

by James E. Houck, David R. Broderick and Carter Keithley

All Eyes on Libby

A small Montana town becomes the focus of the EPA's efforts to clean up the air, and the hearth industry's desire to replace old, inefficient wood stoves with new, cleaner-burning models.

Libby is a small western Montana town with a serious air quality problem. The Libby Valley is the only location in the West, with the exception of southern California, that exceeds the new federal fine particulate (PM_{2.5}) standard on an annual basis. There are a number of factors that, in combination, make Libby unique.

It is isolated; it is in a deep valley with low wintertime wind speeds and poor atmospheric dispersion; it has no industry; it has no natural gas; it has very cold, long winters and is surrounded by forest.

As a consequence of these factors, its poor air quality is primarily due to one thing and one thing only – residential wood stoves. The wood usage per wood stove averages a whopping five cords per heating season.

At first glance this looks like a nightmare for the hearth industry and certainly a nightmare for the 11,675 residents of the Libby Valley. But that may not be the case if the Hearth, Patio & Barbecue Association (HPBA), the U.S. Environmental Protection Agency (EPA), the State

of Montana Department of Environmental Quality (MDEQ) and the local Lincoln County Environmental Health Department officials have their way.

A tried and true solution for reducing particulate levels in an airshed with wood stoves is a change-out program where old, high-emitting, uncertified wood stoves are replaced with new, certified ones. Multiple annual PM_{2.5} nonattainment areas have been identified recently in the eastern U.S., and they may benefit from wood stove change-out programs.



Aerial view of Libby, Montana, situated in the northwestern corner of the state. The Kootenai River can be seen at the bottom of the image.

So here is where the HPBA, the U.S. EPA, the State of Montana DEQ and the Lincoln County Environmental Health Department have come together. Their common goal is a wood stove change-out program in Libby, Montana, that not only would solve the air quality problem for local residents and the State of Montana's requirement under federal law to

of hearth products – everybody wins.

The HPBA should be applauded. Through the HPBA's previous work with numerous, albeit less comprehensive, wood stove change-out programs, the regulatory community has become convinced that wood stove change-out works. Now it's on the table for consideration to solve Libby's problem and, if suc-

cessful there, for expansion to other areas. that hung over the town in winter was discouraging skiers from using the nearby resort, an important source of revenue for the residents. So they voted to impose a "polluters fee" on any homeowner who continued to use their old dirty-burning stove. This "stick" was combined with the "carrot" of appliance discounts from industry and low-interest loans from a local bank to encourage change-outs.

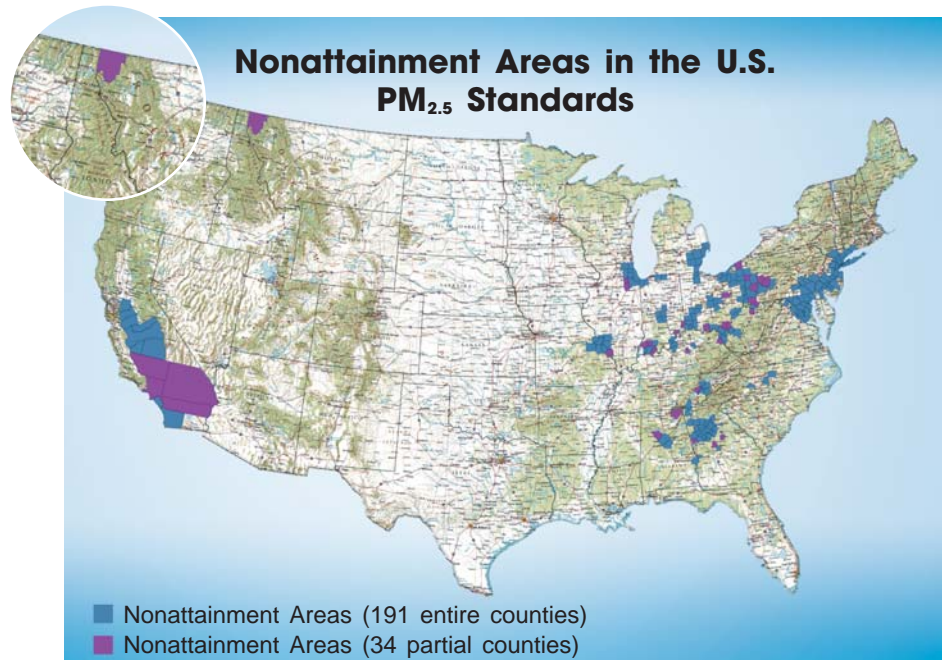
According to Carter Keithley, president and CEO of the Hearth, Patio & Barbecue Association, HPBA stationed its director of Public Affairs, John Crouch, in Crested Butte nearly the entire summer of 1989, and sponsored a "Wood Stove Fair" to expose the local residents to the certified stoves the industry was offering at discount. A total of 195 of the 406 uncertified stoves in Crested Butte were replaced by new units and another 135 were removed or disabled. Air quality measurements in the year following the change-outs showed that pollution in the air was reduced by 60 percent from the previous winter as a result of the campaign.

