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W.R. GRACE & CO.-CONN.
PERMIT TO CONSTRUCT APPLICATION

W.R. GRACE & CO.-CONN. HAS REDACTED INFORMATION FROM THIS APPENDIX PURSUANT TO A CLAIM OF CONFIDENTIALITY

RAMBOLL POWER ENGINEERS MEMBER OF WSP

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APPENDICES

1. INTRODUCTION

W.R. Grace & Co.–Conn. (the applicant) owns and operates a facility in Curtis Bay, Baltimore, Maryland. The applicant is requesting a permit to construct at the current facility, which maintains a Part 70 operating permit (Permit No. 24-510-0076) in accordance with the requirements in Title 26, Subtitle 11, Chapter 2.12 (26.11.2.12) of the Code of Maryland Regulations (COMAR). Permitted sources at the facility currently include calciners, dryers, crushers, grinders, belt conveyors, pneumatic conveyors, screening/classifying devices, storage silos, and fabric filters for product collection and air pollution control.

The applicant is proposing to make modifications and add new equipment, which impact the facility's Part 70 operating permit. Specifically, the applicant is proposing to: (1) install a new production line at the Industrial Catalyst Operation Plant, and (2) modify the existing expansion side of the MAGNAPORE® Catalyst Plant.

This application includes the following appendices:

- **Appendix 1.** Construction Permit Application Forms
- **Appendix 2.** Site Location Map, Process Flow Diagram, and Plot Plan
- **Appendix 3.** Detailed Emissions Calculations
- **Appendix 4.** Emission Source and Control Equipment Specification Sheets
- **Appendix 5.** Toxics Modeling Reports
- **Appendix 6.** Maryland EJ Screen Report

2. FACILITY AND PROJECT DESCRIPTION

The W.R. Grace & Co.'s Grace Curtis Bay facility is located at 5500 Chemical Road, Baltimore, Maryland (herein referred to as the "Facility," or "Grace"), and the facility currently operates under a Part 70 operating permit (Permit No. 24-510-0076) most recently issued on September 1, 2019, by the Maryland Department of the Environment (MDE). Grace submitted a timely Part 70 / Title V renewal application for its permit expiring August 31, 2024, which MDE received on August 31, 2023, so the site continues to operate under the existing permit until the renewal is issued.

Existing emissions sources at the Facility consist of calciners, dryers, crushers, grinders, belt conveyors, pneumatic conveyors, screening/classifying devices, storage silos, and fabric filters for product collection and air pollution control located throughout. Grace is a multi-product specialty inorganic chemicals manufacturing facility, yielding silica-based and alumina-based products. Although Grace operates many plants at the Facility, only the Industrial Catalyst Operation (ICO) and the MAGNAPORE® Catalyst (MAG/MGX) Plants are relevant to this application. Currently, at the ICO Plant, Grace manufactures silica support products, and at the MAG/MGX Plant, Grace manufactures MAGNAPORE® products, a polymerization catalyst.

At the ICO Plant, Grace will install a new production line (herein referred to as "ICO Line 3") to meet projected growth of silica supports.

At the MAGNAPORE® Catalyst Plant, Grace will modify the expansion side (MGX) of the plant to increase production capacity in order to meet increased customer demands. The MAGNAPORE® Catalyst Plant consists of two plants: the original manufacturing facility constructed in 1980 (MAG), and an expansion manufacturing facility constructed in 1990 (MGX). The proposed modifications herein will affect both the MAG and MGX facilities as delineated below in **Section 2.2**. Grace proposes to implement these modifications through this Permit to Construct application.

Given the emissions associated with the proposed projects, the facility will continue to be classified as a major source under the Clean Air Act. However, the entire project does not qualify as a major modification within New Source Review (NSR) construction permitting, which is demonstrated in this application. Grace requests that MDE issue a Permit to Construct to reflect the proposed modifications below.

The following sections describe the proposed projects in further detail. A site location map, a process flow diagram, and a plot plan are included in **Appendix 2**.

2.1 ICO Line 3

The ICO plant currently consists of two lines, identified as ICO East Line and ICO West Line. Grace will be constructing a new production line, ICO Line 3, which will be similar to the existing ICO West production line. There are a few key distinctions between the ICO West Line and ICO Line 3 production lines. First, ICO Line 3 will not have the capability to add chromium. Second, there will not be a sand mill. Lastly, instead of a set of screens and air classifiers equipped to ICO West Line, Grace will utilize a coarse classifier. A fines classifier will be installed in the ICO Line 3, similar to ICO West Line. The secondary coarse and fine classifiers installed in the ICO West Line will not be replicated in the ICO Line 3. ICO Line 3 will utilize existing silos and truck-loading equipment that are part of the ICO West unit.

The new emission units and inherent controls units at ICO Line 3 will consist of:

- one (1) mill feed tank (ET-30102),
- two (2) Line 3 mills (EM-30702, EM-30712),
- one (1) mill receiver tank (ET-30103),
- one (1) spray dryer feed tank (ET-30104),
- one (1) Line 3 spray dryer (EST-35801), with a spray dryer cyclone (EC-35601) and baghouse (EBH-35601),
- one (1) coarse classifier feed hopper (EV-35114), with a bin vent (EBV-35614),
- one (1) coarse classifier (ECL-35704), with a coarse classifier baghouse (EBH-35604) ,
- one (1) coarse sacking station (ES-35604),
- one (1) fines classifier feed hopper (EV-35115), with a bin vent (EBV-35615),
- one (1) fines classifier (ECL-35705), with a fines classifier baghouse (EBH-35605),
- one (1) fines sacking station (ES-35605),
- one (1) finished product packaging silo (EV-35125), with a bin vent (EBV-35606),
- two (2) drum packaging stations (ES-35606, ES-35607),
- one (1) sack filling station (ES-35608),
- one (1) fugitive dust collector with a baghouse (EBH-35671),
- one (1) central vacuum system with a baghouse (EBH-35680), and
- one (1) indoor emissions via building vents.

The new emission points at ICO Line 3 will consist of:

- ICO-130: Line 3 spray dryer (EST-35801) with a spray dryer cyclone (EC-35601) and baghouse (EBH-35601),
- ICO-131: Coarse classifier (ECL-35704) with a coarse classifier baghouse (EBH-35604), fines classifier (ECL-35705) with a fines classifier baghouse (EBH-35605), and cartridge filter (EBH-35670),
- ICO-132: Finished product packaging silo (EV-35125) with a bin vent (EBV-35606),
- ICO-133: Fugitive dust collector with a baghouse (EBH-35671),
- ICO-134: Central vacuum system with a baghouse (EBH-35680), and
- ICO-135: Indoor emissions via building vents.

In addition to the inherent control devices which are used for material recovery, Grace is installing a single cartridge filter (EBH-35670) controlling the coarse classifier and fines classifier. Additionally, as part of the ICO Line 3 project, Grace will replace two (2) existing hammermills (H-7701S, H-7701N) that are shared between all the ICO Lines. These two hammermills' emissions will be routed to the existing stack ICO-60

The emission units at ICO Line 3 that emit fugitives, and whose emissions are captured by the fugitive dust collector (EBH-35671) will consist of:

- one (1) coarse sacking station (ES-35604),
- one (1) fines sacking station (ES-35605),

The emission units at ICO Line 3 that emit indoors, and whose emissions are captured by indoor emissions via building vents, will consist of:

- one (1) mill feed tank (ET-30102),
- two (2) Line 3 mills (EM-30702, EM-30712),
- one (1) mill receiver tank (ET-30103),
- one (1) spray dryer feed tank (ET-30104),

- one (1) coarse classifier feed hopper (EV-35114), with a bin vent (EBV-35614), and
- one (1) fines classifier feed hopper (EV-35115), with a bin vent (EBV-35615).

Existing emission units and controls units, which include the hydrogel hopper (V-1101) with two (2) cartridge collectors (BH2209N, BH2209S) and hammer mill slurry tank (T-1102) which will be shared across all the ICO lines, and the classifier (M-716) with a classifier ultra fine cyclone (C-216) and a cartridge collector (BH-216), both truck silos (T-184, T-185) with their respective bin vents (BV-284, BV-285), and the Bulk Truck Portable Fugitive Product Collector with its cartridge collector (BH-218) will be shared between the ICO West Line and the new ICO Line 3. The increase in production from ICO Line 3 is anticipated to lead to a slight increase in actual emissions from these existing units but will not affect the potential emissions from them. Accordingly, due to the increased uptime, projected actual emissions across the shared equipment in the ICO lines have been calculated based on a maximum of 365 operational days per year.

2.2 MAGNAPORE® Catalyst Plant (MAG / MGX) Modifications

The existing MAGNAPORE® Catalyst Plant currently uses a total of nineteen (19) washpots which are allocated between MAG and MGX, to complete the gel washing step that is integral to production of the MAGNAPORE® catalyst. This MGX Plant modification will install four (4) new washpots and their associated wash solution, and utility supply and return manifolds in the MGX gel washing area. This modification also installs support infrastructure in the MGX gel washing area to accommodate the storage of 12-16 more wash baskets. These changes will increase production capacity of the MAG / MGX facilities by approximately 245 metric tons (mT) per year.

3. EMISSIONS CALCULATIONS

This section summarizes the emission calculation methodologies for the emission sources that comprise the proposed new ICO Line 3 and MAGNAPORE® Projects. A more detailed set of documented emission calculations is presented in **Appendix 3** of the application. Emission source and control equipment specification sheets are presented in **Appendix 4** of the application.

3.1 Emission Calculation Methodology

When calculating project-related emissions increases (referred to as "project emissions increase" or PEI), different methodologies are applied depending on whether the emissions unit is new or existing. Therefore, it is crucial to distinguish whether a source impacted by the proposed project is classified as a new or existing emissions unit:

(i) A new emissions unit is any emissions unit that is newly constructed and that has existed for less than two years from the date such emissions unit first operated.[1]

(ii) An existing emissions unit is any emissions unit that does not meet the requirements in paragraph 40 CFR §52.21(b)(7)(i) of this section (i.e., is not a "new emissions unit").[2] A replacement unit, as defined in paragraph 40 CFR §52.21(b)(33) of this section, is an existing emissions unit.

Since the Facility is an existing major stationary source for purposes of NSR, the full PSD and NSR permitting requirements will apply to each regulated pollutant if the proposed project meets the definition of a major modification. A major modification is a change to a major stationary source that results in both a significant emissions increase and a significant net emissions increase, per 40 CFR §52.21(b)(2)(i).

For PSD, and pursuant to 40 CFR 52.21(b)(40), a significant emissions increase, for a regulated NSR pollutant, refers to an emissions increase that is significant as defined in 40 CFR §52.21(b)(23) (i.e., the significant emission rate [SER]) for that pollutant. For pollutants with a SER, the net creditable emission increases and decreases over the contemporaneous period, as defined in 40 CFR §52.21(b)(3), are estimated, and the net emissions increase is calculated for comparison with the SERs.

Step 1 is referred to as the 'project emissions increase (PEI)' analysis, as it accounts only for emissions directly related to the proposed project. If the estimated emission increases from Step 1 exceed the major modification thresholds, then a Step 2 analysis is performed, commonly referred to as netting analysis. The netting analysis includes all projects within the contemporaneous period for which creditable emissions increases or decreases occurred.

3.1.1 Step 1: Components of Project Emission Increases

The project emissions increase is the difference between a future emission level (either potential emissions or projected-actual-emissions (PAE)) and the baseline actual emissions (BAE).

[1] 40 CFR §52.21(b)(7)(i)
[2] 40 CFR §52.21(b)(7)(ii)

3.1.1.1 Potential Emissions

For new emission units, the calculated project emissions increase is the annual potential emission rate of the unit considering inherent physical and operational constraints on the production capacity of the equipment and any federally enforceable emissions/operating limitations, where applicable.

3.1.1.2 Projected Actual Emissions (PAE)

Projected Actual Emissions, as defined by 40 CFR §52.21(b)(41), refer to the maximum annual rate in tons per year at which an existing emissions unit is projected to emit a regulated NSR pollutant in within 5 years (12-month period) of resuming regular operation, or within 10 years if the project increases the unit's design capacity or potential to emit and results in a significant emissions or net emissions increase.

For the purpose of the project, PAE is calculated by dividing the maximum potential operating days a unit could operate by the average of 24-month operating days (2021 and 2022). This resultant ratio is then multiplied with the baseline emissions of the existing units to calculate the PAE.

3.1.1.3 Baseline Actual Emissions (BAE)

For existing emission units being modified or affected, Baseline Actual Emissions (BAE) are determined following the definitions outlined in 40 CFR §52.21(b)(48)(i) and (ii) and COMAR 26.11.17.01(3). These regulations establish how to calculate emissions increases associated with the proposed project based on historical emissions data.

For other existing emissions units, BAE is similarly calculated using the average annual emissions rate during any consecutive 24-month period within the five years preceding the application submission. However, the Department may allow the use of an alternative 24-month period from the past 10 years if it is shown to more accurately reflect normal operations. This provision is detailed in COMAR 26.11.17.01(3)(c).

For any new emissions unit included in the project scope, the BAE is set to zero. The baseline period can be selected individually for each pollutant; however, once chosen for a specific pollutant, the same baseline period must be applied to all new, modified, and associated emissions units within the project scope. The selection process involves reviewing historical production and emissions data from the past five years to identify a representative 24-month rolling average period of production or annual emissions.

Since the proposed project at the Facility is targeted for a Q1 2025 application submittal date, the 5-year period immediately preceding this date begins Q1 2020. Thus, for the project, the baseline period selected for the analysis for each pollutant is the 24-month period ending December 2022 (i.e., January 2021 to December 2022), which has the highest average emissions."

3.1.2 Step 2: Project Netting

For projects such as ICO Line 3, which includes both existing and new emission units, a hybrid approach can be taken when the Project Netting is calculated by summing the total Potential to Emit (PTE) from new units and the PAE from existing units, then subtracting the BAE of existing units. For new emission units, the PAE and the BAE is typically zero tons per year (tpy). Within the ICO Line 3 project, modified emission units are treated as new emission units.

$$Project\ Netting\colon\ Total\ PTE\ +\ PAE\ -\ BAE$$

For projects where existing emission units are utilized more, such as the increased utilization of existing assets in the Magnapore unit, the projected actual emissions for all existing emission units have been recalculated to reflect the increased production resulting from the project changes. This project entails no potential emissions as it does not involve adding new emission units. The net project emissions are determined by subtracting the BAE from the PAE.

$$Project\ Netting\colon\ PAE\ -\ BAE$$

3.2 ICO Line 3

The new ICO Line 3 production line at Curtis Bay will largely be a replica of the existing ICO West production unit, with a few key exceptions as described in **Section 2.1**. ICO Line 3 consists of a few ICO West Line emission units that will be integrated into the ICO Line 3 process line. For the new emission units, potential emissions were calculated based on the design and production capacity, and for the existing emissions units from the ICO West line, PAE and BAE are calculated as discussed in **Section 3.1**.

3.2.1 Process Units

The new process units Line 3 Spray Dryer (EST-35801), Coarse Classifier (ECL-35704), Fines Classifier (ECL-35705), and Finished Product Packaging Silo (EV-35125), Fugitive Dust Collector (EBH-35671), and Central Vacuum System (EBH-35680) have respective inherent control devices and stacks. However, indoor emissions via building vents do not have such control measures. The particulate matter (PM) and PM with an aerodynamic diameter less than ten micrometers and less than two and one-half micrometers, respectively (PM_{10} and $PM_{2.5}$), emissions have been calculated via the maximum design air flow rate of the blower and the outlet grain loading for these emission units. $PM_{2.5}$ emissions are assumed to be 95% of PM/PM_{10} emissions.

Sample calculation:

$$Short\ Term\ PM\ and\ PM_{10}\ Emissions\ \left(\frac{lb}{day}\right) = Design\ Air\ Flowrate\ (acfm)\ \times\ Outlet\ Grain\ Loading\ \left(\frac{grains}{acfm}\right) \times \frac{1lb}{7{,}000grains} \times \frac{60\ minutes}{1\ hour} \times \frac{24\ hours}{1\ day}$$

$$Long\ Term\ PM\ and\ PM_{10}\ Emissions\ \left(\frac{ton}{year}\right) = Design\ Air\ Flowrate\ (acfm)\ \times\ Outlet\ Grain\ Loading\ \left(\frac{gr}{acfm}\right) \times \frac{1lb}{7{,}000grains} \times \frac{60\ minutes}{1\ hour} \times \frac{24\ hours}{1\ day} \times\ Annual\ No.of\ Days\ (365\ days/year)\ \div\ \frac{1\ ton}{2{,}000\ lbs}$$

The Line 3 Spray Dryer (EST-35801) is equipped with an inherent control device, the Spray Dryer Cyclone (EC-35601) and Baghouse (EBH-35601) — which also serve as recovery devices. This device achieves a fine grain loading of 0.002 grains per actual cubic foot per minute (gr/acfm). Additionally, an external control device — a single Cartridge Filter with a 99.99% control efficiency — is equipped to control emissions from both the Coarse Classifier (ECL-35704) and Fines Classifier (ECL-35705).

Additional new emission units in ICO Line 3, which emit fugitive emissions, are controlled by a Fugitive Dust Collector equipped with a baghouse (EBH-35671), and those new emission units that release indoor emissions will be considered fugitive emissions discharged via building vents (ICO-135). The Hammer Mills (H-7701S and H-7701N) discharge their fugitive emissions through the existing stack

ICO-60. Also, note that the Hammer Mills in ICO Line 3 are replacing the existing Hammer Mills in ICO West Line. Since they are not identical replacements, they are considered new emissions units for the purpose of the project.

For those units repurposed from the existing ICO West Line — Hydrogel Hopper (V-1101), Hammer Mill Slurry Tank (T-1102), Classifier (M-716), Truck Silos (T-184 and T-185), and Bulk Truck Portable Fugitive Product Collector — their PAE and BAE are calculated as explained in **Section 3.1** to integrate them into the ICO Line 3 process, assuming a maximum of 365 operating days. The detailed emission calculation is provided in **Appendix 3**. The fugitive emissions from the existing Hammer Mill Slurry Tank (T-1102) are directed to the existing ICO-46 stack in the ICO West Line. The emissions from Bulk Truck Portable Fugitive Product Collector (BH-218), which are indoor emissions, will be vented through ICO-51 and ultimately discharged via the building vent ICO-47 in the ICO West Line. Indoor emissions are considered as insignificant activities.

3.2.2 Combustion Unit

ICO Line 3 includes a new Spray Dryer with a burner rated at a 11 MMBtu/hr. The criteria pollutants and greenhouse gas emissions from the combustion unit are calculated as discussed below.

3.2.2.1 Criteria Pollutants

Potential emissions of PM, PM_{10}, $PM_{2.5}$, sulfur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb) are estimated using reference emission factors for natural gas combustion provided in the United States Environmental Protection Agency (USEPA's) Compilation of Air Pollutant Emission Factors reference document (i.e., AP-42; 5th Edition). The spray dryer burner is equipped with an ultra-low NOx burner, which has a vendor-specific NO_x emission rate of 10 ppm at 3% O_2. For this application, reference emission factors are taken from Table 1.4.1 and Table 1.4.2 found in Chapter 1.4 for Natural Gas Combustion (July 1998).

3.2.2.2 Greenhouse Gases (GHGs)

Potential emissions of methane (CH_4), carbon dioxide (CO_2) and nitrous oxide (N_2O) are estimated using reference emission factors provided in Table C-1 and C-2 of Subpart C to USEPA's Mandatory Reporting Rule (i.e., 40 CFR Part 98) corresponding to natural gas combustion operations. Potential carbon dioxide equivalent (CO_2e) emissions are estimated using the above-referenced emission factors in concert with the appropriate global warming potentials (GWP) for CO_2, CH_4, and N_2O provided in 40 CFR 98, Subpart A, Table A-1.

3.3 MAGNAPORE®

The production capacity of the MAG/MGX unit will increase with the addition of four new open-top, low vapor pressure washpots and is considered a modification to an existing process unit. To support the additional production at MAG/MGX, the existing process boilers (POW) will be required to generate additional steam.

The Project Netting was determined by calculating the difference between the PAE for the existing emission units, assuming a maximum of 365 operating days, increased production capacity, and increased steam demand, and the BAE, which is the average emissions from 2021 and 2022 for MAG/MGX process equipment and POW combustion related emissions attributable to supplying steam to MAG/MGX.

Production capacity was calculated using a material balance, taking into consideration batch timing and finished product yield and can be found in **Appendix 3**.

Process related emissions from MAG/MGX are calculated using a combination of the calculated production capacity and maximum operating days.

Combustion related emissions from MAG/MGX are calculated using the total maximum burner capacity. Potential emissions of PM, PM_{10}, $PM_{2.5}$, sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb) are estimated using reference emission factors for natural gas combustion provided in the United States Environmental Protection Agency (USEPA's) Compilation of Air Pollutant Emission Factors reference document (i.e., AP-42; 5th Edition). For this application, reference emission factors are taken from Table 1.4.1 and Table 1.4.2 found in Chapter 1.4 for Natural Gas Combustion (July 1998).

Combustion related emissions from the existing boilers (POW) to support additional steam demand from MAG/MGX are also considered. Utilizing the same time period between 2021 and 2022 , the average ratio of MAG/MGX steam usage to annual production volumes as well as the average ratio of natural gas usage to steam production at POW are used to project the increase in natural gas usage at POW. Similar to the MAG/MGX criteria pollutant emissions, AP-42 reference emissions factors were used. Detailed calculations can be found in **Appendix 3**.

For both MAG/MGX and POW, potential emissions of methane (CH_4), carbon dioxide (CO_2) and nitrous oxide (N_2O) are estimated using reference emission factors provided in Table C-1 and C-2 of Subpart C to USEPA's Mandatory Reporting Rule (i.e., 40 CFR Part 98) corresponding to natural gas combustion operations. Potential carbon dioxide equivalent (CO_2e) emissions are estimated using the above-referenced emission factors in concert with the appropriate global warming potentials (GWP) for CO_2, CH_4, and N_2O provided in 40 CFR 98, Subpart A, Table A-1.

3.4 Site-Wide Emissions Summary

A detailed project netting analysis, including potential emissions for the new units, baseline actual emissions, and projected actual emissions for existing units, is provided in **Appendix 3**. A summary comparing the project's emission increases to the Major Modification SER is presented in **Table 1**.

Table 1. Project Emissions Increases Compared with PSD Significant Emission Rates

Pollutant	Step 1-Project Emission Increases (tpy)	Major Modification Significant Emission Rate (tpy)	Major Permitting Triggered (tpy)	Step 2-Project Netting (tpy)	Major Permitting Triggered (tpy)
NO_X	3.75	25	**No**	1.70	**No**
CO	9.26	100	**No**	5.83	**No**
PM	9.47	25	**No**	2.48	**No**
PM_{10}	9.47	15	**No**	2.48	**No**
$PM_{2.5}$	9.04	10	**No**	2.38	**No**
SO_2	0.07	40	**No**	0.04	**No**
VOC	1.85	25	**No**	0.43	**No**
Pb	5.53E-05	0.6	**No**	3.47E-05	**No**
CO_2e	14,519	-	**N/A**	8,843	**N/A**

4. TOXIC AIR POLLUTANT ANALYSES

Projects in the ICO and MAG/MGX Plants change the process emissions of a Class II toxic air pollutant, ammonia, and are therefore subject to the requirements under COMAR 26.11.15 and COMAR 26.11.16. Grace is obligated to demonstrate that the updated ammonia emissions from the facility will not unreasonably endanger human health. This requirement is satisfied with a screening analysis to evaluate potential toxic effects other than cancer in line with MDE requirements.

An air toxics modeling protocol was submitted to MDE on November 10, 2024. MDE provided comments to Grace about the air toxics modeling protocol on November 22, 2024. The air toxics compliance demonstration for ammonia, prepared by POWER Engineers, can be found in **Appendix 5**.

Additionally, modifications in the MAG/MGX Plant may impact hexanol emissions, also a Class II TAP. Since the applicable screening level for hexanol was updated since the last TAPs compliance demonstration was performed, Grace is obligated to demonstrate that the proposed hexanol emissions from the facility will not unreasonably endanger human health. This requirement is also satisfied with a screening analysis to evaluate potential toxic effects other than cancer in line with MDE requirements.

