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EMISSIONS FROM GREEN FIR COMBUSTION

Tested by OMNI Environmental Laboratories for Bonneville Power Administration & USDOE, as reported in the BPA report, **Environmental Impacts of Advanced Biomass Combustion Systems**, 1988.

Tests were performed using green fir sawdust @44% moisture in a prototype cookstove model named "Helen" designed by Larry Dobson.

Due to very low draft caused by extremely hot summer test conditions, the maximum burn-rate of 50,000 Btu/hr (14.7Kw) was not achieved during these tests. Likewise, the low-burn of estimated 8,000Btu/hr was forced to be prematurely terminated when flue gases became cooler than the outside temperature (95°F), creating a negative draft.

	@14,000 Btu/hr (4Kw) Output	@ 21,000 Btu/hr (6Kw) Output
PARTICULATE EMISSIONS		
g/hr	0.28	0.23
ng/Joule	20	9
Grains/DSCF	0.018	0.008
CARBON MONOXIDE EMISSIONS		
g/hr	0.61	0.07
g/Kg	0.65	0.04
ppm	160	4
NO_x EMISSIONS		
ppm (actual)		50
ppm @3%O ₂		81
SO₂ EMISSIONS were not detectable		
VOC EMISSIONS (mg/cu. meter)		
Methane	1	ND
Benzene	1	9
Total HC	25	15
PAH EMISSIONS (mg/hr)	98.9	99.1
ACIDITY of Condensed Emissions		
effective pH	4.8	4.4