

TECHNICAL FACT SHEET

February 21, 2024

Purpose and Summary

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), is proposing to act on Permit to Install (PTI) application No. APP-2023-0028 from Carmeuse Lime & Stone (Carmeuse). Carmeuse operates an existing facility located at 25 Marion Avenue in River Rouge, Michigan. The permit application is for the proposed use of coke oven gas (COG) as an additional fuel in their existing lime kilns. The COG would be obtained from EES Coke Battery, LLC, where it is currently being flared, and is intended to replace an equivalent amount of coal and/or used oil. No new production equipment is proposed to be installed. Carmeuse is not planning to increase production as a result of using COG and has not requested any changes in their allowed emission limits. The proposed use of COG in the lime kilns is subject to permitting requirements of the Department's Rules for Air Pollution Control. Prior to acting on this application, the AQD is holding a public comment period and an in person public meeting and hearing to allow all interested parties the opportunity to comment on the proposed PTI. All relevant information received during the comment period and hearing will be considered by the decision maker prior to taking final action on the application.

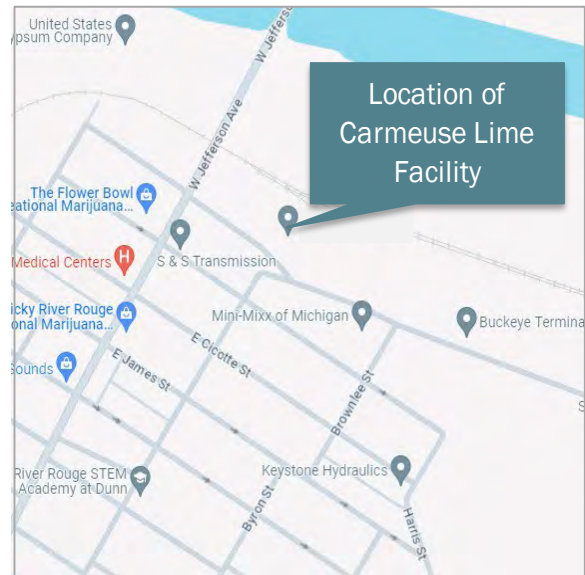


Figure 1: Location of Carmeuse.

Background Information

Carmeuse uses limestone (calcium carbonate) as the primary material to produce lime. The limestone is brought to Carmeuse by ship and is stored in the northern half of the property adjacent to the Rouge River.

The lime (quicklime or calcium oxide) is produced when the limestone is heated to over 1,600°F in two rotary lime kilns. The process basically removes the carbon dioxide portion of the limestone. The kilns, which are 300 feet long, are fired primarily by coal with natural gas used at start up. Other fuels, including glycerin, syngas, and used oil are allowed to be burned in the kilns. The two kilns together have a maximum production capacity of 48 tons of lime product per hour and a design heat input capacity of 368 million British thermal units (MMBTU) per hour.

The exhaust gases from the kilns are sent to a shared positive pressure reverse-air baghouse. The primary purpose of the baghouse is to control particulate matter emissions, but, due to the coating of lime that builds up on the fabric filters, the baghouse also provides some control of other pollutants from the lime production process, in particular sulfur dioxide (SO₂) and hydrogen chloride. These processes operate under Renewable Operating Permit (ROP) No. [MI-ROP-B2169-2013](#) and PTI No. [128-17](#).

Present Air Quality

Carmeuse is located in the portion of Wayne County which is currently meeting all of the National Ambient Air Quality Standards (NAAQS) set by the United States Environmental Protection Agency (USEPA), except for [SO₂](#).

The [other](#) NAAQS are for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone, particulate matter less than or equal to 10 microns in diameter (PM₁₀), and particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}). All of the standards are set at levels designed to protect public health. This includes health protection for sensitive groups like those with heart and lung problems.

The AQD operates 11 [air monitoring stations](#) in Wayne County. There are three air monitoring stations surrounding Carmeuse Lime: the upwind River Rouge station, and the downwind stations of Trinity and Detroit – SW. The Trinity station is approximately one mile from Carmeuse and the Detroit–SW station is approximately two miles from Carmeuse. The Trinity station measures NO₂, metals, CO, PM_{2.5}, SO₂, and black carbon. The Detroit – SW station measures NO₂, metals, PM₁₀, PM_{2.5}, SO₂, black carbon, volatile organic compounds (VOCs) and carbonyls.

