

by James E. Houck and Paul Tieg

The first of the eastern wood stove change-outs begins this month, and the potential for the hearth industry is enormous. Whether that potential will be realized is the question.

Pittsburgh: The Beginning

Let's begin with some straight talk. Fine particulate air pollution in our ambient air, known as PM_{2.5}, has been linked by epidemiological studies to mortality and to cardiovascular and respiratory morbidity. In response to that link, the U.S. Environmental Protection Agency (EPA) set a National Ambient Air Quality Standard (NAAQS) in July of 1997 for PM_{2.5}. As of December 2004, there were 39 areas comprising 208 counties with over 90 million residents that were in violation of the EPA's PM_{2.5} standard. These 39 areas are referred to as non-attainment areas.

According to the EPA, "Meeting the PM_{2.5} standard nationwide will prevent at least 15,000 premature deaths, 75,000 cases of chronic bronchitis, 10,000 hospital admissions for respiratory and cardiovascular disease, hundreds of thousands of occurrences of aggravated asthma, and 3.1 million days when people miss work because they are suffering from symptoms related to particle pollution exposure."

Fireplaces and old wood stoves emit a lot of PM_{2.5}. For comparison, depending on whose estimates you believe,

you can drive a typical car on a paved road for several hundred to several thousand miles and still only emit the same amount of PM_{2.5} as is emitted from a fireplace or a pre-EPA certification wood stove used for less than a single day.

Ignoring the subtleties and complex exceptions in the regulations, the bottom line is that states that have designated non-attainment areas must submit state implementation plans (SIPs) to the EPA by April of 2008 that outline how they are going to meet the PM_{2.5} standard. They are required to be in compliance with the standard by 2010. Wood stove change-outs have been a much-touted mechanism for reducing PM_{2.5} burdens in airsheds, and will unquestionably be considered as part of many SIPs.

That's the good news – sales of new wood stoves/inserts and reduced air pollution go hand-in-hand. The bad news is that there is not a well accepted or established reduction option for wood-fired fireplaces without inserts, nor, for that matter, wood-fired furnaces and hydronic heaters, other than changing them to other fuels, notably, gas.

All but two of the 39 PM_{2.5} non-





The Allegheny, Monongahela and Ohio rivers converge at Pittsburgh.

The 39 Areas of PM_{2.5} Non-attainment as of April 11, 2005

Atlanta, GA	Lancaster, PA
Baltimore, MD	Libby, MT
Birmingham, AL	Liberty-Clairton, PA
Canton-Massillon, OH	Los Angeles-South Coast Air Basin, CA
Charleston, WV	Louisville, KY-IN
Chattanooga, AL-TN-GA	Macon, GA
Chicago-Gary-Lake County, IL-IN	Martinsburg, WV-Hagerstown, MD
Cincinnati-Hamilton, OH-KY-IN	New York-New Jersey-Long Island, NY-NJ-CT
Cleveland-Akron-Lorain, OH	Parkersburg-Marietta, WV-OH
Columbus, OH	Philadelphia-Wilmington, PA-NJ-DE
Dayton-Springfield, OH	Pittsburgh-Beaver Valley, PA
Detroit-Ann Arbor, MI	Reading, PA
Evansville, IN	Rome, GA
Greensboro-Winston Salem-High Point, NC	San Joaquin Valley, CA
Harrisburg-Lebanon-Carlisle, PA	St. Louis, MO-IL
Hickory, NC	Steubenville-Weirton, OH-WV
Huntington-Ashland, WV-KY-OH	Washington, DC-MD-VA
Indianapolis, IN	Wheeling, WV-OH
Johnstown, PA	York, PA
Knoxville, TN	

attainment areas are in the eastern U.S. Unlike their western counterparts, this is something new for many of the eastern air quality regulators and planners. There isn't even any mention of wood smoke on many eastern state regulatory agencies' Web sites. Previous particulate regulations mostly affected the West, and most current wood smoke regulations are in western jurisdictions.

Now that we are heading east with stove change-outs, we will find new people, new jurisdictions, new regulations and new opportunities for the hearth industry.

There is no exact count of the number of wood-burning appliances involved in the East, but to give you an idea of the magnitude of the problem, or opportunity for the hearth industry if one chooses to be optimistic, here are a few facts. The best estimates of the number of wood-burning stoves, wood-burning fireplace inserts, and wood-burning fireplaces without inserts in the United States are about 9 million, 8 million and 30 million, respectively.

