Hearth, Patio & Barbecue Association

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Comments of the
Hearth, Patio & Barbecue Association
Regarding the
Sacramento AQMD's Draft Rule 417
"Woodburning Appliances"

Submitted August 2, 2006

The Hearth, Patio & Barbecue Association (HPBA) is the North American trade association for products such as woodstoves (woodheaters), pellet stoves, gas logs; gas fireplaces, factory built fireplaces, chimneys, and other products associated with fireplaces. As such, we, or our predecessor organizations, have provided comments on State or local regulations regarding woodheater emissions since the mid 1980's. We offer the following comments on Sacramento AQMD's Draft Rule 417.

Section 200 Definitions

The Definition of a Fireplace is incomplete. The Rule contains one portion of the definitions from the Federal Register definition of items which are not woodheaters. The Rule should include other items from that section as alternatives, i.e. 1) woodburning appliances with air to fuel ratios over 35-1 (currently included), or 2) a burn rate over 5 kilograms per hour, or 3) over 800 kilograms in weight. Fireplaces, including those under development with the assistance of USEPA, typically do not operate with air-to-fuel ratios over 35-1.

The Definition of a Masonry Heater should be changed to include the ASTM definition, E 1602-03. This would be consistent with the use of the ANSI Z21 definitions used in section 110.

The Definition of Permanently Inoperable is not germane to this rule. The HPBA opposes on the grounds of Health and Safety, any regulatory action which might in any way encourage or mandate permanent alterations to a factory built fireplace which would violate that product's safety listings.

Section 300 Standards

Section 301 effectively bans the installation or construction of traditional open woodburning fireplaces. HPBA does not understand the nexus between that provision, which would principally affect the airshed in Elk Grove, Natomas, and Folsom, and the neighborhood with the demonstrated

woodsmoke problem, Del Paso Manor. At a minimum the Staff paper should offer some actual justification of this ban on a very traditional aspect of people's homes.

The Staff paper should be revised to reflect the fact that, according to our manufacturers, the vast majority of new homes in this county are currently constructed with gas fireplaces, in excess of 90%. This rule will have little effect on production homes, and will principally impact custom fireplaces, in custom homes.

Section 301.1 (d) should be changed to include the possibility of including the new clean-burning fireplaces. . Currently, the fireplace industry has been working with the USEPA to create testing methodology, through the ASTM process to create an approval process for fireplaces similar to the certification process that the NSPS created for wood stoves (also known as Title 40, Part 60, subpart AAA). EPA representatives are aware that these new products will not be woodheaters and thus will be separate from the appliances defined in the NSPS.

This subsection should contain language which allows for these new developments in emission control technology, as long as that technology is recognized by USEPA and is compatible with the District needs.

In Section 301.2 we support what we believe to be the intent of this section, to extend the enforcement of EPA certified Woodheaters to the used woodstove business. We are, as pointed out above, concerned about any provision which encourages consumers to "render permanently inoperable" all woodburning appliances, which could include factory built fireplaces. Perhaps the rule should contain language which focuses this provision on antique woodstoves, which is probably what the provision was originally intend to cover, would be appropriate.

Section 301.3 raises a host of issues for us. Our retailers already routinely include information on proper installation and use, as well as proper wood selection, with the sale of each appliance. Information on the Health Effects of woodsmoke and proper weatherization methods for the home must be supplied by the District. Our retailers cannot be expected to source this type of information and then seek the approval of the District's PIO on what ever they may find. I'm confident they will be happy to share with their customers any information the District wishes to supply.

With regards to the requirement on proper woodstove sizing information, I'm equally certain that they will consider supplying that to consumers upon the time of sale, although that information is somewhat superfluous at that point. If the district is concerned about proper sizing they are welcome to create the definitive piece of information on this subject. I know the woodstove team at USEPA would welcome this help, as they have given up on this idea.

HPBA is well aware that this section appears in other ordinances in the state. We are equally aware that it is ignored in most of those districts. If Sacramento AQMD wishes to take this section seriously, we will be happy to work with you on the subjects which we have expertise in. If Sacramento AQMD is not planing to follow up on these items, or is not certain if the District will, or will not, provide these materials consistently into the future, HPBA recommends that this sub-section be re-thought.

Section 400 Administrative Compliance

The requirement that a manufacturer submit information directly to the APCO is burdensome and duplicative. EPA Woodheaters come labeled as to their compliance. This may be appropriate for

Masonry Heaters and pellet stoves but is unnecessary for EPA certified appliances since they are governed by the Federal Regulation.

Is the District's enforcement Division prepared to enforce this regulation with regard to all the non-traditional sources of outside fireplaces? HPBA believe that Air District should only adopt rules regarding Hearth Products which they are fully prepared to enforce.

Conclusion

HPBA always supports regulations that encourage the removal and destruction of old, pre EPA certified Woodheaters. We regret that this rule does not address that issue more directly. HPBA also always supports full enforcement of any provision of a rule, so as to create a "level playing field" particularly as it pertains to seasonal retailers of Hearth products, such as large Home Centers. We trust that the District will not adopt any provision in their rule which they are not fully prepared to follow up on, both this year, and every year into the future.

We appreciate the opportunity to provide these comments, and look forward to working with the District to reduce woodsmoke in Sacramento County.

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8-15-06

SMAQMD-SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

RE: PROPOSED RULE #417

WE IN THE SACRAMENTO AREA FIREWOOD INDUSTRY APPLAUDE THE BOARD'S EFFORTS TO IMPROVE AIR QUALITY IN THIS AREA.

WE, HOWEVER, HAVE SEVERAL CONCERNS ABOUT THE WORDING OF THE RULE AND MOST IMPORTANTLY ABOUT THE MESSAGE THE DRIVE BY "ALARMIST" MEDIA WILL IMMEDIATELY PICK UP UPON WHEN THIS RULE IS ENACTED.

