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6.2.2 The combined average sulfur dioxide emission rate (ng/J or lb/million Btu) for the past 30 successive boiler operating days (ending with the last 30-day period in the quarter); and, for any noncompliance periods, reasons for noncompliance with the emission standards and description of corrective action taken.

6.2.3 Identification of the boiler operating days for which valid sulfur dioxide emissions data required by 4.6 have not been obtained for 75 percent of the boiler operating hours; reasons for not obtaining sufficient data; and description of corrective actions taken to prevent recurrence.

6.2.4 Identification of the time periods (hours) when Unit 1 or Unit 2 were operated but combined hourly emission rates (EC) were not calculated because of the unavailability of parameters E1, E2, H1, or H2 as described in 3.2.

6.2.5 Identification of the time periods (hours) when Unit 1 and Unit 2 were operated and where the combined hourly emission rate (EC) equalled Unit 2 (E2/H2) emissions because of the Unit 1 malfunction provisions under 3.5.3, and 3.5.4.

6.2.6 Identification of the time periods (hours) when emissions from the Unit 1 DAFGDS have been excluded from the calculation of average sulfur dioxide emission rates because of Unit 1 DAFGDS startup, shutdown, malfunction, or other reasons; and justification for excluding data for reasons other than startup or shutdown. Reporting of hourly emission rate of Unit 1 (E1/H2) during each hour of the DAFGDS startup, malfunction under 3.5.1, 3.5.2, 3.5.3, and 3.5.4 (see 4.5).

6.2.7 Identification of the number of days in the calendar quarter that the affected facility was operated (any fuel fired).

6.2.8 Identify any periods where Unit 1 DAFGDS malfunctions occurred and the cumulative hours of Unit 1 DAFGDS malfunction for the quarter.

6.2.9 Identify any periods of time that any exhaust gases were discharged to the DAFGDS bypass stack and the hourly gas flow rate through the DAFGDS stack and through the DAFGDS bypass stack during such periods and reason for bypass operation.

6.2.10 [Reserved]

[52 FR 28955, Aug. 4, 1987, as amended at 58 FR 28785, May 17, 1993; 59 FR 8135, Feb. 18, 1994]

### APPENDIX H TO PART 60 [RESERVED]

### APPENDIX I TO PART 60—REMOVABLE LABEL AND OWNER'S MANUAL

#### 1. Introduction

The purpose of this appendix is to provide guidance to the manufacturer for compliance with the temporary labeling and owner's

manual provisions of subpart AAA. Section 2 provides guidance for the content and presentation of information on the temporary labels. Section 3 provides guidance for the contents of the owner's manual.

#### 2. Temporary Labels

##### 2.1 General

Temporary labels shall be printed on 90 pound bond paper and shall measure 5 inches wide by 7 inches long. All labels shall be printed in black ink on one side of the label only. The type font that shall be used for all printing is helvetica. Specific instructions for drafting labels are provided below depending upon the compliance status of the wood heater model. Figures 1 through 7 illustrate the various label types that may apply.

#### 2.2 Certified Wood Heaters

The design and content of certified wood heaters vary according to the following:

- Catalyst or noncatalyst,
- Measured or default thermal efficiency value, and
- Compliance with 1988 or 1990 emission limit.

There are five parts of a label. These include:

- Identification and compliance status,
- Emission value,
- Efficiency value,
- Heat output value, and
- Caveats.

Instructions for drafting each of these five parts are discussed below in terms of the three variables listed above. Figures 1 and 2 illustrate the variations in label design. Figure 1 is a temporary label for a hypothetical catalyst wood heater that meets the 1990 standard, has a certification test emission composite value of 3.5 g/h, and has a default efficiency of 72 percent. The label in Figure 2 is for a hypothetical noncatalyst wood heater with a certification test emission composite value of 7.8 g/h and a measured efficiency of 68 percent. It meets the 1988 but not the 1990 standard. All labels for wood heaters that have been certified and tested should conform as much as possible to the general layout, the type font and type size illustrated in Figures 1 and 2.

##### 2.2.1 Identification and Compliance Status

The top 1.5 inches of the label should contain the following items (and location on the label):

- Manufacturer name (upper left hand corner,
- Model name/number (upper left hand corner,
- The words "U.S. ENVIRONMENTAL PROTECTION AGENCY" (centered at top and enclosed in a box with rounded edges),

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- For catalytic wood heaters, in large bold print the words "CATALYST EQUIPPED" (centered below the words "U.S. ENVIRONMENTAL PROTECTION AGENCY").

- Text indicating compliance status for catalytic wood heaters. For those catalytic wood heaters which comply with the 1988 emission limits, but not the 1990 emission limits, the words: "Meets EPA particulate matter (smoke) control requirements for catalytic wood heaters built on or after July 1, 1988, and before July 1, 1990." For those catalytic wood heaters which comply with the 1990 emission limits, the words: "Meets EPA particulate matter (smoke) control requirements for catalytic wood heaters built on or after July 1, 1990." Finally, for all catalytic wood heaters, the following text should be included: "See catalyst warranty. Illegal to operate when catalyst is not working. See owner's manual for operation and maintenance."