According to the U.S. Department of Energy, about half the total wood consumed residentially in the U.S. is in the 19 eastern states (including Washington, D.C.) that have one or more PM_{2.5} non-attainment areas within their boundaries. Less is known about wood-fired central heating system ownership, but a recent survey for Minnesota – where wood furnace and hydronic heater ownership is probably the highest per capita in the U.S. – indicated there are 62,000 wood-fired central heating systems in the state. Clearly, fewer wood-fired central heat-

ing systems are owned per capita in most other locations. However, they are still a significant piece of the residential wood combustion pie, particularly when you consider that, on average, they burn considerably more wood per unit than wood stoves, fireplace inserts or fireplaces.

Interestingly, the 37 eastern PM_{2.5} non-attainment areas have a lot in common. The source of most (perhaps two-thirds) of the PM_{2.5} is from coal-fired power plants, transportation sources and other large industries. The remaining fraction is from local, smaller industries, dust and

clean air

miscellaneous area-wide sources such as residential wood combustion.

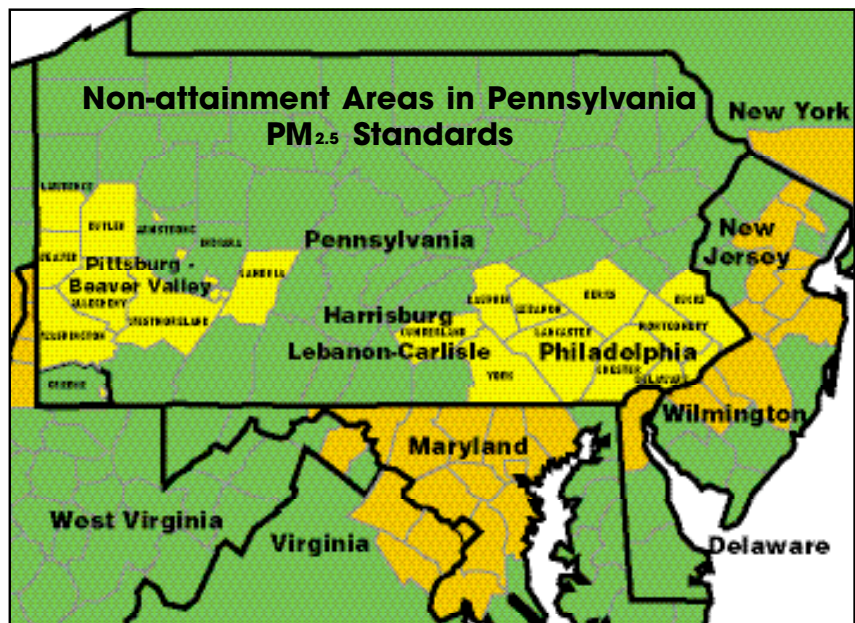
Unlike some non-attainment areas in the West (such as Libby, Montana), residential wood combustion is only a minor source of PM_{2.5}. However, emission reduction from even a minor source is important and undoubtedly will be pursued for two reasons:

First, power plants, other industries and transportation sources already have been heavily regulated and, in most cases, not too much more can reasonably, or certainly not easily, be done to reduce emissions from them.

Second, most of the 37 eastern PM_{2.5} areas are only above the EPA annual standard of 15 micrograms of PM_{2.5} per cubic meter of air by as little as a fraction of a microgram per cubic meter to several micrograms per cubic meter. Even a small incremental drop in PM_{2.5} that may be accomplished by wood stove change-outs or residential wood combustion regulations may contribute significantly to achieving attainment.

When one looks at the map of the United States, the area of the 208 counties appears relatively small compared to the overall continental land area of the U.S. It's tempting to think, "So what? This doesn't look like a big deal!" The fact that 90 million people – or nearly one-third of the U.S. population – live in those 208 counties is the "So what."

About 71 million people live in the



The EPA's map of PM_{2.5} areas: light yellow indicates areas of non-attainment in Pennsylvania, dark yellow areas of non-attainment in adjoining states. For more info go to www.epa.gov/pmdesignations/finaltable.htm.

eastern PM_{2.5} non-attainment areas. Many fireplaces are owned in these predominately urban and suburban counties and, even with their urban/suburban status, there are still a lot of wood stoves associated with 71 million people. In addition, there has been considerable evaluation by the EPA and state agencies on how to address the transport of particulate material from outside of the non-attainment areas into them. Wood stove and wood-fired centralized heating systems, which are more prevalent on a per capita basis in rural areas surrounding the more urban and suburban non-attainment areas, may be “caught in the net.”