WE CAN ALREADY SEE THE HEADLINES
#1 SACRAMENTO RESTRICTS THE USE OF FIREWOOD IN HOMES!!!!

IN HOMES

SACRAMENTO RESTRICTS THE USE OF FIREWOOD

#2 SACRAMENTO RESTRICTS THE USE OF FIREWOOD IN BARBECUING!

SACRAMENTO RESTRICTS THE USE OF FIREWOOD IN BBQ

IS IT YOUR INTENT TO STOP THE USE OF FIREWOOD FOR HOME HEATING OR FOR BARBECUES? IN THIS ERA OF SKYROCKETING ENERGY PRICES, WHERE WE SEND INCREASINGLY HUGE SUMS OF MONEY TO FOREIGN UNSTABLE GOVERNMENTS AND PEOPLES WHO PLAINLY DO NOT LIKE US, TO SATISFY OUR "...ADDICTION TO FOREIGN ENERGY" (GEORGE W BUSH).

IS IT YOUR INTENTION THAT SACRAMENTO CITIZENS FORGO THE USE OF THE OVER 6 MILLION TREES THAT ARE IN SACRAMENTO COUNTY ALONE FOR HOME HEATING OR OUTDOOR BARBECUING!

I GUESS I NEED TO POINT OUT STRONGLY THAT FIREWOOD IS RECOGNIZED BY MANY ECO-SCIENTISTS AS THE ONLY FUEL SOURCE THAT HAS A NET ZERO, NADA, NIL, O EFFECT ON THE ACCUMULATION OF GREENHOUSE GASSES AND GLOBAL WARMING. AS COMPARED WITH NATURAL GAS, FOR INSTANCE, SOME GAS FIELDS EMIT OVER 40% CARBON DIOXIDE AS A PERCENTAGE OF GAS THAT IS VENTED FROM WELLHEAD OPERATIONS. THIS IS EVEN BEFORE WE GET THE NATURAL GAS AND BURN IT, THUS ADDING TO THE CARBON DIOXIDE LOAD WE ADD TO THE GREENHOUSE GASSES OF THIS WORLD.

OF THE 6 MILLION TREES IN SACRAMENTO WE ASK YOU THIS QUESTION, #1. DID YOU EVER SEE A TREE THAT LIVES FOREVER? #2. DID YOU EVER SEE A DEAD TREE THAT DIDN"T EVENTUALLY BURN? #3 IF THIS LIVE OR DEAD TREE IS EVENTUALLY GOING TO BURN, THAN WHY DO YOU WANT THE ENERGY IN THIS TREE NOT TO BE PUT TO WORK FOR SACRAMENTANS?

SUGGESTION. THE WAY THAT YOU CAN PREVENT THE ABOVE MEDIA FRENZY AND ALSO NOT CURTAIL SACRAMENTANS ABILITY TO USE THIS FIREWOOD RESOURCE IN THE FUTURE IS TO PREFACE THIS RULE WITH A "STATEMENT OF INTENT" THE SMAQMD RECOGNIZES

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THE CONTRIBUTION THAT FIREWOOD MAKES TO THE TOTAL ENERGY PICTURE, TO HOME HEATING, TO THE COOKING OF FOOD, TO THE LOCAL ECONOMY AND JOBS, TO LIMITING OUR ADDICTION TO FOREIGN ENERGY, AND THE NET ZERO EFFECT IT HAS ON GREENHOUSE GAS EMISSIONS. WE AT THE SMAQMD IN NO WAY INTEND THIS RULE #417 AS A CURTAILMENT REAL OR PERCEIVED TO THE USE OF FIREWOOD TO HEAT HOMES OR FOR BARBECUE.

AS TO PART 5 OF THE RULE. I JEFF HADDEN FROM N.P.C. FIREWOOD HAVE DELIVERED TENS OF THOUSANDS OF CORDS OF DRY FIREWOOD TO HOMES OVER THE YEARS AND I HAVE NOTED THAT MANY HOME FIREWOOD USERS PLACE THEIR FIREWOOD IN LOCATIONS IN THERE YARD, ON THE GROUND, UNDER DRIP LINES OF ROOFS OR TREES IN SUCH A WAY THAT MY DRY WOOD GETS VERY MUCH WETTER AS THE WINTER STORMS COME IN AND THAN THE FIREWOOD IS BURNED WET. SINCE I HAVE NEVER DELIVERED UNSEASONED WOOD TO MY CUSTOMERS. I WOULD RECOMMEND THAT THIS RULE BE WORDED IN SUCH A WAY THAT THE HOMEOWNER IS COMPELLED TO KEEP THE WOOD DRY!

THANK YOU

JEFF HADDEN N.P. FIREWOOD

duraflame

The Secret of Fire®

August 14, 2006

Mr. Donny Homer
Associate Quality Engineer
Sacramento Metropolitan Air Quality Management District
777 12th Street, 3rd Floor
Sacarmento, CA 95814

RE: Comments regarding SMAQMD Proposed rule 417, Wood Buring Appliances

Dear Mr. Homer,

Duraflame, Inc. is the leading marketer and manufacturer of clean burning composition firelogs in the USA. Based in Stockton, CA we have over 200 employees and have been an active employer and corporate citizen in the State for over 30 years. In fact we created the wood wax firelog product category right here in Stockton over 30 years ago as an environmentally sensitive effort to recycle sawdust generated by our related wood manufacturing operations, and as a result eliminated industrial emissions from the open burning of sawdust and wood chips.

Duraflame, Inc. has been very involved in the development of Residential Wood combustion emissions regulations and public education programs throughout the Western United States and particularly in California for a number of years. We have worked closely with many air districts to educate consumers on proper fireplace usage habits and the clean burning benefits of using manufactured firelogs in open-hearth fireplaces. In fact many air districts in the Western States already advocate manufactured firelogs as a cleaner burning alternative fuel for open fireplaces.