Following that first success, HPBA and its regional affiliates conducted many other "Great Stove Change-out" campaigns throughout the United States. HPBA published a guide for conducting change-out campaigns in 1991 to help regions initiate campaigns in their area. The guide provided a checklist of necessary elements:

- ✓ Define the area and scope of the campaign.
- ✓ Communicate with and organize area dealers
- ✓ Acquire the visible support of state and local authorities.
- ✓ Issue press releases and media kits.
- ✓ Supply dealer participation and promotion kits.
- ✓ Arrange for proper disposal of old appliances.
- ✓ Establish mechanisms for documenting replacements.

Campaigns in areas such as Southern Oregon, the Denver Metro region, Northern California/Nevada, New England and the Puget Sound area of Washington State resulted in replacement of thousands of old, dirty-burning appliances.

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The EPA's recently released PM_{2.5} map. For more information on nonattainment areas, visit the EPA's Web site at www.epa.gov/pmdesignations/finaltable.htm.

meet the PM_{2.5} standard, but would serve as a demonstration project for the application of change-outs for eastern U.S. PM_{2.5} nonattainment areas. Cleaner air for the residents of Libby, cleaner air in highly populated eastern areas and increased sales

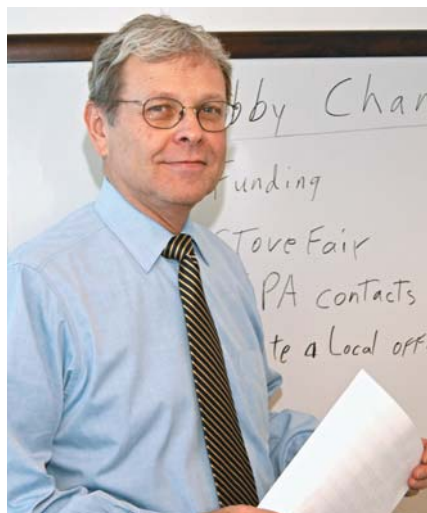
cessful there, for expansion to other areas.

The alternative – the general restriction or banning of residential wood combustion – serves no one's interests well. The HPBA has compiled an impressive resume of wood stove change-out programs. The practical issues associated with implementing the programs have been, in large part, worked out and the efficacy of the approach documented.

The Great Stove Change-out Campaigns

Perhaps the best example of the "Great Stove Change-out" campaigns conducted by HPBA over the past 15 years is the Crested Butte, Colorado, project undertaken in 1989-90. HPBA (then known as the Wood Heating Alliance) partnered with the Colorado Department of Health, EPA, and the City Council in Crested Butte to implement a wholesale change-out of all the uncertified stoves in this little mining town that, like Libby, is in a mountain valley.

The town council in Crested Butte recognized that the pall of wood smoke



Carter Keithley, president and CEO of the Hearth, Patio & Barbecue Association

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Unfortunately, while these campaigns have made a start in reducing wood smoke emissions in their areas, the reality is that there are still many more millions of old, uncertified stoves in use than there are new clean burners in place.

A Financial Catch

Even though Libby seems like the ideal setting for the demonstration of wood stove change-out for PM_{2.5} compliance – isolated, no other significant sources of PM_{2.5}, a relatively small population, high per capita ownership of wood stoves and the heavy use of those stoves due to a cold climate – there is a catch.



The two major industries that historically have supported the Libby community – the vermiculite mine and the lumber mills – are closed.

Unemployment in the Libby Valley is among the highest in Montana. Approximately 20 percent of the people in Lincoln County (Libby is the county seat of Lincoln County) are living below the poverty level. Many households will require financial assistance to purchase a new stove and to pay for the associated chimney work that will be necessary in many homes.

While the exact number of uncertified wood stoves is still being worked out through surveys, the estimate is that there are approximately 1,200 uncertified stoves in the valley. Assuming that the average new stove with its associated chimney upgrade costs \$2,500, the price tag for a complete change-out will be on the order of \$3 million, ignoring administrative costs.

Other costs from dealing with the more minor wood-burning issues related to fireplaces, older wood-burning furnaces, certified catalytic stoves with degraded catalysts and wood-burning appliances in commercial buildings also need to be considered. Finding fiscal resources will be the major task before the HPBA and the U.S. EPA.

Libby's Air Quality

To get a good picture of the air quality in Libby and its regulatory history, we interviewed experts within the Lincoln County Department of Environmental Health, the Montana Department of Environmental Quality and Region 8 of the U.S. EPA who have had a long history of working with Libby's air quality problems. These experts included:

Ron Anderson, who has worked with the Lincoln County Department of Environmental Health for 30 years and has been its director for 26 of those years. Anderson was born in Libby and he has been a lifetime resident of the community. The air quality monitors for the area are located, literally, on the roof above his office.