- Text indicating compliance status for noncatalytic wood heaters. For those noncatalytic wood heaters that comply with the 1988 emission limits but not the 1990 emission limits, the words: "Meets EPA particulate matter (smoke) control requirements for NONCATALYTIC wood heaters built on or after July 1, 1988, and before July 1, 1990." For those noncatalytic wood heaters that comply with 1990 emission limits, the words: "Meets EPA particulate matter (smoke) control requirements for NONCATALYTIC wood heaters built on or after July 1, 1990."

### 2.2.2 Emission Value

Between 1.5 and 3.0 inches down from the top of the label is the part that graphically illustrates the particulate matter, or smoke, emission value. This part consists of the word "SMOKE" in large bold print and a 3.0 inch line with words "(grams per hour)" centered beneath the line. A blunt end arrow with a base (blunt end) that spans 2 g/hr shall be centered over the point on the emissions line that represents the composite emission value for the model as measured in the certification test.

For catalyst equipped wood heaters the 3.0 inch line shall be labeled "0" on the left end of the line (centered below the end) and "5.5" on the right end (centered below the end). To find where to center the large blunt end arrow, measure 0.55 inches from the left end for each g/h of the composite emission value. Thus, a 4 g/h value would be 2.2 inches from the left end. The base of the blunt end should always be 1.1 inches wide (2 g/hr). The words "This Model" should be centered above or within the blunt end arrow.

For noncatalyst equipped wood heaters, the 3.0 inch line should be labeled "0" on the left end of the line (centered below the end) and "8.5" on the right end of the line (centered below the end). To find where to center the large blunt end arrow, measure 0.35

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inches from the left end for each g/h of the composite emission value. Thus, a 4 g/h value would be 1.4 inches from the left end. The base of the blunt end should always be 0.7 inches wide (2 g/h). The words "This Model" should be centered above or within the blunt end arrow.

### 2.2.3 Efficiency Value

Between 3.0 and 4.75 inches down from the top of the label is the part that illustrates overall thermal efficiency value. The efficiency value may either be a measured value or a calculated or default value as provided in §60.536(i)(3) of the regulation. Regardless of how the efficiency is derived, the words "EFFICIENCY" shall be centered above a 4 inch line. The 4 inch line should be divided into 5 equal lengths (each 0.8 inches) and labeled "50%," "60%," \* \* \* "100%" as indicated in Figures 1 and 2. As with the smoke line in 2.2.2, a blunt end arrow shall be centered over the point on the line where the efficiency value would be located. The base of the blunt end arrow shall be 0.48 inches wide (6 percentage points). To find where to center the blunt end arrow, measure 0.08 inches for each percentage point to the right of the nearest labeled value. For example, a value of 82 percent would be 0.16 inches to the right of the "80%" mark.

For default efficiency values, an asterisk shall follow the word "EFFICIENCY" as in Figure 1. The asterisk refers to a note in parentheses that shall say "Not tested for efficiency. Value indicated is for similar catalyst equipped (or noncatalytic, as appropriate) wood heaters."

For measured efficiency values measured with the method in appendix J, the words "Tested Efficiency" shall be centered above the blunt end arrow as in Figure 2.

The last item required for this part is a sentence that says "Wood heaters with higher efficiencies cost less to operate."

### 2.2.4 Heat Output Value

Between 4.75 and 6.0 inches down from the top of the label is the heat output part. The words "HEAT OUTPUT" in large bold print are centered above the Heat Output range numbers in Btu/hr, as derived from the certification test. The words "Use this to choose the right size appliance for your needs. ASK DEALER FOR HELP" should follow the heat output range numbers as in Figures 1 and 2. (Note that "ASK DEALER FOR HELP" is a single line, centered in the label.) The low end of the burn rate range indicated on the label should reflect the low end of the burn rate range achievable by the wood heater as sold and not as tested in the laboratory (see §60.536(i)(4)).

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### 2.2.5 Caveats

In the lower 0.75 inch of the label, the following text shall be presented:

"This wood heater will achieve low smoke output and high efficiency only if properly operated and maintained. See owner's manual."

### 2.3 Coal-Only Heaters

For those heaters which meet the definition of "coal only heater" in §60.531, the temporary label should contain the identical material (same layout and print font and size) as that illustrated in Figure 3, except that the hypothetical manufacturer and model name should be replaced with the appropriate actual names.

### 2.4 Small Manufacturer Exempted Wood Heaters

For those wood heaters exempted under §60.530(d), the small manufacturer exemption, the temporary label should contain the identical material (same layout and print font and size) as that illustrated in Figure 4, except that the hypothetical manufacturer and model name should be replaced with the appropriate actual names.

