

The Second Time Around

Key Players, Experts and Interested Parties

To get a reality check on the expectations and motivations of air quality regulators and the impact that a new NSPS might have on the hearth industry, we talked with key players and recognized experts within the hearth community. We spoke with Gil Wood who is the EPA staff lead for the residential wood

heater NSPS review/revision; Bob Lebens, technical coordinator with the Western States Air Resources Council; Richard "Jiggs" Blackburn, president of Rising Stone; and Ben Myren who is president of Myren Consulting. We also spoke with leading wood heater manufacturers.



Gil Wood
EPA Staff Lead

Residential Wood Heater NSPS Review/Revision Office of Air Quality Planning and Standards U.S. Environmental Protection Agency

Why is the EPA considering revising the NSPS for Residential Wood Heaters?

"It's due for review. The Clean Air Act requires EPA to review this type of standard every eight years and make any appropriate revisions. We've been requested to review the wood stove standards by several state and local governments and tribes, in addition to organizations such as the National Association of Clean Air Agencies (NACAA), the Northeast States for Coordinated Air Use Management (NESCAUM) and the

Western States Air Resources Council (WESTAR).

"These agencies and organizations, along with HPBA's Hydronic Heater Caucus, also have asked us to develop federal regulations for hydronic heaters (also called outdoor wood boilers or water stoves)."

Does the EPA have a projected timeline for the new regulation?

"The projected timeline is for a draft review document by Sept. 30, 2009 (it was completed Oct. 30, 2009), a proposal of revisions by Sept. 30, 2010, and a promulgation of revisions by Sept. 30, 2011."

What will be the major differences between a new NSPS and the existing one?

"Our goal is to develop a rule that will complement EPA's efforts through the Great American Wood Stove Change-out Campaign to replace old wood stoves with today's cleaner technology. Technology has changed since the existing standard was issued in 1988. Best demonstrated technology (BDT) for wood stoves has improved significantly in the last two decades. Hydronic heater technology has improved more recently – as a result of EPA's two-year-old voluntary partnership program for those appliances.

"Because technology is better today, it's reasonable to anticipate that the proposed allowable emission limits will be

lower. In addition, we've been asked to examine the options to regulate all wood-burning residential appliances. What's covered by the current regulation, what's not – and why – has been the source of a lot of confusion for a number of years. That's something we'll be looking at."

How encompassing do you think the new standard will be?

"At this time, the review is closely examining options to include all residential wood-burning appliances. We have been asked to consider developing regulations for other solid biomass and coal appliances, because these appliances are growing in popularity again.

"So we'll be looking at a number of different residential solid fuel-burning appliances besides the cordwood and pellet freestanding stoves and inserts now covered by the NSPS. These might include coal-fired units, other biomass-burning (corn) units, and different wood-burning devices (masonry heaters, hydronic heaters, currently exempt stoves, furnaces, cookstoves and fireplaces)."

Do you think the affected facility designation would have to be changed from the current "wood heaters" to something else more accurately descriptive?

"Not necessarily. It depends on how encompassing the NSPS is after our review. We could also consider 'listing' a new source category under the Clean Air Act."

Will efficiency and/or heat output be taken into consideration in the new standard?

“Yes, but it’s premature to say how they will be factored into NSPS revisions. While we’re reviewing the NSPS, we’re also working on a new outreach campaign – BurnWise – to help consumers navigate what can be a confusing array of information intended to help them make wise choices on how to heat their homes. We want to help ensure that homeowners are getting their money’s worth – and that they’re selecting the cleanest appliances to heat their homes.”

There has been considerable discussion on technical issues associated with testing protocols. Without going into the tedious and often contentious details, what do you see as the big issues associated with testing protocols?

“One issue is ensuring that we have appliances that are based on today’s best demonstrated technology and that operate well in homes. Another is finding common ground to ensure the appliances are properly tested and avoid problems that may undermine performance in homes.”

When all is said and done, what would you like the outcome to be with a revised NSPS?

“EPA’s goal is a regulation that will ensure that today’s best demonstrated technology is used in all new residential wood-burning appliances. That way, consumers can be confident when buying a new EPA-certified appliance that it is cleaner than older wood-burning appliances. Emissions will be reduced when consumers use today’s cleaner appliances and follow EPA’s Burn Wise practices.”