An air toxics compliance demonstration for hexanol, prepared by POWER Engineers, can also be found in **Appendix 5**.

5. FEDERAL AND STATE REGULATORY APPLICABILITY

The following sections outline the federal and state air regulations potentially applicable to the proposed project. Specifically, potentially applicable requirements under New Source Review (NSR), Title V of the Clean Air Act Amendments, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), Compliance Assurance Monitoring (CAM), and COMAR Title 26, Subtitle 11 are discussed herein.

5.1 New Source Review

The federal NSR permitting program regulates emissions from major stationary sources of regulated air pollutants. The federal NSR program is comprised of two elements: Nonattainment NSR (NNSR) and PSD. NNSR permitting is applicable in areas that have been designated as nonattainment for a regulated pollutant under the National Ambient Air Quality Standards (NAAQS). PSD permitting applies in areas that have been designated as attainment or unclassifiable. The Curtis Bay facility is located in Baltimore City, which has been designated as a moderate nonattainment area for 2008 8-hour ozone, a serious nonattainment area for 2015 8-hour ozone, and attainment or unclassifiable for all other criteria pollutants.[3] Ozone NNSR is attributable to emissions of NO_X and VOC, which are precursors to ground-level ozone formation. As such, NNSR is the relevant NSR permitting program for ozone and PSD is the relevant NSR permitting program for all other criteria pollutants.

The ozone NNSR major source thresholds from NO_X and VOC are 25 tpy each for sources in Baltimore City. The PSD major source threshold for all other regulated criteria pollutants is 100 tpy, since chemical manufacturing facilities are on the list of 28 sources for which there is a lower PSD major source threshold.[4] The Facility is classified as an existing major stationary source for NSR. If the proposed project meets the definition of a major modification, the full PSD and NNSR permitting requirements will apply to that pollutant. In Baltimore City, the significant emission rates are 25 tpy for NO_X and VOC, 10 tpy for $PM_{2.5}$, 40 tpy for SO_2, 0.6 tpy for lead, 15 tpy for PM_{10} and 100 tpy for CO. To simplify the permitting process, Grace will evaluate the ICO, MAG, and MGX Plants combined potential emissions to compare with the major modification thresholds. The combined project net emissions for this facility, shown in **Table 1**, are less than the NNSR major modification thresholds for NO_X and VOC and are less than the PSD major modification thresholds for all other regulated pollutants. As such, the facility will not trigger PSD or NNSR permitting.

5.2 Title V Operating Permits

The Title V operating permits program, promulgated in 40 CFR 70, requires a facility to obtain a Title V operating permit if it has potential emissions of a regulated criteria pollutant exceeding 100 tpy, of any single HAP exceeding 10 tpy, or of the aggregate of all HAP exceeding 25 tpy.

This facility is required to obtain a Title V operating permit due to its status as an NSR major source. Grace was issued a Title V operating permit in September 2019 and reapplied for another Title V operating permit which (application received by MDE on August 31, 2023).

[3] Maryland Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available at: https://www3.epa.gov/airquality/greenbook/anayo_md.html
[4] 40 CFR 52.21(b)(1)(i)(a)

5.3 New Source Performance Standards

NSPS, promulgated in 40 CFR 60, provide emissions standards for criteria pollutant emissions from new, modified, and reconstructed sources. NSPS standards are developed for particular industrial source categories, and applicability can be readily ascertained based on the source category covered.

There are no NSPS regulations that apply to the proposed project at the Curtis Bay facility. 40 CFR Subpart LL (Metallic Mineral Processing Plants) does not apply because Grace purchases previously processed materials and does not handle raw ores. Lastly, 40 CFR 60 Subpart Dc (Steam Generating Units) does not apply to Grace's permanent boilers because they were installed prior to the applicability date of the regulation. While the newer rental boiler (POW-06) recently became subject to 40 CFR 60 Subpart Dc, this project does not affect its applicability to nor its compliance with that rule.

5.4 National Emission Standards for Hazardous Air Pollutants

The NESHAP, promulgated in 40 CFR 63, regulate emissions of HAPs from specific source categories. A facility that has potential emissions exceeding 10 tpy for any individual HAP and/or emissions exceeding 25 tpy for the sum of all HAPs is classified as a major source of HAP emissions. A facility that is not a major source of HAPs is classified as an area source.

As previously established, the combined potential emissions of HAPs from the ICO, MAG, and MGX Plants are less than the HAP major source thresholds. As such, the Facility is considered an *area source* of HAP emissions. The following sections discuss the potentially applicable NESHAP standards to the proposed project at the multi-product specialty inorganic chemicals manufacturing facility.

5.4.1 40 CFR 63 Subpart A – General Provisions

NESHAP Subpart A provides generally applicable requirements for testing, monitoring, notifications, and recordkeeping. Any source that is subject to another subpart under 40 CFR 63 is also subject to Subpart A, unless otherwise stated in the specific subpart.

5.4.2 40 CFR 63 Subpart VVVVVV – Chemical Manufacturing Area Sources

Subpart VVVVVV (6V), Chemical Manufacturing Area Sources (CMAS), applies to new and existing chemical manufacturing process units (CMPUs) that use or produce at least one of the HAPs listed in Table 1 of the rule in concentrations exceeding the thresholds listed in 40 CFR 63.11494(a)(2) and that are located at an area source of HAPs.[5]

The regulation defines a CMPU as follows:[6]

> *A CMPU includes all process vessels, equipment, and activities necessary to operate a chemical manufacturing process that produces a material or a family of materials described by North American Industry Classification System (NAICS) code 325. A CMPU consists of one or more unit operations and any associated recovery devices. A CMPU also includes each storage tank, transfer operation, surge control vessel, and bottoms receiver associated with the production of such NAICS code 325 materials.*

The MAGNAPORE® manufacturing process meets the definition of a CMPU, as it produces via chemical reaction a product described under NAICS code 325. The CMPU uses chromium nitrate as a feedstock to produce MAGNAPORE®. Chromium compounds are a listed Table 1 HAP and are present in the

[5] 40 CFR 63.11494(a)
[6] 40 CFR 63.11494(b)

chromium nitrate feedstock in an amount exceeding 0.1% by weight. As such, the MAGNAPORE® manufacturing process meets the definition of an affected source under CMAS.

The silica-based manufacturing process in ICO Line 3 meets the definition of a CMPU, as it produces via chemical reaction a product described under NAICS code 325. However, ICO Line 3 will not be using any feedstocks containing chromium. Thus, ICO Line 3 is not subject to 40 CFR 63 Subpart VVVVVV.

The proposed modified MAGNAPORE® production line will be subject to the same requirements under CMAS as the facility's existing operations. Specifically, Grace will be required to perform quarterly inspections of process vessels and equipment in metal HAP service to demonstrate that the process vessels and equipment are sound and free of leaks.[7] The management practice in 40 CFR 63.11495(a)(1) (process vessel must be equipped with a cover or lid that must be closed at all times) will be applicable, since the process will only contain metal HAPs (chromium compounds) in a powder form that will result in particulate emissions of metal HAP which is controlled by baghouse.

Grace is not required to submit a new Initial Notification or Notification of Compliance Status (NOCS) for the modified production line, as the modified line will be part of the existing MAGNAPORE® manufacturing process CMPU (i.e., this is not a new CMPU), and the process changes will not affect the facility's compliance demonstration.[8] Grace will continue to be subject to the requirement to submit semiannual compliance reports containing the information specified in 40 CFR 63.11501(d)(1), (3), (4), and (8). Compliance reports are only required for semiannual periods during which the facility experienced any of the events described in those sections of the rule.[9]

5.4.3 Non-Applicability of All Other NESHAP

NESHAP standards are developed for particular industrial source categories, and applicability can be readily ascertained based on the source category covered. All NESHAP other than those addressed in this report categorically do not apply to the proposed project.

5.5 Compliance Assurance Monitoring

The requirement to develop CAM plans under 40 CFR 64 is applicable for emission units that are located at a Title V major source and that meet all the following criteria:[10]

- The unit is subject to an emission limit for a regulated air pollutant;
- The unit uses a control device to achieve compliance with the emission limit; and
- The pre-control potential emissions for that pollutant are greater than the Title V major source threshold from the emission unit.

For emission units with post-control emissions of the pollutant that are less than the Title V major source threshold, the CAM plan must be submitted as part of an application for renewal of the Title V permit.[11]

[7] 40 CFR 63.11495(a)(1), (3), (4), and (5)
[8] 40 CFR 63.9(b)(2), 40 CFR 63.9(h), 40 CFR 63.11501(a)-(b), 40 CFR 63.11501(d)(4)
[9] 40 CFR 63.11501(d)
[10] 40 CFR 64.2(a)
[11] 40 CFR 64.5(b)

The facility currently operates under a Title V operating permit and the proposed project modifies existing emission units with permitted control devices. Thermal oxidizers T-657 (MAG-04) and T-1657 (MGX-12) are subject to CAM requirements because they both control VOC emissions that are above 100 TPY before control.

5.6 Code of Maryland Regulations (COMAR) Applicability

Maryland's state requirements for sources of regulated air contaminants are codified under Subtitle 11 of Title 26 of the Code of Maryland Regulations (COMAR 26.11). Specific applicability criteria for all MDE regulations that are not generally applicable (i.e., General Provisions) are covered in the following subsections.

5.6.1 COMAR 26.11.02.09 – Sources Subject to Permits to Construct and Approvals (APPLICABLE)

COMAR 26.11.02.09 specifies that construction or modification of any of the specified subset of regulated sources may not be commenced without first obtaining, and having in current effect, the specified permits to construct and associated approvals. Pursuant to COMAR 26.11.02.09A(1), 26.11.02.09A(2), 26.11.02.09A(4) and 26.11.02.09A(6), installation of the new ICO and modified MAG/MGX units requires an appropriate permit to construct prior to commencement of construction activities.

5.6.2 COMAR 26.11.02.10 – Sources Exempt from Permits to Construct and Approvals (APPLICABLE)

COMAR 26.11.02.10 lists sources and activities that are exempt from the requirement to obtain a permit to construct. As part of the Line 3 project Grace is adding a central vacuum system. COMAR 26.11.02.10T exempts "[v]acuum cleaning systems used exclusively for industrial, commercial, or residential house-keeping purposes." As a result, Grace believes the installation of this central vacuum system is exempted from permitting but is including in this application to be reviewed by MDE for applicability.

5.6.3 COMAR 26.11.02.11 – Procedures for Obtaining Permits to Construct Certain Significant Sources (NOT APPLICABLE)

COMAR 26.11.02.11 delineates specific procedures governing applications for permits to construct for certain significant sources of regulated air pollutants as defined under COMAR 26.11.02.11A(1). Since this application for construction is not for a new source, there is no reconstruction or replacement that qualifies per COMAR 26.11.02.11(A)(2)(b), and the emissions will remain below major permitting thresholds, the proposed modified MAG / MGX production line and the new ICO Line 3 production line are not subject to the provisions under this regulation.

5.6.4 COMAR 26.11.02.12 – Procedures for Obtaining Approvals of PSD Sources, and NSR Sources, Permits to Construct, Permit to Construct MACT Determinations on a Case-by-Case Basis in Accordance with 40 CFR Part 63, Subpart B, and Certain 100-ton Sources (APPLICABLE)

COMAR 26.11.02.12 lays out specific procedures governing permit to construct applications submitted by a discrete subset of regulated sources under the jurisdiction of MDE. As discussed in detail in **Section 5.10** of this application, the Grace facility is an existing PSD or NSR source. Therefore, pursuant to COMAR 26.11.02.12A(1), the applicable procedures put forth under COMAR 26.11.02.12 are applicable to the proposed project.

5.6.5 COMAR 26.11.02.13 – Sources Subject to State Permit to Operate (NOT APPLICABLE)

Per COMAR 26.11.02.13A, a state permit to operate is not required for sources covered by a Part 70 permit. The Facility has a Part 70 permit, and as such, is not subject to the requirement to obtain a

state permit to operate per COMAR 26.11.02.13A. The Facility requests that MDE include the modified and new production lines within their Part 70 permit.

5.6.6 COMAR 26.11.02.14 – Procedures for Obtaining State Permits to Operate and Permits to Construct Certain Sources and Permits to Construct Control Equipment on Existing Sources (NOT APPLICABLE)
COMAR 26.11.02.14 lays out specific procedures that apply to any source or activity that is not regulated under COMAR 26.11.02.11A or COMAR 26.11.02.12, or that constitutes air pollution control equipment for which a permit to construct is required and will control an existing source. This permit to construct application is being submitted in accordance with the applicable requirements of COMAR 26.11.02.11A and COMAR 26.11.02.12. Therefore, pursuant to COMAR 26.11.02.14A(2), the applicable procedures put forth under COMAR 26.11.02.14 are not applicable to the proposed project.

5.6.7 COMAR 26.11.03 – Permits, Approvals, and Registration – Title V Permits (APPLICABLE)
As stated above, the Facility has a current Title V permit. Therefore, pursuant to COMAR 26.11.03.01(A)(1), the applicable procedures put forth under COMAR 26.11.03 are applicable to the proposed project.

5.6.8 COMAR 26.11.09 – Control of Fuel-Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations (APPLICABLE)
COMAR 26.11.09 regulates visible emissions and emissions of PM, SO_2, and NO_X from new fuel-burning equipment constructed in the state of Maryland. While the combustion spray dryer in ICO Line 3 does not qualify as fuel-burning equipment, there is a section of the NO_X regulations which specifies applicability for any installation other than fuel-burning equipment that emits NO_X. Thus, the only applicable requirements of this regulation pertain to NO_X emissions limitations pursuant to COMAR 26.11.09.08.

5.6.9 COMAR 26.11.15 – Toxic Air Pollutants (APPLICABLE)
The provisions of COMAR 26.11.15 regulate emissions of any Class I or Class II toxic air pollutant (TAP) into the ambient air from any installation or new source if the source meets certain applicability criteria under the regulation. The Facility at the MAG / MGX and ICO Plants are subject to requirements under 40 CFR 63. Therefore, pursuant to COMAR 26.11.15.03(A)(4), the applicable procedures put forth under COMAR 26.11.15 are applicable to the proposed project.

5.6.10 COMAR 26.11.17 – Nonattainment Provisions for Major New Sources and Major Modifications (NOT APPLICABLE)
The provisions of COMAR 26.11.17 describe the procedures and conditions for sources that are applying as major new sources or making major modifications in an area of nonattainment. The proposed project, as demonstrated in **Section 5.1 and Table 1 (Section 3.4)0**, does not qualify as a major modification. Therefore, pursuant to COMAR 26.11.17.02(A)(1), the applicable procedures put forth under COMAR 26.11.17 are not applicable to the proposed project.

5.6.11 COMAR 26.11.19 – Volatile Organic Compounds from Specific Processes (APPLICABLE)
COMAR 26.11.19 regulates volatile organic compounds from specific processes. A couple of the specified processes are VOC equipment leaks and chemical production. The MAGNAPORE® Catalyst Plant is already subject to this requirement as specified in its Part 70 permit. Therefore, the applicable procedures put forth under COMAR 26.11.19.02, COMAR 26.11.19.16 and COMAR 26.11.19.30 are applicable to the proposed project.

6. PUBLIC ENGAGEMENT AND ENVIRONMENTAL JUSTICE

6.1 Public Meetings

Grace held a total of three public informational meetings to engage with the Curtis Bay and Baltimore City communities about the proposed construction projects. In addition to the regular meetings Grace has attended for over 10 years, Grace engaged with the public specifically about this project on several occasions. These public informational meetings were publicized in advance. The first meeting was held on December 12, 2024, with the general public and the Community of Curtis Bay Association (CCBA) on a virtual Zoom meeting. The community expressed interest in another set of meetings and Grace set up two additional meetings in January. The second meeting was held on January 22, 2025, again with the general public and the CCBA. The third meeting was held on January 27, 2025, with the general public and the Concerned Citizens of Baltimore. At these meetings, Grace expressed their commitment to NO_X and PM emissions reductions. As discussed with MDE on January 31, 2025, Grace is analyzing various options to achieve additional emissions reductions and expects to submit a separate permit application for these voluntary emissions reductions once the engineering and other required analysis is complete. Feedback from these communities was documented and can be found in **Appendix 6**.

6.2 Maryland EJ Screen Report

House Bill 1200 (HB1200) mandates that permit applications that require public notice, and participation must include an EJ Score for the census tract where the applicant is seeking the permit in the permit application package to MDE. The Department recommends using the Maryland EJ Tool to assess the EJ Score within a 1-mile radius of the facility.

To comply with HB1200 and MDE requirements, the Maryland EJ Tool was utilized to generate EJ Scores for the five census tracts located within a 1-mile radius of the W.R. Grace Curtis Bay facility. This includes Census Tracts 2505 and 2506 in Baltimore City, and Census Tracts 7301.02, 7502.04, and 7511.02 in Anne Arundel County. Two of the census tracts, 2505 and 7301.02, were flagged as overburdened communities with an overall EJ Score greater than the 75th percentile. Census Tract 2505 has the highest EJ Score, 100th percentile, indicating the census tract faces pollution, environmental, and socioeconomic burdens higher than 100% of the state of Maryland. Environmental Indicators with an EJ Indicator Score greater than 75% for the tract include the National Air Toxics Assessment (NATA) Respiratory Hazard Index (80%), NATA Particulate Matter/PM2.5 (97%), and Wastewater Discharge (92%).

Census Tract 7301.02 was also flagged as an overburdened community with an Overall EJ Score of 86th percentile, indicating that the tract faces pollution, environmental, and socioeconomic burdens greater than 86% of the state of Maryland. Environmental Indicators with an EJ Indicator Score greater than 75% for the tract include the NATA Respiratory Hazard Index (80%), NATA Particulate Matter/PM2.5 (95%), and Wastewater Discharge (91%).

To further understand the current socioeconomic and environmental conditions in the Curtis Bay community, Grace has included an analysis of the socioeconomic and environmental indicators provided by the screening tool. Additionally, Grace has engaged with community members about the upcoming projects at the Curtis Bay site on a number of occasions to listen to their concerns and gather input from the community to help shape the upcoming permit application and other measures that Grace is considering to address the community's concerns. The full Maryland EJ Screen Report can be found in **Appendix 6**.

APPENDIX 1
CONSTRUCTION PERMIT APPLICATION FORMS

NOTE: All information completed on the forms is based upon current design specifications and possible vendors of equipment. This information is subject to change and should be viewed as equivalent to what will be installed. Any minor changes in these values that do not impact emissions calculations or dispersion modeling will be updated in an "as-built" amendment.

W.R. Grace & Co.-Conn. has Redacted Information from this Appendix Pursuant to a Claim of Confidentiality

AIR QUALITY PERMIT TO CONSTRUCT APPLICATION CHECKLIST

OWNER OF EQUIPMENT/PROCESS	
COMPANY NAME:	W.R. Grace & Co.-Conn.
COMPANY ADDRESS:	7500 Grace Drive, Columbia, MD 21044
LOCATION OF EQUIPMENT/PROCESS	
PREMISES NAME:	W.R. Grace & Co. - Curtis Bay
PREMISES ADDRESS:	5500 Chemical Road, Baltimore, MD 21226
CONTACT INFORMATION FOR THIS PERMIT APPLICATION	
CONTACT NAME:	Madison Smith
JOB TITLE:	Environmental Manager
PHONE NUMBER:	(443) 509-5415
EMAIL ADDRESS:	Madison.Smith@grace.com
DESCRIPTION OF EQUIPMENT OR PROCESS	
Multi-plant facility that manufactures Silica-based and Alumina-based inorganic chemicals.	

Application is hereby made to the Department of the Environment for a Permit to Construct for the following equipment or process as required by the State of Maryland Air Quality Regulation, COMAR 26.11.02.09.

Check each item that you have submitted as part of your application package.

☒ Application package cover letter describing the proposed project

☒ Complete application forms (Note the number of forms included or NA if not applicable.)

No. 2 Form 5
No. 1 Form 5T
No. 8 Form 5EP
No. 7 Form 6
No. NA Form 10
No. NA Form 11
No. NA Form 41
No. NA Form 42
No. NA Form 44

☒ Vendor/manufacturer specifications/guarantees

☒ Evidence of Workman's Compensation Insurance

☒ Process flow diagrams with emission points

☒ Site plan including the location of the proposed source and property boundary

☒ Material balance data and all emissions calculations

☐ Material Safety Data Sheets (MSDS) or equivalent information for materials processed and manufactured.

☐ Certificate of Public Convenience and Necessity (CPCN) waiver documentation from the Public Service Commission (1)

☒ Documentation that the proposed installation complies with local zoning and land use requirements (2)

(1) Required for emergency and non-emergency generators installed on or after October 1, 2001 and rated at 2001 kW or more.

(2) Required for applications subject to Expanded Public Participation Requirements.

BALTIMORE CITY
DEPARTMENT OF HOUSING &
COMMUNITY DEVELOPMENT

April 3, 2025

W.R. Grace & Co.
7500 Grace Dr., Columbia MD. 21044
5500 Chemical Road, Baltimore MD. 21226

Re: Zoning Verification Request: 5500 Chemical Road

To Whom It May Concern:

This is in response to your request for zoning verification concerning the above referenced property.

The subject property is located in an M-I Maritime Industrial District and authorized for use as a chemical manufacturing facility, in compliance with all applicable zoning regulations. Your proposal to complete the expansions of both the Magnapore and Industrial Catalyst plants would be permitted within your current zoning.

Should you have any additional questions regarding this matter, please contact the Office of the Zoning Administrator at (410) 396-4126.

Sincerely,

Geoffrey Veale
Zoning Administrator

Public Version

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
11/13/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services South, Inc.
Atlanta GA Office
3550 Lenox Road NE
Suite 1700
Atlanta GA 30326 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** (800) 363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Zurich American Ins Co	16535
INSURER B:	American Zurich Ins Co	40142
INSURER C:		
INSURER D:		
INSURER E:		
INSURER F:		

INSURED
W.R. Grace
7500 Grace Drive
Columbia MD 21044 USA

COVERAGES **CERTIFICATE NUMBER:** 570109405895 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. **Limits shown are as requested**

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	
	☐ CLAIMS-MADE ☐ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	
							MED EXP (Any one person)	
							PERSONAL & ADV INJURY	
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	
	☐ POLICY ☐ PRO-JECT ☐ LOC						PRODUCTS - COMP/OP AGG	
	OTHER:							
A	AUTOMOBILE LIABILITY			BAP 7900598 05	11/15/2024	11/15/2025	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS						BODILY INJURY (Per accident)	
	☐ HIRED AUTOS ONLY ☐ NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	
	☐ UMBRELLA LIAB ☐ OCCUR						EACH OCCURRENCE	
	☐ EXCESS LIAB ☐ CLAIMS-MADE						AGGREGATE	
	☐ DED ☐ RETENTION							
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N			WC792878905	11/15/2024	11/15/2025	X PER STATUTE ☐ OTH-ER	
				Workers Comp. AOS				
A	ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? Y	N / A		WC792879005	11/15/2024	11/15/2025	E.L. EACH ACCIDENT	$2,000,000
	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			Workers Comp. MA			E.L. DISEASE-EA EMPLOYEE	$2,000,000
							E.L. DISEASE-POLICY LIMIT	$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
A Waiver of Subrogation is granted in accordance with the policy provisions of the workers compensation policy.

CERTIFICATE HOLDER

W.R. Grace & Co-Conn
7500 Grace Drive
Columbia MD 21044 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services South Inc.

Holder Identifier :

Certificate No : 570109405895

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪1-800-633-6101 ▪ www.mde.state.md.us
Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PROCESSING/MANUFACTURING EQUIPMENT

Permit to Construct ☒ Registration Update ☐ Initial Registration ☐

1A. Owner of Equipment/Company Name
W.R. Grace & Co.-Conn.