John Coefield, who has worked with the Montana Department of Environmental Quality since 1980. Coefield manages the analytical services section that will prepare the emission inventory for the Libby State Implementation Plan (SIP), determine the source/impact relationships, evaluate control plan option effectiveness and prepare the demonstration of compliance for the proposed PM_{2.5} SIP.

Cindy Cody, who is the manager of the Air Quality Planning and Management Unit for EPA Region 8, which is responsible for state compliance with the Clean Air Act Standards in Montana, Colorado, Wyoming, Utah, North Dakota and South Dakota. Cody is leading the EPA regional effort in Libby to assure its compliance with the PM_{2.5} standard.

To gain a further understanding of the air quality problem in Libby, we interviewed **Dr. Tony Ward**. Ward is a researcher at the Center for Environmental Health and Sciences at the University of Montana. He received his Ph.D. in chemistry from the University of Montana and has conducted air quality studies in both Missoula and Libby, Montana.

The results of his Libby air quality study conducted during the last heating



season have just been released, and they will be pivotal in future planning to improve air quality there. Ward is also currently conducting a study for the HPBA in Libby to document changes in polycyclic aromatic hydrocarbon (PAH) levels before and after the envisioned change-out occurs. PAH are a group of air toxic compounds that have been tied to residential wood combustion.

We first asked the regulators about Libby's air quality history and whether residential wood combustion was indeed the predominate source of air pollution.

H&H: Could you give a brief summary of the history and current status of the air quality in the Libby Valley?

Is residential wood combustion an important player?

COEFIELD/MDEQ: "Libby has had particulate issues ever since I have been working with the Montana Air Quality Bureau, which is 24 years. Libby was a TSP nonattainment area, then a PM₁₀ nonattainment area. The initial SIP that we did included some controls on wood stoves. It also included the first big improvement that we made that brought us into compliance with PM₁₀. This was the better control of the re-entrained dust from the winter sanding of roads.

"We got a SIP in place for Libby that included some more equipment to keep the streets clean and some sanding standards and the use of liquid de-icer. Plus Lincoln County had a wood stove registration program and a real-time particulate monitor, which they could use to alert the public when it was time to restrict their burning.

"With these measures we were in compliance but still high. We remained in compliance until the new PM_{2.5} standard came into being. Monitoring showed we were okay on the 65 microgram per cubic meter daily limit, but we are over on the annual limit. Really, what is left to address now is to directly get at wood smoke.

OPPOSITE PAGE ABOVE: A winter inversion, 82 percent of which is composed of wood smoke. OPPOSITE PAGE BELOW: A plume of smoke from a wood stove.

ABOVE: John Coefield of the Montana Department of Environmental Quality.

LEFT: As in most towns, some chimney installations in Libby are, um, interesting.



“We haven’t written the source apportionment study, that is out in the future several months yet, but it is clear that we are going to see wood stoves in the winter responsible for 80 percent-plus of the particulate loading that we have detected on the filters. It is during the wintertime period that we are getting the higher values that are driving our annual average problem.

“Libby is an area, like in most of western Montana, that has low sun angles in the wintertime. It gets a lot of trapped air inversions with very little flow out through either end of the valley, so there are a lot of dispersion issues. Over two or three days in Libby, we will barely hit one hour with wind speeds of one mile per hour. We get a lot of zeros. It is a place where the air puddles and the smoke stays right there until you finally get a front running through. It is always going to be a problem and always has been since we have had a community there.

“Some pretty nasty air pollution occurs during some hours. There will be times, say seven, eight or nine hours, when $PM_{2.5}$ concentrations are over a hundred micrograms per cubic meter. Particulate concentrations at that level are just unpleasant to be around. It should be remembered that Lincoln County made some very good strides with wood stoves in the early ’90s compared to where they were; it really worked for PM_{10} and helped to bring us into compliance. There has just been no impetus to be more stringent or harsh about wood stoves until this time. Wood stoves are a real sensitive issue because, in some cases, they are the sole source of heat.”

CODY/Region 8 EPA: “In the 1990s, it was discovered that the vermiculite being mined in the area contained a potent form of asbestos, exposure to which significantly increased the incidence of asbestosis and mesothelioma in miners, their families, and townspeople not associated with the mine. The area was declared a Superfund site in February 2002, and has been undergoing cleanup since spring of 2000, with an anticipated completion date of 2008 at the earliest.

“In 1987, the EPA finalized health standards for airborne particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). On Nov. 15, 1990, the EPA designated the town of Libby as nonattainment, for not meeting the PM_{10} standard. The

area is currently attaining the PM_{10} standards due to some wood smoke control measures – permitting of new stoves and road dust control.