What is the Burn Wise campaign?

“Burn Wise is our campaign to help consumers get the most out of their wood stove or hydronic heater or other wood heater – while limiting the pollution from those appliances. The appliance a consumer selects, the appliance and chimney maintenance habits, splitting and wood seasoning practices, and the way the fire is built all make a difference in how much wood is used – and how much pollution comes from the wood-burning appliance. So we’re going to be reaching out to consumers with information that will help them be Greener, while also saving money.”



Bob Lebens

Technical Coordinator

Western States Air Resources (WESTAR) Council

WESTAR is an air quality organization with membership made up of 15 western state air quality regulatory agencies and five federal land management partners. Its purpose is to serve as a forum for regional air quality issues and share resources for the common benefit of member states. It is funded primarily by the U.S. EPA.

It is our understanding that you have had a long history with wood heater regulations going back even before the first NSPS.

“Yes, I was employed with the Oregon DEQ from 1984 to 1987 and served in a staff position and manager with responsibility for implementation of the Oregon wood stove certification program. Later, I was employed with the U.S. EPA (Washington, DC) from 1987 to 1992 and served in a staff position and manager with responsibility for the development and implementation of the Federal Wood Heater NSPS.”

Why did WESTAR along with NESCAUM jointly urge the U.S. EPA to update the NSPS for wood-burning devices, specifically with a pivotal April 29, 2008 letter?

“Residential wood burning is a significant source of small particle pollution, much of which is toxic. In some instances, residential wood burning is the principle source of air pollution and the reason communities exceed the federal health-based air pollution standards.

“A tighter standard for currently-

regulated appliances will reduce air pollution as newer, cleaner-burning products replace dirtier-burning, older appliances. Including a broader range of residential wood-burning devices in the NSPS will also reduce the rate of growth of emissions from new, currently unregulated residential wood-burning devices.”

What does WESTAR hope that a new updated NSPS will accomplish?

“WESTAR hopes that the revision to the NSPS will result in a tighter standard so that only the cleanest-burning appliances are available to the consumer. We also hope that other cleaner-burning, residential wood-burning devices, including hydronic heaters and fireplaces, will be regulated in an updated NSPS.”



Richard Blackburn

President

Rising Stone

Richard S. “Jiggs” Blackburn has had 29 years experience in the R & D, production, testing and business development of wood combustion systems. Prior to becoming an independent consultant he worked at Jotul USA, Vermont Castings, Shelton Research, OMNI Environmental Services and CFM Corporation. He has participated in the development of 14 NSPS certified wood heaters including three out of the five lowest emissions wood stoves ever produced by the hearth industry.

What is a good estimate of the time for taking a new wood heater from conception, through NSPS and safety testing procedures, and finally readied for production?

“For non-catalytic heaters it is 12 to 14 months. For catalytic heaters it is 10 to 12 months. It needs to be emphasized that ‘time is indeed money’ and anything that causes delays, such as regulatory bottlenecks, in getting a new heater to market is costly to the industry.”

With the caveat always associated with the term “typical,” what is the typical cost, again for taking a new wood heater from conception, through NSPS and safety testing procedures, and finally to market?

“For steel wood stoves, both catalytic and non-catalytic, the total cost from start to finish is typically between \$645,000 and \$750,000. For non-catalytic, cast-iron, enameled wood stoves it is slightly more than \$1 million. For a comparable painted, non-catalytic, cast-iron model it is about 18 percent less or \$832,000. It should be noted that, if a number of similar models are made, there might be as much as a 25 percent reduction in this cost for each model.”

Slightly more than \$1 million for an enameled, cast-iron wood stove is surprising. Can you break it down a little?

In response to this question, Blackburn broke down the cost into 10 steps for a likely scenario. He notes that combustion engineering, mechanical engineering, other inside company, outside company, tooling and testing costs all contribute to the overall expense.

Ben Myren
President

Myren Consulting

Ben Myren has been involved in wood heater testing and research since 1984. In the last 25 years he estimates he has personally been involved in between 8,000 and 9,000 R&D and certification test runs on about 250 wood heater models.

What is the most important thing to take into consideration when revising the testing protocols for the new NSPS?