### 2.5 Wood Heaters that Are Not Certified

For those wood heaters that do not meet applicable emission limits under §60.532 and are not otherwise exempted, the temporary label should contain the identical material (same layout and print font and size) as those illustrated in Figures 5, 6, and 7, as appropriate. The hypothetical manufacturer and model names should be replaced with the appropriate actual names.

There are three kinds of wood heaters which fall into this category of "not certified." Each requires a separate label. If a wood heater is tested but fails to meet the applicable limits, the label in Figure 5 applies. Such a label should be printed on red rather than white paper. If a wood heater is tested and does meet the emission limit but is not subsequently certified, the label in Figure 6 applies. (An example would be a one-of-a-kind wood heater which is not part of a model line. Because of the costs of testing, this circumstance is not expected to arise often, if at all.) If a wood heater is not tested and is not certified, it should bear the label illustrated in Figure 7. As with Figure 5, this label should be printed on red paper.

### 3.0 Guidance for Preparation of Wood Heater Owner's Manuals

#### 3.1 Introduction

Although the owner's manuals do not require premarket approval, EPA will monitor the contents to ensure that sufficient information is included to provide heater operation and maintenance information affecting

emissions to consumers. The purpose of this section is to provide guidance to manufacturers in complying with the owner's manual provisions of §60.536(1). A checklist of topics and illustrative language is provided as a guideline. Owner's manuals should be tailored to specific wood heater models, as appropriate.

#### 3.2 Topics Required To Be Addressed in Owner's Manual

- Wood heater description and compliance status,
- Tamper warning,
- Catalyst information and warranty (if catalyst equipped),
- Fuel selection,
- Achieving and maintaining catalyst light-off (if catalyst equipped),
- Catalyst monitoring (if catalyst equipped),
- Troubleshooting catalytic equipped heaters (if catalyst equipped),
- Catalyst replacement (if catalyst equipped),
- Wood heater operation and maintenance, and
- Wood heater installation: achieving proper draft.

#### 3.3 Sample Text/Descriptions

The following are example texts and/or further descriptions illustrating the topics identified above. Although the regulation requires manufacturers to address (where applicable) the ten topics identified above, the exact language is not specified. Manuals should be written specific to the model and design of the wood heater. The following guidance is composed of generic descriptions and texts. If manufacturers choose to use the language provided in the example, the portion in italics should be revised as appropriate. Any manufacturer electing to use the EPA example language shall be in compliance with owner's manual requirements provided that the particular language is printed in full with only such changes as are necessary to ensure accuracy. Example language is not provided for certain topics, since these areas are generally heater specific. For these topics, manufacturers should develop text that is specific to the operation and maintenance of their particular products.

##### 3.3.1 Wood Heater Description and Compliance Status

Owner's Manuals shall include:

- A. Manufacturer and model,
- B. Compliance status (exempt, 1988 std., 1990 std., etc.), and
- C. Heat output range (as indicated on temporary label).

Example Text covering A, B, and C above:  
"This manual describes the installation and operation of the *Brand X, Model 0 catalytic*

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equipped wood heater. This heater meets the U.S. Environmental Protection Agency's emission limits for wood heaters sold between July 1, 1990, and July 1, 1992. Under specific test conditions this heater has been shown to deliver heat at rates ranging from 8,000 to 35,000 Btu/hr."

### 3.3.2 Tamper Warning

This consists of the following statement which must be included in the owner's manual for catalyst equipped units:

Example Text covering legal prohibition on tampering:

"This wood heater contains a catalytic combustor, which needs periodic inspection and replacement for proper operation. It is against the law to operate this wood heater in a manner inconsistent with operating instructions in this manual, or if the catalytic element is deactivated or removed."

### 3.3.3 Catalyst Information

Included with or supplied in the owner's and warranty manuals shall be the following information:

- A. Catalyst manufacturer, model,
- B. Catalyst warranty details, and
- C. Instructions for warranty claims.

Example Text covering A, B, and C:

"The combustor supplied with this heater is a *Brand Z, Long Life Combustor*. Consult the catalytic combustor warranty also supplied with this wood heater. Warranty claims should be addressed to:

Stove or Catalyst Manufacturer \_\_\_\_\_  
Address \_\_\_\_\_  
Phone # \_\_\_\_\_

This section should also provide clear guidance on how to exercise the warranty (how to package for return shipment, etc.).

### 3.3.4 Fuel Selection

Owner's manuals shall include:

- A. Instructions on acceptable fuels, and
- B. Warning against inappropriate fuels.

Example Text covering A and B:

"This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.

DO NOT BURN:

- Treated Wood.
- Coal.
- Garbage.
- Cardboard.
- Solvents.
- Colored Paper.
- Trash.

