from installing or operating a woodstove in a manner that is not consistent with the directions provided by the manufacturer. When you consider that faulty woodstove installation causes thousands of house fires annually and that by following the manufacturer's instructions you will preserve the economic and environmental benefits you are paying for in an EPA-certified woodstove, it makes good sense to follow these instructions carefully.

Q. How can I tell if a woodstove is EPA-certified?

A. *All certified woodstoves offered for sale will have both a permanent and a temporary label indicating that the stoves are EPA-certified. The temporary label will also contain information that you will find useful when shopping for a new stove.*

Q. Does this mean that I can use the label to compare new stoves?

A. *Yes. The temporary labels will tell you generally how clean and how efficient each woodstove is. However, because the regulation will require all new stoves to burn much cleaner and more efficiently than unregulated woodstoves, there should not be significant differences in efficiency and emissions performance among certified models. The label will also indicate which stoves are equipped with catalytic combustors.*

Perhaps the most important information on the label you will need when selecting a stove is the heat output range. Use this information to help select the right size stove for the space you will be heating. See the section on stove sizing in this brochure for how to use the information.

Q. How much will the regulation cost me?

A. *An EPA-certified woodstove will cost more than an otherwise comparable unregulated stove. However, for most consumers this cost will be more than offset by savings from reduced firewood consumption (one-third to one-fourth less) and less frequent chimney cleaning. The amount of savings will depend on several factors such as the amount and type of wood you burn, the cost of the wood, the cost of chimney cleaning, and how you operate and maintain your woodstove.*

Q. Does this mean the regulation can save me money in the long run?

A. *Yes. For example, if you have a typical unregulated stove and use three cords of wood (at $100/cord) and have three chimney cleanings (at $50 each) per season, you can save about $200 per season by purchasing a new EPA-certified stove. Your actual savings will vary according to how often you use your stove and other factors. Nationwide, the net savings from reduced firewood consumption and fewer chimney cleanings is estimated to be about $30 million annually. In addition, the health and welfare benefits resulting from fewer smoke-related illnesses and from reduced materials damage is estimated at about $1.5 billion annually.*

? For More Information

Local authorities and experts

Check with your local building inspection office, fire department, county agricultural extension office, insurance agent, woodstove retailer, or chimney sweep for local requirements and advice.

Annual directory of products

Wood Heat 88 (Energy Publications, Box 2008, Laconia, N.H. 03247). Comprehensive product descriptions and photographs. Includes articles on woodstove operation and installation.

EPA woodstove certification program

For lists of certified stoves and general information on enforcement and certification, write Wood Heater Program (EN-341), U.S. EPA, 401 M Street SW, Washington, D.C. 20460, or call (202) 382-2874.

Other government assistance

To obtain brochures and fact sheets dealing with home heating in general and specific aspects of wood heating (such as installation, appliance selection, obtaining and preparing fuel, and chimney systems), you may call the Conservation and Renewable Energy Inquiry and Referral Service toll-free at 1-800-523-2929.

For specific technical questions in these areas you may call the National Appropriate Technology Assistance Service toll-free at 1-800-428-2525.

For safety concerns call the U.S. Consumer Product Safety Commission toll-free at 1-800-638-2772.

The Oregon Department of Environmental Quality (811 SW 6th Avenue, Portland, Oregon 97204) has publications on stove sizing, catalytic stoves, and test data on Oregon-certified stoves.

Sizing Your Woodstove

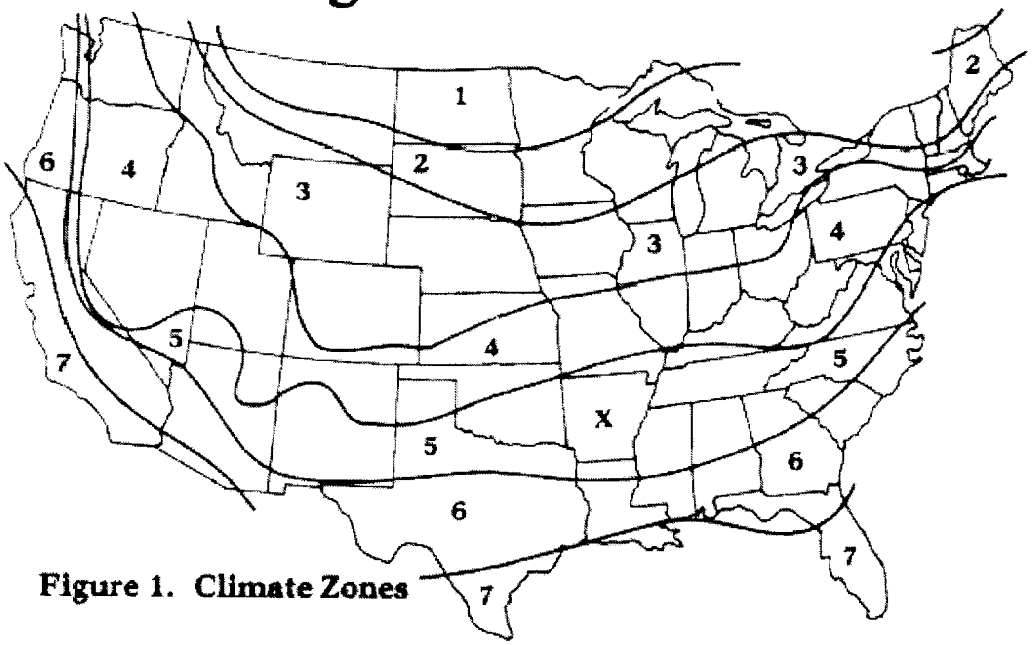

Figure 1. Climate Zones

In selecting a new woodstove, you should carefully determine the right "size" appliance for your needs. By size, we mean rated heat output. A stove that is either too large or too small for the space to be heated will be inefficient, create more pollution, and may cause discomfort as well. Following the five steps below will give you a rough idea of what size stove to buy. For more information on woodstove selection and sizing consult an expert (e.g., heating contractor, architect, or your local woodstove dealer).