We support the District's efforts to identify best practices for reducing particulate emissions from wood burning fireplaces and heaters, and implement rules that will reduce such emissions. However, wood burning control rules should be proportionate to the actual contribution of particulate matter pollution from fireplaces during winter months and we believe it is possible to make significant reductions in wintertime particulate emissions without completely eliminating the tradition and environmentally responsible practice of burning solid fuels in wood burning appliances.

While rule 417 contains some good practical first steps to educating the public about the need to burn cleaner and reduce emissions from residential wood combustion, the principal measure included in the rule which proposes to ban installation of wood burning fireplaces in new homes is unnecessary and will have very little impact on reducing emissions from residential wood combustion in the near term.

The District staff report related to this measure dated July 12, 2006 estimates that this measure will reduce particulate matter from residential wood combustion by about 5%

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per year in its first year and by similar amounts in future years. We believe this estimate is overstated as economic and marketplace factors are slowing the growth of new housing units in the district, and many builders are already voluntarily installing natural gas fireplaces in new residential units. In contrast when considering a similar measure The San Joaquin Valley APCD only estimated a 1-2% reduction in annual emissions from limiting wood burning fireplaces in new construction, yet the rate of population and new housing growth is projected to grow at a higher rate in the San Joaquin Valley than the Sacramento Metro Area.

Limitation of wood burning fireplaces in new housing units is a "feel good measure" that is easy to implement, and gives the appearance of an effort to reduce residential wood combustion emissions, but in the near term will provide little practical benefit.

To the contrary increased public education about cleaner burning practices combined with episodic controls that would voluntarily discourage or mandatorily prohibit residential wood burning on bad air days have been proven to be much more effective in dramatically reducing emissions from residential wood combustion. Episodic burn limitations will also control emissions from all wood burning appliances in the Air District, both existing and new installations, further negating the need to ban the installation of wood burning fireplaces in new construction. Other Air Districts such as the San Joaquin Valley, and the Seattle Metro Area have implemented very substantial residential wood combustion emission reduction public information programs combined with voluntary curtailment programs, and claim that such measures have been extremely effective in helping those districts to drastically reduce or even eliminate winter time violations of EPA particulate matter standards.

We therefore advocate the District postpone the proposed ban on wood burning fireplaces in new housing units, and instead increase its public awareness programs, and speed up its evaluation and implementation of episodic controls of wood burning on had air quality days. In future years should the district find such programs are not providing the reductions required to attain State and Federal particulate standards than we would advocate the District consider a density limititation on wood burning units in new construction as opposed to the currently proposed ban on the installation of wood burning fireplaces in all new residential units.

Below we have provided specific recommendations regarding the implementation of such programs, and some detailed comments regarding suggested revisions to proposed rule 417.

1.) SPECIFIC REVISIONS TO TEXT OF PROPOSED RULE 417

- **Section 112** - We recommend this section be amended to include the identification of manufactured firelogs as being exempt for the provisions of section 304 as well as "Commercial Fire-Starting Products" Perhaps the District intended this meaning but the current statements are unclear. This can easily be corrected by modifying the language of section 112 as follows;

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"EXEMPTION – COMMERCIAL *FIRELOGS AND* FIRE-STARTING PRODUCTS; The provisions of Section 304 shall not apply to commercial products manufactured expressly *for use as a solid fuel*, or for starting a wood fire, in a wood fired appliance."

- **Section 301 d** – The Hearth appliance industry is presently working with The EPA on an ASTM emission testing protocol and ultimately an emission standard for open hearth wood burning appliances that would classify appliances tested to the new standard as approved low emission wood burning fireplaces recognized by The EPA or other Air Quality Agencies. For technical reasons these appliances will not meet the requirements of the EPA Particulate matter standard Title 40, CFR Subpart AAA. Rather than limit future clean burning appliances to those that meet that regulations which was designed to regulate wood burning heating stoves we suggest the District modify this section to more generically allow for new wood burning appliance designs that are classified as approved low emissions devises by EPA or the Districts APCO.

2.) PUBLIC AWARENESS PROGRAM

Duraflame, Inc. supports education programs to inform the public about voluntary actions that citizens can take to reduce the emissions produced from burning wood. Many Air Districts in the western United States have advocated that consumers consider burning manufactured firelogs in open fireplaces as independent research has proven that manufactured firelogs produce 2/3's fewer particulate emissions than equivalent wood fires burned in fireplaces. Air districts such as the Puget Sound Air Pollution Control Agency, The Bay Area Air Quality Management District, The San Joaquin Valley Air Pollution Control District, and The California Air Resources Board have recommended manufactured firelogs as a voluntary emissions reduction tool for fireplaces. We support Public Awareness programs and eager to partner with the District to educate the public about how to burn responsibly.

Considering that in the past the District has distributed public information materials advocating the cleaner burning characteristics of burning manufactured firelogs in wood burning fireplaces, we were surprised to see that the Staff report on this measure dated July 12, 2006 failed to mention the use of firelogs as an alternative fuel for reducing emissions from wood burning fireplaces. Surely if the District is going to advocate, or distribute public education information educating consumers that the burning of dry "seasoned" wood is a cleaner burning practice, than it would be responsible to also include in its future staff reports and public education materials information about the cleaner burning benefits of manufactured firelogs that have been documented by numerous independent studies, copies of which have been provided to the District for review.

3.) CURTAILMENT DURING PERIODS WITH PREDICTED HIGH PM LEVELS

We support episodic curtailment periods for wood burning as the most effective strategy for reducing emissions from wood burning during periods of high PM

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concentrations in a localized air shed. We recommend the District implement a formal two-stage curtailment program that provides exemptions for clean burning appliances and fuels during a voluntary first stage curtailment episode. A first stage voluntary curtailment program should be implemented when air monitoring indicates Air Quality is unhealthy for sensitive groups (AQI of 100-149). A second stage mandatory curtailment program that prohibits wood burning in all types of appliances should be implemented when air quality is predicted be unhealthy for the general population (AQI measure 150+ for PM 2.5).