There is a dark side. If progressive change-outs and technology options that benefit both air quality and the hearth industry are not formalized, state and local regulations that are unfavorable to the hearth industry may be put into place. This is not an idle threat; it has already happened in the western U.S.

In 1987 the EPA promulgated another particulate standard known as PM₁₀. Many areas in the West were in non-attainment for PM₁₀, and residential wood combustion was a recognized contributor to the problem. As a direct consequence, there are now a host of state and local regulations that limit, control, restrict or otherwise regulate the use of wood-burning appliances. Geographically, they range from Maricopa County, Arizona, to the state of Colorado, the state of Washington, various small cities in Montana, the San Joaquin Valley of California, various cities in the San Francisco Bay area, Northern Sonoma County, the Lake Tahoe and Reno areas, San Luis Obispo and probably others in between.

Now is the time for the hearth industry to be progressive and aggressive.

Pittsburgh

The first wood stove change-out to be associated with eastern PM_{2.5} non-attainment is for the Pittsburgh area; it is scheduled to begin this September. The non-attainment area is called the Pittsburgh-Beaver Valley non-attainment area and includes five entire Pennsylvania counties: Allegheny, Beaver, Butler, Washington and Westmoreland, plus isolated parts of three others. (To be absolutely accurate, a very small part of Allegheny County has another PM_{2.5} designation, but is unimportant for the matters at hand.)

Of added significance for widely dispersed area sources such as wood-burning appliances is that there are three other non-attainment areas contiguous with the



The Beaver River meets the Ohio River in Beaver Valley, Pennsylvania.

PHOTO: ©2005 CARA FALKENSTEIN

Pittsburgh-Beaver Valley non-attainment area made up of counties in Pennsylvania, West Virginia and Ohio. Many of the counties in these three adjoining non-attainment areas, along with the counties making up the Pittsburgh-Beaver Valley non-attainment area and counties adjacent to them all, have large rural areas where wood stoves are common.

Unlike regulations and mitigation programs, PM_{2.5} transport and impacts don't follow geopolitical boundaries. For example, the Pittsburgh-Beaver

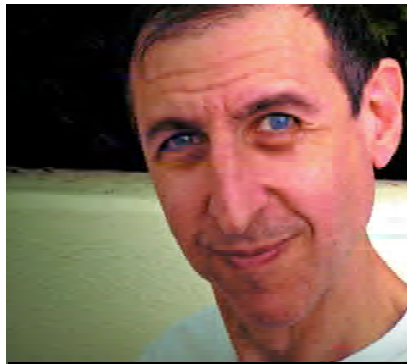
Valley non-attainment area is close to 4,000 square miles in size and had a population of 2.2 million in 2000. Rough estimates of the number of wood stoves, wood-burning fireplace inserts and wood-burning fireplaces without inserts are 30,000, 27,000 and 175,000, respectively. (There is no data on the number of centralized wood-fired heating systems that may be located there.) This is a big area; a lot of people and a lot of wood-burning appliances are involved.

The Allegheny County Health Department (ACHD) and the Pennsylvania Department of Environmental Protection (PDEP) together operate a total of 15 PM_{2.5} monitors in the Pittsburgh-Beaver Valley non-attainment area. In addition, the ACHD and Carnegie Mellon University have conducted considerable research into the character and sources of PM_{2.5} for the Pittsburgh area.

The bottom line is that the area has been extensively studied and its air quality is well understood. The annual average PM_{2.5} levels measured by all regulatory monitors, except for several that were directly adjacent to industries known to be large sources of PM_{2.5}, were in most cases only a fraction of microgram of PM_{2.5} per cubic meter of air above the annual standard.

To get a better understanding of the role that wood smoke plays in the overall picture, we contacted Dr. Cliff Davidson with the Carnegie Mellon University in Pittsburgh. Studies conducted by Dr. Davidson and his graduate student, Natalie Perkney, along with CMU Professor Allen Robinson, confirm a small wood smoke contribution to PM_{2.5} in the Pittsburgh area.