“In 1997, the EPA finalized new health standards for airborne particles smaller than 2.5 microns in diameter, known as $PM_{2.5}$. EPA has determined that Libby will not meet these new health standards due almost certainly to the wintertime emissions of smoke from residential wood stoves. A natural gas line does not serve Libby and, therefore, home heating is accomplished

down due to economic reasons. When they were shut down we expected to see a night and day difference in air quality. Nothing.

“That didn’t really leave much else. It boiled down pretty much to wood stoves.

“During the heating season, forest fires don’t happen at all. Open burning, backyard burning, stops at the end of October for the general public. There is provision for timberland burning and agricultural burning through the month of November, but conditions usually



There are times when $PM_{2.5}$ concentrations are over a hundred micrograms per cubic meter, which is just unpleasant to be around.

by propane or wood stoves. Among the 2,626 residents in the town and surrounding community, approximately 1,500 homes utilize wood stoves as a primary or secondary source of heat (7% serve as a primary source of heat), most of which are not EPA certified.”

ANDERSON/Lincoln County: “I believe 80 percent or more of Libby’s $PM_{2.5}$ nonattainment is due to residential wood combustion. We had assumed for many years that a fair contribution was from the large lumber mill in Libby.

“As you know, the mill was shut

don’t allow it. From a practical standpoint we looked at all these sources and said – what could it possibly be that isn’t the obvious?

“So from everything we have looked at, it all comes back to wood stoves. I feel the 80 percent accurately reflects the wood stove contribution. We have surveyed, evaluated, contemplated and deliberated. What else can it be? We have looked at everything that produces emissions that we can think of and identify and the 20 percent remaining after the 80 percent wood smoke value pretty much covers all these other items.”

H&H: What other measures besides the wood stove regulations already instituted as part of PM₁₀ control and the envisioned wood stove change-out program are needed or already have been taken to achieve PM_{2.5} attainment?

ANDERSON/Lincoln County:

“Well, if you look at the improvement in air quality in the Libby Valley from what it was years ago – just the steps we are taking for PM₁₀ improvement, and the fall burning smoke management program

the major control we had for the coarse particulate fraction.

“In addition, the city has done a lot over the last few years. The city has voluntarily surfaced alleys. We have fewer unpaved parking lots. We have a local paving company now that we never had before. They have paved a lot of parking lots and driveways. This work was all done without having to cite anyone. Road dust has kind of taken care of itself.

“PM₁₀ came into compliance and has been in ever since 1994/95, with no

Study of the Last Heating Season

To get a better understanding of the air quality study conducted in Libby during the last heating season, which will likely provide much of the basis and substantiation for future regulatory decisions in Libby, we talked with Dr. Tony Ward. While many of his responses are quite technical, one does not have to hold a doctorate to appreciate the state-of-the-art nature of the work that is documenting the air quality status of Libby.

H&H: Could you provide a brief summary of the study you conducted in Libby during the 2003-2004 heating season?

WARD/UM: “In the summer of 2003, the Montana Department of Environmental Quality requested that the University of Montana, Center for Environmental Health Sciences (UM-CEHS) develop a research program to apportion the sources of PM_{2.5} in Libby. During the winter of 2003-2004, UM-CEHS conducted a PM_{2.5} sampling program in Libby. The goal of this research program was to identify those sources of PM_{2.5} in the Libby Valley that contribute to elevated concentrations measured in the airshed.

“A Chemical Mass Balance (CMB) computer model was used to apportion the sources of the fine fraction, where information on the PM_{2.5} chemical composition and anticipated sources in the Libby Valley served as model inputs. The existing PM_{2.5} chemical speciation sampler at the Libby sampling site measured the mass and chemical composition (including elements, ions and organic and elemental carbon) of the Libby PM_{2.5} every six days from Nov. 11, 2003, through Feb. 27, 2004.

“A collocated Federal Reference Method (FRM) PM_{2.5} sampler was fitted with a quartz filter for each sample day to measure levels of polar organics, many of which are signature chemical markers emitted from sources in the Libby airshed. In addition, a high volume (Hi-vol) polyurethane foam (PUF) sampler was installed at the Libby monitoring site to collect information on PAHs associated with both the particle and vapor phases. Most of these data were then input into the CMB model to determine the sources of PM_{2.5} in Libby.”

H&H: Did residential wood combustion play a significant role in the PM_{2.5} nonattainment?



Dr. Tony Ward with monitoring equipment on a rooftop at the University of Montana in Missoula.

that the DEQ put into place – we have already taken a tremendous step forward. What is necessary now is just to take the regulations one step further, ratchet them down a little bit more as we are basically dealing with the same sources as we dealt with for PM₁₀.