The voluntary first stage curtailment with exemptions for clean burning technologies is an excellent opportunity for the Air District to educate and encourage the public to change burning practices. Even more importantly, it provides citizens with an incentive to change their burning practices during moderate levels of PM pollution and could result in fewer mandatory curtailments being required.

4.) CONSIDER DENSITY LIMITATIONS ON THE INSTALLATION OF WOOD BURNING FIREPLACES IN NEW HOMES AS OPPOSED TO A BAN ON INSTALLATION OF FIREPLACES IN ALL NEW CONSTRUCTION.

Strict limitation on fireplaces in new construction provides very little benefit in reducing particulate matter emissions. The SJVAPCD District staff's analysis of the effectiveness of its fireplace density limitation indicated a limitation of no more than 1 fireplace per half acre will only reduce particulate emissions by less than two percent (2%) of the total emissions the District claims are emitted by fireplaces on an average winter day.

The majority of open fireplaces installed in new homes will be used infrequently for ambiance rather than for heat. The SJVAPCD's own appliance usage survey conducted by META in 1999, demonstrated this fact indicating that over half of the open fireplaces in the Valley are used only a few times per year or not at all. Therefore, modest growth in the number of new of fireplaces within the Air District will cause very little increase in particulate emissions from residential wood combustion. Furthermore, all new fireplace installations will be subject to the same episodic curtailment requirements as existing appliances, which will mitigate the contribution of emissions from new homes on bad air quality days.

Density limitations should allow 4 wood burning fireplaces per acre as a fair reduction from the current average density of fireplaces in new residential developments. This limitation will fairly mitigate the contribution of particulate matter from fireplaces in the growing urban areas of the District.

Density limitations should allow an exemption for clean-burning fireplaces. Many manufacturers of wood burning fireplaces now have models available that produce emissions equivalent to EPA certified phase II wood stoves. These clean burning fireplaces cannot be certified by EPA at the present time due to specifications in the EPA Wood Stove certification protocol that define size of firebox and air to fuel burn ratio of the appliance. Never the less, the emissions from such appliances are very low and the Hearth Product Manufacturing Industry is presently developing an ASTM emission standard for such appliances in cooperation with the EPA.

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We recommend the District specifically exempt from density limitations EPA phase II certified wood heaters, pellet heaters, and any clean burning wood fireplace designated as a low emission wood burning device that is tested to an ASTM emissions standard recognized by EPA.

Fireplaces are one of the most desired amenities in a new home. Strict limitations on wood burning fireplaces will drive a dramatic increase in the number of natural gas fueled fireplaces that are installed in new residential units. The District should carefully consider the environmental impact of a limitation on new wood burning fireplaces that results in advocating natural gas as the preferred fuel for residential fireplaces. While the particulate emissions of burning natural gas are admittedly very low, the emissions of greenhouse gases from natural gas combustion are extremely high. Significant growth in natural gas fueled fireplaces could strain future energy supplies and result in a dramatic increase in green house gas emissions of carbon dioxide and methane. We question whether it makes good policy sense to solve one problem by exacerbating another.

Our recommendations for reduction of emissions from wood burning fireplaces and heaters meet the requirements of EPA Best Available Control Measures (BACM) for residential wood combustion. They will allow the District to reduce wintertime residential wood combustion emissions, without going far beyond what is necessary for Federal and State PM emission compliance.

We appreciate your consideration of these proposals, and we stand ready to partner with you in your efforts to improve wintertime air quality.

Sincerely,

Chris Caron
Vice President, Brand Development

cc; Aleta Kennard, Program Supervisor, SMAQMD
Brigette Tollstrup, Division Manager, SMAQMD
Bob Cline, Cline and Duplissea
Erika Schmidt, Frause PR

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The Secret of Fire®

September 22, 2006

Larry Greene
Executive Director / APCO
777 12th Street, Third Floor
Sacramento, CA 95814

Dear Larry,

I appreciated the opportunity to meet with you and your senior staff recently to discuss the emissions characteristics of manufactured firelogs and how our industry might play a role in assisting the Sacramento Metro Air District to reduce emissions from residential wood combustion. The frank discussions were very useful to clarify the Air District's open questions about the emissions characteristics of our industry's products.

As you are aware several independent tests, sponsored both by our industry and air quality authorities, have proven that the emission rates of particulate matter, Dioxin/Furans and related air toxics for burning firelogs in an open fireplace are far lower than those produced from burning a typical wood fire in an open fireplace. In spite of these consistent findings from numerous independent laboratory tests your District now questions whether the prior test methodologies provided a fair comparison of the emissions produced by firelogs and / or cordwood when burned in a non-laboratory, real world environment. You also noted that some of the emissions tests you had reviewed indicated that firelogs produce greater emissions than cordwood when evaluated on an emission factor basis, and therefore feared if consumers were to burn more than one firelog at a time the emissions produced would be equal to or greater than those of a cordwood fire providing no emission reduction benefit.

These are certainly fair questions, which we are confident we can resolve with a review of the technical facts related to the performance and usage of our industries products vs. cordwood.

