

# Federal Register

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Friday  
February 26, 1988

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## Part II

### Environmental Protection Agency

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40 CFR Part 60  
Standards of Performance for New  
Stationary Sources; New Residential  
Wood Heaters; Final Rule

**ENVIRONMENTAL PROTECTION  
AGENCY**
**40 CFR Part 60**
**[AD-FRL-3304-8]**
**Standards of Performance for New  
Stationary Sources; New Residential  
Wood Heaters**
**AGENCY:** Environmental Protection  
Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** Standards of performance limiting emissions of particulate matter (PM) from new residential wood heaters were proposed in the Federal Register on February 18, 1987 (52 FR 4994). Today's action promulgates these standards. The standards implement section 111 of the Clean Air Act (CAA) and are based on the Administrator's determination that residential wood heaters cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare. The intended effect of these standards is to require all new residential wood heaters to reduce emissions of PM to levels achievable by the best demonstrated system of continuous emission reduction, considering costs, nonair quality health and environmental impacts, and energy requirements.

**EFFECTIVE DATE:** February 26, 1988.

Under section 307(b)(1) of the CAA, judicial review of the actions taken by this notice is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under section 307(b)(2) of the CAA, the requirements that are the subject of today's notice may not be challenged later during civil or criminal proceedings to enforce these requirements.

**Incorporation by Reference:** The incorporation by reference of certain publications in these standards is approved by the Director of the Office of the Federal Register as of February 26, 1988.

**ADDRESSES: Background Information Document.** A summary of comments on the proposed regulation and EPA responses may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, NC 27711. Telephone (919) 541-2777. Refer to "New Residential Wood Heaters: Background Information for Promulgated Standards." EPA-450/3-87-025.

**Docket.** Docket number A-84-49 is available for public inspection between 8:00 a.m. and 4:00 p.m. Monday through

Friday at the Central Docket Section (LE-131), West Tower Lobby, Gallery 1, 401 M Street SW., Washington, DC 20460. A reasonable fee may be charged for copying.

**FOR FURTHER INFORMATION CONTACT:** For questions concerning regulatory aspects of the standards, please contact Rick Colyer, Standards Development Branch, telephone number (919) 541-5262. For questions concerning technical aspects of the standards, please contact Jeff Telander, Industrial Studies Branch, (919) 541-5427. For questions concerning test methods and laboratory accreditation, please contact George Walsh, Emission Measurement Branch, (919) 541-5544. The address for each is: Emission Standards Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. For questions concerning wood heater certification and enforcement, please contact Doreen Cantor, (202) 382-2874, at the following address: Stationary Source Compliance Division (EN-341), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460.

**SUPPLEMENTARY INFORMATION:**
**Summary of Standards**

Standards of performance for new sources established under section 111 of the CAA reflect:

... application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated [Section 111(a)(1)].

For convenience, this will be referred to as "best demonstrated technology," or BDT.

**Applicability**

These new source performance standards (NSPS) regulate PM emissions from new residential wood heaters. A "wood heater" is defined as an enclosed, woodburning appliance used for space heating that meets all of the following criteria:

1. An air-to-fuel ratio averaging less than 35-to-1.
2. Firebox volume less than 20 cubic feet.
3. Minimum burn rate less than 5 kg/hr, and
4. Maximum weight of less than 800 kg.

The regulation explicitly excludes furnaces, boilers, cookstoves, and open fireplaces.

**PM Standards**

The rule has two phases: Wood heaters manufactured on or after July 1, 1988, or sold at retail on or after July 1, 1990, must meet certain PM emission standards (Phase I); wood heaters manufactured on or after July 1, 1990, or sold at retail on or after July 1, 1992, must meet more stringent PM emission standards (Phase II). For each phase there are separate emission limits for catalytic wood heaters and for noncatalytic wood heaters as specified in Table 1.

**TABLE 1.—WOOD HEATER EMISSION  
LIMITS**

	[Grams per hour]	
	Phase I (July 1, 1988-June 30, 1990)	Phase II (beginning July 1, 1990)
Catalytic.....	5.5	4.5
Noncatalytic.....	8.5	15

The Phase II standards also limit allowable emissions at any burn rate (i.e., a cap). The 1990 cap for catalytic wood heaters is a function of burn rate (dry basis) and is calculated by the following:

- For burn rates < 2.82 kg/hr. Cap = 3.55 g/kg × (burn rate) - 4.98 g/hr.
- For burn rates > 2.82 kg/hr. Cap = 15 g/hr.

The 1990 cap for noncatalytic wood heaters is 15 g/hr for burn rates less than or equal to 1.5 kg/hr and 18 g/hr for burn rates greater than 1.5 kg/hr.

**Modification/Reconstruction**

Modification or reconstruction, as defined in section 60.14 and section 60.15 of Subpart A, shall not, by itself, make a wood heater an affected facility under this subpart. A "modification" is a physical or operational change to an existing wood heater, in this case built before July 1, 1988, that would result in an increase in the emission rate. "Reconstruction" means the replacement of components of an existing wood heater to the extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost needed to construct a comparable entirely new wood heater. Under the final rule, neither "modification" nor "reconstruction" of a unit built before July 1, 1988, makes that unit subject to the standards. On the other hand, a unit otherwise subject to the standards remains subject even if it is later "modified" or "reconstructed."