“I think that is really all we are going to have to do, that and a continuing education program for the public on what they need to do. The road sanding changes all happened during the PM₁₀ program. Road maintenance options were to change to Freeze Guard or coarse sand. We went to Freeze Guard. So the only sanding is now outside the control area. That was

more PM₁₀ violations. Freeze Guard on the roads and stove permitting – those are the two big control programs. We really did not do much to the open burning season at all. The whole state of Montana has a fall smoke management program that includes timberland burning within zone L, which is a specific airshed associated with Libby. We have control over that if we want to override the smoke manager’s call on burning on certain days. But, as it turns out, fall timberland burning hasn’t been significant, all the air pollution spikes are coming in November, December, January and February.”

WARD/UM: “The final report for the 2003/2004 Source Apportionment Research Study was submitted to Montana DEQ on Jan. 11, 2005. The results of the CMB modeling revealed that residential wood combustion is the major source of PM_{2.5} throughout the winter months in Libby, contributing an average of 82 percent of the measured PM_{2.5} throughout the sampling program.”

Wood Stove Change-outs in Libby

The next logical question was to ask Ron Anderson, whose county department is on the front lines and who knows the mood of the area, whether a wood stove change-out is right for Libby, and to ask the other two agencies directly involved (Region 8 of the U.S. EPA and the Montana DEQ) what they think about the efficacy of a wood stove change-out program in Libby and what their roles would be in its implementation.

H&H: What do you think it will take to make a wood stove change-out successful in Libby? Do you believe the Libby community will be amenable to the change-out program?

ANDERSON/Lincoln County: “Yes, I think the community will be amenable to a wood stove change-out program. However, we need to promote it. I sense there probably will be some reluctance by some people. We can probably overcome that by a good, effective promotion program. One other thing that we do have to deal with here is that we have a fairly high unemployment rate. Generally, our unemployment rate for the county runs at the top of the list for the state of Montana or very close to it. The overall economic level here is a little lower than for a lot of other places. I think that’s why we probably have a large number of older stoves.

“People depend on wood a lot to supplement electricity. We don’t have the benefit of a cheap natural gas source. Oil, propane and electricity are the heat sources here other than wood, so wood is an important fuel. We are surrounded by national forest and corporation forest, so wood fuel is quite readily available. All you need is a chain saw and an old pickup and, with no job, you have the ability and all the time you need to harvest wood.

“We are very excited about going to the public and saying, ‘OK., We’ve

got to get rid of old stoves; they are creating a problem that we have to manage, but we can help you with a replacement program’. I think a replacement program is going to be the key issue. If we just shut the door and say, ‘OK, if you have an old stove you can’t use it, do something on your own,’ we are going to have major problems. We are not going to get the compliance we need and it will take some awfully hard-nosed regulatory measures and enforcement. This would be a problem even though people have had a lot of years to think about it from the stove permitting program that has been in place for several years, along with the restrictions on the use of older stoves.

“We, of course, don’t know what the details of a replacement program

tion. Libby is isolated; we don’t have any other contributions – wood stoves are it. If you can replace them with high efficiency stoves and, all of a sudden, *voila*, you solve your problem, that is as good as it gets.

“When EPA called me and said we are talking about a replacement program, I said, ‘Holy Smokes,’ yes! We are just hopeful that it is at the funding level that we need to be effective enough to get the job done. I am just afraid that if we end up with being able to offer someone, say, \$250, it is not going to work. To be effective and to accomplish the anticipated number of change-outs that we will have to accomplish to get the reduction in emissions, we will have to have a significant replacement program.



Ron Anderson, director of the Lincoln County Department of Environmental Health, with air quality monitors on the roof of his office building.

are going to be yet, but we are hopeful that the people that need assistance the most are going to get a real boost. I think that will make the program very successful. The key is getting the word out, getting the program up and running, getting some success stories rolling out, and making it fit Libby’s economic situation so that everyone can actually get a new stove.

“I understand why Libby is being looked as a pilot project. It is really an ideal setting for such a project. We are not dealing with a huge popula-

“A large percentage of folks here really could not afford to get rid of the old stove and go out and buy a \$2,000 to \$3,000 wood stove. Someone giving them \$250 or \$300 to defray the cost of the old wood stove is not going to do it. Wood is always going to have a presence in our community merely because we don’t have access to natural gas. What I would really like to see, since we will be dealing with wood for a long time, is people equipped with the best technology for utilizing that energy source.”

H&H: What do you envision your organization's role will be in a wood stove change-out program in Libby?

CODY/Region 8 EPA: "EPA made the designation of "PM_{2.5} nonattainment" for Libby this year. EPA Region 8 will have the responsibility of reviewing the State Implementation Plan (SIP) that Montana will be required to submit by 2008 to demonstrate how the state will meet compliance with the standard by 2010. EPA recognizes that Libby faces a unique and difficult situation.

"The Libby population is already at risk for airborne disease due to the vermiculite contamination. Libby also has very few options for controlling PM_{2.5}, since over 80 percent comes from wood smoke. Therefore, EPA Region 8 has been working closely with state and local officials, prior to the designation, to begin looking at possible control measures that could be implemented more quickly than 2010. Through these efforts came the proposal of the wood stove change-out program. EPA Region 8 will continue to work with these state and local officials to support the program."

