Masonry Heater Association Of North America

Norbert Senf, Secretary
RR 5, Shawville, Quebec, J0X 2Y0
819-647-5092
819-647-6082 fax
Secretary@mha-net.org

December 17, 1998

Carol Bradley, Clerk of the Board
BAAQMD
939 Ellis
San Francisco, CA 94109
415 771 6000 (fax 415 928 8560)

Dear Ms. Bradley:

We have only recently been made aware of the BAAQMD draft model woodsmoke ordinance. Specifically, that the requirement for EPA-certified woodstoves or fireplaces effectively will ban the use of masonry heaters.

Masonry heaters are non-affected facilities under the EPA regulation, and the regulation specifically recognizes their clean-burning potential. Furthermore, the burn rate determination method under EPA-M5 makes it impossible to test a masonry heater by this method.

Recognizing the need for an alternate method for determining masonry heater emissions, the Masonry Heater Association (MHA) has for a number of years worked to accomplish this. This has included a test method development program under Dr. Jaasma at Virginia Polytechnic Institute, the field testing of numerous heater installations by OMNI in Oregon, including EPA audited tests, and a large database of emissions tests by MHA's own test facility, Lopez Labs.

Masonry heaters are inherently clean burning by virtue of their principle of operation. A fixed, fast burn rate is used and the resulting heat is stored in a masonry mass. This eliminates smoldering combustion, which is the cause of the majority of wood burning PM particulate emissions.

MHA would like the opportunity to present arguments against the banning of masonry heaters in the Bay area. We would emphasize the point that these appliances are significantly cleaner than EPA regulated woodstoves, and hence should in fact be encouraged as an alternate method of wood combustion and of improving air quality.

Therefore, I would ask you let us know how we may best get involved in your process so that we may argue our case.

As an interim measure, attached please find a summary of emissions documentation.

I look forward to hearing from you.

Yours truly,

Norbert Senf, Secretary
The Masonry Heater Association of North America

The Masonry Heater Association of North America

The Masonry Heater Association of North America (MHA) was formed in 1984 to advance the technology of masonry heating in North America and to increase the knowledge and skills of professional heater masons. The MHA fulfills its mandate by sponsoring laboratory research into masonry heating technology, by working with building and environmental regulators to ensure the safe and appropriate use of the technology, and by publishing information of interest to practitioners. The MHA also maintains a professional training and certification program to recognize the competency of qualified heater builders.

MHA Definition of a Masonry Heater

A masonry heater is a site-built or site-assembled, solid-fueled heating device constructed mainly of masonry materials in which the heat from intermittent fires burned rapidly in its firebox is stored in its massive structure for slow release to the building. It has an interior construction consisting of a firebox and heat exchange channels built from refractory components.

Specifically, a masonry heater has the following characteristics:

- a mass of at least 800 kg. (1760 lbs.),
- tight fitting doors that are closed during the burn cycle,
- an overall average wall thickness not exceeding 250 mm (10 in.),
- under normal operating conditions, the external surface of the masonry heater, except immediately surrounding the fuel loading door(s), does not exceed 110 C. (230 F.),
- the gas path through the internal heat exchange channels downstream of the firebox includes at least one 180 degree change in flow direction, usually downward, before entering the chimney,
- the length of the shortest single path from the firebox exit to the chimney entrance is at least twice the largest firebox dimension,
- a maximum chimney flue size of 200 mm X 300 mm (8 in. X 12 in.) nominal or 200 mm (8 in.) i.d. round, and
- the body of the masonry heater and its chimney do not penetrate an exterior vertical wall of the building.

The above definition was passed unanimously by the MHA membership at its annual meeting on June 5, 1998. It has also been submitted by MHA for inclusion in the International Residential Code, due April, 2000, and will be submitted to ASTM for replacement of the current definition in ASTM E-1602 94 “Standard Guide for Construction of Solid Fuel Burning Masonry Heaters”.