An ironic sidelight about starting out with Pittsburgh is that all modern air quality regulations can be traced to the town of Donora in the Pittsburgh-Beaver Val-



“Source Apportionment Air Quality Monitoring conducted by researchers with the Carnegie Mellon University have showed wood smoke contributions to PM_{2.5} to average from 0.4 to 1.6 micrograms per cubic meter during fall and winter months. Of course, as one would expect, the exact wood smoke contribution varies somewhat with the proximity of the monitoring site to homes that burn wood.”

— Dr. Cliff Davidson, Professor, Departments of Civil & Environmental Engineering and Engineering & Public Policy, Carnegie Mellon University

ley non-attainment area. In October of 1948, an air pollution event known as the "Donora Disaster" asphyxiated 20 people and hospitalized 7,000. In that event a local industry was the source of the pollution, with a temperature inversion in the Monongahela River Valley concentrating the air pollutants. This disaster so shocked the nation that it became the impetus for air quality regulations in the U.S.

Today, local industries in the Pittsburgh area have been regulated, but temperature inversions in the Monongahela, Allegheny and Ohio River valleys still concentrate air pollutants regardless of their source. It truly would be ironic if this same part of the country also started the ball rolling for a national wood stove change-out program, as envisioned by some within the EPA.

Gil Wood, an environmental engineer with the Office of Air Quality Planning and Standards, is taking the lead for the EPA for the Pittsburgh wood stove change-out. We talked to him about the role the EPA sees for Pittsburgh and how residential wood combustion fits into the bigger picture.

H&H: We understand that Pittsburgh, as the first of the eastern PM_{2.5} non-attainment areas where a wood stove change-out will be used to reduce PM_{2.5} levels, will be used as a model or case study for the other eastern non-attainment areas. Is this true?

Wood/EPA: "The southwest Pennsylvania change-out is a pilot campaign that we hope will be the first of many in the eastern states where fine particle pollution (also known as PM_{2.5}) is a regional problem. The majority of PM_{2.5} in the East forms when power plant, industry, highway and non-road vehicle emissions react in the atmosphere. EPA and state air quality agencies have taken steps to significantly reduce this type of fine particle pollution. But direct emissions of fine particles – the kind that come from wood smoke – also are a concern in some eastern areas, especially at the local level.

"Replacing older wood stoves with cleaner-burning, EPA-certified stoves can significantly reduce fine particle pollution. That's good for public health, and it may help some polluted areas come closer to meeting national air quality standards. We expect this change-out campaign to make a real difference – quickly – for the people in southwest Pennsylvania, especially for those with heart dis-

ease and lung diseases, such as asthma.

"We think we have an important message not just for the citizens of southwest Pennsylvania, but for everyone who has an old, dirty wood stove: Now is the time to save! Save your health and the health of your neighbors. Save money. Save your property. We want to be sure everyone knows what *Hearth & Home's* readers already



"Already, local entities in over 30 locations have expressed interest in learning more about what it would take to conduct change-out campaigns in their areas."

— Gil Wood, Environmental Engineer, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency

know: EPA-certified wood stoves are not only cleaner (approximately 70 percent less wood smoke on average), but also can save money because they are more energy efficient (many wood stove owners have said they use one-third less wood with a new wood stove), and are safer (less creosote so fewer homes burn down due to chimney fires)."

H&H: We were surprised to learn that neither the EPA nor the Pennsylvania Department of Environmental Protection will actually be managing the wood stove change-out campaign. Could you explain that?

Wood/EPA: "One of the reasons for conducting this pilot campaign in southwest Pennsylvania is to show that non-government organizations and community leaders can organize and manage change-out campaigns. The EPA is extremely pleased that the Southwest Pennsylvania Air Quality Partnership,

in particular, has stepped forward to take this lead role. Their experience and leadership are outstanding. We are impressed with the Partnership's successful experiences with ozone voluntary programs and we look forward to another great success as they conduct their first PM_{2.5} voluntary campaign."

To find out more about the Southwest Pennsylvania Air Quality Partnership (SPAQP) and how it fits into the wood stove change-out picture, we contacted its chairman, Harry Klodowski.

H&H: Simply put, what is the SPAQP, why is it getting involved and how are you going to fund the wood stove change-out program?

