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**GENERAL PERMIT TO INSTALL FOR PROPANE OR NATURAL GAS-FIRED BOILERS
WITH A MAXIMUM RATED HEAT INPUT OF 100 MILLION BTU PER HOUR**

BACKGROUND

On July 31, 2003, the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), issued a general permit to install for propane or natural gas-fired boilers, including portable units, with a maximum rated heat input of 100 million Btu per hour. This general permit, issued pursuant to R 336.1201a promulgated pursuant to Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Rule 201a), provides a streamlined permitting alternative for affected facilities which meet the specified applicability criteria and allows facilities more operational flexibility. Prior to approval, EGLE held a 30-day public comment period to receive comments on the proposed general permit. A public hearing was not requested, but written comments were submitted during the comment period regarding the monitoring and recordkeeping requirements. These comments were reviewed by AQD staff and incorporated into the final version of the general permit.

EMISSIONS

Boilers are used for a variety of applications such as providing process steam; providing hot water or steam for space heating; or generating high-temperature, high-pressure steam for producing electricity. Portable units are used on a temporary basis during maintenance or repairs of permanent units. The general permit to install may be used for one or more propane or natural gas-fired boilers, including portable units, each with a maximum rated heat input of 100 million Btu per hour. Use of the general permit limits the combined fuel use, for all boilers at a stationary source covered by the general permit, to 1400 million standard cubic feet per 12-month rolling time period. A properly operated low-NOx burner must also be used to meet the requirements of this general permit.

Emissions from propane or natural gas-fired boilers are a result of the burning of fuel and products of incomplete combustion. Annual emission rates of criteria pollutants, toxic air contaminants (TACs) and the federally regulated hazardous air pollutants (HAPs) were calculated using an emission limit of 0.05 pound of Nitrogen oxides (NOx) emitted per million Btu heat input and established emission factors for natural gas as developed by the United States Environmental Protection Agency (USEPA). These annual emissions were based on one or more boilers burning a total of 1400 million standard cubic feet of fuel per 12-month rolling time period and are based on a 12-month rolling time period as determined at the end of each calendar month.

Maximum Expected Emissions

Criteria Pollutants	Annual Emissions (tpy)
Nitrogen Oxides (NOx)	35.0
Carbon Monoxide (CO)	58.8
Particulate (total)	5.3

Maximum Expected Emissions

Criteria Pollutants	Annual Emissions (tpy)
Sulfur Dioxide (SO ₂)	0.4
Volatile Organic Compounds	3.8
Hazardous Air Pollutants (HAPs)	
Benzene	0.0015
Formaldehyde	0.05

AMBIENT AIR IMPACTS

Operation of propane or natural gas-fired boilers under the terms and conditions of the general permit to install will have minimal impact on the ambient air. Dispersion modeling was performed for a large uncontrolled boiler burning 4488 million standard cubic feet of natural gas. The modeling parameters included a 50 foot stack and an exhaust flow of 15,000 actual cubic feet per minute. The following tables summarize the impacts of the maximum expected emission rates from this larger combustion source. The dispersion modeling results show that the Predicted Ambient Impacts (PAI) will not exceed the applicable National Ambient Air Quality Standards (NAAQS) for the criteria pollutants, nor consume more than 80% of the allowable increments specified in the federal regulations.

Criteria Pollutants Dispersion Modeling Results

Pollutant	PSD Increments (µg/m ³)	NAAQS Criteria (µg/m ³)	Averaging time	PAI (µg/m ³)
CO	NA	40,000	1-hour	317.17
CO	NA	10,000	8-hour	170.42
SO ₂	409.6	1300	3-hour	1.86
SO ₂	72.8	365	24-hour	0.90
SO ₂	16.0	80	Annual	0.04
PM-10	24.0	150	24-hour	11.41
PM-10	13.6	50	Annual	0.51
NO _x	20	100	Annual	6.66
Lead	NA	1.5	Quarterly	0.000008

µg/m³= microgram per cubic meter

The dispersion modeling results show that the PAI for emissions of benzene and formaldehyde are also acceptable. Because the general permit limits the combined fuel use for all boilers at a stationary source covered by the general permit, the predicted impacts of benzene and formaldehyde were compared to the Secondary Risk Screening Levels (SRSL) as defined in R 336.1119(c).

Toxic Air Contaminants Dispersion Modeling Results

Pollutant	Acceptable Impact (µg/m ³)	Basis	Averaging Time	PAI (µg/m ³)
Benzene	1.0	Rule 225(2) - SRSL	Annual	0.00014
Formaldehyde	0.8	Rule 225(2) - SRSL	Annual	0.005

The ambient impacts from propane or natural gas-fired boilers operating under the general permit will be considerably less than the table values above because the 12-month rolling time period fuel use is limited to 1400 million standard cubic feet of propane or natural gas and the boiler(s) must use low-NOx burners to control emissions.

REVISIONS

The AQD may revise or update a general permit to install for various reasons, including administrative changes (i.e., addresses, contacts, formatting), clarifying instructions or permit language, or correcting an underlying applicable requirement. These types of minor changes are made without a comment period because they do not affect the applicability criteria or the special conditions of the general permit.

The general permit for propane and natural gas-fired boilers has been revised and/or updated as follows:

- April 20, 2005 - clarified the stack height requirement is from ground level to point of discharge and incorporated the revised General Information form (EQP5727).
- December 2010 – revised format of Special Conditions and updated General Information and Process Information forms (EQP5727 and EQP5783).
- June 2017 – made minor administrative changes to Background document.

If a change or revision will affect the applicability criteria or special conditions of the general permit, EGLE will hold a public comment period to receive comments on the proposed changes. If the applicability criteria or special conditions become less stringent as a result of the change (e.g., a setback requirement relaxed from 1000 feet to 500 feet; a reporting requirement reduced from daily to monthly), sources operating under an existing general permit will be notified of the change and allowed to operate under the revised criteria, which can be downloaded from the internet. A source operating under an existing general permit to install will not be required to meet the new requirements if the applicability criteria or special conditions become more stringent as a result of the change.

The most recent version of the general permit is available on the [AQD General Permits to Install web site](#). All changes to the general permit are summarized in the Background document.