“One of the stated goals of state regulators pushing for the NSPS review is to make certification test results a better predictor of actual field performance. The ambient air quality data from Libby, Montana, indicated that the reduction in the day to day ambient PM_{2.5} concentrations, while very substantial, was not as great as expected.

“A possible explanation for some of the difference between the expected and actual results is the difference between laboratory test results and actual field performance. In short, we need to determine if there is anything in either EPA Method 28 or Method 5G that may be a partial cause of this difference and, if so, how do we change the methods to better optimize the field performance of EPA-certified wood heaters. We can – and must – do better just to keep wood as a viable option in much of the country.”

Specifically, what key changes do you envision are most important for revised test protocols?

“Laboratory draft conditions as compared to real world, in-home draft; the surface-area-to-volume ratio of real cordwood fuel as compared to test cribs; and the size and configuration of laboratory fuel loads as compared to those typically used in the home all need to be evaluated.”

Are there other important factors?

“Certainly there are other factors, such as fuel moisture and consumer operation of the appliance, that are known to affect field emissions. And there are ways, for example, education programs, to help ensure that these ‘other factors’ more closely compare to what takes place during certification testing.”

Typical Cost of a Wood Heater from Concept to Completion

10 Steps for a Likely Scenario

1. Product marketing & visual specifications	\$20,500
2. Visual design and combustion concepts	26,800
3. Primary development of first generation unit	252,694
4. Primary development of second generation unit	341,694
5. Final development of prototype	168,600
6. NSPS and safety testing	40,000
7. Completion of final design	32,900
8. Cast iron, refractory, vendor tooling	118,680
9. Enameling trials	5,060
10. Produce fully routed and costed bill of materials	7,640
TOTAL	\$1,014,568



Roger Purinton
Product Development

Jøtul North America

"In the '80s I was working in the lab at Vermont Castings and pretty much saw the whole thing from beginning to end. I think there was a suspicion hanging overhead back then, but relationships have developed and understanding evolved between the EPA and hearth manufacturers. The hearth industry values doing what we can for the environment, and that wasn't necessarily the case the first time around.

"Back then there were many unknowns. How much time and how much money would be required? If you had an in-house laboratory you could do all the pre-testing there and then go to the certification lab and breeze through. We had our own lab at VC, but we were still testing 24-7. I was actually working from 6pm to 6am.

"There was a large impact. Some folks were struggling to cover the bills they incurred. There were also demands on quality control, fitting all those programs together to make sure they were effective. It created more work. It did. But in the long run, it was a good thing. But it was a tough haul.

"There was definitely a major consolidation in the industry. The ones that were strong and wanted to play the game came out okay. This time around we could lose some manufacturers, but nowhere near what happened the first time.

"Right now, everybody is trying to go Green and hoping to be in the forefront. We are still facing issues here and up in Canada. They are still trying to ban our products, so the cleaner we can

make them, the better off we are going to be. This time around there seems to be a lot more willingness to work at a mutually satisfactory solution to the ultimate goal we want to reach."

Kurt Rumens
President

Alan Atemboski
Director of Research & Development
Travis Industries

(Rumens) "Back when we learned about the coming of the first NSPS, we were really green. Alan (Atemboski) was there right at the beginning. We hired Skip Barnett (combustion engineer), Paul Tiegs (test lab) and Jay Shelton (combustion engineer). Shelton was convinced it was a catalytic-only standard. Alan was the one that hit on it. He said, 'What if we just increase the turbulence and the temperature in this area, and don't let it go out so fast.'

"We ended up getting patents on secondary air tubes but didn't have the money to protect them, so that technology is throughout the industry today. We received certificate number 3, the first non-catalytic stove ever to comply with all burn rates.

"We were not afraid of the new regulations; we were not angry. We approached it with a big budget and knew we were going to do it. Once we figured it out, it took us from a regional company to a national company in the course of two years. It was an exceptional thing.

"Meanwhile, the NSPS collapsed a lot of manufacturers. There were over 400 manufacturers back then."

(Atemboski) "It dropped down as low as 50, and has come up a bunch since then."

(Rumens) "The overall industry sales also diminished. There was no longer a threat of an oil embargo, so consumer demand changed dramatically.

"We're approaching the coming NSPS with the same positive attitude. We don't mind building a cleaner-burning stove, but we need to know what the goal is. How do we test for it? And that takes time. And the end result has to remain user-friendly. You have to have a stove that is easy to

light, with glass that stays clean."