Mailing Address
5500 Chemical Road
Street Address
Baltimore | MD | 21226
City | State | Zip

Telephone Number
(410) 354-8987

Signature
Jeff Lukowski
Jeff Lukowski, Senior Operations Director - Curtis Bay | 25 JUN 2025
Print Name and Title | Date

DO NOT WRITE IN THIS BLOCK
2. REGISTRATION NUMBER
County No. (1-2) | Premises No. (3-6)
Registration Class (7) | Equipment No. (8-11)
Data Year (12-13) | Application Date

1B. Equipment Location and Telephone Number (if different from above)
Same as above
Street Number and Street Name
Same as above | ( ) | | |
City/Town | State | Zip | Telephone Number
W.R. Grace & Co. - Curtis Bay
Premises Name (if different from above)

3. Status (A= New, B= Modification to Existing Equipment, C= Existing Equipment)

Status	New Construction Begun (MM/YY)	New Construction Completed (MM/YY)	Existing Initial Operation (MM/YY)
A	0126	0527	
15	16-19	20-23	20-23

4. Describe this Equipment: Make, Model, Features, Manufacturer (include Maximum Hourly Input Rate, etc.)
ICO-Line 3 Process (See Attached Table)

5. Workmen's Compensation Coverage WC 7928789-05 (Binder/Policy Number) 11/15/2025 (Expiration Date)
Company American Zurich Insurance Company
NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6A. Number of Pieces of Identical Equipment Units to be Registered/Permitted at this Time 1

6B. Number of Stack/Emission Points Associated with this Equipment 8

7. Person Installing this Equipment (if different from Number 1 on Page 1)

Name _____ Title _____

Company _____

Mailing Address/Street _____

City/Town _____ State _____ Telephone (_____) _____

8. Major Activity, Product or Service of Company at this Location

Multi-plant facility that manufactures Silica-based and Alumina-based inorganic chemicals.

9. Control Devices Associated with this Equipment

The cyclone and one baghouse are inherent to the spray dryer and are in one Form 6. Two baghouses and one cartridge filter are on the same stack and are in one Form 6.

None	Simple/Multiple Cyclone	Spray/Adsorb Tower	Venturi Scrubber	Carbon Adsorber	Electrostatic Precipitator	Baghouse	Thermal/Catalytic Afterburner	Dry Scrubber
	1					5		
24-0	24-1	24-2	24-3	24-4	24-5	24-6	24-7	24-8

Other

4 Describe 1 cartridge filter and 3 bin vents, which are used for material recovery

24-9

10. Annual Fuel Consumption for this Equipment

OIL-1000 GALLONS	SULFUR %	GRADE	NATURAL GAS-1000 FT^3	LP GAS-100 GALLONS	GRADE
			9 4 4 7 1		
26-31	32-33	34	35-41	42-45	

COAL- TONS	SULFUR %	ASH%	WOOD-TONS	MOISTURE %
46-52	53-55	56-58	59-63	64-65

OTHER FUELS _____ (Specify Type) | 66-1 | ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

OTHER FUEL _____ (Specify Type) | 66-2 | ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

1= Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this Equipment)

Continuous Operation	Batch Process	Hours per Batch	Batch per Week	Hours per Day	Days Per Week	Days per Year
X				2 4	7	3 6 5
67-1	67-2	68-69		70-71	72	73-75

Seasonal Variation in Operation:

No Variation	Winter Percent	Spring Percent	Summer Percent	Fall Percent	(Total Seasons= 100%)
X					
76	77-78	79-80	81-82	83-84	

12. Equivalent Stack Innformation- is Exhaust through Doors, Windows, etc. Only? (Y/N) N (85)

See attached table

If not, then	Height Avove Ground (FT)	Inside Diameter at Top	Exit Temperature (°F)	Exit Velocity (FT/SEC)
	86-88	89-91	92-95	96-98

NOTE:
Attach a block diagram of process/process line, indicating new equipment as reported on this form and all existing equipment, including control devices and emission points.

13. Input Materials (for this equipment only)
Is any of this data to be considered confidential? Y (Y or N)

	NAME	CAS NO. (IF APPLICABLE)	INPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	See attached list					
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

14. Output Materials (for this equipment)
Process/Product Stream

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	Polyolefin Catalyst Base		422	lbs	1,850	short ton
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

15. Waste Streams- Solid and Liquid

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	No waste materials, off spec					
2.	product is recycled					
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

16. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Total daily process emissions

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
10.91	0.16	3.21
99-104	105-110	111-116

Carbon Monoxide	Volatile Organic Compounds	PM-10
21.74	1.42	10.91
177-122	123-128	129-134

17. Total Fugitive Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
0	0	0
135-139	140-144	145-149

Carbon Monoxide	Volatile Organic Compounds	PM-10
0	0	0
150-154	155-159	160-164

Method Used to Determine Emissions (1= Estimate 2= Emission Factor 3= Stack Test 4= Other)

See attached calculations

TSP	SOX	NOX	CO	VOC	PM10
4	4	4	4	4	4
165	166	167	168	169	170

AIR AND RADIATION MANAGEMENT ADMINISTRATION USE ONLY

18. Date Rec'd. Local _____ **Date Rec'd. State** _____ **Return to Local Jurisdiction** Date_____ By_____

Reviewed by Local Jurisdiction Date_____ By_____ **Reviewed by State** Date_____ By_____

19. Inventory Date **Month/Year** (171-174) **Equipment Code** (175-177) **SCC Code** (178-185)

20. **Annual Operating Rate** (186-192) **Maximum Design Hourly Rate** (193-199) **Permit to Operate Month** (200-201) **Transaction Date (MM/DD/YR)** (202-207)

Staff Code (208-210) **VOC Code** (211 212) **SIP Code** (213 214) **Regulation Code** (215-218) **Confidentiality** (219)

Point Description (220-238)

Action (239) A: Add C: Change

Form 5 ICO Line 3
Section 4. ICO-Line 3 Process

Quantity	Make	Model	Manufacturer	Description	Maximum Hourly Input Rate
2	TBD	TBD	TBD	Hammer Mill	
1	TBD	TBD	TBD	Mill Feed Tank	
2	TBD	TBD	TBD	Line 3 Wet Mill	
1	TBD	TBD	TBD	Mill Receiver Tank	
1	TBD	TBD	TBD	Spray Dryer Feed Tank	
1	TBD	TBD	TBD	Line 3 Spray Dryer	
1				Spray Dryer Cyclone	
1				Spray Dryer Baghouse	
1	TBD	TBD	TBD	Coarse Classifier Feed Hopper	
1	TBD	TBD	TBD	Fines Classifier Feed Hopper	
2				Bin Vent for Feed Hopper	
1	TBD	TBD	TBD	Coarse Classifier	
1	TBD	TBD	TBD	Fines Classifier	
2				Baghouse for Classifier	
1				Cartridge Filter for Classifier	
1	TBD	TBD	TBD	Coarse Sacking Station	
1	TBD	TBD	TBD	Fines Sacking Station	
1	TBD	TBD	TBD	Finished Product Packaging Silo	
1				Bin Vent for Finished Product Packaging Silo	
2	TBD	TBD	TBD	Drum Packaging Station	
1	TBD	TBD	TBD	Sack Filling Station	
1	TBD	TBD	TBD	Fugitive Dust Collector	
1				Baghouse for Fugitive Dust Collector	
1	TBD	TBD	TBD	Central Vacuum System	
1				Baghouse for Central Vacuum System	

Form 5 ICO Line 3
Section 12. ICO-Line 3 Stack Information

Stack ID	Height Above Ground (ft)	Inside Diameter at Top (ft)	Exit Temperature (°F)	Exit Velocity (ft/s)
ICO-130	83.75	2	350	73.21
ICO-131	53.83	1.83	Ambient	65.90
ICO-132	64.92	0.71	Ambient	63.14
ICO-133	83.5	0.5	Ambient	424.41
ICO-134	83.5	1	Ambient	9.19
ICO-135	49	11.38	Ambient	20.08

Form 5 ICO Line 3
Section 13. ICO-Line 3 Input Materials and Rates

Code Letter	Per Hour	Units	Per Year	Units
A	662	LBS.	2,900	TONS

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-130

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Spray Dryer EST-35801, Cyclone EC-35601, and Baghouse EBH-35601. The baghouse is used for material recovery (direct-fired).

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	83.75	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	16.92				
Exit temperature (ºF):	350	Inside diameter at top of round stack (ft):		2	
Exit velocity (ft/min):	4,393	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	13,800	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 1
- ☒ Cyclone No. 1
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☐ Other No. _____
  Specify:

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.21	0.21	4.93	0.90
Particulate Matter (filterable as PM2.5)	0.20	0.20	4.71	0.86
Particulate Matter (condensables)	0.06	0.06	1.48	0.27
Volatile Organic Compounds (VOC)	0.06	0.06	1.42	0.26
Oxides of Sulfur (SOx)	6.47E-03	6.47E-03	0.16	0.03
Oxides of Nitrogen (NOx)	0.13	0.13	3.21	0.59
Carbon Monoxide (CO)	0.91	0.91	21.74	3.97
Lead (Pb)	5.39E-06	5.39E-06	1.29E-04	2.36E-05
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)	1,287	1,287	30,882	5,636
Methane (CH_4)	2.43E-02	2.43E-02	5.82E-01	0.11
Nitrous Oxide (N_2O)	2.43E-03	2.43E-03	5.82E-02	0.01
Hydrofluorocarbons (HFCs)	0	0	0	0
Perfluorocarbons (PFCs)	0	0	0	0
Sulfur Hexafluoride (SF6)	0	0	0	0
Total GHG (as CO_2e)	1,288	1,288	30,914	5,642
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
2-methylnaphthalene	2.59E-07	2.59E-07	6.21E-06	1.13E-06
3-methylcholanthrene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
7,12-dimethylbenz(a)anthracene	1.73E-07	1.73E-07	4.14E-06	7.56E-07
Acenaphthene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Acenaphthylene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Anthracene	2.59E-08	2.59E-08	6.21E-07	1.13E-07
Benz(a)anthracene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Benzene	2.26E-05	2.26E-05	5.44E-04	9.92E-05
Benzo(a)pyrene	1.29E-08	1.29E-08	3.11E-07	5.67E-08
Benzo(b)fluoranthene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Benzo(g,h,i)perylene	1.29E-08	1.29E-08	3.11E-07	5.67E-08
Benzo(k)fluoranthene	1.94E-08	1.94E-08	4.66E-07	8.50E-08

(Attach additional sheets as necessary.)

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Chrysene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Dibenzo(a,h)anthracene	1.29E-08	1.29E-08	3.11E-07	5.67E-08
Dichlorobenzene	1.29E-05	1.29E-05	3.11E-04	5.67E-05
Fluoranthene	3.24E-08	3.24E-08	7.76E-07	1.42E-07
Fluorene	3.02E-08	3.02E-08	7.25E-07	1.32E-07
Formaldehyde	8.09E-04	8.09E-04	1.94E-02	3.54E-03
Hexane	1.94E-02	1.94E-02	4.66E-01	8.50E-02
Indeno(1,2,3-cd)pyrene	1.94E-08	1.94E-08	4.66E-07	8.50E-08
Naphthalene	6.58E-06	6.58E-06	1.58E-04	2.88E-05
Phenanethrene	1.83E-07	1.83E-07	4.40E-06	8.03E-07
Pyrene	5.39E-08	5.39E-08	1.29E-06	2.36E-07
Toluene	3.67E-05	3.67E-05	8.80E-04	1.61E-04

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-131

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Coarse Classifier ECL-35704 and Fines Classifier ECL-35705, Coarse Classifier Baghouse EBH-35604, Fines Classifier Baghouse EBH-35605, and Cartridge EBH-35670. The baghouses and cartridge collector are used for material recovery.

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	53.83	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	7.33				
Exit temperature (ºF):	Ambient	Inside diameter at top of round stack (ft):		1.83	
Exit velocity (ft/min):	3,954	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	10,400	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 2
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☒ Other No. 1
  Specify: Cartridge Filter

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.01	0.01	0.18	0.03
Particulate Matter (filterable as PM2.5)	0.01	0.01	0.17	0.03
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-132

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Silo EV-35125 and Bin Vent EBV-35606. The bin vent is used for material recovery.

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	64.92	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	16				
Exit temperature (ºF):	Ambient	Inside diameter at top of round stack (ft):		0.71	
Exit velocity (ft/min):	3,789	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	1,500	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☐ Baghouse No. _____
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☒ Other No. 1
  Specify: Bin Vent, used for material recovery.

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.04	0.04	0.90	0.16
Particulate Matter (filterable as PM2.5)	0.04	0.04	0.85	0.16
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-133

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Fugitive dust collection from several units (EBH-35671).

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	83.5	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	16.75				
Exit temperature (ºF):	Ambient	Inside diameter at top of round stack (ft):		0.5	
Exit velocity (ft/min):	25,465	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	5,000	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 1
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☐ Other No. _____
  Specify:

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.02	0.02	0.48	0.09
Particulate Matter (filterable as PM2.5)	0.02	0.02	0.46	0.08
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-134

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Central Vacuum System with one baghouse (EBH-35680).

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	83.5	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	16.75				
Exit temperature (ºF):	Ambient	Inside diameter at top of round stack (ft):		1	
Exit velocity (ft/min):	551	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	433	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☒ Baghouse No. 1
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☐ Other No. _____
  Specify:

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.02	0.02	0.48	0.09
Particulate Matter (filterable as PM2.5)	0.02	0.02	0.46	0.08
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
ICO-135

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Indoor emissions released from building vents.

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	49	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	2				
Exit temperature (ºF):	Ambient	Inside diameter at top of round stack (ft):		6.5	
Exit velocity (ft/min):	1,205	Distance from emission point to nearest property line (ft):		220	
Exhaust gas volumetric flow rate (acfm):	40,000	Building dimensions if emission point is located on building (ft)	Height 47	Length 168	Width 59

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

☒ None

☐ Baghouse No. _____

☐ Cyclone No. _____

☐ Elec. Precipitator (ESP) No. _____

☐ Dust Suppression System No. _____

☐ Venturi Scrubber No. _____

☐ Spray Tower/Packed Bed No. _____

☐ Carbon Adsorber No. _____

- ☐ Cartridge/Canister
- ☐ Regenerative

☐ Thermal Oxidizer No. _____

- ☐ Regenerative

☐ Catalytic Oxidizer No. _____

☐ Nitrogen Oxides Reduction No. _____

- ☐ Selective ☐ Non-Selective
- ☐ Catalytic ☐ Non-Catalytic

☐ Other No. _____
Specify:

The emissions from indoor sources to the atmosphere is deemed to be an insignificant source per COMAR 26.11.02.10X(3) (<1 tpy of regulated pollutants). All indoor building vents are to be permitted as one source of Indoor emissions.

Public Version

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)	0.10	0.10	2.47	0.45
Particulate Matter (filterable as PM2.5)	0.10	0.10	2.35	0.43
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				

Greenhouse Gases (GHG)	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				

List individual federal Hazardous Air Pollutants (HAP) below:	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)

(Attach additional sheets as necessary.)

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
Indoor emissions. No stack ID

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Coarse Classifier Feed Hopper with one bin vent (EBV-35614).

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	N/A	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	N/A				
Exit temperature (ºF):	N/A	Inside diameter at top of round stack (ft):		N/A	
Exit velocity (ft/min):	N/A	Distance from emission point to nearest property line (ft):		N/A	
Exhaust gas volumetric flow rate (acfm):	Indoor	Building dimensions if emission point is located on building (ft)	Height N/A	Length N/A	Width N/A

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☐ Baghouse No. _____
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☒ Other No. 1
  Specify: Bin vent, used for material recovery

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)				
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**

(Attach additional sheets as necessary.)

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FORM 5EP: Emission Point Data

Complete one (1) Form 5EP for EACH emission point (stack or fugitive emissions) related to the proposed installation.

Applicant Name: W.R. Grace & Co.-Conn.

1. Emission Point Identification Name/Number

List the applicant assigned name/number for this emission point and use this value on the attached required plot plan:
Indoor emissions. No stack ID.

2. Emission Point Description

Describe the emission point including all associated equipment and control devices:
ICO-Line 3 Fines Classifier Feed Hopper with one bin vent (EBV-35615).

3. Emissions Schedule for the Emission Point

Continuous or Intermittent (C/I)?	C	**Seasonal Variation** Check box if none: ☒ Otherwise estimate seasonal variation:	
Minutes per hour:	60	Winter Percent	
Hours per day:	24	Spring Percent	
Days per week:	7	Summer Percent	
Weeks per year:	52	Fall Percent	

4. Emission Point Information

Height above ground (ft):	N/A	Length and width dimensions at top of rectangular stack (ft):	Length: N/A	Width: N/A	
Height above structures (ft):	N/A				
Exit temperature (ºF):	N/A	Inside diameter at top of round stack (ft):		N/A	
Exit velocity (ft/min):	N/A	Distance from emission point to nearest property line (ft):		N/A	
Exhaust gas volumetric flow rate (acfm):	Indoor	Building dimensions if emission point is located on building (ft)	Height N/A	Length N/A	Width N/A

5. Control Devices Associated with the Emission Point

Identify each control device associated with the emission point and indicate the number of devices. ***A Form 6 is also required for each control device***. If none check none:

- ☐ None
- ☐ Baghouse No. _____
- ☐ Cyclone No. _____
- ☐ Elec. Precipitator (ESP) No. _____
- ☐ Dust Suppression System No. _____
- ☐ Venturi Scrubber No. _____
- ☐ Spray Tower/Packed Bed No. _____
- ☐ Carbon Adsorber No. _____
  - ☐ Cartridge/Canister
  - ☐ Regenerative
- ☐ Thermal Oxidizer No. _____
  - ☐ Regenerative
- ☐ Catalytic Oxidizer No. _____
- ☐ Nitrogen Oxides Reduction No. _____
  - ☐ Selective ☐ Non-Selective
  - ☐ Catalytic ☐ Non-Catalytic
- ☒ Other No. 1
  Specify: Bin vent, used for material recovery

FORM 5EP: Emission Point Data

6. Estimated Emissions from the Emission Point

Criteria Pollutants	At Design Capacity (lb/hr)	At Projected Operations		
		(lb/hr)	(lb/day)	(ton/yr)
Particulate Matter (filterable as PM10)				
Particulate Matter (filterable as PM2.5)				
Particulate Matter (condensables)				
Volatile Organic Compounds (VOC)				
Oxides of Sulfur (SOx)				
Oxides of Nitrogen (NOx)				
Carbon Monoxide (CO)				
Lead (Pb)				
Greenhouse Gases (GHG)	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**
Carbon Dioxide (CO_2)				
Methane (CH_4)				
Nitrous Oxide (N_2O)				
Hydrofluorocarbons (HFCs)				
Perfluorocarbons (PFCs)				
Sulfur Hexafluoride (SF6)				
Total GHG (as CO_2e)				
List individual federal Hazardous Air Pollutants (HAP) below:	**At Design Capacity (lb/hr)**	**At Projected Operations**		
		(lb/hr)	**(lb/day)**	**(ton/yr)**

(Attach additional sheets as necessary.)

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
W.R. Grace & Co.-Conn.	(410) 354-8987	6/25/2025

2. Mailing Address	City	Zip Code	County
5500 Chemical Road	Baltimore	21226	Baltimore City

3. Equipment Location	City/Town or P.O.	County
5500 Chemical Road	Baltimore	Baltimore City

4. Signature of Owner or Operator	Title	Print or Type Name
Jeff Lukowski	Senior Operations Director - Curtis Bay	Jeff Lukowski

5. Application Type: Alteration [ ] New Construction [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment: This control equipment is inherent to the spray dryer

Simple Cyclone [X] Multiple Cyclone [ ] Afterburner [ ] Electrostatic Precipitator [ ]

Scrubber [ ] _____ (type) Other [X] Baghouse (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Spray Dryer

10. Stack Test to be Conducted:

Yes [ ] No [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment Included in spray dryer quote

Estimated Erection Cost $10,846

Form number: 6
Revision date: 0/2000
TTY Users 1-800-735-2258

Recycled Paper

12. The Following Shall Be Design Criteria: Note: Vendor information is provided but are not the guaranteed outlet parameters. Outlet parameters used here are reflected in the emissions calculations. The cyclone design is TBD, but conservative estimates were made for grain loading.

	INLET		OUTLET	
Gas Flow Rate	13,800	ACFM*	13,800	ACFM*
Gas Temperature	250	°F	250	°F
Gas Pressure	-20	INCHES W.G.	0	INCHES W.G.
	PRESSURE DROP -20			
Dust Loading	20	GRAINS/ACFD**	0.002	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F

Liquid Flow Rate (Wet Scrubber) _____ GALLONS/MINUTE

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram.

Date Received: Local _____ _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date_____

By _____

Application Returned to Applicant:

Date_____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
W.R. Grace & Co.-Conn.	(410) 354-8987	6/25/2025

2. Mailing Address	City	Zip Code	County
5500 Chemical Road	Baltimore	21226	Baltimore City

3. Equipment Location	City/Town or P.O.	County
5500 Chemical Road	Baltimore	Baltimore City

4. Signature of Owner or Operator	Title	Print or Type Name
Jeff Lukowski	Senior Operations Director - Curtis Bay	Jeff Lukowski

5. Application Type: Alteration [ ] New Construction [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] Multiple Cyclone [ ] Afterburner [ ] Electrostatic Precipitator [ ]

Scrubber [ ] _____ (type) Other [X] Bin Vent (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Coarse Classifier Feed Hopper

10. Stack Test to be Conducted:

Yes [ ] No [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment $12,000

Estimated Erection Cost $3,741

12. The Following Shall Be Design Criteria: Note: Vendor information is provided but are not the guaranteed outlet parameters. This control device emits indoors and is vented via building vents (ICO-135; Indoor emissions; Insignificant activity).

	INLET		OUTLET	
Gas Flow Rate	624	ACFM*	624	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	-10	INCHES W.G.	0	INCHES W.G.
	PRESSURE DROP	-10		
Dust Loading	10	GRAINS/ACFD**	0.001	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F

Liquid Flow Rate (Wet Scrubber) _____ GALLONS/MINUTE

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram.

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
W.R. Grace & Co.-Conn.	(410) 354-8987	6/25/2025

2. Mailing Address	City	Zip Code	County
5500 Chemical Road	Baltimore	21226	Baltimore City

3. Equipment Location	City/Town or P.O.	County
5500 Chemical Road	Baltimore	Baltimore City

4. Signature of Owner or Operator	Title	Print or Type Name
Jeff Lukowski	Senior Operations Director - Curtis Bay	Jeff Lukowski

5. Application Type: Alteration [ ] New Construction [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] Multiple Cyclone [ ] Afterburner [ ] Electrostatic Precipitator [ ]

Scrubber [ ] _____ (type) Other [X] Bin Vent (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Fines Classifier Feed Hopper

10. Stack Test to be Conducted:

Yes [ ] No [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment $12,000

Estimated Erection Cost $3,741

12. The Following Shall Be Design Criteria:

Note: Vendor information is provided but are not the guaranteed outlet parameters. This control device emits indoors and is vented via building vents (ICO-135; Indoor emissions; Insignificant activity).

	INLET		OUTLET	
Gas Flow Rate	624	ACFM*	624	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	0	INCHES W.G.	0	INCHES W.G.
PRESSURE DROP	0			
Dust Loading	10	GRAINS/ACFD**	0.001	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F
Liquid Flow Rate (Wet Scrubber)		GALLONS/MINUTE		

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram.

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation W.R. Grace & Co.-Conn.	**Telephone No.** (410) 354-8987		**Date of Application** 6/25/2025
2. Mailing Address 5500 Chemical Road	**City** Baltimore	**Zip Code** 21226	**County** Baltimore City
3. Equipment Location 5500 Chemical Road	**City/Town or P.O.** Baltimore		**County** Baltimore City
4. Signature of Owner or Operator	**Title** Senior Operations Director - Curtis Bay		**Print or Type Name** Jeff Lukowski

5. Application Type: **Alteration** [ ] **New Construction** [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] **Multiple Cyclone** [ ] **Afterburner** [ ] **Electrostatic Precipitator** [ ]

Scrubber [ ] _____ (type) **Other** [X] 1 Cartridge Filter, 1 Coarse Baghouse, and 1 Fines Baghouse (type)

8. Gas Cleaning Equipment Manufacturer	**Model No.**	**Collection Efficiency (Design Criteria)**
[redacted]	[redacted]	99.99+% 99.99+%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Coarse Classifier and ICO-Line 3 Fines Classifier

10. Stack Test to be Conducted:

Yes [ ] **No** [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment Cartridge: $236,824.36, Baghouses: Included in the Classifiers quote

Estimated Erection Cost $21,376

Form number: 6
Revision date: 0/2000
TTY Users 1-800-735-2258

Recycled Paper

12. The Following Shall Be Design Criteria:

	INLET		OUTLET	
Gas Flow Rate	10,400	ACFM*	10,400	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	10	INCHES W.G.	0	INCHES W.G.
	PRESSURE DROP	10		
Dust Loading	100	GRAINS/ACFD**	0.0001	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F
Liquid Flow Rate (Wet Scrubber)		GALLONS/MINUTE		

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99+
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram.