Burning treated wood, garbage, solvents, colored paper or trash may result in release of toxic fumes and may poison or render ineffective the catalytic combustor.

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Burning coal, cardboard, or loose paper can produce soot, or large flakes of char or fly ash that can coat the combustor, causing smoke spillage into the room, and rendering the combustor ineffective."

### 3.3.5 Achieving and Maintaining Catalyst Light-Off

Owner's manuals shall describe in detail proper procedures for:

- A. Operation of catalyst bypass (stove specific),
- B. Achieving catalyst light-off from a cold start, and
- C. Achieving catalyst light-off when refueling.

No example text is supplied for describing operation of catalyst bypass mechanisms (Item A) since these are typically stove-specific. Manufacturers however must provide instructions specific to their model describing:

- 1. Bypass position during start-up,
- 2. Bypass position during normal operation, and
- 3. Bypass position during reloading.

Example Text for item B:

"The temperature in the stove and the gases entering the combustor must be raised to between 500° to 700 °F for catalytic activity to be initiated. During the start-up of a cold stove, a medium to high firing rate must be maintained for about 20 minutes. This ensures that the stove, catalyst, and fuel are all stabilized at proper operating temperatures. Even though it is possible to have gas temperatures reach 600 °F within two to three minutes after a fire is started, if the fire is allowed to die down immediately it may go out or the combustor may stop working. Once the combustor starts working, heat generated in it by burning the smoke will keep it working."

Example Text for item C:

REFUELING:

"During the refueling and rekindling of a cool fire, or a fire that has burned down to the charcoal phase, operate the stove at a medium to high firing rate for about 10 minutes to ensure that the catalyst reaches approximately 600 °F."

### 3.3.6 Catalyst Monitoring

Owner's manuals shall include:

- A. Recommendation to visually inspect combustor at least three times during the heating season,
- B. Discussion on expected combustor temperatures for monitor-equipped units, and
- C. Suggested monitoring and inspection techniques.

Example Text covering A, B, and C:

"It is important to periodically monitor the operation of the catalytic combustor to ensure that it is functioning properly and to determine when it needs to be replaced. A

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non-functioning combustor will result in a loss of heating efficiency, and an increase in creosote and emissions. Following is a list of items that should be checked on a periodic basis.

- Combustors should be visually inspected at least three times during the heating season to determine if physical degradation has occurred. Actual removal of the combustor is not recommended unless more detailed inspection is warranted because of decreased performance. If any of these conditions exist, refer to Catalyst Troubleshooting section of this owner's manual.

- This catalytic heater is equipped with a temperature probe to monitor catalyst operation. Properly functioning combustors typically maintain temperatures in excess of 500 °F, and often reach temperatures in excess of 1,000 °F. If catalyst temperatures are not in excess of 500 °F, refer to Catalyst Troubleshooting section of this owner's manual.

- You can get an indication of whether the catalyst is working by comparing the amount of smoke leaving the chimney when the smoke is going through the combustor and catalyst light-off has been achieved, to the amount of smoke leaving the chimney when the smoke is not routed through the combustor (bypass mode).

Step 1—Light stove in accordance with instructions in 3.3.5.

Step 2—with smoke routed through the catalyst, go outside and observe the emissions leaving the chimney.

Step 3—Engage the bypass mechanism and again observe the emissions leaving the chimney.

Significantly more smoke should be seen when the exhaust is not routed through the combustor (bypass mode). Be careful not to confuse smoke with steam from wet wood..

### 3.3.7 Catalyst Troubleshooting

The owner's manual should provide clear descriptions of symptoms and remedies to common combustor problems. It is recommended that photographs of catalyst peeling, plugging, thermal cracking, mechanical cracking, and masking be included in the manual to aid the consumer in identifying problems and to provide direction for corrective action.

### 3.3.8 Catalyst Replacement

The owner's manual should provide clear step-by-step instructions on how to remove and replace the catalytic combustor. The section should include diagrams and/or photographs.

### 3.3.9 Wood Heater Operation and Maintenance

Owner's manual shall include:  
A. Recommendations about building and maintaining a fire,

B. Instruction on proper use of air controls,

- C. Ash removal and disposal,
- D. Instruction on gasket replacement, and
- E. Warning against overfiring.

No example text is supplied for A, B, and D since these items are model specific. Manufacturers should provide detailed instructions on building and maintaining a fire including selection of fuel pieces, fuel quantity, and stacking arrangement. Manufacturers should also provide instruction on proper air settings (both primary and secondary) for attaining minimum and maximum heat outputs and any special instructions for operating thermostatic controls. Step-by-step instructions on inspection and replacement of gaskets should also be included. Manufacturers should provide diagrams and/or photographs to assist the consumer. Gasket type and size should be specified.

Example Text for item C:

“Whenever ashes get 3 to 4 inches deep in your firebox or ash pan, and when the fire has burned down and cooled, remove excess ashes. Leave an ash bed approximately 1 inch deep on the firebox bottom to help maintain a hot charcoal bed.”