1. Real World usage of Manufactured Firelogs and Cordwood in Open fireplaces –

By design manufactured firelogs have entirely different burn characteristics than those of cordwood. Firelogs are made with approximately 55% natural or petroleum based waxes and 45% recycled biomass fibers. The wax component of the product provides a far higher energy content fuel that generates approximately twice the BTU content per mass as natural wood, yet the burn rate of this wax component if far lower than seasoned firewood. Firelogs also have significantly lower moisture content than natural wood (2-

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3% vs. 20% for seasoned wood), which allows the fuel in a firelog to be combusted more efficiently. In fact the burn rate for firelogs is ¼ the burn rate of cordwood burned in an open-hearth fireplace. This combination of a higher BTU content fuel which combusts at a significantly lower burn rate thereby allows the user to burn far less fuel during a typical usage occasion. Hence burning far less fuel per fire occasion results in far fewer emissions being emitted.

During our recent meeting a member of your staff indicated that they feared many of the test studies we have presented the District may have utilized an unrealistically high fuel charge for an aesthetic cordwood fire vs. burning just one firelog. They speculated that a person who was going to burn for aesthetic purposes might burn less wood than the recent emission studies indicated. As I mentioned during our meeting the test methodology for both the studies recently presented to your District attempted to replicate emissions for reasonably comparable usage of the two very different fuel products in common appliances. The test protocols and fuel charges for the wood tests were designed to represent real world operating conditions for wood burning fireplaces and were based on independent user data derived from published studies of fireplace usage.

To elaborate on this matter I am attaching a letter from Dr. James Houck, a PHD scientist with Omni Environmental Services who directed the recent fireplace emission tests for the EPA, Environment Canada and the Puget Sound Clean Air Agency. Dr Houck is a renowned expert in this field, and has conducted significant amounts of residential wood combustion emission testing and consulting work for Industry, The EPA and several regional Air Quality Districts.

In addressing the question of fireplace use for aesthetic vs. heating purposes Dr. Houck points out that from an Air Quality planners perspective usually this distinction is made by the number of days and hours a fireplace is used as opposed to the amount of fuel used during a given fire occasion. Air Quality Planners usually consider a household that burns wood frequently in their fireplace to be classified as usage for heating purposes and infrequent users as those who burn for aesthetics.

With regard to individual usage occasions, Dr. Houck notes there is a minimum burn rate of wood fuel that must be combusted in an open-hearth fireplace in order for the fireplace to function properly. This minimum burn rate for burning seasoned cordwood in a typical 36” manufactured fireplace that would be most common appliance in more densely populated tract home developments in the Sacramento Metro area is 3.3 kg per hour. Burning at a rate below this would not sustain combustion and produce a smoldering, unacceptable fire that the user would rectify by adding more fuel to the fire.

Further, Independent studies of fireplace usage in N. California (including the Sacramento Area) conducted by UC Berkeley in 2003 for the California Air Resources Board indicated the average duration of household burning cordwood in their fireplaces is more than 30% longer than the duration of fires burned by households using manufactured fires. (See attached excerpt from this study below)

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Results of Wood Burning Survey - Sacramento, San Joaquin, and San Francisco Areas, University of California Berkeley/ California Air Resources Board - GIS Study, January 15, 2003

> Fireplace Usage, Wood Fires - Average fire duration on weekdays was **4.4 hours**; Average fire duration on weekends was **5.1 hours**
>
> Fireplace Usage, Wood/Wax Firelog Fires - Average fire duration on weekdays was **3.3 hours**; Average fire duration on weekends was **3.4 hours**

Therefore if one multiplies the minimum burn rate of cordwood for an average size fireplace of 3.3kg / hr as noted by Dr Houck, by the minimum average burn duration of 4.4 hours for wood users in N. California, a wood burning household would consume 14.52 kg (32lbs) of fuel during a typical fire occasion. In comparison a household burning firelogs for the average burn duration reported above would only burn one 5-6 lb firelog.

So, contrary to your staff's assertion that people who burn wood fires for aesthetics may burn less wood than the recent emissions studies utilized, the facts do not support such a hypothesis. The average household burning wood in an open fireplace in the Sacramento Metro area clearly burns more mass of fuel per fire for a longer period than households that burn firelogs, and wood burning households generate far more emissions.

2. Are firelogs more emissive if mis-used contrary to manufacturers usage instructions?

Another concern stated by staff during our recent meeting was that if the Air District began to promote firelogs as a cleaner burning for open fireplaces, traditional wood burners might burn more logs than prescribed by the manufactures' directions and negate the lower emissions benefit that occurs as a result of the user burning less fuel with firelogs during a typical fire occasion. Again, this is a fair question, but it is again a hypothesis for which there is no supporting causal data.

To give you some background, firelogs are designed to be used one at a time – no matter the brand or size. All firelog packaging instructs consumers to use the product in this manner. Such instructions are uniform throughout the industry based on compliance with a UL safety Classification for our product category. There are different size firelogs for different applications / lengths of fires, whether 2 hours or upwards of 4 hours. Approximately 70% of the firelogs sold in the marketplace today are the 5-6lb size which burn from 3-4 hours.

As noted in the above-cited 2003 CARB fireplace usage survey the average user of firelogs burns their fireplace for 3.3 – 3.4 hours. This is consistent with burning one 5 or 6lb firelog as prescribed by manufacturers instructions.

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The retail cost of firelogs also creates a disincentive to burning multiple logs in one occasion. The average retail price of a single 5-6 lb firelog today is between $3-$4. Burning two logs would cost $6-$8 per fire which is more than the homeowner who uses their fireplace for secondary heating purposes would be willing to spend.

Due to the high energy content per mass of fuel burning two firelogs at a time, or adding a second firelog to an existing fire will produce a very aggressive fire that could be unsafe, which is why our industry recommends against this practice. Attached you will find some photos of two (6 pound / 4 hour) firelogs burned in a standard 36 inch manufactured fireplace, the most common size wood burning fireplace installed in densely planned subdivisions in the Sacramento Metro Area. One set of photos show two logs that were ignited at the same time, and the other shows the fire produced when one firelog was added to the fire after the first log had been burning for about one hour. You will note that burning two 6lb logs produces a raging fire that would produce too much heat and flame that would alarm the average homeowner. They would likely only do this one time before learning that burning two logs at a time is not necessary and may not be safe.