Pollutant Emissions

The following table provides the estimated emissions for the proposed project for each criteria pollutant.

Table 1: Project Emissions Summary

Pollutant	Baseline Actual Emissions (tpy) ¹	Projected Actual Emissions (tpy) ²	Excludable Emissions (tpy) ³	Emissions Change (tpy) ⁴	Significant Emission Rate (SER) (tpy)	Emissions Change Greater than SER?
Oxides of Nitrogen (NO _x)	650.7	760.8	100.1	9.8	40	No
CO	84.3	132.8	13.0	35.5	100	No
Particulate Matter (PM)	8.9	34.0	14.7	10.4	25	No
PM ₁₀	40.2	54.2	16.7	-2.7	15	No
PM _{2.5}	40.2	54.2	16.7	-2.7	10	No
SO ₂	772.3	848.4	119.3	-43.2	40	No
VOC	3.2	19.2	0.5	15.4	40	No
Lead	0.00038	0.0096	0.0001	0.0092	10	No

¹ The Baseline Actual Emissions are the annual emissions the facility actually emitted.
² The Projected Actual Emissions are the future emissions the facility could emit based on a production level of 350,558 tons of lime per year using coal and COG as fuel.
³ The Excludable Emissions are the emissions the facility could have emitted during the baseline period based on the highest actual monthly emissions during the baseline period.
⁴ The Emissions Change is the Projected Actual Emissions minus the Baseline Actual Emissions minus the Excludable Emissions.

How to evaluate this table: One thing to consider when looking at the information in this table, which may help with understanding its contents, is to look at whether the project emissions change is greater than the SER. If it is not, then that pollutant is not subject to Prevention of Significant Deterioration (PSD) or Nonattainment (NA) New Source Review (NSR). As shown in Table 1, the emission changes are all less than the SERs, so the project is not subject to PSD or NA NSR.

Key Permit Review Issues

Staff evaluated the proposed project to identify all state rules and federal regulations which are, or may be, applicable. The tables in Appendix 1 summarize these rules and regulations.

- **Minor/Major Modification Determination for Attainment Pollutants**

Carmeuse is in the portion of Wayne County which is currently in attainment for NO_x, CO, PM_{2.5}, PM₁₀, ozone, and lead. Carmeuse is an existing PSD major stationary source. If the source is modified and emissions of any regulated pollutant increase by more than the SER for that pollutant, the change will cause the project to be subject to PSD permitting requirements for that pollutant. The proposed project is not subject to PSD because the emission change for each regulated pollutant is less than the SER for that pollutant. Table 1 summarizes the proposed change in emissions for each regulated pollutant.

- **Minor/Major Modification Determination for Nonattainment Pollutants**

Carmeuse is located in the portion of Wayne County which is currently nonattainment for SO₂ and Carmeuse is a major source for SO₂. An increase in the SO₂ emission rate above the SER would result in the project being subject to major NA NSR review. As shown in Table 1, the proposed change in SO₂ emissions due to the project is less than the SER so the project is not subject NA NSR.

- **Federal NSPS Regulations**

New Source Performance Standards (NSPS) were established under Title 40 of the Code of Federal Regulations (40 CFR) Part 60. The facility is subject to the NSPS for Coal Preparation and Processing Plants, 40 CFR Part 60 Subpart Y. No new NSPS requirements are applicable as a result of the facility using COG as a fuel.

- **Federal NESHAP Regulations**

National Emission Standards for Hazardous Air Pollutants (NESHAP) were established under 40 CFR Part 63. The facility is subject to the NESHAP for Lime Manufacturing Plants, 40 CFR Part 63 Subpart AAAAA. No new NESHAP requirements are applicable as a result of the facility using COG as a fuel.

