TECHNICAL FACT SHEET

September 12, 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-2024-0037 for Neogen Corporation (Neogen). The permit application is for the proposed installation and operation of a food safety manufacturing facility. The proposed project is subject to the permitting requirements of the Department's Rules for Air Pollution Control and state and federal regulations. Before acting on this application, the AQD is holding a public comment period and a public hearing, if requested in writing, to allow all interested parties the opportunity to comment on the proposed PTI. All relevant information received during the comment period and hearing, if held, will be considered by the decision maker before taking final action on the application.

Proposed Facility and Present Air Quality

Neogen is proposing to install the following equipment to support a food safety manufacturing facility at 720 East Shiawassee Street, Lansing, Michigan (Figure 1):

- Two (2) coating lines used to apply either solvent-based adhesive or water-based media (broth) to a web substrate using a slot-fed knife die to produce food safety products. Air pollutants from the two coating lines will be controlled with a regenerative thermal oxidizer (RTO).
- One mixing and cleaning area to mix the solvent-based adhesive and clean the slot-fed knife die. Air pollutants from mixing and cleaning will be controlled with the same RTO as the coating lines.
- Broth making area where the broth is prepared by mixing microbial growth media, gum powder, and water. The broth making area will be controlled with a HEPA filter.

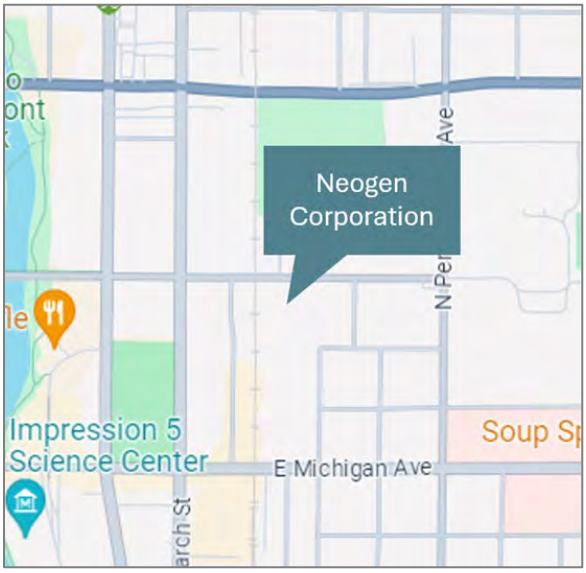

Figure 1: Proposed location of Neogen Corporation

- Two (2) enclosed conversion systems where the coated substrate passes through a fluidized bed of powder to complete a biological reaction. The two enclosed conversion systems will each be controlled by their own HEPA filter.
- Two (2) ethylene oxide (EtO) decontamination units will be controlled with a catalytic oxidizer.
- An existing laboratory that will be relocated to the building with the coating lines.
- Various ancillary equipment including:
  - Six (6) natural gas-fired boilers and water heaters
  - One (1) diesel-fired emergency engine
  - Miscellaneous natural gas-fired air heaters, make-up units, and dehumidifiers.

The facility is proposed to be located in Ingham County, which is 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 (SO_2), nitrogen dioxide (NO_2), ozone, and lead. The NAAQS are set at levels designed to protect public health, including sensitive populations.

The AQD operates an air monitoring station at 815 Filley Street, Lansing. It measures ozone, NO_2, PM2.5, and SO_2. The purpose of an air monitoring station is to assess the regional or area-wide air quality and is not used to determine if a specific source complies with their air permit.

Pollutant Emissions

The proposed facility is requesting a Title V opt-out permit for hazardous air pollutants (HAPs), both individual and aggregate HAPs. This means the facility would not be subject to the Title V requirements. The following table provides the allowed emissions for both hazardous and criteria air pollutants:

Table 1: Allowed Emissions Summary

Pollutant	Projected Emissions (tpy*)
NO_x	38
CO	30
PM	2
PM10	4
PM2.5	4
SO_2	0.2
Volatile Organic Compounds (VOC)	64
Each Individual HAP	<9
Aggregate HAPs	<22.5

*tpy = tons per year

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.

- **Federal NSPS Regulations**
  New Source Performance Standards (NSPS) were established under Title 40 of the Code of Federal Regulations (40 CFR) Part 60. The proposed emergency diesel-fired engine is subject to the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII. Two (2) of the boilers are rated to be greater than 10 Millions of British Thermal Units per hour (MMBTU/hr) and are subject to the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 60 Subpart Dc.

The other natural gas boilers are less than 10 MMBTU/hr and therefore are not subject to this federal regulation.

- **Federal NESHAP Regulations**
  National Emission Standards for Hazardous Air Pollutants (NESHAP) were established under 40 CFR Part 61 or Part 63. The proposed EtO decontamination units are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR Part 63 Subpart O.

  Note some of the references in 40 CFR Part 63 Subpart O are incorrect, and the AQD worked with the USEPA to verify that the correct requirements are in the proposed permit conditions.

- **Rule 224 T-BACT Analysis**
  State of Michigan Rule 224 requires that emissions of toxic air contaminants or TACs do not exceed the maximum allowable emission rate that results from the application of Best Available Control Technology for Toxics (T-BACT). The requirements of Rule 224 do not apply to HAP emissions from any process subject to a federal NESHAP or for any emission units that emits VOCs which are in compliance with Rule 702 VOC BACT. Therefore, HAP emissions from processes subject to 40 CFR Part 63, Subparts O are not subject to Rule 224.

  There are a few non-VOC pollutants that must be addressed.