“Ashes should be placed in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, away from all combustible materials, pending final disposal. The ashes should be retained in the closed container until all cinders have thoroughly cooled.”

Example Text covering item E:

“DO NOT OVERFIRE THIS HEATER”

“Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater and to the catalytic combustor if so equipped.”

### 3.3.10 Wood Heater Installation: Achieving Proper Draft

Owner's manual shall include:

- A. Importance of proper draft,
- B. Conditions indicating inadequate draft, and

C. Conditions indicating excessive draft.

Example Text for Item A:

“Draft is the force which moves air from the appliance up through the chimney. The amount of draft in your chimney depends on the length of the chimney, local geography, nearby obstructions, and other factors. Too much draft may cause excessive temperatures in the appliance and may damage the catalytic combustor. Inadequate draft may cause backpuffing into the room and ‘plugging’ of the chimney or the catalyst.”

Example text for Item B:

“Inadequate draft will cause the appliance to leak smoke into the room through appliance and chimney connector joints.”

Example text Item C:

"An uncontrollable burn or a glowing red stove part or chimney connector indicates excessive draft."

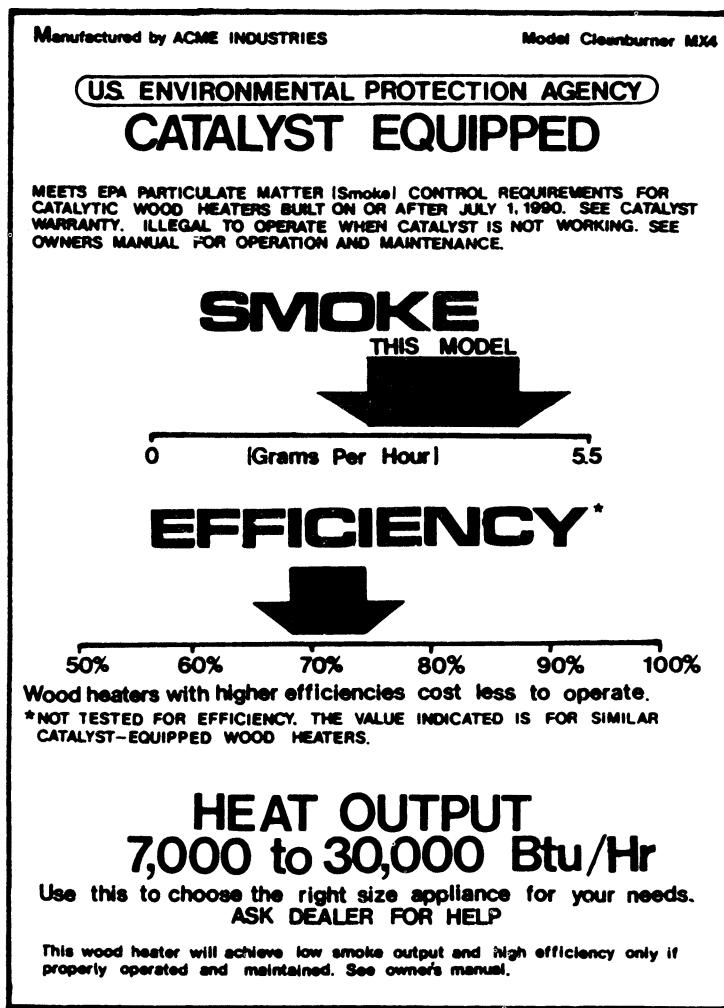


Figure 1. Temporary label for hypothetical wood heater:  
(1) catalytic, (2) estimated efficiency, and  
(3) meets 1990 standard.  
Emissions: 3.5 g/hr  
Efficiency: 72 percent