### Certification and Enforcement Program

As an alternative to having each wood heater be tested for compliance, a manufacturer may elect to have an entire model line certified. To obtain a certificate of compliance the manufacturer must submit for testing a wood heater which is representative of a model line to an EPA-accredited laboratory. If the representative wood heater meets the emission limits, the entire model line will be certified upon approval of a certification application submitted to EPA. Applications for certification may be submitted at any time, but those received before July 1, 1988, will be considered under either the proposed or promulgated requirements, at the applicant's option.

Procedures for loading the test fuel, for setting up the wood heater, for operating the wood heater, and for conducting the emission tests are specified in the regulation. Two equivalent methods for measuring PM are permitted in the regulation.

Certification testing will be conducted by EPA-accredited laboratories. EPA will accredit laboratories based upon their demonstrated proficiency and other specified criteria.

The standards establish an alternative certification procedure for manufacturers who may be unable to obtain timely certification in the event that EPA determines that a certification backlog exceeding six months exists.

Unless exempted, all model lines must be covered by a certificate of compliance, or each wood heater must be individually tested. All wood heaters affected by these standards shall be labeled to indicate their compliance status. Enforcement will include: (1) inspections at the retail level to ensure that all wood heaters are properly labeled, (2) parameter inspections to ensure that components of the manufactured units conform to the representative wood heater submitted for testing, and (3) emission audit testing to ensure that the model line meets the emission limits.

### Other Requirements

All appliances subject to the standards and offered for sale are required to display both a temporary label and a permanent label. In general, the temporary label will help the prospective purchaser select an appliance by providing information on relative pollution levels, efficiency, and at output. The permanent label will

contain information relevant to compliance and applicability. Manufacturers are required to provide operation and maintenance information necessary for good emission control in the owner's manual that accompanies the appliance.

If the wood heater is equipped with a catalyst, the catalyst must be guaranteed in full for at least two years, and, beginning July 1, 1990, for at least three years against thermal degradation of the substrate. Also, the catalyst must be easily accessible for inspection and replacement.

Manufacturers are required to conduct a quality assurance (QA) program consisting of both parameter inspections and emission testing.

Manufacturers are required to maintain records of certification testing data, QA program results, production volumes, and information needed to support a request for a waiver or exemption. Accredited laboratories must keep testing records and report periodically certain information required under alternative certification provisions. Commercial owners who sell used stoves must maintain names and addresses of the previous owner. All records must be retained for at least five years.

### Environmental Impacts

Particulate emissions from wood heaters are a function of the method of measurement. Emission estimates based on laboratory tests were made for both uncontrolled and controlled wood heaters. Based on a total particulate catch using EPA's Modified Method 5 (MMS) discussed in the Emission Measurement Methods section in the proposal preamble (52 FR 5003) and testing procedures and protocols described in Method 28, a typical conventional wood heater emits about 60 to 70 g/hr of PM. Catalytic and noncatalytic wood heaters complying with the 1988 standards will emit at least 82 and 72 percent less, respectively. Although catalytic wood heaters achieve greater emission reductions initially, presumed deterioration of the catalyst over time is estimated to result in emissions from catalytic wood heaters over their useful lifetimes approximately equal to noncatalytic wood heaters. Catalytic and noncatalytic wood heaters complying with the 1990 standards will emit at least 88 and 75 percent less, respectively, than conventional wood heaters. The numerical emission limits

in the regulation, however, are based on PM measurements using the Oregon Method 7, also described in the Emission Measurement Methods section at proposal, which measures roughly half the emissions of MMS.

The EPA projects that the nationwide PM emission reduction in the fifth year will be 395 Gigagrams (Gg) per year (or 436,000 tons per year), as shown in Table 2. It is important to note that all of the fifth year impact data refer only to wood heaters manufactured on or after July 1, 1988, or sold on or after July 1, 1990. Wood heaters manufactured before July 1, 1988, and sold before July 1, 1990, are not affected by this regulation.

Although no emission reduction estimates have been made for pollutants other than PM, the control techniques used to reduce PM emissions are known to reduce carbon monoxide (CO) and polycyclic organic matter (POM) emissions as well. POM is a class of compounds containing carcinogens.

This NSPS is anticipated to have no impacts or only negligible impacts on water quality or quantity, waste disposal, radiation, or noise. The increased wood heater efficiencies are expected to result in reduced wood consumption thereby saving timber and preserving woodlands and vegetation for aesthetics, erosion control, and ecological needs.

Health effects associated with exposure to PM include both mortality and morbidity resulting from respiratory disease, cardiovascular disease, and, in the case of wood heater PM, some risk of carcinogenesis. Welfare effects of PM emissions include soiling and materials damage to residences. Depending on the dispersion characteristics of the PM emissions, soiling and materials damage may also occur to commercial, industrial, governmental, and institutional facilities. PM emissions also adversely affect visibility.

Table 2 includes an approximate estimate of the dollar value benefits of reducing the mortality, morbidity, and household soiling and materials damage associated with the PM emission reduction due to the regulation. In addition to the health benefits of reduced air pollution, these standards are expected to reduce creosote deposition. Creosote deposition is the principal contributor to chimney fires. Thirty percent of the residential fires attributable to wood heat are believed to originate in the chimney.