  Multiple non-VOC TACs will be emitted from the natural gas combustion and the diesel combustion throughout the facility. The natural gas emissions for non-VOCs TACs are less than 1.0 tpy. AQD knowledge of similar instances in the past indicates that control equipment for this relatively low value would not be cost-effective. T-BACT for non-VOC TACs from natural gas combustion equipment is good combustion practices.

- **Rule 225 Toxics Analysis**
  EGLE Rules for Air Pollution Control require the ambient air concentration of TACs to be compared against health-based screening levels.

  AQD staff evaluated Neogen's air quality modeling and proposed TAC impacts. The evaluation found that all TACs show impacts less than the established health-based screening levels and will comply with the requirements of Rule 225.

- **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 BACT analysis performed via Rule 702(a) would dictate the lowest maximum allowable emission rate of VOC from the food safety manufacturing facility.

Coating and Mixing and Cleaning
The VOC emissions from these processes will be controlled by an RTO at 95% destruction efficiency which is considered VOC BACT.

Natural Gas Equipment
The VOC emissions from natural gas combustion are less than 2.0 tpy. AQD knowledge of similar instances in the past indicates that control equipment for this relatively low value would not be cost-effective. VOC BACT from natural gas combustion equipment is good combustion practices.

Diesel Engine
The VOC emissions from diesel combustion are less than 1.0 tpy. . AQD knowledge of similar instances in the past indicates that control equipment for this relatively low value would not be cost-effective. VOC BACT from the diesel engine is good combustion practices

Decontamination Equipment
The VOC emissions from decontamination units are from ethylene oxide. The EtO emissions will be controlled with a catalytic oxidizer. The catalytic oxidizer must have 99.8% destruction efficiency pursuant to NESHAP Subpart O. VOC BACT from the decontamination units is the use of the catalytic oxidizer with a 99.8% destruction efficiency.

Laboratory
The VOC emissions are 2.0 tpy from the laboratory. AQD knowledge of similar instances in the past indicates that control equipment for this relatively low value would not be cost-effective. VOC BACT is no control for the laboratory.

Key Aspects of Proposed Permit Conditions

- **Emission Limits (By Pollutant)**
  The proposed permit includes total facility-wide emission limits for the following pollutants:
  - Ethylene oxide,
  - Each Individual HAP, and
  - Aggregate HAPs (this means the total of all HAPs emitted from the facility).

  The proposed permit includes:
  - VOC and benzene emission limits for FGCOATINGLINE,
  - Ethylene oxide emission limits for FGDECONTAM,
  - VOC emissions for EULAB, and
  - NSPS emission limits for the diesel-fired emergency engine.

- **Usage Limits**
  The proposed permit restricts the following:
  - The types of fuels that may be burned in EUEMENGNE and other natural gas equipment (FGBOILERS and FGNATURALGAS),
  - The amount of ethylene oxide that can be used in FGNESHAPO.

- **Process/Operational Restrictions**
  The proposed permit includes the following process/operational requirements:
  - Control equipment on FGCOATINGLINE must be operating when coating with solvent-based adhesives, the mixing and cleaning area is operating, the broth-making area is operating, and the conversion area is operating.
  - A Preventative Maintenance/Malfunction Abatement Plan must be developed, implemented, and followed for FGCOATING, FGCONVERSION, and FGDECONTAM.

  - Permanent Total Enclosure for each emission unit: coating line, mixing and cleaning area, and around the ethylene oxide group 1 and 2 room air emissions, which requires monitoring emissions to ensure all emissions are captured and sent to the control equipment.

- **Testing & Monitoring Requirements**
  The proposed permit includes the following requirements:
  - Verify VOC emission rates through performance testing for FGCOATING,
  - Install Continuous Emission Monitoring Systems (CEMS) for EtO for FGDECONTAM and FGNESHAPO.

- **Federal Regulations**
  The proposed diesel-fired emergency engine is subject to the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60 Subpart IIII. Permit conditions require compliance with the NSPS required emission limits, operational restrictions, testing or certification, monitoring and recordkeeping, notifications, and reporting.

  The proposed boilers included in FGBOILERS are subject to the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR Part 60 Subpart Dc. Permit conditions require compliance with the NSPS required monitoring and recordkeeping, notifications, and reporting.

  The equipment included in FGNESHAPO of the proposed permit is subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR Part 63 Subpart O. Permit conditions require compliance with the NESHAP required emission limits, operational restrictions, monitoring and recordkeeping, notifications, and reporting.

- **Emission Control Device Requirements**
  The proposed permit includes the following emission control device requirements:
  - FGCOATINGLING must control VOCs with an RTO,
  - FGCONVERSION must control PM, PM10, and PM2.5 with three HEPA filters,
  - FGNESHAPO must control ethylene oxide emissions with a catalytic oxidizer.

Conclusion

Based on the analyses conducted, the proposed project would comply with all applicable state and federal air quality requirements. This project, as proposed, would not violate the federal National Ambient Air Quality Standards or the state and federal requirements.

Based on these analyses, AQD staff have developed proposed permit terms and conditions to ensure the facility process design and operation are enforceable. Additionally, Neogen would perform sufficient monitoring, recordkeeping, and reporting 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, contact Lauren Magirl, AQD, at 517-582-0386 or MagirlL@Michigan.gov.

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 336.1601 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 336.1910	Air pollution control equipment must be installed, maintained, and operated properly.
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.

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 336.1233 are used to ensure the public health is protected from other compounds.
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.