- **Rule 224 T-BACT Analysis**

Michigan Air Pollution Control Rule 224 requires Best Available Control Technology (BACT) for toxic air contaminants (TACs) which is called T-BACT. However, the requirements of Rule 224 do not apply to Hazardous Air Pollutants (HAPs) or other toxic air contaminants (TACs) that would be controlled by the NESHAP. Since the Carmeuse facility is subject to NESHAP Subpart AAAAA, which requires control for particulate HAPs, particulate TACs are not subject to T-BACT.

In addition, the requirements of Rule 224 do not apply to TACs that are VOCs and are in compliance with VOC BACT. As discussed under "Rule 702 VOC Emissions", the proposed project has been determined to be in compliance with Rule 702 BACT for VOCs, so the TACs that are VOCs are also not subject to Rule 224.

- **Rule 225 Toxics Analysis**

EGLE Rules for Air Pollution Control require the ambient air concentration of TACs be compared against health-based screening levels. AQD staff reviewed Carmeuse’s air quality modeling and evaluation of TAC impacts. The review found that all TACs have impacts less than the established health-based screening levels and will comply with the requirements of Rule 225. Note that Carmeuse included TACs from all of the currently approved fuels as well as TACs from the proposed COG in the evaluation.

- **Rule 702 VOC Emissions**

This rule requires an evaluation of the following four items to determine what will result in the lowest maximum allowable emission rate of VOCs:

- a. BACT or a limit listed by the department on its own initiative
- b. New Source Performance Standards (NSPS)
- c. VOC emission rate specified in another permit
- d. VOC emission rate specified in the Part 6 rules for existing sources

An evaluation of these four items determined that a VOC BACT (702(a)) analysis would dictate the lowest maximum allowable emission rate of VOC from the lime kilns when using COG as fuel. Work practice standards ensuring the efficient combustion of COG was determined to meet Rule 702(a).

- **Criteria Pollutants Modeling Analysis**

Computer dispersion modeling was performed to predict how the increase in air emissions of CO from the use of COG as fuel in the lime kilns would impact the area. The increase in emissions was evaluated against the Significant Impact Levels (SILs). The impacts, shown in Table 2, are below the SILs. The hourly emission rates of all other pollutants for which USEPA has established NAAQS are expected to remain the same or decrease due to the use of COG.

For pollutants with impacts less than the SILs, the emissions are presumed to comply with the respective NAAQS and the PSD increment, and no further analysis is required. The NAAQS are intended to protect public health, including sensitive populations. PSD increments are intended to allow industrial growth in an area, while ensuring that the area will continue to meet the NAAQS.

Table 2 – Carbon Monoxide Significant Impact Level Modeling Results

Pollutant	Averaging Time	PSD Significant Level (µg/m ³)	Predicted Impact (µg/m ³)	Percent of SIL (%)	Additional Modeling?
CO	8-hr	500	3.15	0.6	NO
CO	1-hr	2,000	4.97	0.3	NO

Key Aspects of Draft Permit Conditions

- **Emission Limits (By Pollutant)**

In addition to the emission limits in Carmeuse’s current PTI, No. 128-17, the proposed permit includes the following SO₂ emission limits for the kilns when using COG as a fuel:

- 0.842 pounds of SO₂ per 1,000 standard cubic feet of coke oven gas on an hourly average
- 0.66 pounds of SO₂ per 1,000 standard cubic feet of coke oven gas on a monthly average

- **Usage Limits**

In addition to the material usage limits in Carmeuse's current PTI, No. 128-17, the proposed permit limits the amount of COG that can be used as fuel in the cement kilns to 2,250,000 MMBTU per year on a 12-month rolling time period as determined at the end of each calendar month.

- **Federal Regulations**

The facility is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Lime Manufacturing Plants, 40 CFR Part 63 Subpart AAAAA. The proposed permit specifies that compliance with these limits will constitute compliance with the NESHAP.

- **Maximum Achievable Control Technology (MACT) Limits**

The proposed permit includes MACT emission limits for PM and opacity. The limits are based on a MACT control strategy utilizing a jet pulse baghouse. Proper operation of this control equipment, periodic emission testing, and continuous emission monitoring will serve to make the emission limits enforceable as a practical matter.

- **Emission Control Device Requirements**

As required in PTI No. 128-17, the proposed permit requires Carmeuse to use the existing pulse jet baghouse to control emissions from the kilns.

