

State Registration Number
N6251

**RENEWABLE OPERATING PERMIT
STAFF REPORT**

ROP Number
MI-ROP-N6251-2020

Cabot Corporation

and

Air Products and Chemicals, Inc.

SRN: N6251

Located at

3603 South Saginaw Road, Midland, Midland County, Michigan 48640

Permit Number: MI-ROP-N6251-2020

Staff Report Date: October 28, 2019

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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RENEWABLE OPERATING PERMIT

OCTOBER 28, 2019 - STAFF REPORT

ROP Number

MI-ROP-N6251-2020

Purpose

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act of 1990 and Michigan's Administrative Rules for Air Pollution Control pursuant to Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source's applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

General Information

| | |
|---|---|
| Stationary Source Mailing Address: | Section 1: Cabot Corporation 3603 South Saginaw Road Midland, Michigan 48640 Section 2: Air Products and Chemicals, Inc. 3603 South Saginaw Road Midland, Michigan 48640 |
| Source Registration Number (SRN): | N6251 |
| North American Industry Classification System (NAICS) Code: | 325188 |
| Number of Stationary Source Sections: | 2 |
| Is Application for a Renewal or Initial Issuance? | Renewal |
| Application Number: | 201700095 |
| Responsible Official: | Section 1: Jeff Kramer, Facility General Manager 989-495-2106 Section 2: William J. Hammarstrom, Vice President - Americas HyCO 610-874-7116 |
| AQD Contact: | Ben Witkopp, Environmental Engineer 989-894-6219 |
| Date Application Received: | July 21, 2017 |
| Date Application Was Administratively Complete: | July 21, 2017 |
| Is Application Shield in Effect? | Yes |
| Date Public Comment Begins: | October 28, 2019 |
| Deadline for Public Comment: | November 27, 2019 |

Source Description

Cabot Corporation (Cabot) operates an amorphous fumed silica manufacturing facility, SCC 3-01-070-99, in Midland Michigan. It is located in the eastern side of Midland County at 3603 South Saginaw Road. The area is dominated by nearby chemical manufacturing facilities. The facility consists of a chlorosilane vapor reactor with associated chlorine abatement technology, product collection filters, product calciner, product conveying and storage. The facility also consists of equipment for process byproduct gas treatment and hydrochloric acid recovery and storage, with associated wastewater collection, treatment and disposal. The chlorine abatement technology can result in CO emissions above the PSD trigger levels. The facility has a capacity of about 18 million lbs/yr of amorphous fumed silica. Air Products and Chemicals, Inc. is located just south of Cabot Corporation on land owned by Cabot Corporation. It functions as a support facility as it supplies hydrogen directly to Cabot Corporation. The renewable operating permit therefore consists of two sections.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2018**.

TOTAL STATIONARY SOURCE EMISSIONS

| Pollutant | Tons per Year |
|------------------------------------|---------------|
| Carbon Monoxide (CO) | 126 |
| Lead (Pb) | |
| Nitrogen Oxides (NO _x) | |
| Particulate Matter (PM) | |
| Sulfur Dioxide (SO ₂) | |
| Volatile Organic Compounds (VOCs) | |

The following table lists Hazardous Air Pollutant emissions as calculated for the year 2018 by Cabot

| Individual Hazardous Air Pollutants (HAPs) ** | Tons per Year |
|---|---------------|
| Hydrogen Chloride | 5.3 |
| Carbon Tetrachloride | 247 pounds |
| Chlorine | 102 pounds |
| Methyl Chloride | 125 pounds |
| Methylene Chloride | 69 pounds |
| Chloroform | 62 pounds |
| Total Hazardous Air Pollutants (HAPs) | 5.6 |

**As listed pursuant to Section 112(b) of the federal Clean Air Act.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

Regulatory Analysis

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is located in Midland County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70, because the potential to emit of carbon monoxide exceeds 100 tons per year.

A second section has been added to the permit to indicate the presence of Air Products and Chemicals, Inc. as part of the single stationary source in addition to Cabot. Air Products and Chemicals, Inc. is deemed a support facility because it supplies hydrogen to Cabot.

Cabot had previously requested a limit on both individual and total HAPS be included in the renewable operating permit as a source wide requirement. This was done to clarify the minor source of HAPs status for the entire stationary source. During the renewal process, the company has reaffirmed the request. It should be noted the limits have not been implemented through New Source Review permitting under Title I authority. The underlying applicable requirement listed is pertinent as the conditions are self-imposed and stricter than required.