While, people could burn more than one log in a large masonry fireplace, these are not the standard in most homes today. If a consumer were to choose to burn more than one firelog it is likely the would do so by burning one log in succession to the other. This would extend their burning time to 6-8 hours, depending on when the second log is added to the fire, which would be contrary to the average burn durations for fireplace according to the CARB 2003 Fireplace usage study.

Even in the event that the minority of households with large masonry fireplaces in the Sacramento Metro area decided to burn two firelogs their fireplace, firelogs would still produce fewer emissions than burning and a wood fire for an equivalent time period in an open fireplace.

1. Firelogs
   2 x 2.72kg (6lb) = **5.44kg** of fuel consumed over 5 hours
   5.44kg x 14.2 g/kg pm[1] = **77.25** g particulate matter emitted
   77.25 g-pm / 5 hours = **15.45 g-pm / hour**

2. Cordwood
   3.3kg / hr (minimum functional burn rate for a fireplace)
   3.3kg / hr x 5 hours = **16.5kg** of fuel consumed over 5 hours
   16.5kg x 13 g/kg pm[2] = **214.5 g** particulate matter emitted
   214.5 g-pm / 5 hours = **42.9 g-pm / hour**

[1] Mean emission factor of Total Particulate emissions for manufactured firelogs cited from 2005 Environment Canada / EPA region 5 study "Content and emission characteristics of Artificial Wax Firelogs"

[2] Mean EPA method 5H emission factor of total particulate emissions for Cordwood from 167 fireplace emission tests – Source January 2005 Omni Environmental Services "Development of a Fireplace Baseline Particulate Emission Factor Database"

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This example clearly demonstrates, that even a household chose to burn more firelogs than manufacturers prescribe, or that independent usage studies indicate to be normal, they would still produce 64% fewer particulate emissions than burning cordwood for a comparable time period. So again the Districts concerns that increased usage, or misusage for firelogs would increase emissions and negate the emission reduction benefits of burning firelog are without merit.

3. Do firelogs emit more air toxic compounds than burning cordwood?

During our recent meeting you pointed out that your review of the recent tests conducted for the Puget Sound Clean Air Agency to compare the Dioxin / Furan Air emissions of manufactured firelogs vs. cordwood indicated that such emissions for firelogs were greater than those of cordwood. You were correct that when looking at the emissions data on a grams of pollutant emitted / kg of fuel combusted basis firelogs produced 1/3 more dioxin / furans emissions than cordwood. However the grams of pollutant emitted per hour of a comparable fire duration data from the same test demonstrated firelogs produced 3/4 less toxic emissions than burning cordwood.

Again for the reasons outlined above, namely firelogs contain a much higher energy content that is combusted at a much lower burn rate than cordwood, it is not realistic to attempt to make apples vs. apples comparisons of emissions on a mass of emissions per mass of fuel basis, when the fuel products being compared are apples and oranges.

What you may have overlooked from reviewing the recent test reports though is that the Dioxin / Furan emissions for both firelogs and cordwood were extremely low in relative terms. Further, most of the air toxic components used to calculate the total Dioxin / Furan emissions of firelogs were non-detectable, and therefore the approved EPA protocol for measuring dioxin emissions requires that ½ of the detection limit must be added to the calculation for a non-detectable component, thereby resulting in a potential overstatement of the real total volume of such emissions. Finally, since the emissions of Air Toxic components including Dioxin / Furans for firelogs is so low, the test laboratory had to burn two firelogs in succession in order to collect enough emission material to allow them to detect any level of air toxic components from firelog emissions. Thus when used according to the manufactures instructions, that is burning one firelog per fire occasion, the Air Toxic components of firelog emissions are extremely low, if not undetectable.

4. If the District promotes manufactured firelogs as a clean burning alternative for fireplace use will it confuse households about what is acceptable to burn and undercut its goal to reduce residential wood combustion emissions by advocating less or no burning of solid fuel in fireplaces?

At our recent meeting your Communications Director pointed out that even if firelogs are cleaner to burn than cordwood in an open fireplace, they still produce emissions greater than not burning at all. She went on to state that since the District is just beginning to intensify its efforts to educate the public about the need to reduce residential wood

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combustion emissions it was important to keep the message simple and advocate that converting a fireplace to natural gas fuel or not using fireplaces at all are the lowest emission alternatives. We won't argue that firelogs don't generate emissions, but we do disagree with the strategy of not advocating all clean burning options available to consumers.

There appears to be a double standard in the Districts policy on what it will advocate as clean burning and what it will not. In the case of wood burning stoves the District is advocating that consumers change out old wood burning appliances to newer, cleaner burning wood or pellet fueled heating stoves. These appliances still produce particulate emissions but far fewer than old wood fueled stoves. A gas fueled stove produces even fewer particulate emissions vs. a wood-burning stove, yet it still encourages cleaner burning wood stoves or pellet stoves as an alternative. If the district is willing to advocate cleaner burning solid fuel options for wood heating, than it should be consistent and advocate proven cleaner burning fuels such as firelogs for aesthetic use in wood burning fireplaces.

What is even more confusing with the Districts policy, is that it does advise households that plan to burn cordwood in fireplaces to burn seasoned wood, which certainly is cleaner than burning "green" wood, yet in spite of numerous independent tests that demonstrate firelogs burn significantly cleaner than even seasoned wood, the District has decided to discontinue its prior policy of advocating firelogs as a cleaner burning alternative. We fail to accept the logic in this policy change as a fair and reasonable approach when the District is willing to advocate other uses of solid fuel as clean burning options.

