

TECHNICAL FACT SHEET

June 21, 2023

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-2022-0124 from AmeriTi Manufacturing LLC (AmeriTi). The permit application is a request to modify AmeriTi's existing permit by:

- Increasing the allowed amount of metal processed in the powder manufacturing process.
- Replacing control devices for the powder processes and one of the crushers.
- Removing equipment formerly owned by AmeriTi because it is now owned and operated by a different nearby company.

The proposed project 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 a virtual public hearing to allow all interested parties the opportunity to comment on the proposed PTI. All relevant information received during the comment period and the virtual hearing will be considered by the decision maker prior to taking final action on the application.

Background Information and Proposed Changes

AmeriTi operates an existing titanium processing and manufacturing facility at 19300 Filer Avenue, Detroit, Michigan.

The processes at the facility are described below.

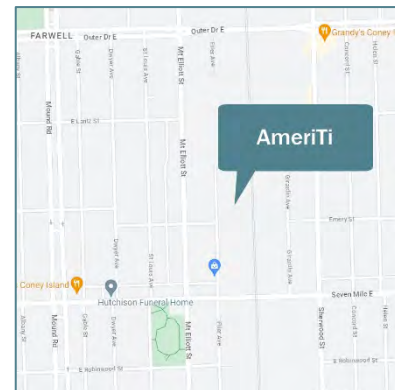


Figure 1: location of AmeriTi

- **Scrap Titanium Processing** – Titanium scrap from outside suppliers is crushed in an underwater crushing process. Since this crushing process is wet, it is not expected to generate particulate emissions and is not included as an emission unit in the permit. The wet crushed titanium chips then move to a water-based washing process to remove residual machining oils and lubricants. Cleaned chips are transferred into rotary dryers (EUDRYER1 and EUDRYER2). Each dryer is equipped with control devices: a cyclone and wet scrubber, in series. This equipment is used to reduce emissions of particulate matter (PM).
- **Ferrotitanium Production** – AmeriTi produces ferrotitanium ingots in two induction crucible furnaces (EUFETIFURN1 and EUFETIFURN2). These furnaces were originally permitted in 1998. Titanium alloys and iron are added to the furnaces, to produce the ingots. Emissions from the furnaces are captured by two large hoods located directly above each furnace, which route emissions to a control device called a baghouse. The baghouse reduces emissions of PM. Once the ferrotitanium ingots cool, they are crushed in a series of crushers (FGFETICRUSHERS). Emissions of PM from the crushers are controlled by wet scrubbers.

This process is being modified by replacing the control device for one of the crushers. See the "Emission Control Device Requirements" section below for more information.

- **Powder Manufacturing** – AmeriTi produces titanium powder (EUPOWDER) using a hydride dehydride (HDH) process. Recycled titanium is loaded into two electrically heated vacuum furnaces where nitrogen, hydrogen, and oxygen are forced into the metal through the hydriding process,

which makes the metal brittle. It is then milled to a specific size and returned to the vacuum furnace to de-hydride the metal. Then further crushing and screening takes place. Exhaust from crushers, blenders, and granulating and screening operations are routed to wet scrubbers to control PM emissions.

AmeriTi also has a powder de-oxidation process (EUPOSS). A portion of the powder produced from EUPOWDER will go through this process, which adds calcium to the titanium and heats the metal so the calcium can absorb oxygen from the titanium. This process has additional milling and blending operations controlled by a wet scrubber.

This process is being modified by increasing the daily limits for allowed metal throughput and replacing two of the control devices for the hydride de-hydride (HDH) process. See the "Emission Control Device Requirements" section below for more information.

- **Metal injection molding and investment casting processes** - The metal injection molding and investment casting processes that used to be a part of AmeriTi are now owned by a new company called Tri-Tech (6401 East 7 Mile Road). Under AQD Policy and Procedure [AQD-011: Stationary Source Determination](#), the policy states if any of the listed criteria do not apply, the entities should be treated as separate stationary sources:
 1. Evaluate the spatial relationship if multiple properties are involved, i.e., are they "adjacent or contiguous?"
 2. Evaluate the "control" relationship, i.e., are the entities "under the control of the same person?"
 3. Determine the industrial grouping relationship.
 - a) Do the entities share the same 2-digit major group code associated with the primary activity?
 - b) If the entities have different major group codes, to what extent do they support the primary activity?