Summary of North American Emissions Test Results for Masonry Heaters and Advanced Fireplaces

Appliance Type	Brand	Lab	# of runs	PM emission factor g/kg	Notes	Reference
Advanced Fireplace	Moberg 36	OMNI	7	3.9		11
Advanced Fireplace	Moberg 42	OMNI	7	2.0		12
Advanced Fireplace	Frisch-Rosin	VPI	2	3.6		10
Advanced Fireplace	Frisch-Rosin	OMNI	7	2.2		4
Advanced Fireplace	Frisch-Rosin	Lopez	7	1.8		4
Advanced Fireplace	Buckley Rumford	OMNI		2.5		
Advanced Fireplace	Buckley Rumford	OMNI		2.3		
Advanced Fireplace	Buckley Rumford	Lopez	9	1.9		
↑ Fireplaces ↑						
↓ Masonry Heaters ↓						
Contraflow	Heat-Kit1	OMNI	7	5.6	underfire air	8
Contraflow	Heat-Kit1	Lopez	1	4.5	underfire air	3
Contraflow	Heat-Kit1	VPI	15	2.5	underfire air	2
Contraflow	Tulikivi	OMNI	7	5.7	underfire air	8
Contraflow	Tulikivi	Lopez	21	3.7	underfire air	
↑ Pre-1991 air systems (European) ↑						
↓ Post-1991 air systems (mostly North American) ↓						
Contraflow	Tempcast	OMNI	7	3.0	poplar fuel	7
Contraflow	Heat-Kit2	Lopez	29	1.3		4
Grundofen	Biofire	OMNI	7	1.9		8
Grundofen	EnviroTech	OMNI	7	1.4		8
Grundofen	EnviroTech	VPI	20	1.0		2
Grundofen	EnviroTech	OMNI	7	0.9		6
Swedish	Mastercraft	OMNI	7	1.9		5
Swedish	Royal Crown	OMNI	7	1.4		8

Table of Emission Tests References:

1.) OMNI Environmental Services, Inc., Test Report: Emissions and Efficiency, Frisch-Rosin Masonry Fireplace (Revised May 25, 1995), prepared for Lopez Quarries Masonry Heaters, Everett, 1995.

2.) R. Jaasma, J. W. Shelton and C. H. Stern, Final Report on Masonry Heater Emissions Test Method Development, Wood Heating Alliance, Washington, 1990

3.) N. Senf, Recent Laboratory and Field Testing of Masonry Heater and Masonry Fireplace Emissions, presented at the 87th Annual Meeting of the Air and Waste Management Association, Cincinnati, June 19-24, 1994
available online at:
http://mha-net.org/msb/html/lop-arc.htm#Recent Laboratory and Field Testing

4.) N. Senf, Very Low Emissions Cordwood Combustion in High Burn Rate Appliances - Early Results with Possible Implications, presented at the 88th Annual Meeting of the Air and Waste Management Association, San Antonio, 1995.

5.) S.G. Barnett, In-Home Evaluation of Emissions from a Mastercraft Swedish Heater Kit Masonry Heater, prepared for Mastercraft Masonry, Brush Prairie, (1993).

6.) S.G. Barnett, In-Home Evaluation of Emissions from a Grundofen Masonry Heater, OMNI-80119-01, prepared for Mutual Materials Company, The Masonry Heater Association of North America, and Dietmeyer, Ward and Stroud, Seattle, (1992).

7.) R. Bighouse, S.G. Barnett, In-Home Evaluation of Emissions from a Temp-Cast 2001 Masonry Heater, prepared for Temp-Cast 2000 Masonry Heater Manufacturing, Inc., Port Colborne, (1992).

8.) S. G. Barnett, Summary Report of the In-Home Performance of Five Commercially Available Masonry Heaters, OMNI 80132-01, prepared for the Masonry Heater Association of North America, Reston, (1992).

9.) S.G. Barnett, In-Home Evaluation of Emissions from Masonry Fireplaces and Heaters, Western States Clay Products Association, San Mateo, (1991).

10.) N. Senf, A Comparison of Fireplace Emissions Test Methods, prepared for The Brick Institute of America, Reston, 1995.

11.) OMNI Environmental Services, Inc., Evaluation of Efficiency and Emissions from a Moberg/Royal Crown MRC-3036 Masonry Heater, Beaverton, 1994

12.) OMNI Environmental Services, Inc., Moberg 3042 Masonry Heater Emissions Testing Report, Beaverton, 1996