COEFIELD/MDEQ: "We are very involved in it. The planning section is rolling forward with it. We will certainly do the technical side trying to quantify the benefits. We will help promote the program. Promotion activities will include the pollution prevention side – for instance, making sure that we have iden-



Early January in Libby, by the banks of the Kootenai.

tified a way to dispose and recycle old wood stoves. We want to definitely make sure that happens, as we don't want them hanging around town.

"In addition, I am assuming if there is a wood stove change-out fair, we will have a representative in Libby. We are working closely with the county. Basically this is a Lincoln County Health Department show. We are there to help them as much as we can and we are interfacing with the folks from EPA. We would also like to see some kind of on-site manager help coordinate the program."

H&H: Regarding the wood stove change-out program under consideration, what is MDEQ's opinion of this approach for achieving attainment in Libby?

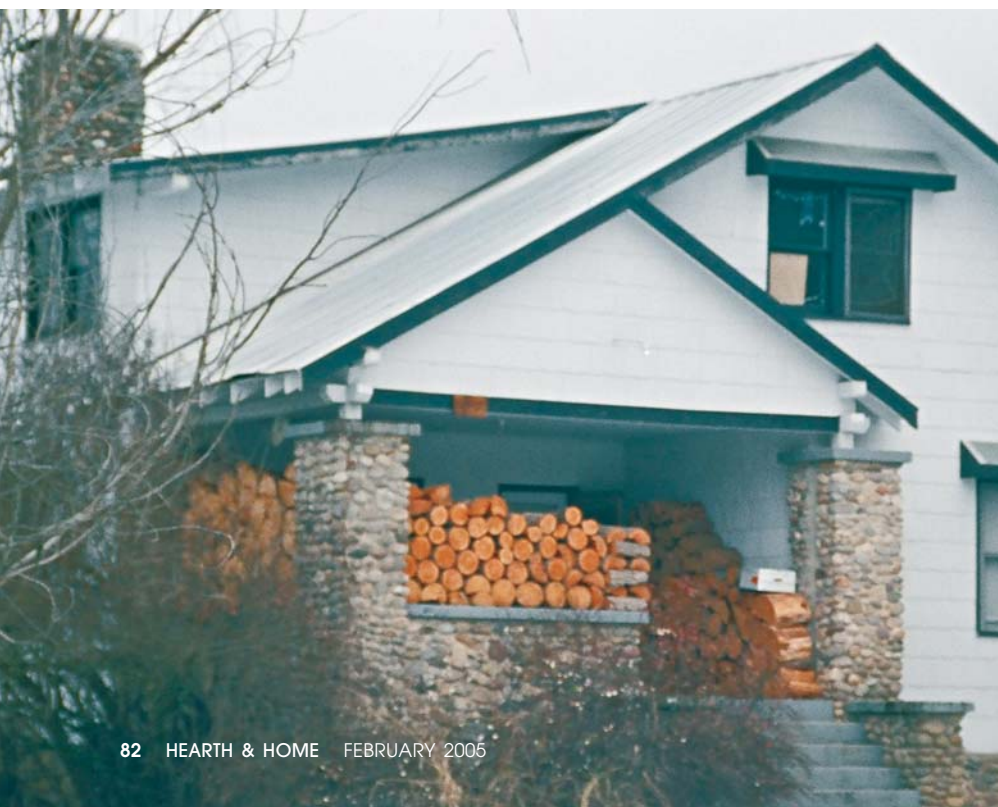
COEFIELD/MDEQ: "We are very hopeful that it will be a significant part of the SIP. We can't tell at this point whether it will be enough all by itself. We are evaluating that right now. We are doing a new wood stove survey and are going to try to quantify how many people in Libby burn how much wood in which type of stove. From this we will be able to tell how much credit we can get for a certain percentage of inroads into old wood stove replacement.

"For example, if we can get 40 or 80 percent of noncompliant stoves changed around, we hope we will be able to say how much benefit this will give us. We are pretty excited about it. I really feel like it is a chance to go forward in Libby given the fact that we really don't have a natural gas option. It makes sense to try.

"At this point it is early in the game. We are not at all sure what kind of penetration we are going to need in the change-out to get enough particulate reduction. When we come up with our emission budget, and when we determine the percent reduction we need in total emissions, then we will have a sense of how many noncompliant wood stoves will need to be changed over.

"We are not going to know that number until February or March. The survey will run through January. It is pretty far out yet for us to confidently make any statements about what we will get for what. Certainly a change-out program can't hurt. It should help a lot. Everyone is hoping that maybe it will be the prime driver on our compliance strategy for this SIP.

The wood usage per wood stove averages a whopping five cords per heating season.