(Atemboski) "We're not sitting around waiting. We're trying to anticipate what they want and we've got projects going on right now that look at ways to further reduce emissions in our stoves. I'm convinced, from my conversations with the EPA, that they understand we have to build a stove that consumers can operate easily in their home."

(Rumens) "I do think that the pressure of a tough economy coupled with the requirement of more research will have a compound effect. It will be tough going for some companies."

(Atemboski) "If you look at the EPA's certified stove list, particularly at all the companies that



(L. to R.) Kurt Rumens, Alan Atemboski



don't comply with Washington State's 4.5 or 3.5 requirements, those most likely will be the companies that go away because they have not invested time or energy in figuring out some of these things. They are going to have to go from 7.5 to whatever the new standard is.

"I don't agree with what the HPBA is doing; they're trying to come up with a separate standard for builder boxes and the EPA is baulking. Their position is, 'No, we're going to regulate everything the same way.' You can't have one standard for this type of wood-burning product and another standard for this other type of wood-burning product."



Craig Shankster

President

Morsø US

“The first NSPS dramatically affected Morsø. It occurred during a period when we were not particularly profitable in the industry here (Morsø is a Danish company), and we made a commercial judgment not to retool for the American market. We backed out and, in my opinion, made a huge mistake because we then lost 16 years of market momentum.

“This time around, I am quietly confident we won’t see too many upsets in the way we currently test the product. I think it will be just a matter of cleaning up some of the gray areas with the test methods. We test for many different markets, so I don’t think there will be many surprises.

“What will it do to the industry? I think it is going to sort out the gray areas again, the hydronic heaters, for example, and the fireplaces. Those are people on the outside of the loop and I think, rightly, they should be in it. Wood smoke comes from many things; I would even like to bring in barbecues if I could.

“It would be nice if EPA would look into other polluting things such as cars and barbecues. I’m sure you’ve seen the plumes of smoke coming from steakhouses over the weekend.

“We don’t call ourselves Morsø Wood-burning Stoves anymore. We have re-labeled ourselves Morsø High Efficiency Wood Stoves. Stay away from the wood-burning bit. The industry could do a hell of a lot of good with everybody adopting that type of thinking.

“The new NSPS? I welcome it, to be honest. I think it’s needed. It’s also needed beyond our industry. I would like to see some stiffer regulations for change-outs. I think there should be a compulsory change-out.”

Brad Determan

President

Hearth & Home Technologies

“I came into the industry in ’95 through the white goods business, and we had similar issues in refrigeration, for example, with the Department of Energy – being required to make appliances more energy efficient. So I’m not unfamiliar with this process.

“By its very nature the process ends up becoming political and people start competitive posturing, but at the end of the day it works. People generally don’t like being told what to do, especially by government types, but the reality is that most of us need somebody

good venture for them to be in the stove business? That’s possible, sure.

“There’s no question that the first NSPS was good for the industry. The recent proclamation on Libby (meeting the new 24-hour fine particulate – PM_{2.5} – federal standard) is a great example. How can you be in an industry for any length of time and not agree with things that are obviously good for that industry?

Ed Note: We asked about the fate of the open wood-burning builder box.

“To some extent that depends on where they land on the regulation and how innovative we can get. It’s a very difficult technology to control. Is there a chance that one of us can innovate sufficiently to keep those very aggressive opening price points on that product? Maybe. But I’m not sure that’s what homeowners want anymore anyway.

“Homeowners will continue to want a hearth product in the home. What’s fun in this business is that we’re turning hearth products into something



to come in once in a while and say, ‘Hey, you can do better.’ So I don’t have the kind of adversary response to this process that I see some people have.

“We’re fortunate in that hearth products don’t have the capital barriers of an automobile or many other products. It’s more intellectual property, time, thought and a little bit of tooling. But will these new regulations cause some people to decide that it is no longer a

that they haven’t been – some of the contemporary looks, the artwork. I’m not sure that the (builder box) wouldn’t die a natural death in the marketplace anyway. If it ends up getting double-pressured out of the system, that would be okay.

“Homeowners are going to want fireplaces long after you and I are gone, and we have to figure out what they want them to do and look like.” 