- **Testing & Monitoring Requirements**

The proposed permit includes the following requirements for the lime kilns:

- Monitor and keep records of the COG usage.
- Verify PM, PM10, PM2.5, NOx and SO₂ emission rates through performance testing while using COG as fuel.
- Continuous Opacity Monitoring System (COMS), as required by the NESHAP.

Conclusion

Based on the analyses conducted to date, the AQD staff concludes that the proposed project would comply with all applicable state and federal air quality requirements. The AQD staff also concludes that this project, as proposed, would not violate the federal NAAQS or the state and federal PSD Increments.

Based on these conclusions, the AQD staff has developed proposed permit terms and conditions which would ensure that the proposed facility design and operation are enforceable, and that sufficient monitoring, recordkeeping, and reporting would be performed by the applicant to determine compliance with these terms and conditions. If the permit application is deemed approvable, the delegated decision maker may determine a need for additional or revised conditions to address issues raised during the public participation process.

If you would like additional information about this proposal, please contact Andrew Drury, AQD, at DruryA@Michigan.gov or 517-648-6663.

**Appendix 1
STATE AIR REGULATIONS**

State Rule	Description of State Air Regulations
R 336.1201	Requires an Air Use Permit for new or modified equipment that emits, or could emit, an air pollutant or contaminant. However, there are other rules that allow smaller emission sources to be installed without a permit (see Rules 336.1279 through 336.1290 below). Rule 336.1201 also states that the Department can add conditions to a permit to assure the air laws are met.
R 336.1205	Outlines the permit conditions that are required by the federal Prevention of Significant Deterioration (PSD) Regulations and/or Section 112 of the Clean Air Act. Also, the same types of conditions are added to their permit when a plant is limiting their air emissions to legally avoid these federal requirements. (See the Federal Regulations table for more details on PSD.)
R 336.1224	New or modified equipment that emits toxic air contaminants must use the Best Available Control Technology for Toxics (T-BACT). The T-BACT review determines what control technology must be applied to the equipment. A T-BACT review considers energy needs, environmental and economic impacts, and other costs. T-BACT may include a change in the raw materials used, the design of the process, or add-on air pollution control equipment. This rule also includes a list of instances where other regulations apply and T-BACT is not required.
R 336.1225 to R 336.1232	The ambient air concentration of each toxic air contaminant emitted from the project must not exceed health-based screening levels. Initial Risk Screening Levels (IRSL) apply to cancer-causing effects of air contaminants and Initial Threshold Screening Levels (ITSL) apply to non-cancer effects of air contaminants. These screening levels, designed to protect public health and the environment, are developed by Air Quality Division toxicologists following methods in the rules and U.S. EPA risk assessment guidance.
R 336.1279 to R 336.1291	These rules list equipment to processes that have very low emissions and do not need to get an Air Use permit. However, these sources must meet all requirements identified in the specific rule and other rules that apply.
R 336.1301	Limits how air emissions are allowed to look at the end of a stack. The color and intensity of the color of the emissions is called opacity.
R 336.1331	The particulate emission limits for certain sources are listed. These limits apply to both new and existing equipment.
R 336.1370	Material collected by air pollution control equipment, such as dust, must be disposed of in a manner, which does not cause more air emissions.
R 336.1401 and R 336.1402	Limit the sulfur dioxide emissions from power plants and other fuel burning equipment.
R 336.1601 to R 336.1651	Volatile organic compounds (VOCs) are a group of chemicals found in such things as paint solvents, degreasing materials, and gasoline. VOCs contribute to the formation of smog. The rules set VOC limits or work practice standards for existing equipment. The limits are based upon Reasonably Available Control Technology (RACT). RACT is required for all equipment listed in Rules 336.1601 through 336.1651.
R 336.1702	New equipment that emits VOCs is required to install the Best Available Control Technology (BACT). The technology is reviewed on a case-by-case basis. The VOC limits and/or work practice standards set for a particular piece of new equipment cannot be less restrictive than the Reasonably Available Control Technology limits for existing equipment outlined in Rules 336.1601 through 336.1651.
R 336.1801	Nitrogen oxide emission limits for larger boilers and stationary internal combustion engines are listed.
R 336.1910	Air pollution control equipment must be installed, maintained, and operated properly.
R 336.1911	When requested by the Department, a facility must develop and submit a malfunction abatement plan (MAP). This plan is to prevent, detect, and correct malfunctions and equipment failures.
R 336.1912	A facility is required to notify the Department if a condition arises which causes emissions that exceed the allowable emission rate in a rule and/or permit.