“There are also other things to consider. For example, who is going to pay for the chimneys? The cost of the stove may not be half of the total costs. A lot of installations have been there a long time and the chimneys have just been cobbled together. Enough money to pay for the whole thing – wouldn’t that be great? We are cautiously optimistic and we would get behind a change-out program. We will do whatever we can. The alternative to this, of course, is some way to coerce the public to stop burning wood by more permits and requirements to remove stoves. No one really wants to go there. We also feel that local support will be very important for its success.”

H&H: What obstacles do you see to the implementation of a successful wood stove change-out program?

CODY/Region 8 EPA: “There will need to be many resources coming together to make this happen: financial assistance to lower income residents, availability of stoves and installers, and a public outreach campaign to obtain strong interest from the community. Therefore, the timing may be impacted and we may need to phase this program over several years.”

H&H: If you were to define one thing that would make this program successful from MDEQ’s point of view, what would it be?

COEFIELD/MDEQ: “One thing to make this program successful, the single, biggest thing is for someone to come up with enough money to just do it all. Everything hinges on that right now. After we have the money, then we can worry about other things that are important to the process and that will make it work.

“Right now we are thinking that we need some sort of on-site manager – an on-site manager who knows where the people are, who knows what kind of device someone has and who can look at 47 different ways of having a poor installation and knows what to do to correct them. This would be someone who is local, and who is committed to this program and can make recommendations for each individual home, as well as having the right kind of technical expertise.

“I don’t know how you can do 700 or 800 installations in a summer with chimney work to boot. This is a ter-

rific task. Someone who really, really knows his or her stuff will need to be in charge. In the budget, we want money included to have some local managers who are advocates for the citizens and for the program.”

The Libby Wood Stove Change-out as a Demonstration Project

The big hope, of course, is that the full-scale change-out of wood stoves in Libby will be successful and that it will be used as a model for the numerous eastern PM_{2.5} nonattainment areas. For insight into EPA’s thinking on the future role of wood stove change-outs in other areas and the Libby opportunity, we talked

Although EPA’s primary focus is on facilitating the change-out of old, dirty, inefficient “conventional” wood stoves to cleaner burning alternatives (e.g., EPA-certified stoves and gas stoves), there is definitely more to our initiative.

“We currently are participating via an ASTM (American Society for Testing and Materials) committee to develop a method for testing fireplace emissions. EPA foresees that this effort would allow the potential development of an agreed upon emission standard and/or a national building code for fireplaces. Also, based on recommendations from numerous states, we are looking further into the magnitude of outdoor wood-fired hydronic heater emissions.



Wood is free for the cutting in nearby national forests.

with **Larry Brockman** who works for EPA’s Office of Air Quality Planning and Standards (OAQPS) in Research Triangle Park, North Carolina. Brockman is the team leader for a new effort to develop and implement a voluntary Residential Wood Smoke Reduction Initiative.

H&H: Can you tell us very briefly what the Residential Wood Smoke Reduction Initiative encompasses? Is this just about changing out old wood stoves?

BROCKMAN/EPA: “EPA estimates that 80 percent of the 420,000 tons of fine particle pollution from residential wood smoke comes from wood stoves.

“EPA is also participating in a new ASTM committee that is working to develop a consensus test method, and potentially a consensus emission standard, for these outdoor heaters. Finally, education and outreach is going to play a central role in all aspects of our initiative. We plan to have a new EPA Fireplace and Wood Stove Web site up in early 2005. The Web site is geared primarily toward consumers, but also will have wood stove change-out and technical information for air program officials.”

H&H: Could you describe your interest, and the interest of your group from RTP, in the Libby wood stove change-

out?

BROCKMAN/EPA: “Our No.1 interest – which I believe is similar to that of the state of Montana, the EPA Regional Office and the city of Libby – is improving air quality and reducing community members’ exposure to the unhealthy



EPA's Larry Brockman, team leader of the Residential Wood Smoke Reduction Initiative.

effects of wood smoke. As we begin our Residential Wood Smoke Reduction Initiative, we also see this effort as an opportunity to demonstrate, through pre- and post- air emissions monitoring, the effectiveness of implementing wood stove change-out campaigns.

“Having a successful wood stove change-out campaign in Libby, and in our two other demonstration areas, will

certainly help us move closer to our goal of growing the wood stove change-out efforts into a program like the diesel retrofit program. For example, this grant program provides money to pay for the “retrofit” of older, less effective air pollution control equipment with state-of-the-art technology on a school bus.”

H&H: In what other locations do you envision using the wood stove change-out approach after having studied Libby?

BROCKMAN/EPA: “We are currently planning two other wood stove change-out pilots in areas that have fine particle problems. We expect actual implementation of these two pilots to occur in the early fall of 2005. After we have completed our work in Libby and in our two other locations, we will share those results with state, local and tribal organizations.

