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EPA's Proposed Wood Stove / Wood Heater Regulations: Frequently Asked Questions

/name redacted/
Specialist in Environmental Policy

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Summary

On January 3, 2014, the Environmental Protection Agency (EPA) released proposed emission standards for new residential wood heaters, the most common of which are wood stoves, pellet stoves, hydronic heaters, and forced air furnaces. The proposal, which would revise standards for wood stoves and pellet stoves and establish standards for other types of wood heaters for the first time, appeared in the *Federal Register* on February 3. This began a public comment period that is scheduled to run until May 5, 2014.

According to EPA, smoke from wood heaters contributes "hundreds of thousands of tons" of fine particles to the air throughout the country each year, accounting for nearly 25% of all area source air toxics cancer risks and 15% of non-cancer respiratory effects. In many areas, in wintertime, wood heaters are the largest source of particulate air pollution; yet many heater types are not currently subject to any federal emission standard.

The proposed rule would only gradually reduce this pollution, because it would apply only to new heaters (not those already in use) and it would give the industry a five-year grace period before its most stringent standards would take effect. Wood heaters can last for 40 years or more, so it will be decades before the full health benefits of the rule would be attained.

Nevertheless, the rule would eliminate an estimated 210 to 470 premature deaths annually in the 2014-2022 period, according to EPA, as well as reduce hospital admissions and lost work days due to respiratory illness. EPA quantifies these benefits at $1.8 billion to $4.2 billion per year during the 2014-2022 period, more than 100 times the agency's estimate of the annualized cost to manufacturers, $15.7 million.

Trade associations representing the affected industries and companies in the industry have mixed views of the proposed standards. While supporting revision of the current standards and the inclusion of additional heater types, they express concern that the standards as proposed will impose too great a cost. Facing higher costs for new units, homeowners will continue to use current, highly polluting equipment, rather than replace it, the industry maintains. Many have also expressed concerns regarding the process to be used in certifying compliance and the short period of time in which currently available units could be tested and certified.

These concerns, as well as the widely acknowledged health effects, have generated substantial interest in the proposed rule in areas where wood stoves are used as heating sources, and Members of Congress from those areas have written EPA to express concerns regarding the proposed rule's possible impacts. The subject has also been raised during hearings on EPA's FY2015 appropriation request, and legislation (H.R. 4407) has been introduced to place limits on EPA's authority to set the standards.

This report addresses some of the most frequent questions raised concerning the proposal, in order to provide basic information about EPA's action, its potential impacts, and industry and other reactions to the rule.

Contents

Figures

Contacts

On January 3, 2014, the Environmental Protection Agency (EPA) issued proposed emission standards for new residential wood heaters, including wood stoves, pellet stoves, hydronic heaters, and forced air furnaces (defined below). The rule is the result of a regular review process that Section 111 of the Clean Air Act requires for all New Source Performance Standards (NSPS). Wood stoves and pellet stoves have been subject to NSPS since 1988. The act requires a review of NSPS and, if appropriate, revision of the standards, at least every eight years. EPA has not reviewed the wood stove NSPS until now, so this review is 18 years overdue.

The proposal appeared in the *Federal Register* on February 3, 2014.[1] This began a public comment period that is scheduled to run until May 5.

Release of the proposed rule has generated a substantial amount of interest, particularly in areas where wood is used as a heating fuel, and Members of Congress from those areas have written EPA to express concerns regarding the proposed rule's possible impacts.[2] This report addresses questions posed to CRS by numerous requesters in order to provide basic information about EPA's action, its potential impacts, and industry and other reactions to the rule.

Here are 10 questions raised by the proposal.

Q: To what sources of emissions would this rule apply?

A: The rule would amend the current NSPS for Residential Wood Heaters (which applies to wood stoves and pellet stoves) and would, for the first time, set standards for new residential hydronic heaters, forced air furnaces, single burn rate stoves, and residential masonry heaters designed to burn wood.[3]

The rule would not apply to outdoor fireplaces, pizza ovens, barbecues or chimineas (free-standing outdoor chimneys), and it would not apply to new or existing heaters that are fueled solely by oil, gas, or coal.

[1] U.S. EPA, "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, and New Residential Masonry Heaters; Proposed Rule," 79 *Federal Register* 6329, February 3, 2014. Hereinafter, "Proposed Rule."