While we can appreciate the District's desire to present a simple message to the public, even the simplest most concise message will have little impact if it is not a message that the public is receptive too. A simple message of "do not burn in your fireplace" will not be as readily accepted as a message that indicates there are options to burn cleaner in your fireplace. The public today is more environmentally aware than ever, and while they are not ready to give up their everyday comforts, they are willing to make incremental changes in their behavior. The overwhelming demand and growth in sales of expensive hybrid fuel vehicles is a good example of this trend. The public is still not willing to cut back the amount they drive in their vehicles, but they are willing to purchase vehicles that will use less fuel for economy and environmental benefits. The fact that a growing number of people are willing to pay more for fuel efficiency than will ever be paid back by the efficiency gain is a demonstration that more people see the need to do the right thing for the environment, particularly when it doesn't require them to drive any less.

We suggest that advocating manufactured firelogs as a clean burning alternative to burning cordwood for the hundreds of thousands of open fireplaces in the Sacramento Metro Area could be your hybrid vehicle strategy for cutting residential wood combustion emissions. People are going to continue to use their fireplaces regardless of your messaging but if you give them an option to use them in a cleaner burning fashion people will begin to change their burning habits and you will see a real reduction in

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residential wood combustion emissions from open fireplaces. We know it will work because the strategy has been proven in the Puget Sound area, which was once a non-attainment area for PM 10 emission. The Puget Sound Clean Air Agency achieved PM10 attainment without ever banning the installation of a wood burning fireplace, but instead by creating meaningful partnerships with all stakeholders to cooperatively implement a multifaceted strategy of educating the public about how to burn cleaner with tools such as new clean burning appliances and clean burning fuels such as manufactured firelogs. We are confident the Sacramento Metro Air Quality Management can achieve this same level of success.

We aren't asking the District to carry all the burden of communicating this message either. All we ask is that you change your recently modified neutral strategy regarding burning of firelogs to one that advocates them as one of several simple cleaner burning tips for open fireplace use. With your support our industry will take the initiative of spreading this message to the public, and to the extent you are willing to engage in cooperative communications we are ready and willing to partner with the District in promoting its residential wood combustion emissions reduction messages.

Larry, we trust we have addressed all of the concerns expressed by your staff at our recent meeting. We really desire to be a partner of the Air District instead of an adversary. We hope that your review of our comments herein will once again open a path for your District and our industry to pursue a win / win strategy to reducing RWC emissions.

Best Regards,

Chris Caron
Vice President, Brand Development

cc; Bob Cline, Cline & Dupliessea
Erika Schmidt, Frause PR

Attch;

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September 13, 2006

Chris Caron
Duraflame, Inc.
2894 Mount Diablo Blvd.
Stockton, CA 95203

Dear Chris,

In response to your question regarding the burn rate of cordwood in fireplaces used to compare the air emissions from commercially available wax/fiber firelogs that were part of the two recent testing programs sponsored by Environment Canada (EC), I offer the following information. The first EC testing program (administered by U.S. EPA Region 5), which focused on a number of key pollutants (NO_x, VOC, $PM_{2.5}$, PAH, CO, benzene, and formaldehyde), made measurements of these pollutants for five firelog brands. Direct measurement of emissions from cordwood was not funded. Comparison with cordwood was accomplished by using literature values compiled in a refereed Air and Waste Management Association publication, which in turn, compiled test results from a broad spectrum of fireplace operations and cordwood fuels (multiple fireplace models and nine tree species were used for fuel). These data were from work conducted for the Oregon Department of Energy, work conducted for Duraflame, Inc., work conducted by the Canadian Combustion Research Laboratory, work conducted by Shelton Research, Inc., and work conducted by B.C. Research. The second Environment Canada study (administered by the Puget Sound Clean Air Agency – PSCAA), which measured dioxin and furan (TEQ values) emissions, as well as, the key pollutants listed above on one additional firelog (a west coast manufactured Duraflame product) did directly measure emissions from cordwood for comparison and in that case the cordwood burn rate was 3.3kg/hr (dry reporting basis).

It is my understanding that there is concern about cordwood burn rates for fireplaces used for aesthetic purposes being less than for fireplaces used for heating and, that because of this, difference the comparisons between air emissions from cordwood and wax fiber firelogs are not applicable to the aesthetic use of fireplaces in the Sacramento area. This is not the case for several reasons: (1) The distinction between the aesthetic and heating use has been traditionally based on the number of fires per year rather than the intensity of the fires. The distinction between aesthetic use and heating use is a “gray” area as both the enjoyment and the utility of a fireplace share a common commodity – heat. Generally, if a home occupant reports using a fireplace less than several times a year it is considered aesthetic use. (2) There is only a small range of burn rates that are reasonable for a given fireplace size regardless of whether its use is

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described as for heating or aesthetics and the burn rate is also largely independent of the climate where the fireplace is located. For a standard 36-inch fireplace, the burn rate range would be about 3.0 to 5.0 kg/hr (dry reporting basis). The 36-inch size is the most common size in the Sacramento area. Below about 3.0 kg/hr the fire does not burn well and can go out. Above about 5.0 kg/hr the fire is too hot for most rooms and also can become a fire hazard. It should be remembered that a fireplace is a room heater, not a centralized heating system, its heating use is almost always classified as "secondary" not "primary" and its heat output doesn't, and can't, tract heating demand well. It should also be remembered that while true wood heaters (freestanding stoves and fireplace inserts) have air controls that regulate fires, fireplaces have no such controls – fire burn rates are primarily a function of how much wood is put into the unit, which has practical limits. (3) According to a survey conducted by the University of California, Berkeley in 2002, for the Sacramento Valley, 56% of the respondents that use fireplaces reported using them for aesthetics and 44% using them for heat. Even if there is a slightly lower burn rate on average for fireplaces used for aesthetics, the impact is diluted by the high fraction of fireplaces that are used for heating.