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
W.R. Grace & Co.-Conn.	(410) 354-8987	6/25/2025

2. Mailing Address	City	Zip Code	County
5500 Chemical Road	Baltimore	21226	Baltimore City

3. Equipment Location	City/Town or P.O.	County
5500 Chemical Road	Baltimore	Baltimore City

4. Signature of Owner or Operator	Title	Print or Type Name
Jeff Lukowski	Senior Operations Director - Curtis Bay	Jeff Lukowski

5. Application Type: Alteration [ ] New Construction [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] Multiple Cyclone [ ] Afterburner [ ] Electrostatic Precipitator [ ]

Scrubber [ ] _____ (type) Other [X] Bin Vent (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Finished Product Packaging Silo

10. Stack Test to be Conducted:

Yes [ ] No [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment $12,904

Estimated Erection Cost $3,741

12. The Following Shall Be Design Criteria:

Note: Vendor information is provided but are not the guaranteed outlet parameters. Outlet parameters used here are reflected in the emissions calculations.

	INLET		OUTLET	
Gas Flow Rate	1,500	ACFM*	1,500	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	-20	INCHES W.G.	0	INCHES W.G.
	PRESSURE DROP	-20		
Dust Loading	30	GRAINS/ACFD**	0.003	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F

Liquid Flow Rate (Wet Scrubber) _____ GALLONS/MINUTE

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Blvd ▪ Baltimore, Maryland 21230
(410) 537-3230 ▪ 1-800-633-6101 ▪ www.mde.state.md.us

Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation	Telephone No.	Date of Application
W.R. Grace & Co.-Conn.	(410) 354-8987	6/25/2025

2. Mailing Address	City	Zip Code	County
5500 Chemical Road	Baltimore	21226	Baltimore City

3. Equipment Location	City/Town or P.O.	County
5500 Chemical Road	Baltimore	Baltimore City

4. Signature of Owner or Operator	Title	Print or Type Name
Jeff Lukowski	Senior Operations Director - Curtis Bay	Jeff Lukowski

5. Application Type: Alteration [ ] New Construction [X]

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone [ ] Multiple Cyclone [ ] Afterburner [ ] Electrostatic Precipitator [ ]

Scrubber [ ] _____ (type) Other [X] Baghouse (type)

8. Gas Cleaning Equipment Manufacturer	Model No.	Collection Efficiency (Design Criteria)
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Fugitive Dust Collector

10. Stack Test to be Conducted:

Yes [ ] No [X] _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment $10,500

Estimated Erection Cost $8,777

12. The Following Shall Be Design Criteria: Note: Vendor information is provided but are not the guaranteed outlet parameters. Outlet parameters used here are reflected in the emissions calculations. A conservative 0.005 gr/acfd is used.

	INLET		OUTLET	
Gas Flow Rate	5,000	ACFM*	5,000	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	-0.5 to -4	INCHES W.G.	0	INCHES W.G.
	PRESSURE DROP	-0.5 to -4		
Dust Loading	0.5	GRAINS/ACFD**	0.0005	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F

Liquid Flow Rate (Wet Scrubber) _____ GALLONS/MINUTE

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram.

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PERMIT TO CONSTRUCT
GAS CLEANING OR EMISSION CONTROL EQUIPMENT

1. Owner of Installation W.R. Grace & Co.-Conn.	**Telephone No.** (410) 354-8987		**Date of Application** 6/25/2025
2. Mailing Address 5500 Chemical Road	**City** Baltimore	**Zip Code** 21226	**County** Baltimore City
3. Equipment Location 5500 Chemical Road	**City/Town or P.O.** Baltimore		**County** Baltimore City
4. Signature of Owner or Operator Jeff Lukowski	**Title** Senior Operations Director - Curtis Bay		**Print or Type Name** Jeff Lukowski

5. Application Type: **Alteration** ☐ **New Construction** ☒

6. Date Construction is to Start: 01/2026 **Completion Date (Estimate):** 05/2027

7. Type of Gas Cleaning or Emission Control Equipment:

Simple Cyclone ☐ **Multiple Cyclone** ☐ **Afterburner** ☐ **Electrostatic Precipitator** ☐

Scrubber ☐ _____ (type) **Other** ☒ Baghouse (type)

8. Gas Cleaning Equipment Manufacturer	**Model No.**	**Collection Efficiency (Design Criteria)**
[redacted]	[redacted]	99.99%

9. Type of Equipment which Control Equipment is to Service:

ICO-Line 3 Central Vacuum System

10. Stack Test to be Conducted:

Yes ☐ **No** ☒ _____ (Stack Test to be Conducted By) _____ (Date)

11. Cost of Equipment $10,499

Estimated Erection Cost $8,777

12. The Following Shall Be Design Criteria: Note: Vendor information is provided but are not the guaranteed outlet parameters. Outlet parameters used here are reflected in the emissions calculations.

	INLET		OUTLET	
Gas Flow Rate	433	ACFM*	433	ACFM*
Gas Temperature	70	°F	70	°F
Gas Pressure	-0.5 to -4	INCHES W.G.	0	INCHES W.G.
PRESSURE DROP	-0.5 to -4			
Dust Loading	5	GRAINS/ACFD**	0.005	GRAINS/ACFD**
Moisture Content	5	%	5	%
OR				
Wet Bulb Temperature		°F		°F
Liquid Flow Rate (Wet Scrubber)		GALLONS/MINUTE		

(WHEN SCRUBBER LIQUID OTHER THAN WATER INDICATE COMPOSITION OF SCRUBBING MEDIUM IN WEIGHT %)

*= ACTUAL CUBIC FEET PER MINUTE **= ACTUAL CUBIC FEET DRY

WHEN APPLICATION INVOLVES THE REDUCTION OF GASEOUS POLLUTANTS, PROVIDE THE CONCENTRATION OF EACH POLLUTANT IN THE GAS STREAM IN VOLUME PERCENT. INCLUDE THE COMPOSITION OF THE GASES ENTERING THE CLEANING DEVICE AND THE COMPOSITION OF EXHAUSTED GASES BEING DISCHARGED INTO THE ATMOSPHERE. USE AVAILABLE SPACE IN ITEM 15 ON PAGE 3.

13. Particle Size Analysis Grace has conservatively assumed that all PM = PM10

Size of Dust Particles Entering Cleaning Unit	% of Total Dust	% to be Collected
0 to 10 Microns	100	99.99
10 to 44 Microns	0	100
Larger than 44 Microns	0	100

14. For Afterburner Construction Only:

Volume of Contaminated Air _____ CFM (DO NOT INCLUDE COMBUSTION AIR)

Gas Inlet Temperature _____ °F

Capacity of Afterburner _____ BTU/HR

Diameter (or area) of Afterburner Throat _____

Combustion Chamber _____ (diameter) _____ (length) Operating Temperature at Afterburner _____ °F

Retention Time of Gases _____

15. Show Location of Dust Cleaning Equipment in the System. Draw or Sketch Flow Diagram Showing Emission Path from Source to Exhaust Point to Atmosphere.

See Appendix 2 for Process Flow Diagram

Date Received: Local _____ **State** _____

Acknowledgement Date: _____

By _____

Reviewed By:

Local _____

State _____

Returned to Local:

Date _____

By _____

Application Returned to Applicant:

Date _____

By _____

REGISTRATION NUMBER OF ASSOCIATED EQUIPMENT: ☐ ☐☐☐☐

PREMISES NUMBER: ☐☐ ☐☐☐☐

Emission Calculations Revised By _____ **Date** _____

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Air and Radiation Management Administration ▪ Air Quality Permits Program

APPLICATION FOR PROCESSING/MANUFACTURING EQUIPMENT

Permit to Construct ☒ Registration Update ☒ Initial Registration ☐

1A. Owner of Equipment/Company Name
W.R. Grace & Co.-Conn.

Mailing Address
5500 Chemical Road
Street Address
Baltimore | MD | 21226
City | State | Zip

Telephone Number
(410) 354-8987

Signature

Jeff Lukowski, Senior Operations Director- Curtis Bay
Print Name and Title

25JUN2025
Date

DO NOT WRITE IN THIS BLOCK
2. REGISTRATION NUMBER

County No. (1-2) | Premises No. (3-6)
Registration Class (7) | Equipment No. (8-11)
Data Year (12-13) | Application Date

1B. Equipment Location and Telephone Number (if different from above)

Same as above
Street Number and Street Name

Same as above | State | Zip | ( ) Telephone Number
City/Town

W.R. Grace & Co. - Curtis Bay
Premises Name (if different from above)

3. Status (A= New, B= Modification to Existing Equipment, C= Existing Equipment)

Status	New Construction Begun (MM/YY)	New Construction Completed (MM/YY)	Existing Initial Operation (MM/YY)
B	0626	0527	1990
15	16-19	20-23	20-23

4. Describe this Equipment: Make, Model, Features, Manufacturer (include Maximum Hourly Input Rate, etc.)
Magnapore Production Line (MAG and MGX) Reg #24-0076-7-1024

5. Workmen's Compensation Coverage WC 7928789-05 (Binder/Policy Number) 11/15/2025 (Expiration Date)
Company American Zurich Insurance Company
NOTE: Before a Permit to Construct may be issued by the Department, the applicant must provide the Department with proof of worker's compensation coverage as required under Section 1-202 of the Worker's Compensation Act.

6A. Number of Pieces of Identical Equipment Units to be Registered/Permitted at this Time 4 Additional MGX Wash Pots

6B. Number of Stack/Emission Points Associated with this Equipment No New Emission Points

7. Person Installing this Equipment (if different from Number 1 on Page 1)

Name _____ Title _____

Company _____

Mailing Address/Street _____

City/Town _____ State _____ Telephone (_____) _____

8. Major Activity, Product or Service of Company at this Location

Multi-plant facility that manufactures Silica-based and Alumina-based inorganic chemicals.

9. Control Devices Associated with this Equipment

None [ ] 24-0

Simple/Multiple Cyclone	Spray/Adsorb Tower	Venturi Scrubber	Carbon Adsorber	Electrostatic Precipitator	Baghouse	Thermal/Catalytic Afterburner	Dry Scrubber
[ ]	[ ]	[ ]	[ ]	[ ]	[21]	[2]	[ ]
24-1	24-2	24-3	24-4	24-5	24-6	24-7	24-8

Other [ ] Describe _____ 24-9

10. Annual Fuel Consumption for this Equipment

* Represents total fuel consumption for MAG-MGX Equipment after modification

OIL-1000 GALLONS	SULFUR %	GRADE	NATURAL GAS-1000 FT^3	LP GAS-100 GALLONS	GRADE
[ ]	[ ]	[ ]	[3 1 7 7 6]	[ ]	[ ]
26-31	32-33	34	35-41	42-45	

COAL- TONS	SULFUR %	ASH%	WOOD-TONS	MOISTURE %
[ ]	[ ]	[ ]	[ ]	[ ]
46-52	53-55	56-58	59-63	64-65

OTHER FUELS _____ (Specify Type) [ ] 66-1 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

OTHER FUEL _____ (Specify Type) [ ] 66-2 ANNUAL AMOUNT CONSUMED _____ (Specify Units of Measure)

1= Coke 2= COG 3=BFG 4=Other

11. Operating Schedule (for this Equipment)

Continuous Operation	Batch Process	Hours per Batch	Batch per Week	Hours per Day	Days Per Week	Days per Year
[X]	[ ]	[ ]	[ ]	[2 4]	[7]	[3 6 5]
67-1	67-2	68-69		70-71	72	73-75

Seasonal Variation in Operation:

No Variation	Winter Percent	Spring Percent	Summer Percent	Fall Percent	(Total Seasons= 100%)
[X]	[ ]	[ ]	[ ]	[ ]	
76	77-78	79-80	81-82	83-84	

12. Equivalent Stack Innformation- is Exhaust through Doors, Windows, etc. Only? (Y/N) [N] (85)

No additional stacks due to modification

If not, then	Height Avove Ground (FT)	Inside Diameter at Top	Exit Temperature (°F)	Exit Velocity (FT/SEC)
	[ ] (86-88)	[ ] (89-91)	[ ] (92-95)	[ ] (96-98)

NOTE:
Attach a block diagram of process/process line, indicating new equipment as reported on this form and all existing equipment, including control devices and emission points.

13. Input Materials (for this equipment only)
Is any of this data to be considered confidential? [Y] (Y or N)

	NAME	CAS NO. (IF APPLICABLE)	INPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	See Attached List					
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

14. Output Materials (for this equipment)
Process/Product Stream

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	Magnapore Catalyst		355	lbs	1553	tons
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

15. Waste Streams- Solid and Liquid

	NAME	CAS NO. (IF APPLICABLE)	OUTPUT RATE PER HOUR	UNITS	PER YEAR	UNITS
1.	Catalyst Waste		155	lbs	681	tons
2.	Suspended Solids		19	lbs	82	tons
3.	Nitrates (as N)	6484-52-2	61	lbs	268	tons
4.						
5.						
6.						
7.						
8.						
9.						
TOTAL						

16. Total Stack Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
2.4	0.05	4.42
99-104	105-110	111-116

Carbon Monoxide	Volatile Organic Compounds	PM-10
7.3	6.62	2.4
177-122	123-128	129-134

17. Total Fugitive Emissions (for this equipment only) in Pounds Per Operating Day

Particulate Matter	Oxides of Sulfur	Oxides of Nitrogen
6.7	0	0
135-139	140-144	145-149

Carbon Monoxide	Volatile Organic Compounds	PM-10
0	0.7	6.7
150-154	155-159	160-164

Method Used to Determine Emissions (1= Estimate 2= Emission Factor 3= Stack Test 4= Other)

See attached calculations

TSP	SOX	NOX	CO	VOC	PM10
4	4	4	4	4	4
165	166	167	168	169	170

AIR AND RADIATION MANAGEMENT ADMINISTRATION USE ONLY

18. Date Rec'd. Local _____ **Date Rec'd. State** _____ **Return to Local Jurisdiction** Date_____ By_____

Reviewed by Local Jurisdiction Date_____ By_____ **Reviewed by State** Date_____ By_____

19. Inventory Date **Month/Year** (171-174) **Equipment Code** (175-177) **SCC Code** (178-185)

20. Annual Operating Rate (186-192) **Maximum Design Hourly Rate** (193-199) **Permit to Operate Month** (200-201) **Transaction Date (MM/DD/YR)** (202-207)

Staff Code (208-210) **VOC Code** (211 212) **SIP Code** (213 214) **Regulation Code** (215-218) **Confidentiality** (219)

Point Description (220-238) **Action** (239) A: Add C: Change

Form 5 MAG/MGX Plant
Section 13. MAG/MGX Input Materials and Rates

Code Letter	Per Hour	Units	Per Year	Units
A	129	LBS.	546	TONS
B	1,356	LBS.	5,939	TONS
C	40	LBS.	175	TONS
D	178	LBS.	782	TONS
E	16	LBS.	72	TONS
F	8	LBS.	157	TONS
G	169	LBS.	740	TONS
H	308	LBS.	1,350	TONS

Public Version

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Air and Radiation Management Administration ● Air Quality Permits Program
1800 Washington Boulevard ● Baltimore, Maryland 21230
(410)537-3225 ● 1-800-633-6101● www.mde.maryland.gov

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Applicant Name: W.R. Grace & Co. - Curtis Bay

Step 1: Quantify premises-wide emissions of Toxic Air Pollutants (TAP) from new and existing installations in accordance with COMAR 26.11.15.04. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Class I or Class II?	Screening Levels (µg/m^3)			Estimated Premises Wide Emissions of TAP			
						Actual Total Existing TAP Emissions	Projected TAP Emissions from Proposed Installation	Premises Wide Total TAP Emissions	
			1-hour	8-hour	Annual	(lb/hr)	(lb/hr)	(lb/hr)	(lb/yr)
ex. ethanol	*64175*	*II*	*18843*	*3769*	*N/A*	*0.60*	*0.15*	*0.75*	*1500*
ex. benzene	*71432*	*I*	*80*	*16*	*0.13*	*0.5*	*0.75*	*1.00*	*400*
Chrome +3	7440-47-3	II	NA	5	NA	0.023	0.023	0.023	146.667
Ammonia	7664-41-7	II	243.7832	174.1309	NA	32.40	3.57	38.77	268102
Hexanol	111-27-3	II	NA	27.30	NA	0.715	0.715	0.715	6,260

(attach additional sheets as necessary.)

Note: Screening levels can be obtained from the Department's website (http://www.mde.maryland.gov) or by calling the Department.

Step 2: Determine which TAPs are exempt from further review. A TAP that meets either of the following Class I or Class II small quantity emitter exemptions is exempt from further TAP compliance demonstration requirements under Step 3 and Step 4.

Class II TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(a))
A Class II TAP is exempt from Step 3 and Step 4 if the Class II TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour, and any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3.

Class I TAP Small Quantity Emitter Exemption Requirements (COMAR 26.11.15.03B(3)(b))
A Class I TAP is exempt from Step 3 and Step 4 if the Class I TAP meets the following requirements: Premises wide emissions of the TAP shall not exceed 0.5 pounds per hour and 350 pounds per year, any applicable 1-hour or 8-hour screening level for the TAP must be greater than 200 µg/m^3, and any applicable annual screening level for the TAP must be greater than 1 µg/m^3.

If a TAP meets either the Class I or Class II TAP Small Quantity Emitter Exemption Requirements, no further review under Step 3 and Step 4 are required for that specific TAP.

FORM 5T: Toxic Air Pollutant (TAP) Emissions Summary and Compliance Demonstration

Step 3: Best Available Control Technology for Toxics Requirement (T-BACT, COMAR 26.11.15.05)
In the following table, list all TAP emission reduction options considered when determining T-BACT for the proposed installation. The options should be listed in order beginning with the most effective control strategy to the least effective strategy. Attach supporting documentation as necessary.

Target Pollutants	Emission Control Option	% Emission Reduction	Costs		T-BACT Option Selected? (yes/no)
			Capital	Annual Operating	
ex. ethanol and benzene	*Thermal Oxidizer*	*99*	*$50,000*	*$100,000*	*no*
ex. ethanol and benzene	*Low VOC materials*	*80*	*0*	*$100.000*	*yes*
Chrome +3	Filters/Dust Collectors	99	$20,000-300,000	$10,000-$100,000	yes
Ammonia	Absorbers/Scrubbers	95	$500,000	$200,000	yes
Hexanol	Condensers	99	$80,000	$5,000	yes
Hexanol	Thermal Oxidizers/Afterburners	99	$300,000	$100,000	yes

(attach additional sheets as necessary)

Step 4: Demonstrating Compliance with the Ambient Impact Requirement (COMAR 26.11.15.06)
Each TAP not exempt in Step 2 must be individually evaluated to determine that the emissions of the TAP will not adversely impact public health. The evaluation consists of a series of increasingly non-conservative (and increasingly rigorous) tests. Once a TAP passes a test in the evaluation, no further analysis is required for that TAP. "Demonstrating Compliance with the Ambient Impact Requirement under the Toxic Air Pollutant (TAP) Regulations (COMAR 26.11.15.06)" provides guidance on conducting the evaluation. Summarize your results in the following table. Attach supporting documentation as necessary.

Toxic Air Pollutant (TAP)	CAS Number	Screening Levels ($\mu g/m^3$)			Premises Wide Total TAP Emissions		Allowable Emissions Rate (AER) per COMAR 26.11.16.02A		Off-site Concentrations per Screening Analysis ($\mu g/m^3$)			Compliance Method Used?
		1-hour	8-hour	Annual	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	1-hour	8-hour	Annual	AER or Screen
ex. ethanol	*64175*	*18843*	*3769*	*N/A*	*0.75*	*1500*	*0.89*	*N/A*	*N/A*	*N/A*	*N/A*	*AER*
ex. benzene	*71432*	*80*	*16*	*0.13*	*1.00*	*400*	*0.04*	*36.52*	*1.5*	*1.05*	*0.12*	*Screen*
Chrome +3	7440473	NA	5	NA	0.023	146.667	.0815	NA	NA	1.96	NA	ISCST3
Ammonia	7664417	243.783	174.130	NA	38.77	268102	3.974/0.873	NA	190.835	118.214	NA	Screen
Hexanol	111273	NA	27.30	NA	0.715	6,260	0.445/0.097	NA	NA	13.70	NA	Screen

(attach additional sheets as necessary)

If compliance with the ambient impact requirement cannot be met using the allowable emissions rate method or the screening analysis method, refined dispersion modeling techniques may be required. Please consult with the Department's Air Quality Permit Program prior to conducting dispersion modeling methods to demonstrate compliance.