[2] "EPA Proposed Standards for Wood Heaters Would Increase Heating Costs, Senators Say," *Daily Environment Report*, March 31, 2014. A letter to EPA Administrator McCarthy from Sens. Collins and King of Maine is available at http://www.collins.senate.gov/public/index.cfm/press-releases?ID=c858ecaa-45a2-4953-bffe-edf035de3bd8. A letter to the EPA Administrator from Sen. Thune of South Dakota is available at http://www.thune.senate.gov/public/index.cfm/press-releases?ID=008e36fa-35c2-42f0-a50c-6165fb33d982.

[3] Hydronic heaters, which are typically located outside the buildings they heat in small sheds with short smokestacks, are appliances that burn wood to heat a liquid (water or a water-antifreeze mixture) that is piped to provide heat and hot water to occupied buildings, such as homes. Hydronic heaters may also be located indoors. The forced air furnaces that would be subject to these regulations are similar to natural gas-fired or oil-fired forced air furnaces used in millions of American homes, except that they are designed to burn wood. According to EPA, "Industry information suggests that there are three times more sales of wood-fired, forced-air furnaces each year compared to wood-fired hydronic heaters. These units are relatively easy to retrofit into existing structures, and their sales price is substantially less than hydronic heaters but greater than gas or oil furnaces." Proposed Rule, p. 6360. Masonry heater operation, according to EPA, involves one or two short high burn rate cycles where hot gases are generated during combustion of a fuel load in the firebox. The hot gases then pass through channels, saturating the masonry mass with heat. The masonry mass then radiates heat into the area around the masonry heater for 12 to 24 hours.

In addition, EPA did not include standards for indoor fireplaces in the proposed regulation, because, the agency stated, "Fireplaces are not effective heaters."[4] However, the agency is seeking additional data and comments on this issue. Fireplaces are included in an EPA voluntary program that encourages manufacturers to make cleaner-burning fireplaces and retrofits available for consumers,[5] and some industry representatives have asked EPA to include fireplaces in the final rule.

Q: Is this a final rule?

A: No. EPA is taking comment on a proposed rule and may modify it as a result. Under a consent decree issued April 28, 2014, by the U.S. District Court for the District of Columbia, EPA must issue a final rule by February 3, 2015. The final rule may be changed from the proposal, provided that there is an explanation of the reasons for any major changes. At the least, when the agency promulgates the final version of the rule, it must provide a response to each of the significant comments, criticisms, and new data submitted during the proposed rule's public comment period.

Q: Would the proposed rule affect existing wood stoves and other wood heaters already purchased or in use?

A: No. The proposed standards would only apply to new wood stoves and heaters sold after the rule's effective date. Compliance requirements would be phased in over a five-year period after that effective date. For most new wood stoves or pellet stoves, there would be little change in emission standards until 2020. Other wood heaters (notably, what are called hydronic heaters and wood-fired forced air furnaces) have not previously been subject to federal emission standards. These heaters would be subject to standards for the first time 60 days after a final rule is promulgated. As with wood stoves, however, far more stringent standards would affect new hydronic heaters and forced air furnaces beginning with models sold in 2020.

The absence of standards for most wood heaters currently in use limits the effectiveness of EPA and state efforts to reduce wood smoke emissions. By general agreement, there are at least 6 million wood stoves in operation that predate EPA's 1988 standards. Annual sales of wood stoves are less than 3% of this amount, according to EPA's Regulatory Impact Analysis (RIA),[6] and do not necessarily replace existing units, so it could be decades before older, highly polluting equipment is retired. Industry, EPA, and a number of states have initiated wood stove change-out programs, with subsidies for purchases that replace equipment that predates EPA standards, and at least one manufacturer has proposed banning the sale of replacement parts for non-EPA-compliant models. But the wood smoke issue is likely to remain for years to come no matter what action EPA takes.

[4] U.S. EPA, "Overview of Proposed Updates to Air Emissions Requirements for New Residential Wood Heaters," p. 2, at http://www2.epa.gov/sites/production/files/2013-12/documents/proposed_wood_heater_nsps_overview_fact_sheet_1.pdf.

[5] For information, see "Burn Wise," U.S. EPA's Voluntary Program for Wood-Burning Fireplaces, July 11, 2013, at http://www.epa.gov/burnwise/pdfs/fireplaceqa.pdf.