The two companies do not share common ownership, and the two facilities have different North American Industry Classification System (NAICS) codes listed on their applications (which correspond to different Standard Industrial Classification (SIC) codes). As such, the AQD is treating them as a separate stationary sources, issued a new State Registration Number (SRN) to TriTech, and each are operating under their own separate air permit, PTI No. 20-23.

Present Air Quality

AmeriTi is located in the portion of Wayne County, Michigan which is currently meeting all of the National Ambient Air Quality Standards (NAAQS) set by the United States Environmental Protection Agency (USEPA). The air quality standards are for particulate matter less than or equal to 10 microns in diameter (PM10), particulate matter less than or equal to 2.5 microns in diameter (PM2.5), carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), ozone, and lead (Pb). All of the NAAQS are set at levels designed to protect public health, including sensitive populations.

Pollutant Emissions

The following table provides the maximum emissions increase resulting from the proposed project, in tons per year (tpy):

EMISSION SUMMARY

| Pollutant | Project Estimated Emissions (tpy) |
|-----------|-----------------------------------|
| PM | 0.514 |
| PM10 | 0.061 |

| Pollutant | Project Estimated Emissions (tpy) |
|-----------|-----------------------------------|
| PM2.5 | 0.034 |

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**

The facility is an existing Prevention of Significant Deterioration (PSD) minor source. A modification at the facility where the emissions of any regulated pollutant will increase by more than 250 tpy for that pollutant results in the modification being subject to PSD requirements for that pollutant. The proposed project is not subject to PSD because the emission increase for each regulated pollutant is less than 250 tpy.

- Rule 224 TBACT Analysis**

Michigan Air Pollution Control Rule 224 requires Best Available Control Technology (BACT) or T-BACT for toxic air contaminants (TACs). AmeriTi's TAC emissions are in the form of particulate, which are controlled by wet scrubbers. The existing and proposed control equipment fulfills the TBACT requirements. The proposed permit continues to require AmeriTi to implement Malfunction Abatement Plans (MAPs) for the operation and maintenance of this equipment. The proposed permit also has specific requirements for monitoring the control equipment every shift, so that malfunctions in the control equipment can be detected and fixed quickly.

- Rule 225 Toxics Analysis**

EGLE's Air Pollution Control Rules require the ambient air concentration of TACs be compared against their respective health-based screening levels. These screening levels are defined as concentrations measured in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) with specific averaging times of 1-hour, 8-hour, 24-hour, and/or annual averaging. AQD staff reviewed AmeriTi's TAC impacts using air dispersion computer modeling. The model factors potential emission rates, exhaust flow rates, exhaust stack heights, and building dimensions to predict what the ground level concentrations would be under the worst-case meteorological conditions for air quality. These predicted ground level concentrations are compared to the health-based screening levels. The rules also allow for specific circumstances where predicted concentrations above the screening levels may be approved.

Based on the model results, all but two of the predicted concentrations of TACs are below their respective health-based screening levels. The two above their respective screening levels were nickel and hexavalent chromium (Cr VI). As the following paragraphs explain, the predicted impacts of these TACs are however approvable.

- For nickel, the higher impacts are projected to occur on some of the industrial properties surrounding the AmeriTi facility. Rule 225 allows for the predicted ground level concentrations to be 10 times higher on industrial-use properties, for certain TACs, including nickel. The model showed that for nickel the predicted concentration is lower than the allowed screening level on non-industrial properties surrounding the facility and is less than 10 times the allowed screening level on industrial properties surrounding the facility.
- For Cr VI, the higher impacts are projected to occur on both industrial and non-industrial areas surrounding the AmeriTi facility. Rule 225(3)(b) allows for the maximum emissions of Cr VI from the entire facility to be less than or equal to ten times the secondary risk screening level (SRSL) on industrial property or public roadways and the maximum ambient impact on all property that is not industrial or public roadway to be less than or equal to the

SRSL. The Cr VI impacts satisfy these two requirements. Compliance with Rule 225(3)(b) requires the applicant to monitor changes in land use, which is specified in the draft special conditions (SC VII.2 in FGPOWDER).