APPENDIX 2
SITE LOCATION MAP, PROCESS FLOW DIAGRAM, AND PLOT PLAN

W.R. GRACE & CO.-CONN. HAS NOT INCLUDED OR REDACTED INFORMATION FROM THIS APPENDIX PURSUANT TO A CLAIM OF CONFIDENTIALITY

APPENDIX 3
DETAILED EMISSIONS CALCULATIONS

W.R. GRACE & CO.-CONN. HAS REDACTED INFORMATION FROM THIS APPENDIX PURSUANT TO A CLAIM OF CONFIDENTIALITY

W.R. Grace Co.-Conn.
5500 Chemical Rd, Baltimore, MD 21226
Project Netting

STEP 1 - Project Emission Increases		**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**SO_2 (TPY)**	**VOC (TPY)**	**Pb (TPY)**	**CO_2e (TPY)**
Project Potenital to Emit (PTE)	ICO Line 3	0.59	3.97	1.99	1.99	1.91	0.03	0.26	2.36E-05	5,642
	Magnapore Expansion									
	Total	**0.59**	**3.97**	**1.99**	**1.99**	**1.91**	**0.03**	**0.26**	**2.36E-05**	**5,642**
Project Increases - Projected Actuals	Increased utilization of existing ICO West assets	0.00	0.00	5.44	5.44	5.17	0.00	0.00	0.00	0
	Increased throughput at Magnapore	0.81	1.33	1.67	1.67	1.60	0.01	1.33	7.94E-06	3,203
	Increased steam production at Powerhouse	2.36	3.96	0.36	0.36	0.36	0.03	0.26	2.37E-05	5,674
	Total	**3.17**	**5.30**	**7.48**	**7.48**	**7.13**	**0.04**	**1.59**	**3.17E-05**	**8,877**
	Total PTE + PAE	**3.75**	**9.26**	**9.47**	**9.47**	**9.04**	**0.07**	**1.85**	**5.53E-05**	**14,519**
	Major Modification SER	**25**	**100**	**25**	**15**	**10**	**40**	**25**	**0.6**	**-**
	Major Permitting Triggered?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

STEP 2 - Project Netting		**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**SO_X (TPY)**	**VOC (TPY)**	**Pb (TPY)**	**CO_2e (TPY)**
Project Past Actuals (BAE)	Existing ICO assets emissions	0.00	0.00	5.18	5.18	4.92	0.00	0.00	0.00	0
	Magnapore	0.62	1.02	1.59	1.59	1.51	0.01	1.27	6.09E-06	2,228
	Magnapore - Powerhouse contributions	1.43	2.41	0.22	0.22	0.22	0.02	0.16	1.45E-05	3,448
	Total BAE	**2.05**	**3.43**	**6.99**	**6.99**	**6.66**	**0.02**	**1.42**	**2.06E-05**	**5,675**
Project Netting (Increases and Decreases)	**Total PTE + PAE - Project Decreases - BAE**	**1.70**	**5.83**	**2.48**	**2.48**	**2.38**	**0.04**	**0.43**	**3.47E-05**	**8,843**
	Major Modification SER	**25**	**100**	**25**	**15**	**10**	**40**	**25**	**0.6**	**-**
	Major Permitting Triggered?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

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Table A.1: POTENTIAL EMISSIONS (PTE) for New Process Units

Process Units														
Status	Process Unit ID	Process Unit Description	Inherent Control Device ID	Inherent Control Device Description	Control Device ID	Control Device Description	Stack ID	Flowrates[7] (acfm)	PM[7] (gr/acfm)	Max PM (lbs/day)	Days	Max PM[8] (ton/year)	Max PM_{10}[8] (ton/year)	Max $PM_{2.5}$[9] (ton/year)
REPLACED	H-7701S	Hammer Mill[1]	--	--	--	--	F[1]	--	--	--	--	--	--	--
REPLACED	H-7701N	Hammer Mill[1]	--	--	--	--	F[1]	--	--	--	--	--	--	--
NEW	ET-30102	Mill Feed Tank	--	--	--	--	I[3]	--	--	--	--	--	--	--
NEW	EM-30702	Line 3 Mill	--	--	--	--	I[3]	--	--	--	--	--	--	--
NEW	EM-30712	Line 3 Mill	--	--	--	--	I[3]	--	--	--	--	--	--	--
NEW	ET-30103	Mill Receiver Tank	--	--	--	--	I[3]	--	--	--	--	--	--	--
NEW	ET-30104	Spray Dryer Feed Tank	--	--	--	--	I[3]	--	--	--	--	--	--	--
NEW	EST-35801	Line 3 Spray Dryer[5]	EC-35601 EBH-35601	Spray Dryer Cyclone & Baghouse	--	--	ICO-130	13,800	0.002	4.44	365	0.81	0.81	0.77
NEW	EV-35114	Coarse Classifier Feed Hopper	EBV-35614	Bin Vent	--	--	I[3]	--	--	--	--	--	--	--
NEW	ECL-35704	Coarse Classifier	EBH-35604	Coarse Classifier Baghouse	EBH-35670	Cartridge Filter[6]	ICO-131	10,400	0.0001	0.18	365	0.03	0.03	0.03
NEW	ECL-35705	Fines Classifier	EBH-35605	Fines Classifier Baghouse										
NEW	ES-35604	Coarse Sacking Station	--	--	--	--	F[2]	--	--	--	--	--	--	--
NEW	EV-35115	Fines Classifier Feed Hopper	EBV-35615	Bin Vent	--	--	I[3]	--	--	--	--	--	--	--
NEW	ES-35605	Fines Sacking Station	--	--	--	--	F[2]	--	--	--	--	--	--	--
NEW	EV-35125	Finished Product Packaging Silo	EBV-35606	Bin Vent	--	--	ICO-132	1,500	0.003	0.90	365	0.16	0.16	0.16
NEW	ES-35606	Drum Packaging Station	--	--	--	--	ICO-132[4]	Routed to EBV-35606 (ICO-132) via EV-35125						
NEW	ES-35607	Drum Packaging Station	--	--	--	--	ICO-132[4]	Routed to EBV-35606 (ICO-132) via EV-35125						
NEW	ES-35608	Sack Filling Station	--	--	--	--	ICO-132[4]	Routed to EBV-35606 (ICO-132) via EV-35125						
NEW	EBH-35671	Fugitive Dust Collector with a Baghouse	--	--	--	--	ICO-133	5,000	0.0005	0.48	365	0.09	0.09	0.08
NEW	EBH-35680	Central Vacuum System with a Baghouse	--	--	--	--	ICO-134	433	0.005	0.48	365	0.09	0.09	0.08
NEW	--	Indoor Emissions via Building Vents	--	--	--	--	ICO-135	40,000	0.0003	2.5	365	0.45	0.45	0.43
											Process Units Total	**1.63**	**1.63**	**1.55**

Notes:

1. Hammer mill in ICO line 3 is being replaced with one of larger capacity, and the fugitive emissions from these emission units are routed to an existing stack ICO-60.
2. Fugitive emissions are routed to a Fugitive Dust Collection System and controlled by baghouse EBH-35671 (ICO-133).
3. Indoor emissions will be vented via building vents (ICO-135).
4. Fugitive emissions are routed to the Finished Product Packaging Silo (EV-35125) and controlled by EBV-35606 (ICO-132)
5. The Spray Dryer is controlled by a cyclone and baghouse, which has an outlet grain loading of 0.002 gr/acfm.
6. A single Cartridge Filter will be controlling the Coarse Classifier and Fines Classifier.
7. The flowrates for the Classifiers (ECL-35704, ECL-35705), the Finished Product Packaging Silo (EBV-35606) and the Fugitive Dust Collector (EBH-35671) are sourced from manufacturer specification sheets. The grain loadings were calculated via process knowledge and manufacturer-supplied control efficiencies.
8. PM is assumed equal to PM_{10}.
9. $PM_{2.5}$ is assumed 95% of PM/PM_{10}

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Table A.2: POTENTIAL EMISSIONS (PTE) for New Combustion Unit

Combustion Unit[3,4,5]													
Status	Process Unit ID	Process Unit Description	Stack ID	Capacity (MMBtu/hr)	Hours	NO_X	CO	PM/PM_{10}[1]	$PM_{2.5}$[2]	SO_2	VOC	Pb	CO_2e[6]
NEW	D-35801	Spray Dryer	ICO-130	11.0	8,760	0.59	3.97	0.36	0.36	0.03	0.26	2.4E-05	5,642
					Combustion Unit Total	**0.59**	**3.97**	**0.36**	**0.36**	**0.03**	**0.26**	**2.4E-05**	**5,642**

	NO_X	CO	PM/PM_{10}	$PM_{2.5}$	SO_2	VOC	Pb	CO_2e
Pollutants -->								
Total Emissions from NEW Units (Process Units + Combustion Unit)	**0.59**	**3.97**	**1.99**	**1.91**	**0.03**	**0.26**	**2.4E-05**	**5,642**

Notes:

1. PM is assumed equal to PM_{10}.
2. $PM_{2.5}$ is assumed 95% of PM/PM_{10}
3. Emission factors are from AP-42 Chapter 1.4, Table 1.4.1 and Table 1.4.2.

Pollutant	Emission Factor (lb/MMscf)
NO_X[a]	12.39
CO	84
PM/PM_{10}	7.6
$PM_{2.5}$	7.6
SO_2	0.6
VOC	5.5
Pb	0.0005
PM (Condensable)	5.7
PM (Filterable)	1.9

[a] Ultra-low NOx emission factor is 10 ppm at 3% O_2, according to the vendor data.

$E = Kx\ Ch\ x\ F\ x\ (20.9/(20.9 - O_2\%)$ from Appendix F to Part 75—Conversion Procedures

C_h (ppm)	10
O_2 (%)	3%
K (lb/dscf)/ppm NO_X	1.194E-07
F (dscf/MMBtu)	8,710

4. Natural gas heating value is 1020 Btu/scf.
5. Per 40 CFR 98, Subpart C, Tables C-1 and C-2 for natural gas combustion. The emission factors were converted from kg/MMBtu to lb/MMBtu.
6. The CO_2e emission factor is calculated as the sum of each GHG pollutant multiplied by its global warming potential, per 40 CFR 98, Subpart A, Table A-1:

CO_2: 1
CH_4: 28
N_2O: 265

Greenhouse Gases (GHG) Emission Factors

Pollutant	Emission Factor (lb/MMbtu)[10,11]
CO_2	116.98
CH_4	2.20E-03
N_2O	2.20E-04
CO_2e [2]	117.10

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Table A.3: PROJECTED ACTUAL EMISSIONS (PAE) for Existing Units

Status	Process Unit ID	Process Unit Description	Inherent Control Device ID	Inherent Control Device Description	Stack ID	2021 Actual Emissions (ton/year) PM/PM_{10}	2022 Actual Emissions (ton/year) PM/PM_{10}	2023 Actual Emissions (ton/year) PM/PM_{10}	Projected Actual $PM^{1,5}$ (ton/year)	Projected Actual $PM_{10}^{1,5}$ (ton/year)	Projected Actual $PM_{2.5}^{1,6}$ (ton/year)
EXISTING	V-1101	Hydrogel Hopper[3]	BH2209N BH2209S	Cartridge Collector Cartridge Collector	ICO-60	1.73	1.8	1.68	1.85	1.85	1.76
EXISTING	T-1102	Hammer Mill Slurry Tank	--	--	F[2]	Routed to BH-204 (ICO-46)					
EXISTING	N/A	Fugitive dust collection from several units.	BH-204	Baghouse	ICO-46	1.54	1.60	1.50	1.65	1.65	1.57
EXISTING	M-716	Classifier[4]	C-216 BH-216	Classifier Ultra Fine Cyclone Cartridge Collector	ICO-73	0.84	0.87	0.82	0.90	0.90	0.86
EXISTING	T-184	Truck Silo[4]	BV-284	Product Collector, bin vent	ICO-127	0.35	0.36	0.34	0.38	0.38	0.36
EXISTING	T-185	Truck Silo[4]	BV-285	Product Collector, bin vent	ICO-128	0.42	0.44	0.41	0.45	0.45	0.43
EXISTING	-	Bulk Truck Portable Fugitive Product Collector	BH-218	Cartridge Collector	ICO-51[7]	Indoor Emissions					
EXISTING	West Plant Building Vent	Indoor Emissions	--	--	ICO-47	0.20	0.21	0.19	0.21	0.21	0.20
								Total Projected Actual Emissions	**5.44**	**5.44**	**5.17**

Table A.4: Projected Operating Days

Status	Process Unit ID	Process Unit Description	Inherent Control Device ID	Inherent Control Device Description	Stack ID	Max days	Actual Operating Days 2021	2022	2023	Max. Average Days	Ratio
EXISTING	V-1101	Hydrogel Hopper[3]	BH2209N BH2209S	Cartridge Collector Cartridge Collector	ICO-60	365	341	354	332	348	1.05
EXISTING	T-1102	Hammer Mill Slurry Tank	--	--	F[2]	Routed to BH-204 (ICO-46)					
EXISTING	N/A	Fugitive dust collection from several units.	BH-204	Baghouse	ICO-46	365	341	354	332	348	1.05
EXISTING	M-716	Classifier[4]	C-216 BH-216	Classifier Ultra Fine Cyclone Cartridge Collector	ICO-73	365	341	354	332	348	1.05
EXISTING	T-184	Truck Silo[4]	BV-284	Product Collector, bin vent	ICO-127	365	341	354	332	348	1.05
EXISTING	T-185	Truck Silo[4]	BV-285	Product Collector, bin vent	ICO-128	365	341	354	332	348	1.05
EXISTING	-	Bulk Truck Portable Fugitive Product Collector	BH-218	Cartridge Collector	ICO-51[7]	Indoor Emissions					
EXISTING	West Plant Building Vent	Indoor Emissions	--	--	ICO-47	365	341	354	332	348	1.05

Notes:
1. Projected actual emissions were calculated by assuming a ratio of maximum days to maximum average days from 2021 and 2022.
2. Fugitive emissions are routed to an existing stack, ICO-46, included in the above tables.
3. Fugitive emissions from these emission units are routed to an existing stack, ICO-60.
4. Actual emissions were derived from the flow rate and grain loading for the emission units and the number of operating days reported in the 2021, 2022 and 2023 Emissions Certification reports.
5. PM is assumed equal to PM_{10}.
6. $PM_{2.5}$ is assumed 95% of PM/PM_{10}
7. Indoor emissions will be vented via the building vent (ICO-47), included in the above tables.

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Table A.5: PAST OR BASELINE ACTUAL (BAE) for Existing Units

Status	Process Unit ID	Process Unit Description	Control Device ID	Control Device Description	Stack ID	2021 Actual Emissions (ton/year)	2022 Actual Emissions (ton/year)	2023 Actual Emissions (ton/year)	Past Actual $PM^{1,5}$ (ton/year)	Past Actual $PM_{10}^{1,5}$ (ton/year)	Past Actual $PM_{2.5}^{1,6}$ (ton/year)
						PM/PM_{10}	PM/PM_{10}	PM/PM_{10}			
EXISTING	V-1101	Hydrogel Hopper[3]	BH2209N BH2209S	Cartridge Collector Cartridge Collector	ICO-60	1.73	1.80	1.68	1.77	1.77	1.68
EXISTING	T-1102	Hammer Mill Slurry Tank	--	--	F[2]	Routed to BH-204 (ICO-46)					
EXISTING	N/A	Fugitive dust collection from several units.	BH-204	Baghouse	ICO-46	1.54	1.60	1.50	1.57	1.57	1.49
EXISTING	M-716	Classifier[4]	C-216 BH-216	Classifier Ultra Fine Cyclone & Cartridge Collector	ICO-73	0.84	0.87	0.82	0.86	0.86	0.81
EXISTING	T-184	Truck Silo[4]	BV-284	Product Collector, bin vent	ICO-127	0.35	0.36	0.34	0.36	0.36	0.34
EXISTING	T-185	Truck Silo[4]	BV-285	Product Collector, bin vent	ICO-128	0.42	0.44	0.41	0.43	0.43	0.41
EXISTING	-	Bulk Truck Portable Fugitive Product Collector	BH-218	Cartridge Collector	ICO-51[7]	Indoor Emissions					
EXISTING	West Plant Building Vent	Indoor Emissions	--	--	ICO-47	0.20	0.21	0.19	0.20	0.20	0.19
								Total Past Actual Emissions	**5.18**	**5.18**	**4.92**

Notes:
1. Past actual emissions were derived from the maximum two-year average of the 2021, 2022, and 2023 Emissions Certification reports.
2. Fugitive emissions are routed to an existing stack, ICO-46, included in the above tables.
3. Fugitive emissions from these emission units are routed to an existing stack, ICO-60.
4. Actual emissions were derived from the flow rate and grain loading for the emission units and the number of operating days reported in the 2021, 2022 and 2023 Emissions Certification reports.
5. PM is assumed equal to PM_{10}.
6. $PM_{2.5}$ is assumed 95% of PM/PM_{10}
7. Indoor emissions will be vented via the building vent (ICO-47), included in the above tables.

Magnapore Expansion Project Projected Actual Emissions (PAE)

	PM	PM_{10}	$PM_{2.5}$[3]	SO_2[4]	NO_x[5]	VOC[6]	CO[7]	Pb[8]	CO_2e[9]
PAE (tpy)[1,2]	2.03	2.03	1.95	0.04	3.17	1.59	5.30	0.00	8,877
Significant Emissions (tpy)[10]	25	15	10	40	25[11]	25[11]	100	0.6	75,000[12]

1. Emissions from increased natural gas usage at Magnapore as well as POW to support additional steam demand.
2. Conservatively assuming hourly production related emissions at 8,760 hours/year.
3. Assume $PM_{2.5}$ = 0.95 * PM_{10}
4. AP-42 Table 1.4-2; 0.6 lb/MMscf
5. AP-42 Table 1.4-1; 50 lb/MMscf
6. AP-42 Table 1.4-2; 5.5 lb/MMscf
7. AP-42 Table 1.4-1; 84 lb/MMscf
8. AP-42 Table 1.4-2; 0.0005 lb/MMscf
9. AP-42 Table 1.4-2; 120,000 lb/MMscf CO_2, 0.64 lb/MMscf N_2O, 2.3 lb/MMscf CH_4
10. 40 CFR §52.21(b)(23)(i)
11. COMAR 26.11.17.01 B(26)(a)
12. 40 CFR §52.21(b)(49)(iv)(B)

Projected Actuals	2.03	2.03	1.95	0.038	3.17	1.59	5.30	0.00	8,877
Baseline Emissions	1.81	1.81	1.73	0.025	2.05	1.42	3.43	0.00	5,675
Project Increases	0.22	0.22	0.22	0.013	1.11	0.17	1.87	0.00	3,201

MAG/MGX Expansion Project Emissions

Criteria Pollutant (tpy)	Source - Magnapore Combustion	Source - POW Steam Production	Source - Magnapore Process	MAG Total (tpy)	Total PAE (tpy)
PM	0.12	0.36	1.55	1.67	2.03
PM_{10}	0.12	0.36	1.55	1.67	2.03
$PM_{2.5}$	0.12	0.36	1.47	1.60	1.95
SO_2	0.01	0.03	-	0.01	0.04
NO_x	0.81	2.36	-	0.81	3.17
VOC	0.09	0.26	1.24	1.33	1.59
CO	1.33	3.96	-	1.33	5.30
Pb	0.00	0.00	-	0.00	0.00
CO_2	1,907	5,662	1,293	3,199	8,861
CH_4	0.04	0.11	-	0.04	0.15
N_2O	0.01	0.03	-	0.01	0.04
CO_2e	1,911	5,674	1,293	3,203	8,877

APPENDIX 4
CONTROL EQUIPMENT SPECIFICATION SHEETS

W.R. GRACE & CO.-CONN. HAS NOT INCLUDED INFORMATION FROM THIS APPENDIX PURSUANT TO A CLAIM OF CONFIDENTIALITY

APPENDIX 5
TOXICS MODELING REPORTS

1.0 MARYLAND TAP ANALYSIS FOR AMMONIA

The Project is subject to the Maryland toxic air pollutant (TAP) requirements because TAPs will discharge into the ambient air, and the Project is required to obtain a Permit-to-Construct (PTC) under COMAR 26.11.02.09 (pursuant to COMAR 26.11.15.03(A)(1)).

COMAR 26.11.15.06 requires a demonstration that TAP emissions will not unreasonably endanger human health. Grace is demonstrating compliance with this ambient impact requirement using a screening analysis as specified under COMAR 26.11.15.07. According to COMAR 26.11.16.02(A), such a demonstration is made by showing that TAP emissions from the premises will not cause increases in ambient levels that exceed the applicable TLV- /threshold-based screening level for a Class II TAP (MDE Screening Levels).

1.1 TAP Sources/Ammonia Emissions

The maximum expected premises-wide ammonia emissions were calculated using stack test/monitoring data, process rates, product ammonia content, ammonia usage, tank vapor displacement, mass balance and engineering judgement.

Table 1 identifies the premises-wide ammonia sources along with a description of the source and the calculated ammonia emissions.

TABLE 1 TAP SOURCES AND AMMONIA EMMISIONS

STACK ID	AMMONIA EMISSIONS (G/S)	SOURCE DESCRIPTION	CONTROLS
SGO_21	0.518	A-Mill and Baghouse	
SGO_32	0.115	K-11/Activator and Baghouse	
SGO_56	0.433	Flash Dryer and Baghouse	
SGO_68	0.324	Wash Tanks vent	
SGO_74	0.179	B-Mill and Baghouse	
SAC_111	0.001	Spray Dryer and 8 Cyclones	Venturi Scrubber and Hot Water Generator HCL Scrubber
SAC_115	0.025	Calciner and Cyclone, Dryer and 2 Cyclones	Calciner and 2 Scrubbers, Dryer Scrubber and Ammonia Absorber
SAC_123	0.019	Ammonia Storage Tank	Ammonia Scrubber
AEO_11	4.66	Dryer, 4 Alumina Spheres Columns, Separator, Centrifuge and 11 Tanks	Catalytic Converter to control ammonia (CAMET)
AEO_82	0.05	Dryer, Kiln III (exhaust and flue gas), Kiln 1, Kiln I Cooler, Calciner Kiln (exhaust gas) and Baghouse	SCR Reactor
ICO_20	0.27	West Plant Spray Dryer and Baghouse	
ICO_105	0.41	East Plant Spray Dryer and Baghouse	
DCO_01	0.31	Building fugitives (stack)	
DCO_23	0.003	3 electric Calciners	Venturi Scrubber and 2 Packed Tower Absorbers
AEO_54	0.38	Building fugitives (stack)	

STACK ID	AMMONIA EMISSIONS (G/S)	SOURCE DESCRIPTION	CONTROLS
SGO_84	0.52	Turbo Dryer and Baghouse	
ICO_PL3	0.126	New Line 3 Spray Dryer, Cyclone and Baghouse	
SGO_33	0.33	Building 111 fugitives (vent)	
MAG_0921	0.054	Magnapore fugitives (vent)	

1.2 TAPS Compliance Screening Analysis

A refined screening approach is used to demonstrate compliance. In this refined screening, off-site ground-level impacts of maximum expected ammonia emissions (the ammonia Class II TAP is listed under COMAR 26.11.16.07 B) are estimated using refined air quality modeling, consistent with COMAR 26.11.16.02(A)(3) (and COMAR 26.11.16.02(C)(1)), are directly compared to the applicable MDE Screening Levels.

Refined Air Quality Modeling

Consistent with COMAR 26.11.16.02, a more rigorous, refined air quality dispersion modeling analysis was performed to project off-site 1-hr and 8-hr ammonia concentrations. The United States Environmental Protection Agency's (USEPA) guidance given in Appendix W to 40 CFR 51 was followed in the performance of this refined air quality modeling.

- Air quality model

The refined modeling was conducted using the USEPA air quality model (AERMOD) (version 23132) using Providence/ORIS BEEST Suite (version 12.10) as the user interface. The standard regulatory default option was invoked in AERMOD. In addition, the adjusted u* regulatory option was invoked.

- Model receptors

Concentrations were projected at ground-level locations (receptors) on the W.R. Grace Curtis Bay property line and at locations off-site (including receptors not on land, to be comprehensive). Model receptors were located to determine the expected highest off-site short-term concentrations. A total of 5683 receptors were used. Receptors were placed along the property line at 25-m spacing. Also, receptors were placed in a grid at 25-m spacing out to 200 m from the property, and at 100-m spacing out to 3 km from the property. Figures 1 and 2 show maps of the closer-in model receptors and the entire receptor grid, respectively.

The Grace facility is isolated within a highly industrial section of Curtis Bay surrounded by other industries and a landfill. No general public reside in the vicinity of the facility. Much of the Grace facility (to the North and West) is surrounded by a large water body. The inaccessibility of the shoreline and inhospitable nature of the industrial facility deters public access. There is fencing along almost all the property to the East and South. In addition, there is a guardhouse at the entrance to the facility, signage, and video surveillance that preclude/deter public access.

Ground elevations (as well as hill-height scaling factors used by AERMOD) of each receptor were obtained using AERMAP (version 18081), AERMOD's terrain preprocessor. United States

Geological Survey (USGS) digital elevation data (3DEP data with a resolution of 1 arc-second) for the modeling domain were input to AERMAP.