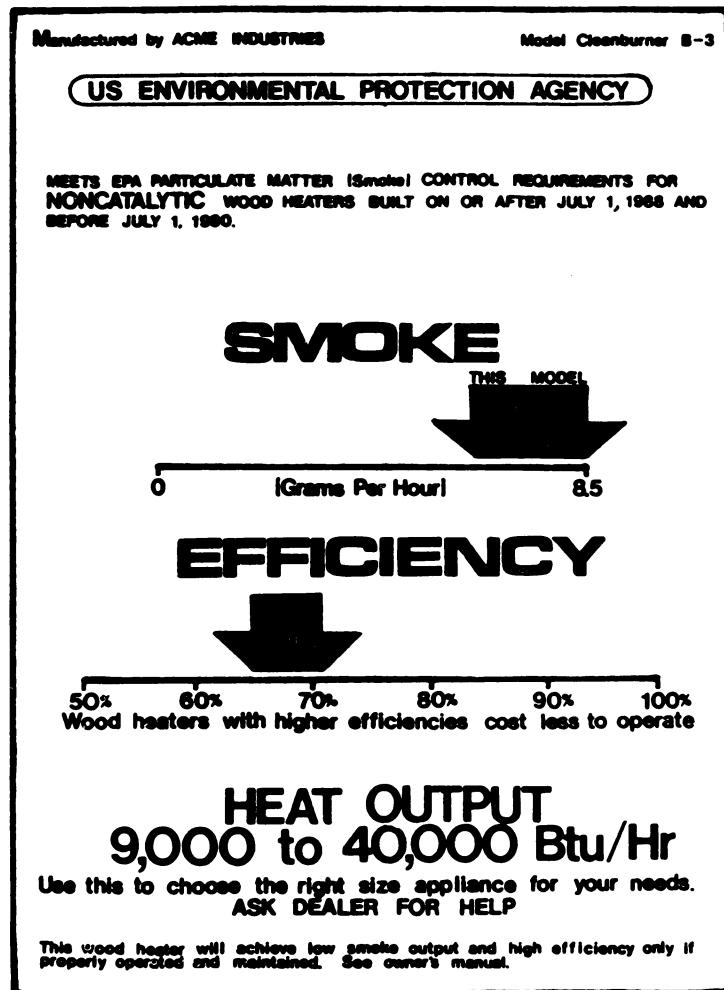


Figure 2. Temporary label for hypothetical wood heater:  
(1) noncatalytic, (2) measured efficiency, and  
(3) meets 1988 standard.  
Emissions: 7.8 g/hr  
Efficiency: 68 percent

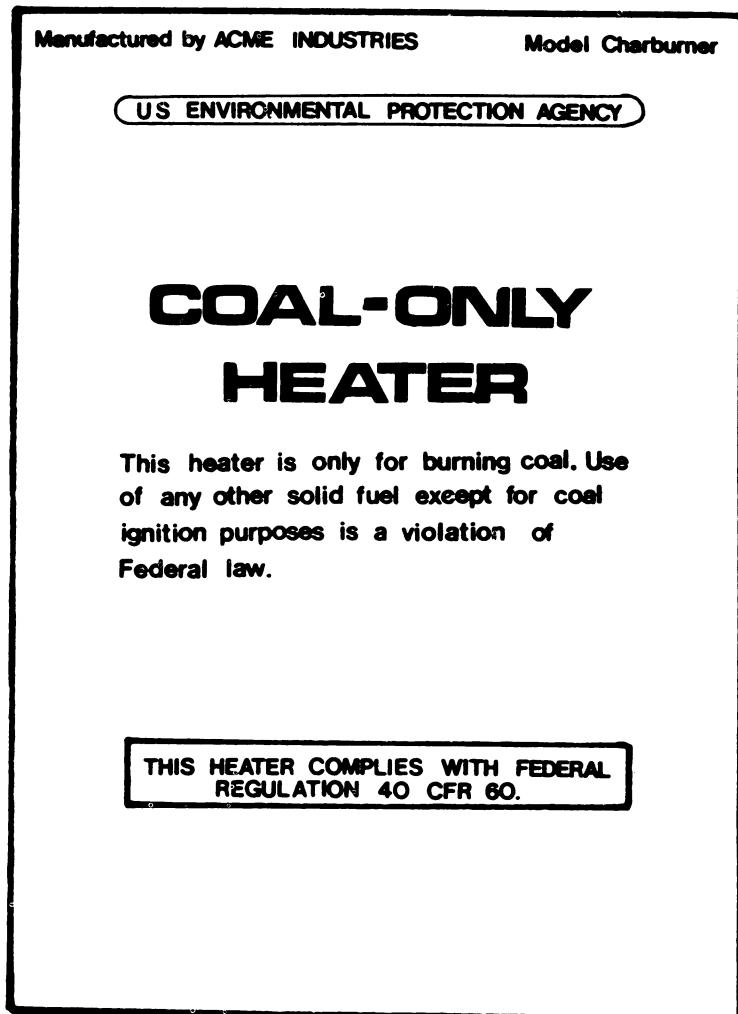


Figure 3. Temporary label for hypothetical coal-only heater.

