

# SCIENTIFIC INFORMATION STATEMENT

## Attachment A

### *3. A brief explanation of scientific information:*

The following scientific studies and information were relied upon in the development of the proposed rule, including the selection of the particulate matter emission limit and emission test methods:

- a. “Proposal for a Particulate Matter Emission Standard and Related Provisions for New Outdoor Wood-Fired Boilers”; Vermont Agency of Natural Resources, Air Pollution Control Division; January 20, 2005, revised July 6, 2005; November 17, 2006;
- b. Vermont Air Pollution Control Regulations (effective April 27, 2007), Agency of Natural Resources, Air Pollution Control Division, 103 South Main Street, Waterbury, VT 05671-0402;
- c. 40 CFR Part 60, Subpart AAA, “Standards of Performance for New Residential Wood Heaters” and related test methods;
- d. CSA B415.15, “Performance Testing of Solid Fuel Burning Heating Appliances”; Canadian Standards Association;
- e. “Test Method 28 OWHH for Measurement of Particulate Emissions and Heating Efficiency of Outdoor Wood-Fired Hydronic Heating Appliances”, US Environmental Protection Agency, February 2, 2007;
- f. “Review and Analysis of Emissions Data for Residential Wood-Fired Central Furnaces” by McCrillis, Robert C., USEPA Document 95-RP137.04; 1995;
- g. Certification test reports from OMNI Test Laboratory, Inc., Intertek Testing Services and Myren Consulting, Inc. for six OWB models certified for sale in Vermont under Section 5-205 of the Vermont Air Pollution Control Regulations.
- h. “Control of Emissions from Outdoor Wood Boilers”, Chapter 150, Maine Regulations, Maine Department of Environmental Protection.
- i. “Smoke Gets in Your Lungs: Outdoor Wood Boilers in New York State”, Eliot Spitzer, Attorney General of New York State, Environmental Protection Bureau, August 2005; revised March 2008;
- j. “Assessment of Outdoor Wood-fired Boilers”, Northeast States for Coordinated Air Use Management (NESCAUM), March 2006;
- k. “Test of a Solid Fuel boiler for Emissions and Efficiency Per Intertek’s Proposed Protocol for Outdoor Boiler Efficiency and Emissions Testing”, Intertek Report No. 3087471, for the State of Michigan, Air Quality Department, 420 Fifth Street, Gwinn, MI 49841. (test of Dectra Garn Model 1350).

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- l. Test Results and ASTM Method Calculations for Clean Wood Heat, Black Bear Boiler; data from John D. Voorhees, Director of Technical Services, OMNI-Test Laboratories, Inc., 5465 SW Western Avenue, Suite G, Beaverton, OR 97005; personal communication, January 23, 2007;
- m. “Dispersion Modeling Assessment of Impacts of Outdoor Wood boiler Emissions in Support of NESCAUM’s Model Rule”; Impact Assessment and Meteorology Section, Division of Air Resources, NYS DEC; January 26, 2007;
- n. “Model Regulation Outdoor Hydronic Heaters”, NESCAUM, can be downloaded from the NESCAUM Website at: <http://www.nescaum.org/topics/outdoor-hydronic-heaters>;
- o. “EPA Outdoor Wood-fired Hydronic Heaters Program”, details at: [http://www.epa.gov/woodheaters/what\\_epa\\_doing.htm](http://www.epa.gov/woodheaters/what_epa_doing.htm)
- p. “Air Pollution Dispersion Modeling for Outdoor Wood Boilers in a Complex Terrain Setting”, Vermont Department of Environmental Conservation, Air Pollution Control Division, by Dan Riley, July 18, 2008;
- q. “House Bill 1405-FN”, “Outdoor Wood-Fired Hydronic Heaters”, Chapter 125-R, New Hampshire Statutes, 2008 Legislative Session;
- r. 310 CMR 7.26(50), “Outdoor Hydronic Heaters”, Commonwealth of Massachusetts, Department of Environmental Protection;
- s. “Biomass and Carbon Neutrality, Issues and Concerns for Stakeholder Discussion”, Dawn Gallagher, Commissioner, Maine Dept. of Environmental Protection, July 22, 2004;
- t. “Black Carbon Pollution Emerges As Major Player in Global Warming”, Science Daily, March 24, 2008;
- u. “Study Finds Soot as a Major Player in Global Warming”, Robert Service, Science, Vol 319, March 28, 2008