FIGURE 1 RECEPTOR MAP – CLOSE-IN RECEPTORS

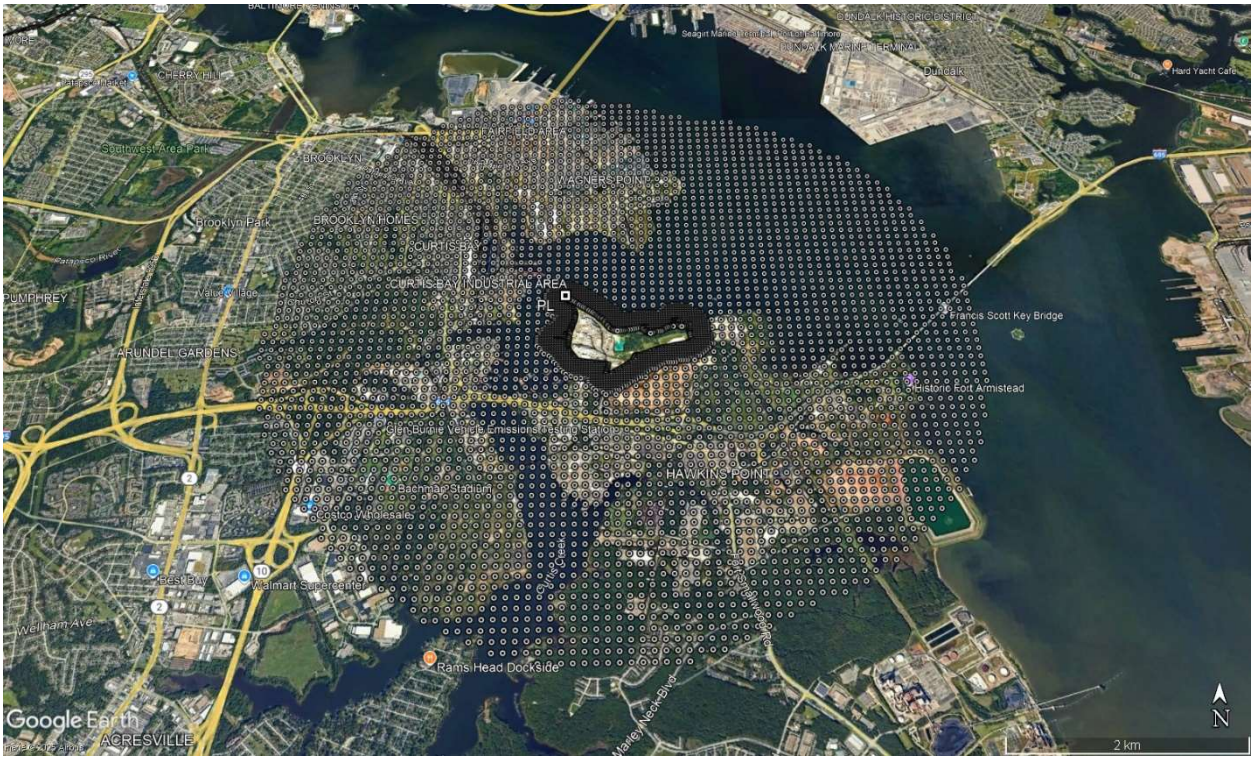

FIGURE 2 RECEPTOR MAP – ENTIRE RECEPTOR GRID

- Rural/urban classification

The Land Use Procedure given in USEPA Appendix W to 40 CFR 51 section 7.2.1.1(b)(i) was used to determine the urban/rural status for the dispersion modeling. The Project sources are located within an urban area (Baltimore urban area), but located close enough to a body of water (Patapsco River and Curtis Creek) or other non-urban land use categories to result in a predominantly rural land use classification within 3 km of the source. Section 5.1 of the AERMOD Implementation Guide (EPA-450/B-24-009, November 2024) cautions users against applying the Land Use Procedure on a source-by-source basis but should also consider the potential for urban heat island influences across the full modeling domain. Following your suggestion, the Land Use Procedure was used to determine the urban/rural status but disregarding the area of water within 3 km of the source. After removing the area covered by water (32%), 68% of the 3-km radius area is land. GoogleEarth images and US Geological Survey National Land Cover Database (NLCD) data for the area of interest were reviewed. Approximately 70% of the relevant land area is comprised of urban land use types as proposed by Auer (J. Appl. Meteor., 17, 636-643, May 1978). As a result, AERMOD was run in the urban mode. The April 2020 census population of nearby Baltimore City (585708) and the default surface roughness length were input to AERMOD to run the urban mode.

- Meteorological data

The recent five consecutive years (2019 through 2023) of AERMOD-ready representative meteorological input data were obtained from MDE (specifically, the SFC and PFL files provided by MDE's LiAn Zhuang (email dated 9/30/24)). The surface meteorological data (Automated Surface Observing System data) were collected at Baltimore/Washington International

Thurgood Marshall Airport, Anne Arundel County, Maryland (WBAN 93721), and the upper air meteorological data were collected at Sterling, Virginia (Dulles International Airport) (WBAN 93734). MDE used AERSURFACE (version 20060) to determine representative surface characteristics and AERMET (version 23132) to process the meteorological data. The adjusted u* regulatory option was invoked in AERMET.

- Structure downwash

Direction-specific building dimensions of nearby/adjacent buildings/structures/tanks on the premises were generated using BPIPPRM (version 04274) and input to AERMOD to address the potential structure wake effects on stack plumes. Premises wide, 176 buildings/structures/tanks were included in the structure downwash analysis.

- Stack characteristics

Two types of sources were modeled: point sources and volume sources. Point sources were used to represent emissions from stacks, while volume sources were used to represent vented fugitive building emissions.

The USEPA User's Guide for the Industrial Source Complex (ISC3) Dispersion Models (EPA-454/B-95-003a) was followed in developing the source characteristics of the volume sources.

The SGO_33 source is a roof line source and was represented by 42 separated volume sources. The separation distance between the volume sources is two times the width, W, of the source (W is 3 ft). The Syinit (initial $SIGMA_y$) is calculated as 2W/2.15 [2*3/2.15=2.79 ft]. The Szinit (initial $SIGMA_z$) is calculated as Hb/2.15 [40/2.15=18.60 ft], where Hb is the average building roof height (40 ft).

The MAG_0921 source was represented by 4 individual volume sources. The width of each volume source is 6 ft. The initial $SIGMA_y$ is calculated as W/4.3 [6/4.3=1.40 ft], where W is the width of the volume source. The initial $SIGMA_z$ is calculated as Hb/2.15 [28/2.15=13.02 ft], where Hb is the building height (28 ft).

Tables 2 and 3 present characteristics of modeled sources input to AERMOD.

TABLE 2 CHARACTERISTICS OF MODELED POINT SOURCES

STACK ID	LOCATION		BASE ELEV.	STACK HEIGHT	STACK DIAMETER	STACK EXIT VELOCITY	STACK EXIT TEMP.
	UTM E (m)	UTM N (m)	(m)	(m)	(m)	(m/s)	(K)
SGO_21	364407.0	4341540.7	6.5	24.08	0.46	22.94	421.89
SGO_32	364468.9	4341582.5	6.9	9.14	0.71	5.94	349.67
SGO_56	364413.9	4341526.6	6.7	32.00	0.25	26.08	394.11
SGO_68	364495.8	4341520.9	7.1	23.77	0.51	18.63	310.78
SGO_74	364446.7	4341527.0	6.4	16.76	0.46	10.22	421.89
SAC_111	364323.0	4341583.8	6.4	60.96	1.68	16.04	343.00
SAC_115	364281.7	4341624.8	6.2	45.72	1.37	14.21	327.44
SAC_123	364295.0	4341519.3	6.3	9.14	0.15	5.17	310.78
AEO_11	364367.5	4341862.1	4.5	36.58	1.07	20.06	310.78
AEO_82	364375.8	4341879.5	4.5	48.77	1.52	18.33	483.56
ICO_20	364310.7	4341780.6	4.7	24.38	0.61	21.67	435.78
ICO_105	364359.3	4341765.4	4.8	24.38	0.61	17.79	435.78
DCO_01	364697.6	4341370.1	11.0	14.63	0.42	10.16	324.67
DCO_23	364734.7	4341393.2	10.0	15.24	0.2	5.82	333.00
AEO_54	364392.8	4341853.4	4.8	16.76	3.51	12.67	293.15
SGO_84	364451.8	4341607.8	6.3	12.19	0.61	14.34	422.04
ICO_PL3	364306.4	4341783.5	4.7	24.38	0.61	21.67	435.78

TABLE 3 CHARACTERISTICS OF MODELED VOLUME SOURCES

SOURCE ID	LOCATION		BASE ELEV.	RELEASE HEIGHT	INITIAL $SIGMA_Y$	INITIAL $SIGMA_Z$
	UTM E (m)	UTM N (m)	(m)	(m)	(m)	(m)
S33_0001	364520.8	4341535.7	7.4	12.19	0.85	5.67
S33_0002	364519.0	4341536.1	7.4	12.19	0.85	5.67
S33_0003	364517.2	4341536.4	7.4	12.19	0.85	5.67
S33_0004	364515.4	4341536.8	7.4	12.19	0.85	5.67
S33_0005	364513.6	4341537.1	7.3	12.19	0.85	5.67
S33_0006	364511.8	4341537.5	7.3	12.19	0.85	5.67
S33_0007	364510.0	4341537.8	7.3	12.19	0.85	5.67
S33_0008	364508.2	4341538.2	7.3	12.19	0.85	5.67
S33_0009	364506.4	4341538.6	7.3	12.19	0.85	5.67
S33_0010	364504.6	4341538.9	7.3	12.19	0.85	5.67
S33_0011	364502.8	4341539.3	7.3	12.19	0.85	5.67
S33_0012	364501.0	4341539.6	7.3	12.19	0.85	5.67
S33_0013	364499.2	4341540.0	7.3	12.19	0.85	5.67

SOURCE ID	LOCATION		BASE ELEV.	RELEASE HEIGHT	INITIAL $SIGMA_Y$	INITIAL $SIGMA_Z$
	UTM E (m)	UTM N (m)	(m)	(m)	(m)	(m)
S33_0014	364497.4	4341540.4	7.3	12.19	0.85	5.67
S33_0015	364495.7	4341540.7	7.3	12.19	0.85	5.67
S33_0016	364493.9	4341541.1	7.3	12.19	0.85	5.67
S33_0017	364492.1	4341541.4	7.3	12.19	0.85	5.67
S33_0018	364490.3	4341541.8	7.3	12.19	0.85	5.67
S33_0019	364488.5	4341542.1	7.2	12.19	0.85	5.67
S33_0020	364486.7	4341542.5	7.2	12.19	0.85	5.67
S33_0021	364484.9	4341542.9	7.2	12.19	0.85	5.67
S33_0022	364483.1	4341543.2	7.2	12.19	0.85	5.67
S33_0023	364481.3	4341543.6	7.1	12.19	0.85	5.67
S33_0024	364479.5	4341543.9	7.1	12.19	0.85	5.67
S33_0025	364477.7	4341544.3	7.1	12.19	0.85	5.67
S33_0026	364475.9	4341544.7	7.1	12.19	0.85	5.67
S33_0027	364474.1	4341545.0	7.0	12.19	0.85	5.67
S33_0028	364472.3	4341545.4	7.0	12.19	0.85	5.67
S33_0029	364470.5	4341545.7	7.0	12.19	0.85	5.67
S33_0030	364468.8	4341546.1	7.0	12.19	0.85	5.67
S33_0031	364467.0	4341546.5	7.0	12.19	0.85	5.67
S33_0032	364465.2	4341546.8	7.0	12.19	0.85	5.67
S33_0033	364463.4	4341547.2	7.0	12.19	0.85	5.67
S33_0034	364461.6	4341547.5	7.0	12.19	0.85	5.67
S33_0035	364459.8	4341547.9	7.0	12.19	0.85	5.67
S33_0036	364453.5	4341549.1	6.9	12.19	0.85	5.67
S33_0037	364451.7	4341549.5	6.9	12.19	0.85	5.67
S33_0038	364449.9	4341549.8	6.9	12.19	0.85	5.67
S33_0039	364448.1	4341550.2	6.9	12.19	0.85	5.67
S33_0040	364446.3	4341550.6	6.9	12.19	0.85	5.67
S33_0041	364435.3	4341552.8	6.8	12.19	0.85	5.67
S33_0042	364433.5	4341553.1	6.8	12.19	0.85	5.67
M0921_1	364536.4	4341774.4	5.8	8.53	0.43	3.97
M0921_2	364537.6	4341780.4	5.8	8.53	0.43	3.97
M0921_3	364538.8	4341786.4	5.8	8.53	0.43	3.97
M0921_4	364540.0	4341792.3	5.8	8.53	0.43	3.97

Refined Screening Compliance Demonstration

Table 4 presents the refined modeling results (projected maximum off-site concentrations) for the premises-wide, multi-stack analysis. This table also compares the projected maximum off-site ammonia impacts with the applicable MDE Screening Levels and demonstrates compliance (i.e., maximum off-site concentrations do not exceed MDE Screening Levels).

TABLE 4 REFINED MODELING TAP COMPLIANCE - COMPARISON BETWEEN MAXIMUM MODELED AMMONIA CONCENTRATIONS AND MDE SCREENING LEVELS

TAP	CAS #	MAXIMUM MODELED CONCENTRATION		MDE SCREENING LEVEL		COMPLIANCE	
		1-hr ($\mu g/m^3$)	8-hr ($\mu g/m^3$)	1-hr ($\mu g/m^3$)	8-hr ($\mu g/m^3$)	1-hr	8-hr
Ammonia	7664-41-7	190.8345	118.2143	243.7832	174.1309	Yes	Yes

1.0 MARYLAND TAP ANALYSIS FOR HEXANOL

The Magnapore Expansion Project is subject to the Maryland toxic air pollutant (TAP) requirements because TAPs will discharge into the ambient air, and the Project is required to obtain a Permit-to-Construct (PTC) under COMAR 26.11.02.09 (pursuant to COMAR 26.11.15.03(A)(1)).

COMAR 26.11.15.06 requires a demonstration that TAP emissions will not unreasonably endanger human health. Grace is demonstrating compliance with this ambient impact requirement using a screening analysis as specified under COMAR 26.11.15.07. According to COMAR 26.11.16.02(A), such a demonstration is made by showing that TAP emissions from the premises will not cause increases in ambient levels that exceed the applicable TLV- /threshold-based screening level for a Class II TAP (MDE Screening Levels).

1.1 TAP Sources/Hexanol Emissions

The maximum expected premises-wide hexanol emissions were calculated using condenser vapor pressure, process rates, mass balance, control efficiencies, monitoring data, and engineering judgement.

Table 1 identifies the premises-wide hexanol sources along with a description of the source and the calculated hexanol emissions.

TABLE 1 TAP SOURCES AND HEXANOL EMMISIONS

STACK ID	HEXANOL EMISSIONS (G/S)	SOURCE DESCRIPTION	CONTROLS
MAG_03	0.00630	3 Tanks, 3 Reactors and Condenser	
MAG_04	0.05565	Calciner and Filters	Thermal Oxidizer
MAG_06	0.00473	Dryer, Tower Water Condenser and Chilled Water Condenser	
MGX_10	0.00578	7 Tanks, 2 Reactors and Chilled Water Condenser	
MGX_12	0.00557	Electric Calciner and Filters	Thermal Oxidizer
MGX_23	0.00851	Dryer, Tower Water Condenser and Chilled Water Condenser	
MAG_0921	0.00357	Magnapore fugitives (vent)	

1.2 TAPS Compliance Screening Analysis

A refined screening approach is used to demonstrate compliance. In this refined screening, off-site ground-level impacts of maximum expected hexanol emissions are estimated using refined air quality modeling, consistent with COMAR 26.11.16.02(A)(3) (and COMAR 26.11.16.02(C)(1)), are directly compared to the applicable MDE Screening Levels.

Refined Air Quality Modeling

Consistent with COMAR 26.11.16.02, a more rigorous, refined air quality dispersion modeling analysis was performed to project off-site 8-hr hexanol concentrations. The United States Environmental Protection Agency's (USEPA) guidance given in Appendix W to 40 CFR 51 was followed in the performance of this refined air quality modeling.

- Air quality model

The refined modeling was conducted using the USEPA air quality model (AERMOD) (version 23132) using Providence/ORIS BEEST Suite (version 12.10) as the user interface. The standard regulatory default option was invoked in AERMOD. In addition, the adjusted u* regulatory option was invoked.

- Model receptors

Concentrations were projected at ground-level locations (receptors) on the W.R. Grace Curtis Bay property line and at locations off-site (including receptors not on land, to be comprehensive). Model receptors were located to determine the expected highest off-site short-term concentrations. A total of 5683 receptors were used. Receptors were placed along the property line at 25-m spacing. Also, receptors were placed in a grid at 25-m spacing out to 200 m from the property, and at 100-m spacing out to 3 km from the property. Figures 1 and 2 show maps of the closer-in model receptors and the entire receptor grid, respectively.

The Grace facility is isolated within a highly industrial section of Curtis Bay surrounded by other industries and a landfill. No general public reside in the vicinity of the facility. Much of the Grace facility (to the North and West) is surrounded by a large water body. The inaccessibility of the shoreline and inhospitable nature of the industrial facility deters public access. There is fencing along almost all the property to the East and South. In addition, there is a guardhouse at the entrance to the facility, signage, and video surveillance that preclude/deter public access.

Ground elevations (as well as hill-height scaling factors used by AERMOD) of each receptor were obtained using AERMAP (version 18081), AERMOD's terrain preprocessor. United States Geological Survey (USGS) digital elevation data (3DEP data with a resolution of 1 arc-second) for the modeling domain were input to AERMAP.

FIGURE 1 RECEPTOR MAP – CLOSE-IN RECEPTORS

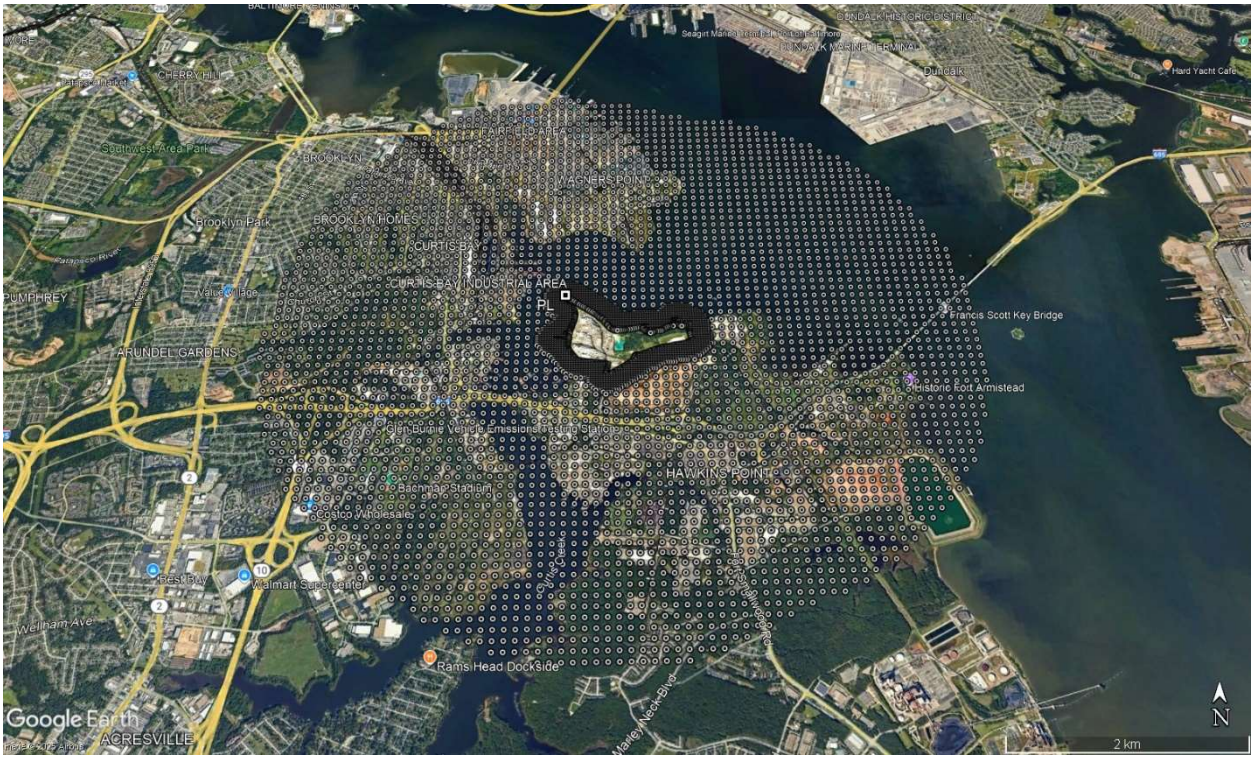

FIGURE 2 RECEPTOR MAP – ENTIRE RECEPTOR GRID

- Rural/urban classification

The Land Use Procedure given in USEPA Appendix W to 40 CFR 51 section 7.2.1.1(b)(i) was used to determine the urban/rural status for the dispersion modeling. The Project sources are located within an urban area (Baltimore urban area), but located close enough to a body of water (Patapsco River and Curtis Creek) or other non-urban land use categories to result in a predominantly rural land use classification within 3 km of the source. Section 5.1 of the AERMOD Implementation Guide (EPA-450/B-24-009, November 2024) cautions users against applying the Land Use Procedure on a source-by-source basis but should also consider the potential for urban heat island influences across the full modeling domain. Following your suggestion, the Land Use Procedure was used to determine the urban/rural status but disregarding the area of water within 3 km of the source. After removing the area covered by water (32%), 68% of the 3-km radius area is land. GoogleEarth images and US Geological Survey National Land Cover Database (NLCD) data for the area of interest were reviewed. Approximately 70% of the relevant land area is comprised of urban land use types as proposed by Auer (J. Appl. Meteor., 17, 636-643, May 1978). As a result, AERMOD was run in the urban mode. The April 2020 census population of nearby Baltimore City (585708) and the default surface roughness length were input to AERMOD to run the urban mode.

- Meteorological data

The recent five consecutive years (2019 through 2023) of AERMOD-ready representative meteorological input data were obtained from MDE (specifically, the SFC and PFL files provided by MDE's LiAn Zhuang (email dated 9/30/24)). The surface meteorological data (Automated Surface Observing System data) were collected at Baltimore/Washington International Thurgood Marshall Airport, Anne Arundel County, Maryland (WBAN 93721), and the upper air meteorological data were collected at Sterling, Virginia (Dulles International Airport) (WBAN 93734). MDE used AERSURFACE (version 20060) to determine representative surface characteristics and AERMET (version 23132) to process the meteorological data. The adjusted u* regulatory option was invoked in AERMET.

- Structure downwash

Direction-specific building dimensions of nearby/adjacent buildings/structures/tanks on the premises were generated using BPIPPRM (version 04274) and input to AERMOD to address the potential structure wake effects on stack plumes. Premises wide, 176 buildings/structures/tanks were included in the structure downwash analysis.

- Stack characteristics

Two types of sources were modeled: point sources and volume sources. Point sources were used to represent emissions from stacks, while volume sources were used to represent vented fugitive building emissions.

Regarding point sources, stacks were represented in different ways in AERMOD depending on their release characteristics. The stacks with rain caps (MAG_04 and MGX_12) and stack-top-mounted flame arrester (MAG_03) were represented as POINTCAP stacks. Stacks with horizontal releases (MAG_06 and MGX_23) were represented as POINTHOR stacks. The stack with a downward release (MGX_10) was represented as a default point source stack but with an exit velocity set to a nominally low value of 0.001 m/s to suppress momentum plume rise.

The USEPA User's Guide for the Industrial Source Complex (ISC3) Dispersion Models (EPA-454/B-95-003a) was followed in developing the source characteristics of the volume sources.

The MAG_0921 source was represented by 4 individual volume sources. The width of each volume source is 6 ft. The initial $SIGMA_y$ is calculated as W/4.3 [6/4.3=1.40 ft], where W is the width of the volume source. The initial $SIGMA_z$ is calculated as Hb/2.15 [28/2.15=13.02 ft], where Hb is the building height (28 ft).

Tables 2 and 3 present characteristics of modeled sources input to AERMOD.

TABLE 2 CHARACTERISTICS OF MODELED POINT SOURCES

STACK ID	LOCATION		BASE ELEV.	STACK HEIGHT	STACK DIAMETER	STACK EXIT VELOCITY	STACK EXIT TEMP.
	UTM E (m)	UTM N (m)	(m)	(m)	(m)	(m/s)	(K)
MAG_03	364544.3	4341807.0	5.7	24.69	0.10	0.478	294.26
MAG_04	364558.2	4341795.7	5.5	25.45	0.61	5.917	783.15
MAG_06	364556.9	4341810.5	5.5	6.10	0.14	0.031	294.26
MGX_10	364526.3	4341794.0	5.9	27.43	0.08	0.001	294.26
MGX_12	364503.7	4341785.2	5.8	36.88	0.61	5.917	783.15
MGX_23	364526.4	4341787.3	5.9	21.34	0.08	0.621	294.26

TABLE 3 CHARACTERISTICS OF MODELED VOLUME SOURCES

SOURCE ID	LOCATION		BASE ELEV.	RELEASE HEIGHT	INITIAL $SIGMA_Y$	INITIAL $SIGMA_Z$
	UTM E (m)	UTM N (m)	(m)	(m)	(m)	(m)
M0921_1	364536.4	4341774.4	5.8	8.53	0.43	3.97
M0921_2	364537.6	4341780.4	5.8	8.53	0.43	3.97
M0921_3	364538.8	4341786.4	5.8	8.53	0.43	3.97
M0921_4	364540.0	4341792.3	5.8	8.53	0.43	3.97

Refined Screening Compliance Demonstration

Table 4 presents the refined modeling results (projected maximum off-site concentrations) for the premises-wide, multi-stack analysis. This table also compares the projected maximum off-site hexanol impacts with the applicable MDE Screening Level and demonstrates compliance (i.e., maximum off-site concentrations do not exceed MDE Screening Level).