“A number of organizations, including state, local and tribal agencies, have already expressed interest in learning more about our initiative and in implementing a wood stove change-out campaign. We expect those areas, particularly in the eastern U.S. that have recently been designated as not meeting the fine particle standard, to have an interest in developing voluntary programs to reduce residential wood smoke.”

H&H: What is the time frame for these



other programs?

BROCKMAN/EPA: “We hope to support an additional three to six wood stove change-out campaigns in 2006-2007. If resources become available, EPA would gradually ramp up the initiative from demonstration or pilot projects to a program between now and 2008.”

H&H: What sorts of things do you hope to learn from the Libby program?

BROCKMAN/EPA: “Recognizing all locations are going to have their own set of issues, we hope to learn more about the actual mechanics and roles and responsibilities of implementing a wood stove change-out campaign. That is, what each organization (HPBA, state, EPA) is going to need to do to carry out various tasks and at what level of effort. Everyone is strapped for resources, and we want to be able to provide a good estimate of what it will take (time and money) for other communities to implement their own campaign.”

H&H: What do you see as the key issues that will sway EPA to use change-outs in the future?

BROCKMAN/EPA: “I believe cost effectiveness is going to determine the future use of wood stove change-out programs. It appears that changing out old, dirty, inefficient wood stoves to cleaner burning technologies is a very cost-effective way to reduce fine particle pollution. In addition, air toxics emissions are reduced as well. Based on our preliminary estimates, it costs well below \$2,000/ton, which is very cost effective relative to implementing other types of control technologies.”

H&H: If you were to define one thing to make the Libby program, and similar future programs, successful, what



would it be?

BROCKMAN/EPA: “It is critical to demonstrate to public officials and other potential partners the human health, environmental, economic and other benefits associated with changing out the old, dirty, inefficient wood stoves with cleaner burning appliances.”

The Importance of the Libby Change-out Program

In many respects, the Libby change-out proposal and the other projects being planned by EPA are the culmination of nearly 20 years of collaboration between HPBA and EPA, which began with the regulatory negotiations (“Reg-Neg”) in 1986 that established a “New Source Performance Standard” (NSPS) for wood stoves.

From 1995 to 1997, HPBA was a member of a special EPA advisory com-

the CAAAC was presented with a report from the National Academy of Sciences (NAS) on a study mandated by the U.S. Congress on the effectiveness of the Clean Air Act. The report is a watershed in air quality deliberations. It recommends sweeping changes in the way air quality management is undertaken in the U.S., including improvements in air quality measurement, expansion of federal and multi-state approaches, encouragement of innovative measures, and development of multi-pollution strategies. In other words, the NAS report said the old mechanisms aren’t working anymore and, since our nation must turn its attention to more difficult pollution sources, some new approaches are needed.

HPBA was appointed to a CAAAC “Working Group” to develop mechanisms for implementing the NAS Report. The Working Group forwarded its pro-

positions over the Working Group proposals that EPA approached HPBA with a proposal to undertake one of the most worthwhile air pollution abatement measures ever: the Libby Change-out Program. The residents of Libby have suffered tremendously from the effects of breathing the asbestos dust created by the vermiculite mining operation in the area. Not only the miners, but their wives and children were exposed to the terrible effects of the asbestos, and the suffering and deaths are well documented in a book published in 2004 by Andrew Schneider and David McCumber titled, “An Air That Kills” (Putnam).

Recognizing that the wood smoke concentrations in Libby exacerbate the suffering of the residents in the town, many of whom have limited lung capacity and are on oxygen bottles, EPA sought HPBA’s help in relieving the problem. This will not be an easy task. Libby is an economically depressed area, and many of its residents cannot afford the cost of replacing their old stoves. The hearth industry is ready to help, and our manufacturers and dealers have said they will find ways to discount the appliances and installations as much as possible. But other sources of funds must be found.

The hearth industry and all of the companies in it can be proud of the contribution they are making to cleaner air in our country, and EPA has recognized our contribution by making us partners with them in these efforts. Ours is an industry of smart, caring, small business people with the very highest integrity. They can sleep better at night knowing they are part of “the solution.”



In Libby, the air puddles and the smoke stays right there until a front finally comes through.

mittee known as the “Subcommittee for Ozone, PM and Regional Haze Implementation Programs.” It was partially out of the work of this subcommittee that the new PM_{2.5} air pollution standard was developed that became effective throughout the United States in 2004.

As a result of HPBA’s work on the subcommittee, the association was invited to become a member of the primary EPA advisory committee on air quality issues known as the CAAAC (Clean Air Act Advisory Committee). In January, 2004,

posals to EPA in December, 2004, including a recommendation that:

“EPA should further develop the Residential Wood Smoke initiative that includes working with states, locals, tribes, industry, non-governmental organizations and others to support and facilitate the change-out of dirty, inefficient ‘conventional’ (pre-NSPS) wood stoves with new, cleaner and more efficient heating appliances (e.g., EPA-certified wood stoves and gas appliances).”

It was in the course of the deliber-

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