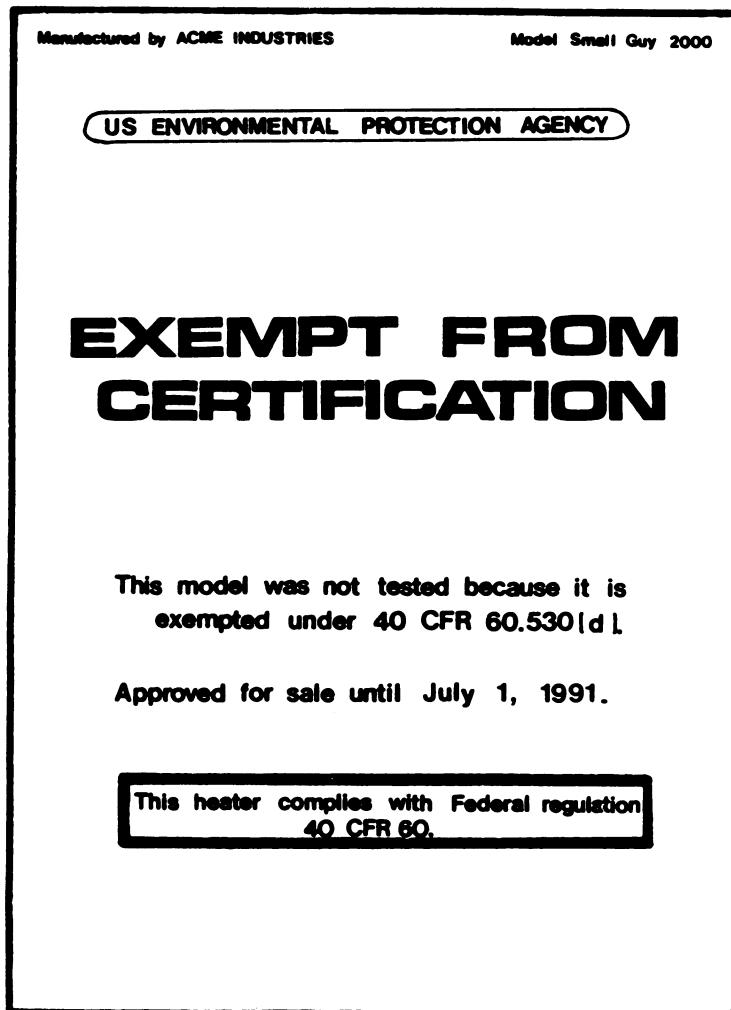


Figure 4. Temporary label for hypothetical wood heater.  
exempted under small manufacturer exemption.

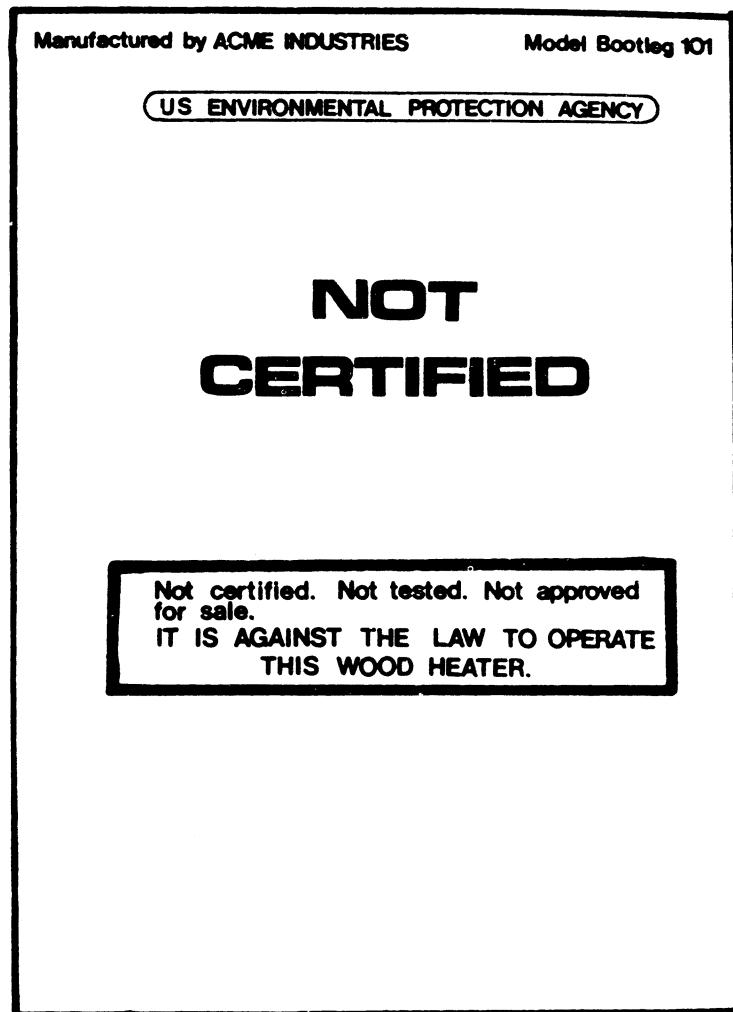


Figure 5. Temporary label for hypothetical wood heater that was not tested, not certified, and does not meet applicable standards.