Over the last two decades, there have been numerous studies conducted by various laboratories funded by both the private and public sector that show wax/fiber firelogs offer an air emission reduction as compared to cordwood use in fireplaces. Emission comparisons for fireplaces should be on a mass pollutant per unit time, not mass of pollutant per mass of fuel burned. Wax/fiber fielogs have a heat content of about 15,700 Btu/dry pound of fuel as compared to wood, which averages about 8900 Btu/ dry pound of fuel. In addition wax/fiber firelogs average 2.2% moisture (dry basis) as compare to typical well-seasoned cordwood, which averages 24.1% moisture (dry basis). Less energy is required to evaporate the water from firelogs as an equal mass of cordwood. Due to the higher heat content and lower moisture content, a lower mass of firelogs is needed for the same heat output. Further, one-at-a-time usage instructions are included with most firelogs and the use of multiple 5 lb or 6 lb firelogs produces an obviously unsafe fire, which would be found to be unacceptable by most consumers. Reflective of the higher heat content, lower water content, and one-at-a-time use, the average firelog burn rate in fireplaces is 0.74 dry kg/hr – significantly less than cordwood.

The results of the second Environment Canada (PSCAA) study, which consisted of a western Duraflame firelog burned in a typical 36-inch fireplace and of cordwood burned at a rate of 3.3 kg/hr, provide a snapshot of the level of emission reduction achievable for firelog use in lieu of cordwood in the Sacramento area. The $PM_{2.5}$ emissions at a level reflective of aesthetic fireplace use are 6.79 g/hr for a wax/fiber firelog and 26.7 g/hr for cordwood, respectively. In addition the emission rates for all other air pollutants measured, importantly including dioxin TEQ values, were less for the normal use of a firelog than for the use of cordwood.

I hope this information answers your questions. If you have any other questions please do not hesitate to contact me.

Sincerely,

James E. Houck, Ph.D.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OCT - 6 2006

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Duraflame, Inc.
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Stockton, California 95210
Attn: Mr. Chris Caron
Vice President, Brand Development

Dear Mr. Caron:

This is in response to your letter of August 16, 2006, to Karen Blanchard of my staff concerning manufactured fire logs. Karen's preliminary communications with you or your representative about Duraflame logs apparently gave you the impression that the one remaining unresolved issue standing in the way of our advocating fire logs as an acceptable measure for reducing emissions from wood burning fireplaces concerns typical home usage. While this is one of our concerns, it is not our only concern. As a result, your impression is not consistent with our position. My staff, as well as our counterparts in the U.S. Environmental Protection Agency's Office of Research and Development (ORD), have reviewed the May 2006 report prepared by OMNI Environmental Services for the Puget Sound Clean Air Agency, as well as other relevant studies[i], and based on the data in these reports EPA can neither universally recommend the use of manufactured fire logs instead of cordwood in our public information nor state unequivocally that manufactured fire logs produce less air pollution than cordwood.

We have a number of concerns with making a universal statement without extensive caveats. First, variations in emissions exist depending on the cordwood species being burned. Our own testing[ii] showed a 6-fold variation in emissions between oak and pine species. Variation between these species was also observed in the 2000 Environment Canada study[iii]. This makes universal statements regarding the benefits of manufactured fire logs over cordwood tenuous when only one species of cordwood (fir) was compared to fire logs in the OMNI study. There is also considerable variation in fire log composition that could make Duraflame results unrepresentative of all manufacturers.

Our major issue with the Region 5 Great Lakes and the Puget Sound studies we reviewed was the degree of equivalency between burning two fire logs in succession vs. consuming 10 pounds of cordwood every hour (multiple charges each hour) for three hours. Available data indicate that fire logs appear to generate fewer emissions than cordwood, at least in relative terms. However, absolute reductions can only be determined using an objective, reproducible test method. If a flame-out criterion is used for test completion it should be determined identically for both types of fuel. This could be based on a visual observation, a stack temperature, CO level, etc. as long as it is applied equally to both fuel types.

With all the uncertainties involved in both the test protocol and in actual home usage of both cordwood and manufactured fire logs, we are not comfortable with stating definitively that manufactured fire logs produce less air pollution than cordwood. As a result, we have decided to neither favor nor discourage the use of manufactured fire logs in our public information materials.

The EPA can not endorse any specific consumer product brand. Even if we could, as mentioned above, it would be difficult for us to make a universal statement about the benefits of manufactured fire logs as a whole, with the differences in composition among brands. Therefore, we will not be pursuing this matter further. Thank you for your interest in improving the environment and look forward to working with you in the future on other matters.

Sincerely,

Gregory A. Green, Director
Outreach and Information Division

cc:
Karen Blanchard, OAQPS/OID/VIPG
Chebryll Edwards, OAQPS/OID/VIPG
Larry Brockman, OAQPS/OID/VIPG
Gary Blais, OAQPS/OID/VIPG
Brian Gullett, ORD/NRMRL
John Kinsey, ORD/NRMRL
Patricia Velasco, CARB
Aleta Kinnard, Sacramento

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[i] "Air Emissions and Product Characterization of Wax/Fiber Fire logs in the Great Lakes Region," OMNI Environmental Services, Beaverton, OR, December 22, 2005.
"Dioxin/Furan Air Emissions, General Emissions, and Fuel Composition of Duraflame Fire logs and Douglas Fir Cordwood, OMNI Environmental Services, Beaverton, OR, May 23, 2006.
[ii] PCDD/F, PCB, HxCBz, PAH, and PM Emission Factors for Fireplace and Woodstove Combustion in the San Francisco Bay Region. Environ. Sci. Technol., 37 (9), 1758 -1765, 2003.
[iii] Environment Canada. Characterization of Organic Compounds from Selected Residential Wood Stoves and Fuels; Report ERMD 2000-01; Environment Canada, Emission Research and Measurement Division: Ottawa, ON, December 2000.