Klodowski/SPAQP: "The SPAQP is a partnership of industry, government, academia and citizens groups dedicated to educating the public about air quality problems, how individuals can protect themselves from bad air quality and take action to improve air quality. The wood stove change-out program will have a dramatic effect on improving the health of participants; it will reduce community pollution levels and allow safe use of an inexpensive renewable fuel. We are participating because it fits our mission of education and voluntary reduction of pollution through individual action. We are working on funding through three sources: government grants, participation by the wood stove manufacturers and retailers, as well as local corporations and foundations."

H&H: What is the schedule for the Pittsburgh area wood stove change-out program?

Klodowski/SPAQP: "We plan to begin the campaign in late September 2005 for a month, and possibly again in January 2006 if we secure enough additional funding and participation."

For wood stove change-out programs to work and, in particular, to flourish on a more regional or national scale, industry buy-in is needed. We contacted Carter Keithley, president and CEO of the Hearth, Patio & Barbecue Association (HPBA), for industry's perspective.

H&H: Will the Pittsburgh change-out be beneficial to the hearth industry? What issues do you see?

Keithley/HPBA: "The Pittsburgh change-out program ventures into the



"The solution is in our hands; we don't need to wait for more regulations or action by industry 10 years down the road."

— Harry Klodowski Jr., Chairman,
Southwest Pennsylvania
Air Quality Partnership

type of geographic area that will be more typical of the areas we will encounter throughout the U.S. Only a relatively low proportion of the PM_{2.5} pollution in the area will be attributable to wood smoke, and a lot of that will be from suburban fireplaces. So we will have to work harder to demonstrate the benefits of change-outs, and we will have to include retrofits of gas logs, pellet appliances and EPA-certified fireplace inserts in the mix of change-outs."

Keithley's comment regarding the significance of fireplace contribution to PM_{2.5} reflects another issue/opportunity that could be of considerable importance to the hearth industry beyond wood stoves alone. We asked Gil Wood of the EPA about his views on wood-burning appliances other than wood stoves.

Wood/EPA: "While wood stove change-outs have a track record of reducing PM_{2.5} levels, we hope there will be ways to reduce emissions from existing fireplaces, wood furnaces and hydronic heaters as well.

"Estimates show approximately 40,000 wood stoves in the southwest Pennsylvania area, as well as a considerable number of fireplaces and other wood-burning devices. So the Southwest Pennsylvania Air Quality Partnership's campaign is also including rebates on gas logs for wood-burning fireplaces. And in a separate effort, the EPA, manufacturers and a number of states are looking at ways to reduce emissions from wood furnaces and hydronic heaters as soon as possible."

Finally, we asked the HPBA's Carter Keithley about the true bottom line:

H&H: What will be the financial cost, and benefit, to the hearth industry? Most readers are aware of the substantial financial and product contributions made by the hearth industry to the impoverished Libby, Montana, non-attainment area. (See *Hearth & Home*, February and March 2005, for more information about Libby, Montana.) Continued industry donations of this magnitude can't be expected for the other more typical non-attainment areas. On the other hand, the financial worth of potential new product sales across the eastern U.S. is staggering, and some level of "seed-money" participation by industry may be warranted.

Keithley/HPBA: "The plan for the program is more along the lines of our traditional change-outs, with discounts offered by dealers and manufacturers to help provide financial incentives to consumers. We have never offered such programs in the fall, which is the heart of our selling season, but in this case, to satisfy the EPA's need to maximize the potential media coverage, our dealers generously agreed to participate with discounts.

"As we expand our efforts to include change-outs in dozens of additional non-attainment areas, our objective will be to find funding from outside our industry to provide the financial incentives needed to encourage change-outs. These financial incentives will help give the local authorities the political courage to impose sanctions on the use of old, dirty-burning appliances, which is the ultimate incentive for change-outs."

So it all looks pretty rosy – establish that wood stove change-outs contribute to reducing PM_{2.5} in the Pittsburgh pilot study, sell millions of wood-burning appliances in the East, improve the health of residents because the air is cleaner, and members of the hearth industry make money.

But wait a minute. This is not yet a done deal; some problems exist. For example, Betsy Mallison, community relations coordinator with the Southwest Regional Office of the Pennsylvania DEP, stated that the DEP is evaluating the wood stove change-out program for use with its SIP. It's not yet part of the plan and there is no guarantee that it will be.

It is our opinion that a regulatory mandate (such as a SIP could impose) – not a voluntary program – will be necessary to change out enough wood stoves and additionally affect enough

fireplaces and centralized wood-burning heater systems to be significant.