[6] U.S. EPA, Regulatory Impact Analysis (RIA) for Proposed Residential Wood Heaters NSPS Revision, Final Report, January 2014, p. 3-24, at http://www2.epa.gov/sites/production/files/2013-12/documents/ria-20140103.pdf. The sales data cited in the RIA are for the year 2008. Elsewhere, the RIA states: "Since 2005, total industry shipments on average have declined annually by 24%" (p. 3-23), so the unit sales may be substantially lower now.

Q: What would the proposed rule require?

A: As proposed, the rule's standards would take effect in two phases: on the effective date of the rule (60 days after promulgation, presumably in 2015), new wood heaters would have to meet standards that EPA describes as "emission levels that almost all models can readily achieve now using today's designs and technology."[7] Many in industry dispute this characterization, but in the agency's RIA, EPA states that the Step 1 limit for wood stoves and pellet stoves "is the 1995 Washington State standard for non-catalytic stoves."[8] In an attachment to the RIA, the agency provides a list of 130 wood and pellet stoves (out of 145 models on the market) that already meet the standard, using industry supplied data.[9] Of hydronic heaters, the agency states: "The Step 1 limit is the EPA 'Phase 2' voluntary program limit already met by 36 hydronic heater models (27 cord wood and 9 pellet models) built by 17 U.S. manufacturers."[10] The Step 1 standard for forced air furnaces is based on testing done in March 2010 for the Canadian standard for these units.

The second phase, which would require a roughly 70% reduction from the Step 1 standards for wood stoves and pellet stoves, a roughly 80% reduction for hydronic heaters, and a 94% reduction in emissions from forced air furnaces, would take effect five years after the rule's effective date (presumably in 2020). According to EPA, "... the proposed second step represents stronger emission levels achievable for all appliance types at reasonable cost, but allows appropriate lead times for manufacturers to redesign their model lines to accommodate the improved technology across multiple model lines and test, field evaluate, and certify the new model lines."[11] The agency's RIA also provides data on numerous heaters that it states currently achieve emissions at or below the required Step 2 level.[12]

In addition to the proposed five-year phase-in, the agency has asked for comment on an alternative approach that would have three phases, instead of two. In the alternative approach, Step 1 standards would be the same and would be implemented on the effective date of the rule, presumably in 2015. The final standards would also be the same, but they would not be required until eight years after the rule's effective date (presumably in 2023). In return for the longer implementation period, an intermediate step, requiring a 44% reduction in emissions from wood stoves and pellet stoves, a 53% reduction from hydronic heaters, and an 83% reduction from forced air furnaces, would take effect three years after the rule's effective date (presumably in 2018).

Q: What would the rule cost?

A. EPA estimates that the annualized cost of the rule in the 2014-2022 timeframe would be $15.7 million.[13] The rule would affect about 296,000 heaters sold annually during this period, according

[7] Proposed Rule, p. 6353.

[8] U.S. EPA, Regulatory Impact Analysis (RIA) for Proposed Residential Wood Heaters NSPS Revision, Final Report, January 2014, p. 9-16, at http://www2.epa.gov/sites/production/files/2013-12/documents/ria-20140103.pdf. NOTE: There are two pages in the RIA numbered "9-16": the one referenced here is page 197 of the pdf.

[9] RIA, p. 9-10, at http://www2.epa.gov/sites/production/files/2013-12/documents/ria-20140103.pdf. NOTE: There are two pages in the RIA numbered "9-10"; the list referenced here begins on p. 216 of the pdf file.

[10] RIA, p. 9-16 (p. 198 of the pdf file).

[11] Proposed Rule, p. 6353.

[12] RIA, pp. 9-15 to 9-17 (pp. 197-199 of pdf file).