TABLE 4 REFINED MODELING TAP COMPLIANCE - COMPARISON BETWEEN MAXIMUM MODELED HEXANOL CONCENTRATIONS AND MDE SCREENING LEVEL

TAP	CAS #	MAXIMUM MODELED CONCENTRATION	MDE SCREENING LEVEL	COMPLIANCE
		8-hr ($\mu g/m^3$)	8-hr ($\mu g/m^3$)	8-hr
Hexanol	111-27-3	13.70	27.30	Yes

APPENDIX 6
PUBLIC FEEDBACK AND MARYLAND EJ SCREEN REPORT

Prepared for:

W.R. Grace & Co

Prepared by:

Ramboll
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San Francisco, CA

Last Updated: February 20, 2025

Maryland EJ Screen Report

W.R. Grace Project

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Executive Summary

House Bill 1200 (HB1200) mandates that permit applications that require public notice and participation must include an EJ Score for the census tract where the applicant is seeking the permit in the permit application package to the Maryland Department of the Environment (MDE). The Department recommends using the Maryland EJ Tool to assess the EJ Score within a 1-mile radius of the facility.

To comply with HB1200 and MDE requirements, the Maryland EJ Tool was utilized to generate EJ Scores for the five census tracts located within a 1-mile radius of the W.R. Grace Curtis Bay facility. This includes Census Tracts 2505 and 2506 in Baltimore City, and Census Tracts 7301.02, 7502.04, and 7511.02 in Anne Arundel County. Two of the census tracts, 2505 and 7301.02, were flagged as overburdened communities with an overall EJ Score greater than the 75th percentile. Census Tract 2505 has the highest EJ Score, 100th percentile, indicating the census tract faces pollution, environmental, and socioeconomic burdens higher than 100% of the state of Maryland. Environmental Indicators with an EJ Indicator Score greater than 75% for the tract include the National Air Toxics Assessment (NATA) Respiratory Hazard Index (80%), NATA Particulate Matter/PM2.5 (97%), and Wastewater Discharge (92%).

Census Tract 7301.02 was also flagged as an overburdened community with an Overall EJ Score of 86th percentile, indicating that the tract faces pollution, environmental, and socioeconomic burdens greater than 86% of the state of Maryland. Environmental Indicators with an EJ Indicator Score greater than 75% for the tract include the NATA Respiratory Hazard Index (80%), NATA Particulate Matter/PM2.5 (95%), and Wastewater Discharge (91%).

To further understand the current socioeconomic and environmental conditions in the Curtis Bay community, Grace has included an analysis of the socioeconomic and environmental indicators provided by the screening tool. Additionally, Grace has been an active member of the community and has been engaging with the local community members regularly for many years. Information about the upcoming Curtis Bay projects were outlined during more recent specific outreach sessions. These meetings allowed for two-way communication and provided community members an opportunity to share their concerns and for Grace to gather input from the community. These conversations helped to shape the upcoming permit application as well as other measures that Grace is actively considering to address the community's concerns.

RAMBOLL

ENVIRONMENT & HEALTH

1.0 Background

This document provides an Environmental Justice (EJ) Screening Score based on quantitative data from the Maryland Department of the Environment's (MDE's) Environmental Justice Screening Tool, Version 2.0 Beta. The assessment focuses on socioeconomic and environmental indicators within a 1-mile radius of the WR Grace facility, located at 5500 Chemical Road, in Baltimore, Maryland. The Overall EJ Score is presented as a percentile for comparison purposes that represents the percentage of the population in Maryland that ranks lower than the census tract in question. Environmental and Socioeconomic Indicators are presented as percentages, percentile rankings are included if the information was provided by the screening tool.

1.1 MDE's Definition of Underserved and Overburdened Communities

1.1.1 Underserved Communities[1]: According to state law, a community is classified as underserved if it meets at least one of the following criteria:

- **Low-income residents**: At least 25% of the population qualifies as low-income, which is based on the most recent U.S. Census Bureau data. This means households earning below a certain income threshold, typically below 200% of the federal poverty line, are counted.
- **Nonwhite residents**: At least 50% of the residents identify as nonwhite. This includes populations categorized as African American, Hispanic, Asian, Native American, or other nonwhite groups.
- **Limited English proficiency**: At least 15% of the population has limited English proficiency, meaning they speak a language other than English at home and speak English less than "very well."

1.1.2 Overburdened Communities (OBC)[2,3]: A community is considered overburdened if three or more of the following environmental health indicators exceed the 75th percentile statewide:

- **Pollution Burden Exposure Indicators**:
  - **PM2.5 concentration**: Particulate matter 2.5 levels above the 75th percentile for statewide comparison.
  - **Ozone concentration**: Based on summer seasonal average of the maximum daily 8-hour concentration of ozone in air in ppb (parts per billion).
  - **NATA Diesel PM concentration**: Diesel particulate matter (PM) levels above the 75th percentile for statewide comparison.
  - **NATA Cancer Risk**: Increased cancer risk based on NATA data, with a score exceeding the 75th percentile statewide.
  - **NATA Respiratory Hazard Index**: Higher respiratory risks, calculated based on exposure to toxic chemicals.
  - **Traffic Proximity**: High levels of traffic congestion or proximity to major roadways, contributing to pollution from vehicle emissions.
  - **TRI Facility Proximity**: Close proximity to toxic release inventory facilities that emit pollutants.
  - **Hazardous Waste Landfill Proximity**: Close to landfills that may leach hazardous materials into the environment.

[1] MDEJ. MDE's Environmental Justice Screening Tool. EJ Screening Tool

[2] MDEJ. MD EJSCREEN v2.0: A Tool for Mapping Environmental Justice in Maryland. https://mde.maryland.gov/programs/Crossmedia/EnvironmentalJustice/Documents/mdejscreen-cejsc-2-25-2021v1.pdf

[3] MDEJ. MDE's Environmental Justice Screening Tool. EJ Screening Tool

- **Pollution Burden Environmental Effects Indicators**:
  - **Lead Paint Indicator**: Elevated risks of lead exposure, often based on housing age and maintenance levels.
  - **Risk Management Plan Facility Proximity**: Close proximity to facilities handling hazardous chemicals, as defined by federal Risk Management Plan (RMP) regulations.
  - **Hazardous Waste Proximity**: Near hazardous waste management facilities.
  - **Superfund Site Proximity**: Close proximity to National Priorities List (Superfund) sites, indicating potential long-term environmental contamination.
  - **Wastewater Discharge Indicator**: High levels of proximity to areas with significant wastewater discharge.
  - **Brownfields Proximity**: Close proximity to brownfield sites, which may involve redevelopment of contaminated land.
  - **Power Plant Proximity**: Near emitting power plants, which can contribute to air and water pollution.
  - **Concentrated Animal Feeding Operation (CAFO) Proximity**: Near large-scale animal farming operations that may impact air and water quality.
  - **Mining Operations Proximity**: Close proximity to mining sites, which may cause land disturbance and contamination.
- **Sensitive Population Indicators**:
  - **Low-birth-weight Infants**: Census tracts with a higher proportion of low-birth-weight infants (below 5.5 pounds) in relation to statewide data.
  - **Asthma Emergency Room Discharges**: Communities where asthma-related emergency room visits are above the 75th percentile.
  - **Myocardial Infarction Discharges**: Higher rates of hospital discharges due to heart attacks (myocardial infarctions), indicating poor cardiovascular health.
  - **Broadband Coverage**: Percent of population lacking broadband access, with census tracts above the 75th percentile indicating limited access to essential online services.

1.1.3 How MDE Calculates an EJ Score[4]:

MDE calculates the EJ Score based on four primary factors:

1. **Pollution Burden Exposure**: This score considers the levels of air and water pollutants, traffic proximity, and nearby industrial facilities. A census tract is flagged if these indicators are above the 75th percentile compared to statewide data. For example, a community with PM2.5 concentrations of 9 µg/m³ and proximity to a TRI facility may receive a higher exposure score.
2. **Pollution Burden Environmental Effects**: This score evaluates environmental degradation and proximity to hazardous sites, such as Superfund locations or emitting power plants. A community with several nearby hazardous facilities may have an elevated environmental effects score.
3. **Sensitive Populations**: This score reflects the vulnerability of populations based on health indicators, such as asthma rates and low-birth-weight infants. Communities with asthma emergency room discharge rates above 15 per 1,000 people would score higher in this category.
4. **Socioeconomic/Demographic Indicators**: The socioeconomic score is calculated based on the definition of an underserved community. If 30% of a community's residents are low-income, or 55% are nonwhite, or 20% have limited English proficiency, that census tract qualifies as underserved. A tract meeting more than one of these thresholds would receive a higher socioeconomic score.

[4] MDEJ. MDE's Environmental Justice Screening Tool. EJ Screening Tool

The overall EJ Score is derived from the combined weight of these four categories. A census tract that has high pollution burdens, environmental effects, and sensitive populations, along with socioeconomic vulnerabilities, will receive a higher EJ Score, potentially reflecting severe environmental justice concerns.

2.0 MDE EJ Screen Score Summary

The census tracts within one mile of the facility, including Census Tracts 2505 and 2506 in Baltimore City, as well as Census Tracts 7301.02, 7502.04, and 7511.02 in Anne Arundel County, present environmental and socioeconomic challenges that are of concern. For the purposes of this summary, the focus will be on the indicators that are potentially related to the project and those that demonstrate a clear need for assistance in the area. For more comprehensive information on all indicators in the projects 1-mile vicinity, the full raw data from the MDE EJ Screening Report is included as an attachment to this report. **Figure 1** provides EJ scores across all census tracts and **Table 1** provides indicator data across all census tracts.

The area's Overall Environmental Justice (EJ) Score Percentile reaches 100.00th percentile in Census Tract 2505, 14.90th percentile in Census Tract 2506, 86.12nd percentile in Census Tract 7301.02, 73.27th percentile in Census Tract 7502.04, and 50.92nd percentile in Census Tract 7511.02, placing several of these tracts among the most impacted in Maryland, indicating substantial environmental risks and social inequities. Poverty rates in these tracts reach as high as 51.92%, with minority populations making up 53.65% of residents in some areas, amplifying the vulnerability of these communities to environmental hazards. Environmental pollution is of particular interest, with PM2.5 exposure scores reaching 98.37% in some census tracts, which poses respiratory and cardiovascular risks. The NATA Respiratory Hazard Index is similarly high at 80%, reflecting elevated risks from pollutants like volatile organic compounds (VOCs) and fine particles. The Toxics Release Inventory (TRI) Score, reaching 78.95%, points to nearby industrial facilities releasing toxic chemicals, further contributing to health risks. Additionally, proximity to wastewater discharge facilities, Wastewater Discharge Score reaching 97.20%, indicates substantial exposure to industrial contaminants. The combination of these environmental pollution indicators and socioeconomic vulnerabilities creates a high-risk environment for the communities near the facility, underscoring the need for environmental risk mitigation and enhanced community engagement.

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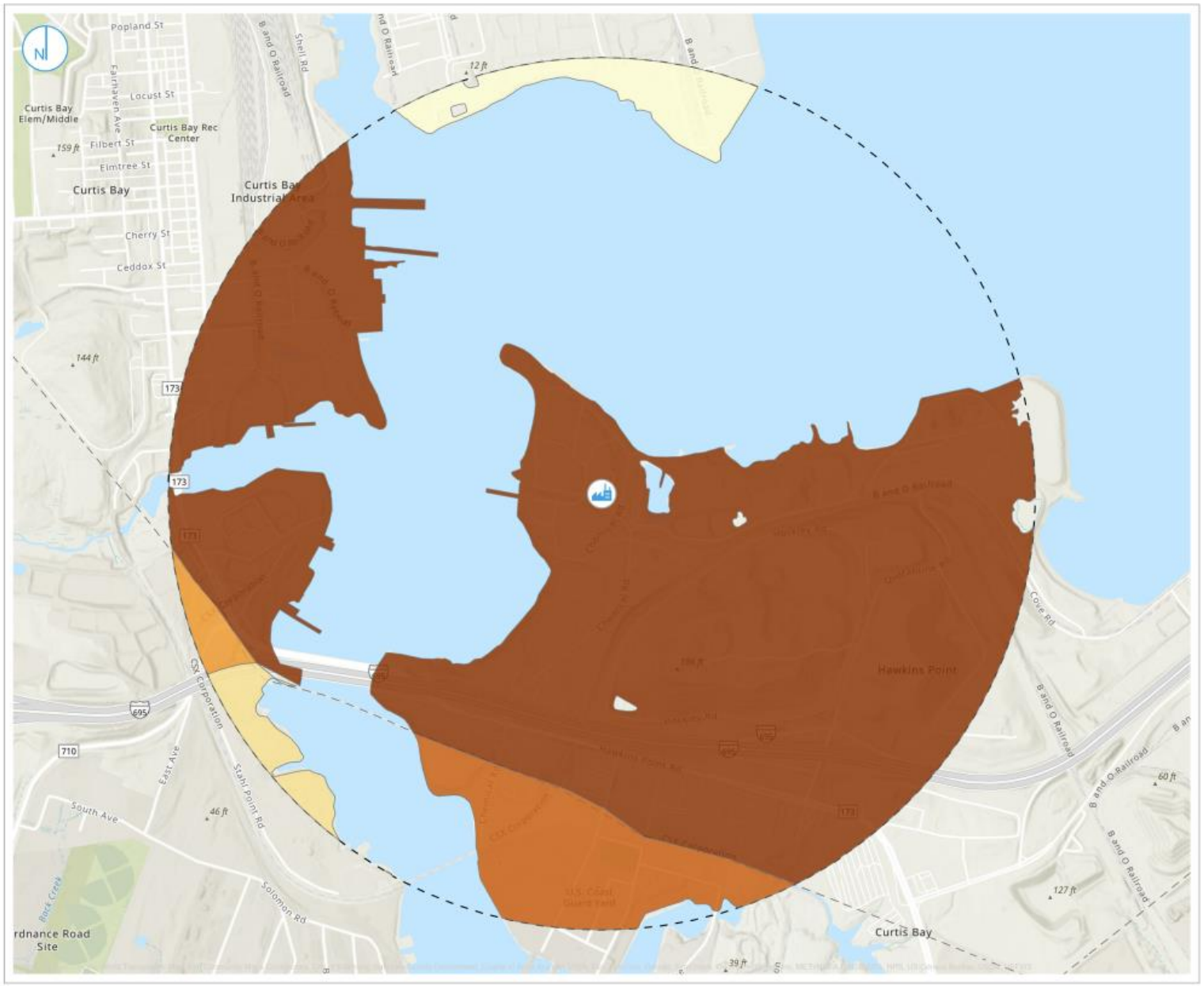

EJ SCORES WITHIN 1 MILE RADIUS OF W.R. GRACE FACILITY
DATA FROM MDE EJ SCREENING TOOL VERSION 2.0

W.R. GRACE
5500 Chemical Road
Baltimore, Maryland

FIGURE 01

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Table 1. Census Tracts within 1-mile of 5500 Chemical Road, Baltimore, Maryland

Threshold for Indicator to be classified as EJ community is 75th percentile

City/County	Census Tract	Overall EJ Score (Percentile)	Socioeconomic Indicators	EJ Score for Indicator (% for tract)	Socioeconomic Score (Percentile Distribution acoss Maryland)	Environmental Indicators	EJ Score for Indicator (% for tract)	EJ Score for Indicator (Percentile score)
Anne Arundel County	7511.02	50.92	Poverty	18.96%	20.01	NATA Respiratory Hazard Index Score	80.00%	32.49%
						NATA Particulate Matter (PM2.5) Score	97.20%	28.69%
			Minority	40.03%		Toxics Release Inventory (TRI) Score	15.79%	94.87%
						Hazard Waste Proximity Score	17.63%	--
						Wastewater Discharge Score	53.56%	--
Anne Arundel County	7301.02	86.12	Poverty	11.45%	34.00	NATA Respiratory Hazard Index Score	80.00%	25.09%
						NATA Particulate Matter (PM2.5) Score	95.28%	19.80%
			Minority	34.10%		Toxics Release Inventory (TRI) Score	42.11%	99.32%
						Hazard Waste Proximity Score	21.20%	--
						Wastewater Discharge Score	91.25%	--
Anne Arundel County	7502.04	73.27	Poverty	16.68%	15.19	NATA Respiratory Hazard Index Score	80.00%	24.32%
						NATA Particulate Matter (PM2.5) Score	97.94%	22.39%
			Minority	27.47%		Toxics Release Inventory (TRI) Score	5.26%	80.18%
						Hazard Waste Proximity Score	20.77%	--
						Wastewater Discharge Score	95.22%	--
Baltimore City	2505	100.00	Poverty	51.92%	73.13	NATA Respiratory Hazard Index Score	80.00%	58.15%
						NATA Particulate Matter (PM2.5) Score	97.25%	51.35%
			Minority	53.65%		Toxics Release Inventory (TRI) Score	52.63%	99.52%
						Hazard Waste Proximity Score	37.81%	--
						Wastewater Discharge Score	92.24%	--
Baltimore City	2506	14.90	Poverty	--	--	NATA Respiratory Hazard Index Score	80.00%	--
						NATA Particulate Matter (PM2.5) Score	98.37%	--
			Minority	--		Toxics Release Inventory (TRI) Score	78.95%	99.86%
						Hazard Waste Proximity Score	38.12%	--
						Wastewater Discharge Score	97.20%	--

Notes:

1. Socioeconomic indicators for census tract 2506 were not provided in the MDEJ Data Set

3.0 Socioeconomic Indicator Analysis

The census tracts within a 1-mile radius of the facility face significant socioeconomic challenges, contributing to the compounded risks posed by environmental hazards. Census Tract 2505, located in Baltimore City, stands out as the most vulnerable, with a Final Environmental Justice (EJ) Score of 100.00th percentile — the highest in the area. This tract also exhibits one of the highest poverty rates at 51.92%, and its minority population exceeds 50%, compounding the challenges for its residents. This combination of high poverty and minority representation underscores the need for targeted socioeconomic and environmental interventions. In contrast, Census Tract 2506, also in Baltimore City, has a notably lower EJ Score of 14.90th percentile, though it still exhibits environmental pollution exposure vulnerabilities compared to other tracts in the state. Notably, the tool does not provide information on socioeconomic risks, such as poverty rates and minority population, for this census tract.

In Anne Arundel County, Census Tracts 7301.02 and 7502.04 also face considerable socioeconomic risks, with high EJ Scores of 86.12th and 73.27th percentile, respectively. While the poverty rates in these tracts are lower at around 15%, they still face substantial challenges due to minority populations ranging from 25% to 35%. These factors elevate the tracts' overall vulnerability to environmental hazards. Census Tract 7511.02, with a moderate EJ Score of 50.92nd percentile, shows a somewhat reduced environmental burden, but socioeconomic vulnerabilities persist. With a minority population of 40% and a poverty rate of 19%, this tract still warrants attention. Across all tracts, the elevated poverty and minority populations may highlight the need for better access to healthcare, economic assistance, and resources to mitigate the impacts of environmental risks.

4.0 Environmental Pollution Indicator Analysis

Environmental pollution poses a concern across the census tracts surrounding the facility. Particulate Matter (PM2.5) concentrations have exposure scores reaching as high as 98.37%. All tracts in this area face elevated environmental risks from PM2.5, as reflected by NATA PM Scores consistently above 95%. The NATA Respiratory Hazard Index, which remains high at 80% across all tracts, further underscores the poor air quality due to pollutants such as volatile organic compounds (VOCs) and fine particulate matter. This suggests that these communities experience some of the highest pollution levels in Maryland, leading to an increased risk of respiratory and cardiovascular issues.

The Toxics Release Inventory (TRI) Score adds to the environmental concerns, with values peaking at 78.95%. Census Tracts 2505 and 2506 in Baltimore City are particularly affected by the proximity of industrial facilities. These tracts are exposed to hazardous chemicals that could lead to long-term health risks, including cancer and respiratory diseases. This exposure is exacerbated by the area's dense population and socioeconomic challenges.

Additional environmental stressors include the proximity to hazardous waste and wastewater discharge sites. Census Tract 7511.02, despite having a moderate EJ Score of 50.92nd percentile, experiences a Wastewater Discharge Score of 53%, indicating moderate risks related to water contamination. In contrast, the other tracts have much higher wastewater discharge scores, exceeding 90%, suggesting that air pollution is not the only major environmental impact in these areas. The Hazardous Waste Proximity Scores, which reach 38.12%, further highlight the exposure of communities, particularly in Census Tracts 2505 and 2506, to industrial waste, increasing the burden of environmental risks on these vulnerable populations.

5.0 Community Involvement

Grace has been a proud member of the Curtis Bay community for more than 115 years and is committed to its future. For more than a decade, Grace has administered the Community Advisory Panel (CAP) and has regularly participated in neighborhood meetings. In addition to our routine engagements with the community, we partner with United Way and other local businesses for the annual Back to School Bash and Holiday Festival, serve Thanksgiving dinner to hundreds of community members each November, and volunteer at the local Boys & Girls Club and local schools to support youth development. We proudly support Chesapeake Arts Center, Grow Home, and The Well to help enhance the lives of families in the community.

Prior to submitting the permit application to MDE, Grace engaged with community members on several occasions to provide information on the proposed projects and listen and gather feedback from the Curtis Bay and surrounding communities. Formal outreach began in October 2024, when Grace team members met with members of the Board of the Curtis Bay Community Association (CBCA) to describe the process and timeline the company planned to follow and listen to any initial concerns as the process got underway. Grace then scheduled the first communitywide meeting on this project based on feedback that a December meeting would be more welcome than one in November. After the first meeting on December 12, 2024, Grace heard community feedback which was then incorporated into the company's overall site project planning as a direct result. During subsequent community meetings on January 22, 2025, and January 27, 2025, Grace team members shared changes Grace began analyzing as a direct response to the concerns raised by the community in December. Since October 2024, Grace has conducted several one-on-one meetings with a variety of stakeholders including local elected officials, local universities active in the community, and board members from organizations such as the CBCA, South Baltimore Community Land Trust, and Concerned Citizens for a Better Brooklyn. Throughout this process, the team at Grace has gathered feedback from the community and continues to work internally to address concerns to positively impact the community, where feasible.

6.0 Conclusion

In summary, the EJ Screening Score analysis for the 1-mile radius surrounding the Grace facility highlights significant environmental and socioeconomic conditions. The high EJ Scores in several census tracts, particularly Census Tract 2505 with a 100th percentile score, reveal elevated levels of PM2.5 exposure, respiratory hazard indices, and close proximity to industrial facilities. These environmental burdens are compounded by socioeconomic vulnerabilities, such as high poverty rates and large minority populations. The combination of these factors suggests a heightened need for interventions to reduce environmental risks and improve the overall quality of life in these communities. The full raw data set from the Maryland EJ Screen Tool is included as an attachment for a more detailed review of all indicators in the region.

Grace recognizes that the EJ Screening Score analysis of the Curtis Bay community ranks it amongst the most underserved and overburdened communities in the state of Maryland. With this in mind, we are committed to being a responsible business, a good neighbor, and an active member of the Curtis Bay community. Grace's investment in the facility will enable us to keep jobs in the community and allow us to hire additional employees. While making upgrades to our facility, we plan to incorporate state-of-the-art emissions control technologies.

For over a decade, Grace has participated in community events, meetings, donation drives, and youth development programs. Additionally, Grace has engaged with the Curtis Bay and surrounding communities specifically about the upcoming projects and permit application to solicit input from the community. Through these interactions, we have heard the concerns raised by the community. We are looking into ways Grace may be able to assist with those concerns, where feasible. We plan to continue in partnership with the community, working closely together for the good of our shared community.