State Rule	Description of State Air Regulations
R 336.2001 to R 336.2060	Allow the Department to request that a facility test its emissions and to approve the protocol used for these tests.
<p>R 336.2801 to R 336.2804 Prevention of Significant Deterioration (PSD) Regulations</p> <p>Best Available Control Technology (BACT)</p>	<p>The PSD rules allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the National Ambient Air Quality Standards (NAAQS). The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing the BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
R 336.2901 to R 336.2903 and R 336.2908	<p>Applies to new "major stationary sources" and "major modifications" as defined in R 336.2901. These rules contain the permitting requirements for sources located in nonattainment areas that have the potential to emit large amounts of air pollutants. To help the area meet the NAAQS, the applicant must install equipment that achieves the Lowest Achievable Emission Rate (LAER). LAER is the lowest emission rate required by a federal rule, state rule, or by a previously issued construction permit. The applicant must also provide emission offsets, which means the applicant must remove more pollutants from the air than the proposed equipment will emit. This can be done by reducing emissions at other existing facilities.</p> <p>As part of its evaluation, the AQD verifies that no other similar equipment throughout the nation is required to meet a lower emission rate and verifies that proposed emission offsets are permanent and enforceable.</p>

FEDERAL AIR REGULATIONS

Citation	Description of Federal Air Regulations or Requirements
Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)	The United States Environmental Protection Agency has set maximum permissible levels for seven pollutants. These NAAQS are designed to protect the public health of everyone, including the most susceptible individuals, children, the elderly, and those with chronic respiratory ailments. The seven pollutants, called the criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and sulfur dioxide (SO ₂). Portions of Michigan are currently non-attainment for either ozone or SO ₂ . Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.
<p>40 CFR 52.21 – Prevention of Significant Deterioration (PSD) Regulations</p> <p>Best Available Control Technology (BACT)</p>	<p>The PSD regulations allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the NAAQS. The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>

Citation	Description of Federal Air Regulations or Requirements
40 CFR 60 – New Source Performance Standards (NSPS)	The United States Environmental Protection Agency has set national standards for specific sources of pollutants. These New Source Performance Standards (NSPS) apply to new or modified equipment in a particular industrial category. These NSPS set emission limits or work practice standards for over 60 categories of sources.
40 CFR 63— National Emissions Standards for Hazardous Air Pollutants (NESHAP)	The United States Environmental Protection Agency has set national standards for specific sources of pollutants. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) (a.k.a. Maximum Achievable Control Technology (MACT) standards) apply to new or modified equipment in a particular industrial category. These NESHAPs set emission limits or work practice standards for over 100 categories of sources.
Section 112 of the Clean Air Act Maximum Achievable Control Technology (MACT) Section 112g	In the Clean Air Act, Congress listed 189 compounds as Hazardous Air Pollutants (HAPS). For facilities which emit, or could emit, HAPS above a certain level, one of the following two requirements must be met: 1) The United States Environmental Protection Agency has established standards for specific types of sources. These Maximum Achievable Control Technology (MACT) standards are based upon the best-demonstrated control technology or practices found in similar sources. 2) For sources where a MACT standard has not been established, the level of control technology required is determined on a case-by-case basis.

Notes: An “Air Use Permit,” sometimes called a “Permit to Install,” provides permission to emit air contaminants up to certain specified levels. These levels are set by state and federal law, and are set to protect health and welfare. By staying within the levels set by the permit, a facility is operating lawfully, and public health and air quality are protected.

The Air Quality Division does not have the authority to regulate noise, local zoning, property values, off-site truck traffic, or lighting.

These tables list the most frequently applied state and federal regulations. Not all regulations listed may be applicable in each case. Please refer to the draft permit conditions provided to determine which regulations apply.