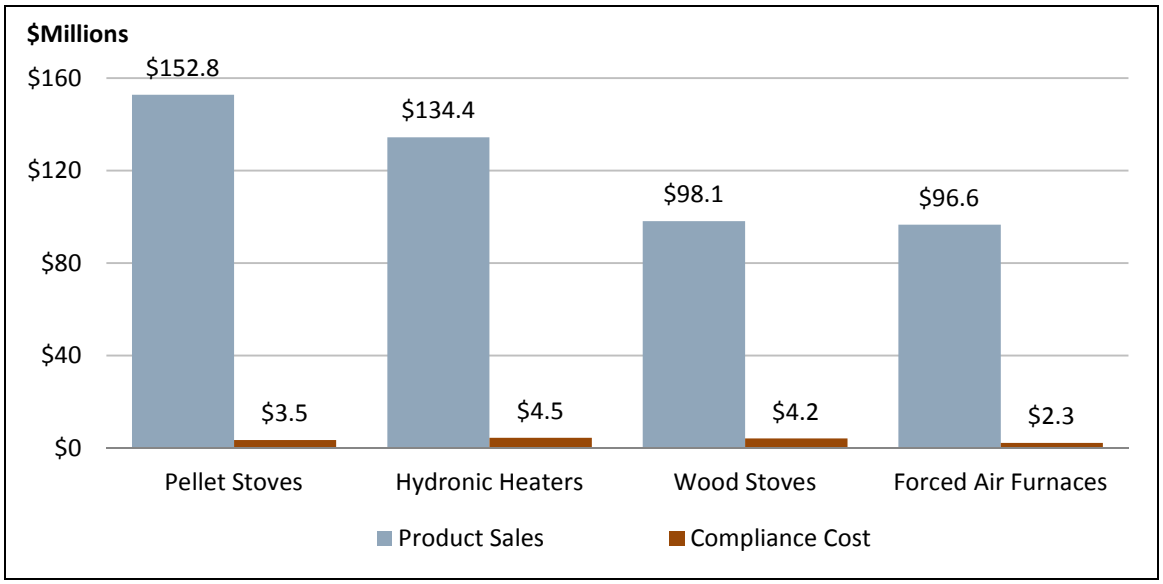
[13] Detailed cost estimates, summarized in this paragraph, can be found in Section 5 of the agency's RIA at (continued...)

to the agency. As shown below in **Figure 1**, EPA's estimate of the cost impact of the rule varies by industry segment, but it is below $5 million for each segment. In percentage terms, EPA estimates that increased costs will range from a low of 2.3% of revenues for pellet stoves to a high of 6.4% of revenues for single burn rate stoves, which are currently not subject to emission standards.

The cost of the alternative three-step regulation would be higher than that of the rule as proposed: a total of $28.3 million annually during the 2014-2022 timeframe, if the alternative three-step phase-in were to occur.

The estimated costs—whether for the proposed rule or the alternative—are relatively small compared to other recent EPA rules that have stirred controversy. The Mercury and Air Toxics Standards, for example, which apply to electric generating units, were estimated to cost $9.5 billion annually—more than 600 times as much as the proposed wood heater rule; but the revenues of the electric utilities, to which the MATS rule applies, are about 1,000 times those of the wood heater industry, so the estimated costs of this rule would impose a greater burden on this small segment of U.S. industry than MATS would impose on electric utilities. Most of the manufacturers of wood heaters are small businesses and do not have large revenues over which to spread research and development costs. As a result many fear that stringent standards will drive them out of business.

Figure 1. Annualized Compliance Cost and Projected Industry Revenue, by Product Type, in 2018



Source: Table 5-5a in the EPA Regulatory Impact Analysis

Notes: Two other industry segments, masonry heaters and single burn rate stoves, account for less than 5% of industry sales combined, and are estimated to have compliance costs totaling $1.2 million.

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http://www2.epa.gov/sites/production/files/2013-12/documents/ria-20140103.pdf.

Q: Is there controversy over the agency's proposed testing and certification requirements?

A: Yes. The heart of the controversy over EPA's proposed rule has to do with the testing that would be required for certification of wood heating equipment under the proposal. In order to demonstrate compliance with the proposed standards, EPA would rely on testing and certification provided by independent labs—just as it does with the current standards for wood and pellet stoves. The labs use an EPA protocol, which specifies the type and amount of wood, moisture content, startup procedures, duration of the test, etc., to test whether or not a specific model meets the EPA standards.

As noted above (in "What would the proposed rule require?"), EPA has stated that a large number of wood heaters (about 90% of current wood stove models, for example) already meet the proposed Step 1 standards. But EPA is proposing to alter the test method to better account for real world conditions. So, in reality, if the testing and certification process changes, none of these heaters can be said to meet the proposed standards until they are tested under the new protocol. Recertifying under a new testing protocol would impose costs on already certified equipment and could result in many of the heaters not being certified.