FG-SILICA-MFTING-PROCESS at the stationary source was previously felt to be subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR Part 64. It was subsequently treated as such in the ROP. Emission unit EU-HCL-RECOVERY in the flexible group has a control device. Potential pre-control emissions of chlorine are greater than the major source threshold level. However, as stated above, the HAPs limits were not established through permitting requirements under Title I. CAM applies only to those emissions units for which there is an emission limitation or standard in an applicable requirement. In this case, there is no applicable requirement established through Title I. The emission unit does not have a specific chlorine limit. Additionally, an emission limit or standard must apply to where the potential for pre-control emissions to exceed major source thresholds exists. The HAPs limit in the permit applies source wide and is not specific to an emission unit. Therefore, Cabot does not have an emission unit subject to CAM. All reference to CAM requirements were removed during this ROP renewal cycle.

Since the issuance of the previous ROP, Cabot has initiated new source review permitting. Permit to Install (PTI) No. 29-18 was issued to allow the installation of a new adiabatic absorption tower to accommodate new feedstock. The capacity of the hydrogen plant associated with the source was also increased. After the permit was issued, Cabot encountered unforeseen impediments over which it had no control. The problems would have then impacted testing requirements contained in the new permit. Administrative changes were requested, and made, to the permit to facilitate flexibility in testing based upon changes in production schedule. The administrative changes resulted in the issuance of PTI No. 29-18A.

FG-SILICA-MFTING-PROCESS at the stationary source was subject to review under the Prevention of Significant Deterioration regulations of 40 CFR 52.21, because at the time of New Source Review permitting the potential to emit of carbon monoxide was greater than 100 tons per year.

Although EU-MAINTCOLDCLEANER was installed after August 15, 1967, this equipment was exempt from New Source Review (NSR) permitting requirements at the time it was installed. However, future modifications of this equipment may be subject to NSR.

EU-ENGINE at the stationary source is subject to the National Emissions Standards for Hazardous Air Pollutants promulgated in 40 CFR Part 63, Subparts A and ZZZZ (Reciprocating Internal Combustion Engines Area Source MACT). The ROP contains special conditions provided by Cabot Corporation in their application for applicable requirements from 40 CFR Part 63, Subparts A and ZZZZ. The AQD is not delegated the regulatory authority for this area source MACT.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

Please refer to Parts B, C, and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

Source-wide Permit to Install (PTI)

Rule 214a requires the issuance of a Source-wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-N6251-2013 are identified in Appendix 6 of the ROP.

| PTI Number | | | |
|------------|--|--|--|
| 138-97A | | | |

Streamlined/Subsumed Requirements

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

Non-applicable Requirements

In the renewal application Cabot Corporation stated the following regulations were non-applicable requirements for FG-SILICA-MFTING-PROCESS: 40 CFR Part 63, Subpart JJJJJJ, 40 CFR Part 63, Subpart NNNNN, 40 CFR Part 63, Subpart VVVVVV. The AQD has not verified the assessment.

Processes in Application Not Identified in Draft ROP

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

| PTI Exempt Emission Unit ID | Description of PTI Exempt Emission Unit | Rule 212(4) Citation | PTI Exemption Rule Citation |
|-----------------------------|--|----------------------|-----------------------------|
| Section 1: | | | |
| EU-FUELBURN | Calciner; 4 space heaters, all natural gas-fired | Rule 282(b)(i) | Rule 212(4)(c) |
| EU-PROPANETANKS | Propane tanks for forklift | Rule 284(b) | Rule 212 (4)(d) |
| Section 2: | | | |
| EU-14 | Hydrogen reformer furnace | Rule 212(4)(b) | Rule 282(b)(i) |

Draft ROP Terms/Conditions Not Agreed to by Applicant

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

Compliance Status

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

Action taken by the MDEQ, AQD

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is

not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Chris Hare, Bay City District Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.

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DECEMBER 10, 2019 - STAFF REPORT ADDENDUM

Purpose

A Staff Report dated October 28, 2019, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

General Information

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|-----------------------|--|
| Responsible Official: | Section 1: Jeff Kramer, Facility General Manager 989-495-2106 Section 2: William J. Hammarstrom, Vice President - Americas HyCO 610-874-7116 |
| AQD Contact: | Ben Witkopp, Environmental Engineer 989-894-6219 |

Summary of Pertinent Comments

No pertinent comments were received during the 30-day public comment period.

Changes to the October 28, 2019 Draft ROP

No changes were made to the draft ROP.