Case in point: The voluntary Wood Stove Change-out Program for the Pittsburgh area currently proposed by SPAQP is for a total of 1,000 wood stoves and fireplace inserts (and perhaps some rebates for gas log sets for fireplaces). It is unlikely that the impact of changing out only 1,000 wood-burning appliances among the 30,000 wood stoves, 27,000 wood-burning fireplace inserts and 175,000 wood-burning fireplaces without inserts (plus an unknown, albeit smaller, number of wood-burning centralized heating systems) that are in the Pittsburgh-Beaver Valley non-attainment area will be enough to make a measurable change in wood smoke levels.



"The Pittsburgh program is important exactly because it is typical of much of the East, and because it provides the opportunity for a highly visible EPA-arranged press event to capture the attention of the mainstream media."

— Carter Keithley,
President and CEO
Hearth, Patio & Barbecue Association

Not to sound cavalier, but if Pittsburgh is the pilot demonstration project, then something had better be demonstrated. The hearth industry still has much work to do.

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The Vesta Challenge to

Today, a low-emission wood-burning fireplace does not exist. Nor is there a wood-fired retrofit technology that reduces emissions in existing wood-burning fireplaces.

Yet the need for such products does exist; there would be a substantial benefit to everyone in the hearth industry if such technology were on the market.

To provide an incentive, *Hearth & Home* magazine is issuing a challenge to the industry.

Industry recognition in the form of a Vesta Award and accompanying publicity await the company that meets this challenge.

The Problem & the Options

Let's talk about fireplaces, in particular, wood-burning fireplaces without inserts. These are the products that give people their "fireplace fix." They are used occasionally for supplemental heat, but also for pleasure and aesthetics. People like to see flames and hear the crackle of wood.



It's difficult to define the exact contribution of wood-burning fireplaces without inserts to the wood smoke fraction of $PM_{2.5}$ in the eastern non-attainment areas. Their contribution is not directly related to their total number, which is, as already noted, substantial. There are an estimated 30 million wood-burning fireplaces without inserts already in homes nationwide, and about 400,000 new wood-burning ones installed annually with new housing construction.

The differences in wood consumption, usage patterns, and $PM_{2.5}$ emission factors for fireplaces also need to be taken into consideration when comparing their relative $PM_{2.5}$ impacts to other wood-burning appliances. Even more important is the fact that most of the eastern $PM_{2.5}$ non-attainment counties are, in large part, urban or suburban in character. The per capita ownership of wood-burning fireplaces is highest in suburbia, whereas the per capita ownership of freestanding wood stoves and wood-burning centralized heating systems is highest in rural settings.

Consequently, even though the long-range transport of $PM_{2.5}$ is a well-documented and significant phenomenon, there is attenuation with transport distance, and sources closer to the monitoring sites show relatively higher impacts. Based on the available facts and over 25 years experience with air quality, our best professional judgment is that, on average, about one-quarter to one-third of the wood smoke $PM_{2.5}$ measured with reference monitors in the eastern non-attainment areas is from wood-burning fireplaces without inserts.

The current options to reduce $PM_{2.5}$ from fireplaces include the following:

1. Install a fireplace insert into an existing fireplace; pellet inserts, gas inserts and EPA-certified cordwood inserts are available. Inserts

are essentially stoves designed to fit into a fireplace cavity and greatly diminish the fireplace experience, even though they increase heating efficiency and reduce emissions. Pellet and gas fuels also increase fuel expenditures.

2. Install an EPA-certified wood stove that is made to look like a fireplace. Wood stoves can be five to 10 times more expensive than a simple fireplace, which makes them unlikely candidates for tract housing, and as with inserts, diminish the fireplace experience. For example, they can't be burned with doors open.

Additionally, the replacement of a built-in fireplace, especially a masonry fireplace, with a built-in wood stove is a major and expensive undertaking. It has been estimated that, in the U.S., about 20 percent of fireplaces are masonry.

3. Use a different fuel. Fireplaces can be converted to natural gas or LPG with a log set or can burn wood/fiber firelogs that produce lower emissions, particularly if the fireplace factory-supplied grate is replaced with one with more closely spaced bars. Unfortunately, gas and firelog fuel options don't give the purist the true fireplace experience, and there is considerably more fuel costs than for cordwood.