One option that could resolve this concern would be to grandfather equipment that is certified at emission levels below the proposed standards under current test methods. But, in some cases (e.g., forced air furnaces), there are no current standards and no test method until EPA promulgates one. Manufacturers of these heaters would have only 60 days from promulgation of the final rule to get their full line of equipment tested, a daunting task, and one that has the potential to create "logjams" at testing facilities, according to manufacturers.

Q: Would the rule have any special provisions for small businesses?

A: As part of the regulatory process, in 2010, EPA created a Small Business Advocacy Review panel under the Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act.[14] The panel included representatives of the Office of Advocacy of the Small Business Administration, the Office of Information and Regulatory Affairs at the Office of Management and Budget, and 26 small businesses or organizations from the wood heating industry.

The panel produced a number of recommendations, which are summarized in Chapter 6 of the RIA and in the preamble to the proposed rule. EPA states in the preamble that it collected additional information and refined its economic and technical analyses based on the panel's input. The agency states that its stepped compliance approach is a response to the panel's recommendation for delayed compliance dates for low volume producers. The panel recommended that EPA allow the use of International Standards Organization (ISO)-accredited labs and certifying bodies to expand the options for product testing and certification, which EPA has proposed to do. The panel recommended that EPA allow manufacturers to test a representative unit for a model line to determine compliance with the standards, rather than each

[14] 5 U.S.C. §609.

individual unit, which EPA agreed to. The panel also recommended that EPA not move forward with proposed emission limits for 12 types of heaters, 8 of which EPA agreed to.[15]

In general, however, the proposed emission standards would apply equally to manufacturers of all sizes with the same compliance deadlines for all. This may be because more than 90% of the manufacturers of wood heaters qualify as small businesses.

Q: What are the estimated benefits of the proposed rule?

A: EPA has found that wood smoke causes respiratory illness and even premature death in some people exposed to it. The agency estimates that the reductions in fine particulate ($PM_{2.5}$) emissions that will result from the proposed standards will avoid 210 to 470 premature deaths per year in the years 2014-2022, as well as reduce nonfatal heart attacks, emergency room visits, and lost work days. Using its standard methods for monetizing health benefits, EPA states that the reduced health impacts resulting from the proposal would provide a benefit of $1.8 billion to $4.2 billion per year over the period 2014-2022, or $118 to $267 in benefits for every dollar spent to comply. Given this ratio, the agency's cost or benefit estimates could be off by two orders of magnitude and the benefits would still outweigh the costs.[16]

The agency states that 98% of the monetized benefits of the proposed rule come from the reduction in premature mortality.[17] In line with other executive branch agencies,[18] and as reviewed by its outside Science Advisory Board, EPA values statistical lives saved at $8.0 million each in 2010 dollars.[19]

The agency attributes more than 95% of the benefits to the standards for hydronic heaters, forced air furnaces, and single burn-rate stoves (none of which are currently subject to regulation).[20]

The projected benefits do not include the value of the carbon monoxide, volatile organic compounds, air toxics, and black carbon emissions that would be reduced along with $PM_{2.5}$ emissions.[21] EPA also states, in a press release that accompanied announcement of the proposal, that consumers will see a monetary benefit from efficiency improvements in the new wood heaters, which use less wood to produce an equivalent amount of heat, although it did not quantify this benefit. This assertion is disputed by some in the industry, but it did not figure in EPA's calculation of costs and benefits.

Like many recent EPA Regulatory Impact Analyses, this proposed rule's RIA derives virtually all of its monetized benefits from the reduction in $PM_{2.5}$ emissions, and the resulting effect on premature mortality. In estimating the premature mortality, the agency relied on two peer-reviewed epidemiological studies (the Harvard Six Cities study and the American Cancer Society

[15] Proposed Rule, pp. 6370-6371.

[16] The benefits of the rule are discussed in Section 7 of the RIA.

[17] RIA, p. 7-6.

[18] For a discussion of the value of a statistical life used by various federal agencies, see archived CRS Report R41140, *How Agencies Monetize "Statistical Lives" Expected to Be Saved By Regulations.*

[19] RIA, pp. 7-6 and 7-7.

[20] CRS calculation, based on data in RIA, p. 8-6.

[21] RIA, pp. 7-15 to 7-30.

study), which have formed the backbone of the agency's conclusions on the health effects of $PM_{2.5}$ for the past two decades.[22]

Q: Would any of the rule's provisions apply to the operators of residential wood heaters?