1. On the map above (Figure 1), locate where you live and place an "X" at that point. Note where the "X" is in relation to the boundaries of the climate zone. For example, on the map an "X" has been placed at Little Rock, Arkansas, which is located in the middle of climate zone 5. The seven zones are based upon anticipated low temperatures ranging from less than minus 20°F to more than 30°F.
2. Determine the square footage of the area that you expect the woodstove to heat. This area will include the room the stove will be located in and perhaps the adjacent rooms. You will probably include only a portion of your house, unless you (1) have a small house, (2) are willing to live with big temperature differences within the house, or (3) have a means of distributing the heat to remote rooms.
3. Now look at the bottom line of numbers in Figure 2, the Heat Requirement Calculation chart. Find the point that approximates the square footage estimate from Step 2. Next, draw a vertical line up from that point until you are in the right climate zone for your location. Look again at where you placed your "X" on the map (Figure 1) and place another "X" in Figure 2 at a point that approximates the relative position of your geographic position to the climate zone boundaries. (See the example calculation to the right.) From the "X" you made in Figure 2, draw a horizontal line to the heat requirement figures on the left side of the chart. This number is the **unadjusted** maximum heat output your new stove should be capable of attaining.
4. Next, you should adjust the maximum heat output number obtained above by subjectively taking into account how "weatherized" your home is. If your home is a "typical" new single-story wood house with 8-foot high ceilings, double-paned windows, and 3½ inches of insulation in the walls, 9 inches in the ceiling, and 6 inches in the floor (R-11, R-30, and R-19, respectively), no adjustment is necessary. However, if your house is drafty, has lots of windows, has high ceilings, or is poorly insulated, you may want to adjust the heat output value upward by 10 to 100 percent. The adjustment factor you choose should reflect how many and to what extent these factors are present. Similarly, if you have a very tight, well-insulated home with relatively few windows, you may want to reduce the heat output value by 10 to 50 percent.
5. Now you are ready to compare your adjusted heat output value estimate with the heat output values on the temporary labels of the EPA-certified stoves. Be sure that the high end of

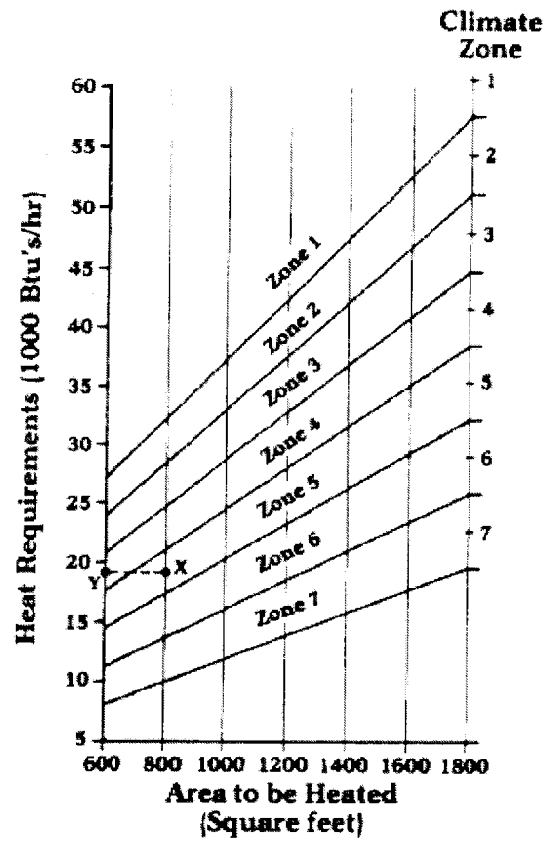

Figure 2. Heat Requirement Calculations

the heat output values on the EPA-certified woodstove temporary label is equal to or greater than the maximum heat output value you calculated in Step 4. In order to avoid buying too large a stove for your needs, you should also take into account your **average** heating needs, which will probably be one-half or less of the value you calculated in Step 4. Be sure that the low end of the range on the label is not higher than one-half the calculated heat requirement value. If you intend to use the stove during mild weather conditions, you should also make sure that the minimum heat output is about one-fourth the maximum value.

Example Calculation

A homeowner in Little Rock, Arkansas, is considering purchase of a freestanding woodstove to heat his newly constructed, well-insulated 800-square-foot room addition. He is trying to decide between two similar models--one large and one small. The label on the larger unit says its heat output ranges from 12,000 to 50,000 Btu per hour; the heat output figures for the smaller one are 7,000 to 20,000 Btu per hour.

Using the map and chart in this brochure, he first notes that Little Rock is in the center of zone 5. Next, on the chart he locates the point along the 800-square-foot vertical line that approximates the center of zone 5. This point is shown on the chart (Figure 2) by an "X." From this point he draws a horizontal line to the left (marked by a "Y" on the chart). From this, he determines that for a typical house he would need about 19,000 Btu per hour for the coldest weather anticipated. His room addition, being extra well-insulated and having relatively few windows, allows him to reduce the heat requirement somewhat. He estimates that a 20 percent adjustment is appropriate. He now calculates that the maximum heat output he will need is only about 15,200 Btu per hour, and an average value of about 7,600 Btu per hour.

Having made this calculation, the homeowner knows he can confidently purchase the smaller stove and still have sufficient heat. He also knows that had he bought the larger unit he may have been uncomfortably warm most of the winter, paid too much money, operated the stove inefficiently, and created a safety hazard from creosote buildup in the chimney.