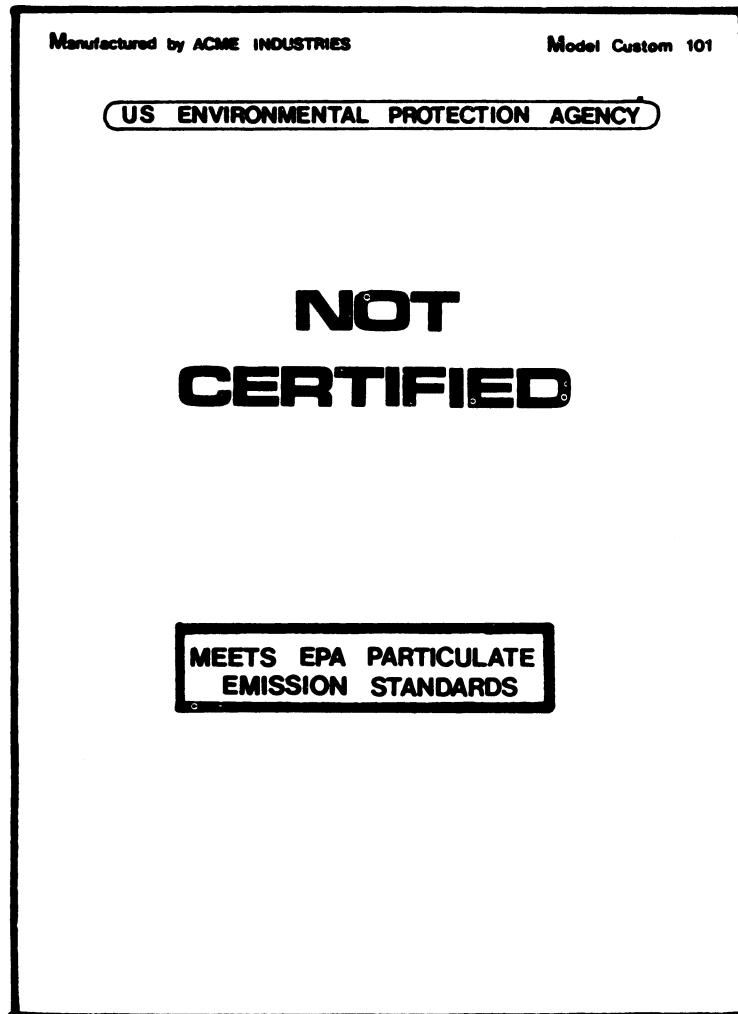


Figure 6. Temporary label for hypothetical wood heater that has been tested, meets applicable standards, but was not certified.

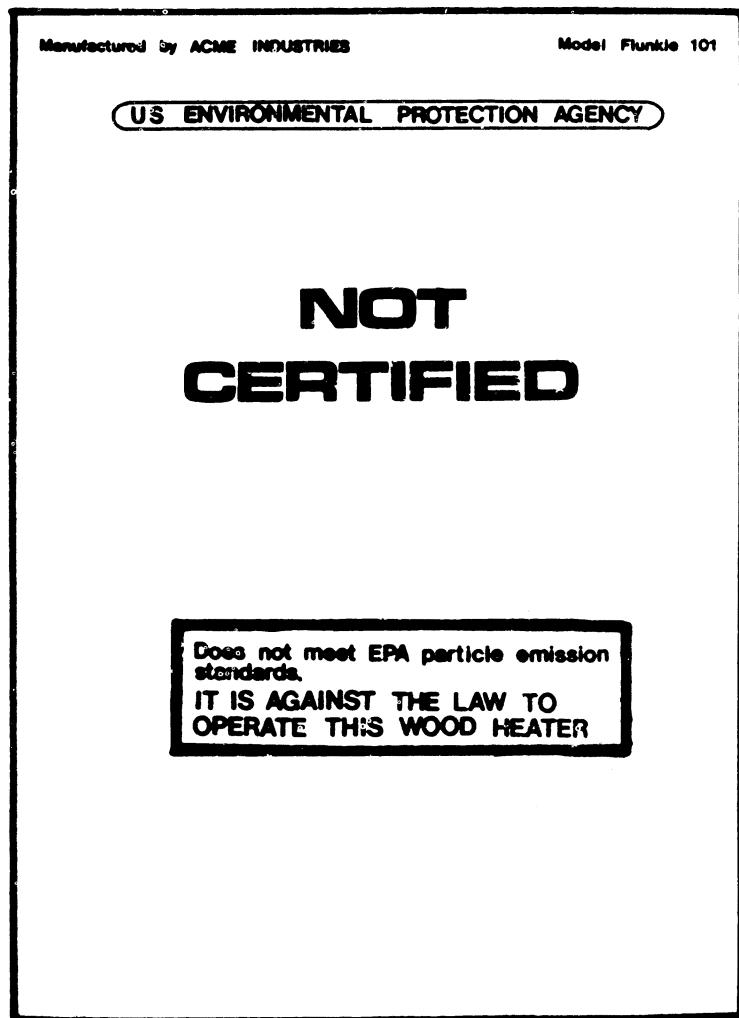


Figure 7. Temporary label for hypothetical wood heater that has been tested, but does not meet applicable standards and was not certified.

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