A: Yes. Although the rule mainly sets emission standards to be met by manufacturers, it also has some provisions applicable to the equipment's operator. Specifically, it sets requirements for the type of fuel that may be used in hydronic heaters and forced air furnaces, and it prohibits the burning of garbage, yard waste, tires, plastic, waste petroleum products or paint, material containing asbestos, construction and demolition waste, paper products, railroad ties, pressure-treated wood, animal remains, unseasoned wood, and salt water driftwood in those heaters. Similar prohibitions apply to new masonry heaters.[23] For pellet-fueled appliances, the proposal makes it clear that operation according to the owner's manual includes operation only with pellet fuels that have been used in the certification test and have been graded and marked under a licensing agreement with the Pellet Fuels Institute, or an equivalent organization approved by EPA, to meet certain minimum requirements and procedures for quality assurance.[24] For wood stoves, it would be against federal law to operate the equipment in a manner inconsistent with operating instructions in the owner's manual, such as using treated wood, colored paper, cardboard, solvents, trash, and garbage.[25]

Q: What is the industry reaction to the proposed rule?

A: There is a general consensus in the wood heat industry that new standards of some sort would be welcome. The prevalence of wood smoke and its health consequences, particularly in small towns and cities, has led some jurisdictions to ban the installation of new wood heaters or to instigate burn bans on days when air quality is poor. Several states have adopted emission standards more stringent than EPA's. According to the Connecticut Department of Energy and Environmental Protection, local health districts in the state have issued cease and desist orders to individuals violating local bans on the use of hydronic heaters. In monitoring conducted over a two-year period, Connecticut found the monthly contribution of wood smoke to total concentrations of $PM_{2.5}$ to be as high as 41.3%, with daily contributions as high as 74.3%.[26] The existence of bans and the threat of future bans discourages sales of wood heating equipment; even if it didn't, many in the industry want to see the pollution problem addressed.

As represented by Hearth, Patio, & Barbecue Association (HPBA) and others, therefore, the wood heater industry has supported EPA's decision to revise the NSPS and expand it to cover additional heater types. HPBA stated in one press account that it welcomed the "long overdue" standards.[27]

[22] RIA, p. 7-5.

[23] Proposed Rule, pp. 6385, 6390.

[24] Proposed Rule, p. 6375.

[25] Proposed Rule, p. 6382.

[26] Statement of Richard Pirolli, Bureau of Air Management, Connecticut Department of Energy and Environmental Protection, at U.S. EPA Public Hearing on the Proposed New Source Performance Standards for Wood Heaters, Boston, Massachusetts, February 26, 2014, transcript, p. 191, at http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2009-0734-1037.

[27] "EPA proposes Revised Performance Standards for New Wood Stoves, Heaters," *Daily Environment Report*, January

(continued...)

In a more detailed statement prepared later, however, the association stated: "If the standards are promulgated as written, the increase in cost for new woodstoves will be significant, compelling consumers to keep their old stoves in use," and thus, the rule would not achieve the emission reductions that EPA foresees. The association's statement quoted its president:

> In addition to downplaying the effects on the consumer, EPA has failed to provide any data showing that any of our manufacturer members can meet the new regulations as proposed. The testing procedure to measure emissions is imprecise and does not reflect real world performance. Competing in this numbers game will cause smaller companies to go out of business. Innovation will suffer and consumers will bear the burden of the costs with no guarantee of cleaner air.[28]

Most of the individual manufacturers who testified at EPA's public hearing, February 26, 2014, made similar statements.

The challenge, therefore, which the industry, EPA, and individual states all face, is to find the sweet spot, where emissions are significantly reduced, without needlessly harming the industry or unwittingly providing incentives for equipment owners to continue using old, inefficient, highly polluting equipment. This is not an easy task. No matter what levels EPA chooses for new standards, there are likely to be winners and losers. As a result, controversy over the EPA proposal is likely to continue.

Author Contact Information

(name redacted)
Specialist in Environmental Policy
#redacted#@crs.loc.gov, 7-....

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4, 2014.

[28] Hearth, Patio & Barbecue Association, "HPBA Urges Thoughtful Review of Proposed NSPS Standards," March 20, 2014, at http://www.prweb.com/releases/2014/03/prweb11685330.htm.