In addition, AmeriTi is proposing to emit two TACs for which the AQD does not have established health-based screening levels. The two TACs, niobium and zirconium, were evaluated by the AQD Toxics Unit which determined that the predicted ambient impact of these emissions were acceptable for human health and the environment.

- **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

The equipment involved in this project do not emits VOCs, so this rule is not applicable.

Key Aspects of Draft Permit Conditions

This section contains information about portions of the permit used to determine compliance with the air quality rules and regulations.

- **Usage Limits**

The draft permit continues to include daily and annual limits on the amount of metal processed in the titanium powder production process.

According to Policy and Procedure [AQD-029: Establishing Emission Limits for Rule 225](#), anytime Subrules (2) or (3) of Rule 225 are employed, an emission limit must be included in the permit to ensure compliance with the special provisions of these subrules. It also states that non-TAC emission limits, such as production limits and/or operational limits, may also be used as a surrogate for specific limits on TAC(s). For Cr VI and nickel, material limits for the permitted equipment control the amount of TACs and can be used as surrogates for an emission limit.

- **Process/Operational Restrictions**

The proposed permit continues to require AmeriTi to have a malfunction abatement plan (MAP) for all required control devices. The MAP must specify steps AmeriTi will take to avoid malfunctions, including regular inspections, maintenance, and repairs, who is responsible in the event of a malfunction, what replacement parts must be kept on site, what operating variables will be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring. It must also include a description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

In addition to the MAP requirement, the proposed permit includes specific allowable ranges for operating variables for the facility's pollution control devices. These includes the minimum acceptable pressure drop range for each wet scrubber and baghouse, and the minimum flow rate for the scrubbers.

For sources of fugitive dust at the facility, including but not limited to storage, handling, and transport of bulk materials, emissions from roads and lots, and emissions from building vents/openings, the proposed permit continues to require AmeriTi to implement a program for fugitive dust control. The plan must include a detailed description of the best management practices to be utilized to reduce

fugitive dust, such as the use of dust suppressants, engineering controls, and cleaning of lots and roadways.

- **Emission Control Device Requirements**

The draft permit includes the following changes in emission control device requirements:

- The powder crushing terminator, rod mill crusher, additional terminator, two (2) powder crushing attrition mills, and screeners within EUPOWDER would be controlled by a 6,000 cubic feet per minute (cfm) Schubert wet scrubber (different from the 6,000 cfm Schubert in EUDOSS), replacing the existing 5,000 cfm AER HazDust wet scrubber.
- The impact mill, powder crushing attrition mill, powder granulating and screening, and powder blending within EUPOWDER would be controlled by a 4,000 cfm Schubert wet scrubber (different from the 4,000 cfm Schubert in EUFETICRUSH1), replacing the existing 1,000 cfm Tri-Mer 10-M wet scrubber.
- One of the ferrotitanium ingot crushers (EUFETICRUSH1) would be controlled by a 4,000 cfm Schubert wet scrubber (different from the 4,000 cfm Schubert in EUPOWDER), replacing the existing 1,500 cfm Tri-Mer wet scrubber.

- **Reporting**

As mentioned in the Rule 225 section above, Cr VI and nickel TAC emissions passed modeling by considering the impacts which fall on industrial property. Rule 225 allows for the predicted ground level concentrations to be 10 times higher on industrial-use properties. Compliance with Rule 225(3) requires the applicant to monitor changes in land use, which is specified in the draft special conditions (SC VII.2 in FGPOWDER).

Conclusion

Based on the analyses conducted to date, AQD staff concludes that the proposed project would comply with all applicable state and federal air quality requirements.

Based on these conclusions, AQD staff has developed proposed permit terms and conditions which would ensure 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 Marina Ostaszewski, AQD, OstaszewskiM1@Michigan.gov or at 517-648-7995.

**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 336.1702 | 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 336.1910 | 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. |
| 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. |

| State Rule | Description of State Air Regulations |
|---|--|
| <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> |
| <p>R 336.2901 to R 336.2903 and R 336.2908</p> | <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 |
|---|---|
| <p>Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)</p> | <p>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 (SO₂). Portions of Michigan are currently non-attainment for either ozone or SO₂. Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.</p> |
| <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> |
| <p>40 CFR 60 – New Source Performance Standards (NSPS)</p> | <p>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.</p> |

| Citation | Description of Federal Air Regulations or Requirements |
|--|--|
| 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. |

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.