In addition to these "fixes," the HPBA is working on a testing protocol to measure particulate emissions from fireplaces under the American Society for Testing and Materials (ASTM) process so that clean-burning, wood-burning fireplaces can be documented and hopefully accepted by regulators. A passing threshold to be classified as a clean-burning fireplace still needs to be established. The development of the ASTM testing protocol, the establishment of the "passing grade" and acceptance by regulatory bodies such as the EPA may take some time.

the Hearth Industry

The Vesta Challenge

To stimulate the development of clean-burning fireplace options in a timely fashion (PM_{2.5} SIP preparation and planning has already begun) and to bring awareness to promising products, two new categories of Vesta Awards will be offered next year at the 2006 HBPEXpo in Salt Lake City.

Category 1: New low-emission wood-burning fireplaces, with special consideration for those that burn cleanly with their doors open.

Category 2: Wood-fired retrofit tech-


nologies that will reduce emissions in existing wood-burning fireplaces.

As most readers know, the Vesta Awards program was started at the HPBEXpo in Salt Lake City in 2000 with the purpose of honoring innovation in technology and design for both hearth and outdoor room products. Currently, awards are given in 20 categories, with an additional two Best-in-Show winners.

Last year there were 165 products entered, and approximately 1,800 industry members attended the presentation ceremony. A rough gauge indicated that half were manufactur-

ers and half dealers. In addition, last year a number of air quality regulators also attended the Vesta ceremony.

On Saturday, the day following the awards presentation, dealers (and regulators) were able to view winning products in manufacturers' booths. All winning products, and finalists, receive exposure in *Hearth & Home* magazine and on both the *Hearth & Home* and HPBA Web sites.

Winning a Vesta Award, therefore, ensures wide exposure to those in the North American hearth industry, and beyond. 

The Official Rules

1. The documentation required to prove that a fireplace design has low emissions must be certified by a U.S. EPA-accredited wood heater emissions testing laboratory. Note: This does not mean that a U.S. EPA-accredited laboratory must perform the fireplace tests, but that the test results for proving a fireplace design has low emissions must be reviewed and approved by a U.S. EPA-accredited laboratory.
2. The reporting units for comparison to other fireplaces must be in grams of particulate emissions per dry kilogram (g/kg) of fuel burned.
3. The test method to be used will include a protocol for fueling and a protocol for emissions sampling and measurement.

A. Fueling Protocol: Since fueling protocol is known to affect the emissions performance of fireplaces, it will be critical that all contestants use the same one. Currently there is no universally recognized fueling protocol for fireplaces, but one of the two current possibilities now in the offing will be available and stipulated for this contest.

The first one is being developed by an American Society for Testing and Materials (ASTM) committee made up of not only industry and laboratory engineers, but also engineers from the U.S. EPA. This committee is also receiving input from other state and local governmental agencies. The committee has been working on a fireplace fueling protocol for over a year now and is projected to be finished for a final committee vote by the end of September 2005. If this ASTM protocol is approved by the committee by the end of November 2005, it will be the fueling protocol to use for this contest.

In the event that the ASTM fueling protocol is not finished by the end of November 2005, a second fireplace fueling protocol, one now being considered for adoption by the Colorado Department of Health-Air Quality Division, will be the designated fueling protocol. This fueling protocol is being considered as part of an expansion or extension of Colorado's 1995 masonry heater regulations (a.k.a., Reg 4) to fireplaces. If the ASTM protocol is *not* completed by the end of November 2005, this Colorado fueling protocol will be the one required.

In any case, the fueling protocol to be used will be specified by *Hearth & Home* by the end of November.

B. Emissions Measurement: The ASTM committee now deliberating the fueling protocol is also nearly finished with a separate method for measuring emissions from fireplaces. This fireplace emissions method is an adaptation of the U.S. EPA's "dilution tunnel" Method 5G for wood stoves and also is expected to be completed this fall. In the event the ASTM is not completed by the end of November 2005, instructions for using the U.S. EPA Method 5G for measuring fireplace emissions will be provided by *Hearth & Home*.

4. Along with the emission results for the new product, results from testing a standard factory-built, 36-inch "builder-box" fireplace, using the same fueling protocol and emissions measurement technique, must be submitted to provide documentation of emission reduction. In the case of a retrofit device, the same model fireplace, before and after installation of the retrofit device, should be used.

Submittal of particulate testing performed by a third-party laboratory must be received at *Hearth & Home* offices no later than February 17, 2006. Contact Richard Wright at 1-800-258-3772 for more details.