ATTACHMENTS

MDE Screening Report

Area of Interest (AOI) Information

Area : 3.14 mi²

Oct 15 2024 10:22:06 Eastern Daylight Time

Tabloid ANSI B Landscape

Summary

Name	Count	Area(mi²)	Length(mi)
MDE Final EJ Score (%ile score)	5	1.70	N/A
Overburdened Communities Combined Score	5	1.70	N/A
Overburdened Pollution Environmental Score (%ile score)	5	1.71	N/A
Overburdened Exposure Score (%ile score)	5	1.71	N/A
Overburdened Sensitive Population (%ile score)	5	1.71	N/A
Socioeconomic/Demographic Score 2020 (Percentile score) (Underserved Community)	4	1.67	N/A
Air Emissions Facilities	8	N/A	N/A
Sulfur Dioxide (2010)	1	0.27	N/A
Ozone (2015)	2	3.14	N/A
Fine Particles (2012)	2	3.14	N/A
Biosolids FY 2020 and Current Permit Details	0	N/A	N/A
Biosolids FY2010 - 2014 Permit Details	0	N/A	N/A
Biosolids FY2009 Expired Permit Details	0	N/A	N/A
Biosolids FY 2020 and Current Permits Distribution By Acreage	1	0.29	N/A
Biosolids FY2015 - 2019 Permits Distribution By Acreage	2	1.72	N/A
Biosolids FY2010 - 2014 Permits Distribution By Acreage	2	1.72	N/A
Biosolids FY2009 Permits Expired Distribution By Acreage	2	1.72	N/A
Biosolids FY 2020 and Current Permit Distribution By Percent Coverage	2	1.72	N/A
Biosolids FY2015 - 2019 Permit Distribution By Percent Coverage	2	1.72	N/A
Biosolids FY2010 - 2014 Permit Distribution By Percent Coverage	2	1.72	N/A
Biosolids FY2009 Expired Permit Distribution By Percent Coverage	2	1.72	N/A
Concentrated Animal Feeding Operations (CAFOs)	0	N/A	N/A
Composting Facilities	0	N/A	N/A
Food Scrap Acceptors	0	N/A	N/A
Landfills	5	N/A	N/A
Correctional Facilities	0	N/A	N/A
Industrial Food Suppliers	0	N/A	N/A
Residential Colleges	0	N/A	N/A
Non-Residential Colleges	0	N/A	N/A
Hospitals	0	N/A	N/A
High Schools	0	N/A	N/A
Grocery Stores	0	N/A	N/A
10 Miles from Landfill	19	49.84	N/A
10 Miles from Composting Facility	1	1.92	N/A
General Composting Facilities Tier 2 (MD)	0	N/A	N/A
Commercial Anaerobic Digester (MD)	0	N/A	N/A
Out of State Facilities	0	N/A	N/A
30 mile buffer (Maryland)	4	10.25	N/A
30 Mile Buffer (Out of State)	0	0	N/A
Land Restoration Facilities	17	N/A	N/A
Determinations (points)	0	N/A	N/A
Determinations (areas)	6	0.08	N/A
Entities	18	N/A	N/A
Active Coal Mine Sites	0	N/A	N/A
Historic Mine Facilities	0	N/A	N/A

All Permitted Solid Waste Acceptance Facilities	5	N/A	N/A
Municipal Solid Waste Acceptance Facilities	1	N/A	N/A
Maryland Dam Locations	0	N/A	N/A
Maryland Pond Locations	14	N/A	N/A
Surface Water Intakes	0	N/A	N/A
Wastewater Discharge Facilities	8	N/A	N/A
Drinking Water	0	N/A	N/A
Clean Water	0	N/A	N/A

MDE Final EJ Score (%ile score)

#	Census tract identifier	Geographic Area Name	Total Population	Final EJ Score Percent (for this tract)	Final EJ Score Percentile (Distribution across Maryland)	Area(mi²)
1	24510250500	Census Tract 2505, Baltimore city, Maryland	4561	53.72	100.00	1.41
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	10577	37.42	86.12	0.20
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	4599	29.71	50.92	0.05
4	24510250600	Census Tract 2506, Baltimore city, Maryland	0	22.77	14.90	0.03
5	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	4790	33.85	73.27	0.02

Overburdened Communities Combined Score

#	GEOID20	Geographic_Area_Name	TotalPop	Overburd_Exposure_Percent	Overburd_Exposure_Percentile	Overburd_Poll_Enviro_Percent	Overburd_Poll_Enviro_Percentile	Sensitive_Population_Percent
1	24510250500	Census Tract 2505, Baltimore city, Maryland	4,561	68.28	100.00	32.31	99.93	83.25
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	10,577	53.20	94.60	19.86	92.00	84.23
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	4,599	52.77	93.92	13.60	78.47	50.71
4	24510250600	Census Tract 2506, Baltimore city, Maryland	0	65.46	99.93	25.62	98.36	0.00
5	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	4,790	48.75	74.71	20.38	92.96	72.08

#	Sensitive_Population_Percentile	OverburdenedAllPercent	OverburdenedAllPercentile	Area(mi²)
1	94.81	100.00	100.00	1.41
2	95.90	97.27	93.37	0.20
3	29.60	59.54	76.21	0.05
4	0.07	43.75	4.85	0.03
5	77.72	90.23	78.54	0.02

Overburdened Pollution Environmental Score (%ile score)

#	GEOID20	Geographic_Area_Name	RentalsOccupiedPre79Percent	Percentile	PercentRMP	PercentRMPEJ	PercentHazWaste	PercentHazWasteEJ
1	24510250500	Census Tract 2505, Baltimore city, Maryland	40.28	94.81	98.39	61.14	37.81	57.77
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	1.83	24.74	24.81	23.72	21.20	23.37
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	8.54	44.77	19.61	28.99	17.63	29.59
4	24510250600	Census Tract 2506, Baltimore city, Maryland	0.00	0.00	79.64	0.00	38.12	0.00
5	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	8.09	41.49	41.01	24.54	20.77	22.65

#	PercentSuperFundNPL	PercentSuperFundNPLEJ	PercentHazWW	PercentHazWWEJ	BrownFPercent	Percentile_1	PercentPowerPlants	Percentile_12
1	20.80	60.04	92.24	92.24	1.27	98.56	0.00	0.00
2	21.46	25.91	91.25	68.44	0.00	0.00	18.18	99.32
3	23.04	33.92	53.56	58.52	0.00	0.00	0.00	0.00
4	13.49	0.00	97.20	0.00	2.11	99.52	0.00	0.00
5	17.51	24.56	95.22	68.44	0.84	97.20	0.00	0.00

#	PercentCAFOS	Percentile_12_13	PercentActiveMines	Percentile_12_13_14	PollutionEnvironmentalPercent	PollnEnvironmentalPercentile	Area(mi²)
1	0.00	0.00	0.00	0.00	32.31	99.93	1.42
2	0.00	0.00	0.00	0.00	19.86	92.00	0.20
3	0.00	0.00	0.00	0.00	13.60	78.47	0.05
4	0.00	0.00	0.00	0.00	25.62	98.36	0.03
5	0.00	0.00	0.00	0.00	20.38	92.96	0.02

Overburdened Exposure Score (%ile score)

#	GEOID20	Geographic_Area_Name	Total_Pop	PercentNATA_Cancer	Percentile_NATA_Cancer	PercentNATA_Resp_HI	Percentile_NATA_Resp_HI	PercentNATA_Diesel
1	24510250500	Census Tract 2505, Baltimore city, Maryland	4,561.00	60.00	52.14	80.00	58.15	50.98
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	10,577.00	60.00	22.50	80.00	25.09	30.19
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	4,599.00	60.00	29.13	80.00	32.49	38.68
4	24510250600	Census Tract 2506, Baltimore city, Maryland	0.00	60.00	0.00	80.00	0.00	50.24
5	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	4,790.00	60.00	21.81	80.00	24.32	40.08

#	Percentile_NATA_Diesel	PercentNATA_PM25	PercentileNATA_PM25	PercentOzone	PercentileOzone	PercentTraffic	PercentileTraffic	PercentTRI
1	58.53	97.25	51.35	99.65	58.53	5.74	43.43	52.63
2	18.37	95.28	19.80	99.79	25.25	1.57	10.47	42.11
3	28.61	97.20	28.69	99.77	32.70	14.09	31.05	15.79
4	0.00	98.37	0.00	99.45	0.00	40.01	0.00	78.95
5	21.98	97.94	22.39	99.65	24.48	7.07	19.50	5.26

#	PercentileTRI	PercentHazWasteLF	Percentile_HazWasteLF	PollutionExposurePercent	PollutionExposurePercentile	Area(mi²)
1	99.52	100.00	99.73	68.28	100.00	1.42
2	99.32	16.67	95.49	53.20	94.60	0.20
3	94.87	16.67	95.49	52.77	93.92	0.05
4	99.86	16.67	95.49	65.46	99.93	0.03
5	80.18	0.00	0.00	48.75	74.71	0.02

Overburdened Sensitive Population (%ile score)

#	GEOID20	Geographic_Area_Name	PerAstma	PercentileAst	PerMyo	PercentileMyo	PerLow	PercentileLow
1	24510250500	Census Tract 2505, Baltimore city, Maryland	95.50	90.57	95.30	88.38	83.90	87.90
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	80.63	99.79	85.23	99.86	74.73	99.86
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	45.40	56.60	49.00	57.01	22.20	28.71
4	24510250600	Census Tract 2506, Baltimore city, Maryland	0.00	0.00	0.00	0.00	0.00	0.00
5	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	74.00	81.07	68.20	74.57	54.09	69.31

#	PercentBroad	PercentileBroad	PercentSens	PercentileSens	Area(mi²)
1	41.68	99.52	79.10	91.59	1.42
2	3.68	50.10	61.07	87.41	0.20
3	13.32	77.10	32.48	54.85	0.05
4	0.00	0.00	0.00	0.05	0.03
5	7.97	48.87	51.06	68.46	0.02

Socioeconomic/Demographic Score 2020 (Percentile score) (Underserved Community)

#	Census tract identifier	Geographic Area Name	Total Population	Percent Poverty	Percent Minority	Percent Limited English Proficiency	Demographic Score (Percent for this tract)	Demographic Score (Percentile Distribution acoss Maryland)	Area(mi²)
1	24510250500	Census Tract 2505, Baltimore city, Maryland	4,561	51.92	53.65	0.00	35.19	73.13	1.41
2	24003730102	Census Tract 7301.02, Anne Arundel County, Maryland	10,577	11.45	34.10	1.09	15.55	34.00	0.20
3	24003751102	Census Tract 7511.02, Anne Arundel County, Maryland	4,599	18.96	40.03	1.03	20.01	44.62	0.05
4	24003750204	Census Tract 7502.04, Anne Arundel County, Maryland	4,790	16.68	27.47	1.41	15.19	33.10	0.02

Air Emissions Facilities

#	Agency Interest ID	Facilty Name	Agency Interest Alt Name	Premises ID	Emission Year	Air Code	NAIC Code	NAIC Description
1	439	Curtis Bay Energy, LP	Curtis Bay Energy, LP-439	510-2975	2021	Title V	562,213	Solid Waste Combustors and Incinerators
2	1792	US Coast Guard Yard (USCG Yard)	US Coast Guard Yard (USCG Yard)-1792	003-0316	2021	Title V	928,110	National Security
3	1890	Bitumar USA, Inc.	Bitumar USA, Inc.-1890	003-0234	2021	SOP	324,122	Asphalt Shingle and Coating Materials Manufacturing
4	2102	W. R. Grace & Co. - Davison Chemical	W. R. Grace & Co. - Davison Chemical-2102	510-0076	2021	Title V	325,180	Other Basic Inorganic Chemical Manufacturing
5	6867	Baltimore City Composting/Veolia Water North America-Central, LLC	Baltimore City Composting/Veolia Water North America-Central, LLC-6867	510-2781	2021	SOP	325,311	Nitrogenous Fertilizer Manufacturing
6	9620	United States Gypsum Company	United States Gypsum Company-9620	510-0106	2021	Title V	327,420	Gypsum Product Manufacturing
7	13670	Quarantine Road Municipal Landfill	Quarantine Road Municipal Landfill-13670	510-2293	2021	Title V	562,212	Solid Waste Landfill
8	20813	Buckeye Terminals, LLC - Baltimore Terminal	Buckeye Terminals, LLC - Baltimore Terminal-20813	510-0918	2021	Title V	493,190	Other Warehousing and Storage

#	Physical Address	Physical City	Physical State	Physical Zip Code	County	Carbon Monoxide (CO)	Nitrous Oxide	Particulate Matter (PT)
1	3200 Hawkins Point Rd	Baltimore	MD	21,226	Baltimore City	13.14	551.00	0.00
2	2401 Hawkins Point Rd	Curtis Bay	MD	21,226	Anne Arundel	311.54	90.94	0.07
3	6000 Pennington Ave	Curtis Bay	MD	21,226	Anne Arundel	35.92	44.55	5.54
4	5500 Chemical Rd	Curtis Bay	MD	21,226	Baltimore City	549.23	683.13	1,035.06
5	5800 Quarantine Rd	Curtis Bay	MD	21,226	Baltimore City	0.00	0.00	0.00
6	5500 Quarantine Rd	Curtis Bay	MD	21,226	Baltimore City	87.11	103.24	286.85
7	6100 Quarantine Road	Curtis Bay	MD	21,226	Baltimore City	92.27	16.96	390.82
8	6200 Pennington Ave	Baltimore	MD	21,226	Baltimore City	89.46	107.39	15.33

#	Particulate Matter (10 Filterable)	Particulate Matter (2.5 Filterable)	PM Condensables	Volatile Organic Compounds (VOC)	Sulphur Dioxide (SOx)	Carbon Dioxide	Mercury	Methane
1	26.60	1.14	0.43	0.44	29.57	319,199.07	0.00	13.10
2	0.07	0.07	4.59	128.38	3.38	54,692.70	0.00	2.68
3	0.64	0.64	1.81	11.65	1.12	50,567.54	0.00	1.04
4	1,035.05	983.20	39.26	60.91	44.54	793,481.77	0.04	14.80
5	0.00	0.00	0.00	109.94	0.00	0.00	0.00	0.00
6	196.82	90.03	26.93	22.70	0.62	133,194.46	0.00	2.38
7	173.93	26.39	3.17	22.05	3.83	68,440.86	0.00	73,254.09
8	10.25	7.38	4.32	1,052.60	121.38	81,081.85	0.00	1.87

#	Billable Criteria Pollutants (BCRI)	Billiable Hazardous Pollutants (BHAP)	Total Billable and Non-Bilable Hazardous Air Pollutant Emissions (HAPS)	Count
1	608.03	3.80	3.81	1
2	227.37	1.47	94.57	1
3	59.78	0.00	0.05	1
4	1,862.90	20.56	1,468.49	1
5	109.94	0.00	326.42	1
6	350.31	0.00	7.42	1
7	219.93	6.42	44.10	1
8	1,295.94	0.00	66.06	1

Sulfur Dioxide (2010)

#	area_name	COMPOSID	Clean Data Determination	Area(mi²)
1	Anne Arundel County and Baltimore County, MD	SO2.2010.Baltimore	Yes	0.27

Ozone (2015)

#	STATEFP10	COUNTYFP10	COUNTYNS10	GEOID10	NAME10	Ozone NAA Area	8-Hr Ozone (2015) Designation	8-HR Ozone (2015) Classification	8-Hr Ozone (2015) Status	Area(mi²)
1	24	510	01702381	24510	Baltimore	Baltimore, MD	Nonattainment	Moderate	*No Data*	2.72
2	24	003	01710958	24003	Anne Arundel	Baltimore, MD	Nonattainment	Moderate	*No Data*	0.42

Fine Particles (2012)

#	STATEFP10	COUNTYFP10	COUNTYNS10	GEOID10	NAME10	PM2.5 (2012) Status	Area(mi²)
1	24	510	01702381	24510	Baltimore	Attainment/Unclassifiable	2.72
2	24	003	01710958	24003	Anne Arundel	Attainment/Unclassifiable	0.42

Biosolids FY 2020 and Current Permits Distribution By Acreage

#	County Name	FY2020andAfter	Area(mi²)
1	Anne Arundel	103.73	0.29

Biosolids FY2015 - 2019 Permits Distribution By Acreage

#	County Name	FY2015to2019	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY2010 - 2014 Permits Distribution By Acreage

#	County Name	FY2010to2014	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY2009 Permits Expired Distribution By Acreage

#	County Name	FY2009	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY 2020 and Current Permit Distribution By Percent Coverage

#	County Name	FY2020andAfter	Area(mi²)
1	Anne Arundel	103.73	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY2015 - 2019 Permit Distribution By Percent Coverage

#	County Name	FY2015to2019	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY2010 - 2014 Permit Distribution By Percent Coverage

#	County Name	FY2010to2014	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Biosolids FY2009 Expired Permit Distribution By Percent Coverage

#	County Name	FY2009	Area(mi²)
1	Anne Arundel	*No Data*	0.29
2	Baltimore City	*No Data*	1.43

Landfills

#	County	Type	Facility_N	ADDRESS	SITE__ACRE	AI_No_	Owner_Type	PERMITNUMB	EXPIRATION	Count
1	BALTIMORECITY	WPT	Baltimore Processing & TransferCntr.	5800 Chemical Road, Baltimore MD 21226.	15.60	10,299.00	PRI	2013-WPT-0627	2/23/2019, 7:00 PM	1
2	BALTIMORECITY	WMI	Baltimore RegionalMWI	3200 Hawkins Point Road, Baltimore MD 21226	4.00	439.00	PRI	2011-WIN-0036	3/7/2017, 7:00 PM	1
3	BALTIMORECITY	WMF	Quarantine Road MunicipalLF	6100 Quarantine Road, Baltimore MD 21226.	153.00	13,670.00	MUN	2014-WMF-0325	11/8/2019, 7:00 PM	1
4	BALTIMORECITY	WPT	Stericycle Medical WastePF&TS	5901 Chemical Road, Baltimore MD 21226.	2.40	8,713.00	PRI	2014-WPT-0591	12/9/2019, 7:00 PM	1
5	BALTIMORECITY	WIF	W.R. Grace & Co. -Conn.	5500 Chemical Road, Baltimore MD 21226.	157.00	2,102.00	PRI	2012-WIF-0613	1/29/2017, 7:00 PM	1

10 Miles from Landfill

#	County	Type	Facility_N	ADDRESS	FILL	SITE__ACRE	AI_No_	Owner_Type
1	HOWARD	WPT	AmeriwastePF&TS	7150 Kit Kat Road, Elkridge MD 21075.	-	12.89	36,535.00	PRI
2	BALTIMORECITY	WTS	Northwest TransferStation	5030 Reisterstown Road, Baltimore MD 21215.	-	6.60	23,220.00	MUN
3	FREDERICK	WMF	Fort Detrick MunicipalLandfill	7184 Troy Hill Drive Elkridge MD 21075.	61	297.00	1,790.00	FED
4	HOWARD	WTS	Workplace EssentialsTS	7184 Troy Hill Drive Elkridge MD 21075.	-	1.00	36,696.00	PRI
5	ANNEARUNDEL	WMF	Millersville MunicipalLandfill	389 Burns Crossing Road, Severn MD 21144	330	567.00	19,044.00	CTY
6	ANNEARUNDEL	WPT	Curtis Creek PF &TS	23 Stahl Point Road, Baltimore MD 21226.	-	12.80	23,330.00	PRI
7	BALTIMORE	WPF	Recovermat Mid-Atlantic, LLCPF	2202 Halethorpe Farm Road, Halethorpe MD 21227.	-	8.50	18,296.00	PRI
8	BALTIMORE	WTS	Western Acceptance FacilityTS	3310 Transway Road, Halethorpe MD 21227.	6	6.00	10,889.00	CTY
9	BALTIMORECITY	WPT	Baltimore Processing & TransferCntr.	5800 Chemical Road, Baltimore MD 21226.	-	15.60	10,299.00	PRI
10	BALTIMORECITY	WPT	Baltimore Recyling CenterPF&TS	1030 Edison Highway, Baltimore MD 21213.	-	12.50	63,585.00	PRI
11	BALTIMORECITY	WMI	Baltimore RegionalMWI	3200 Hawkins Point Road, Baltimore MD 21226	-	4.00	439.00	PRI
12	BALTIMORECITY	WPT	Daniels SharpsmartPF&TS	6611 Chandlery Street, Baltimore MD 21224	-	1.00	63,950.00	PRI
13	BALTIMORECITY	WIF	Fort Armistead Road-Lot 15LF	3601 Fort Armistead Road, Baltimore MD 21226.	32	65.00	100,995.00	PRI
14	BALTIMORECITY	WIF	Hawkins Pt. Plant Industrial WasteLF	3901 Fort Armistead Road, Baltimore MD 21226.	30	30.00	22,198.00	PRI
15	BALTIMORECITY	WPF	L & J ProcessingFacility	222 North Calverton Road, Baltimore MD 21223.	-	1.00	64,649.00	PRI
16	BALTIMORECITY	WMF	Quarantine Road MunicipalLF	6100 Quarantine Road, Baltimore MD 21226.	126	153.00	13,670.00	MUN
17	BALTIMORECITY	WTE	Southwest ResourceRecovery	1801 Annapolis Road, Baltimore MD 21230.	-	15.00	472.00	PRI
18	BALTIMORECITY	WPT	Stericycle Medical WastePF&TS	5901 Chemical Road, Baltimore MD 21226.	-	2.40	8,713.00	PRI
19	BALTIMORECITY	WIF	W.R. Grace & Co. - Conn.	5500 Chemical Road, Baltimore MD 21226.	10.7	157.00	2,102.00	PRI

#	MD_GRID__E	PERMITNUMB	EXPIRATION	Area(mi²)
1	865 /489	2011-WPT-0572	11/2/2016, 8:00 PM	0.01
2	855 /550	2010-WTS-0038	1/16/2016, 7:00 PM	0.27
3	672 /583	2015-WMF-0327	8/25/2020, 8:00 PM	1.85
4	885 /550	2015-WTS-0594	6/3/2020, 8:00 PM	1.85
5	895 /460	2012-WMF-0240	11/12/2017, 7:00 PM	1.92
6	917 /500	2013-WPT-0539	12/18/2018, 7:00 PM	3.14
7	888 /506	2010-WPF-0341	12/25/2015, 7:00 PM	3.14
8	905 /510	2015-WTS-0599	5/10/2020, 8:00 PM	3.14
9	921 /499	2013-WPT-0627	2/23/2019, 7:00 PM	3.14
10	920 /535	2014-WPT-0631	12/27/2019, 7:00 PM	3.14
11	926 /568	2011-WIN-0036	3/7/2017, 7:00 PM	3.14
12	950 /525	2015-WPT-0633	2/8/2020, 7:00 PM	3.14
13	927/500	2011-WIF-0653	9/25/2018, 8:00 PM	3.14
14	925 /501	2005-WIF-0527A	1/3/2016, 7:00 PM	3.14
15	896/531	2008-WPF-0634	6/28/2016, 8:00 PM	3.14
16	922 /502	2014-WMF-0325	11/8/2019, 7:00 PM	3.14
17	904 /523	2011-WTE-0030	10/5/2016, 8:00 PM	3.14
18	921 /501	2014-WPT-0591	12/9/2019, 7:00 PM	3.14
19	921 /500	2012-WIF-0613	1/29/2017, 7:00 PM	3.14

10 Miles from Composting Facility

#	County	Facility	Address	Accepts_Fo	Location_o	Area(mi²)
1	*No Data*	Millersville Landfill and Resource Recovery Facility Composting Pad	389 Burns Crossing Road, Severn, MD 21144	No	389 Burns Crossing Rd, Severn, MD 21144	1.92

30 mile buffer (Maryland)

#	Facility_Name_1	Facility_Contact_1	Contact_Phone	Contact_Email_1	Contact_2	Contact_2_Phone	Contact_2_Email	URL	Area(mi²)
1	Prince George's County Organics Composting Facility	Angie Webb, Recycling Coordinator	(240) 904-4630	awebb@menv.com	*No Data*	*No Data*	*No Data*	https://www.princegeorgescountymd.gov/583/Organics-Composting-Facility	0.83
2	Bioenergy DEVCO - Maryland Organics Recycling Facility	Vinnie Bevivino	(202) 360-1805	Vbevivino@bioenergydevco.com	Mike Manna	(609) 744-2819	mmanna@bioenergydevco.com	https://www.bioenergydevco.com/maryland-organics-recycling-facility/	3.14
3	Veteran Compost - Aberdeen	Justen Garrity	(443) 584-3478	info@veterancompost.com	*No Data*	*No Data*	*No Data*	https://www.veterancompost.com/	3.14
4	Composting Facility at Alpha Ridge Landfill	Bureau of Environmental Services	(410) 313-6444	*No Data*	*No Data*	*No Data*	*No Data*	https://www.howardcountymd.gov/public-works/composting-facility	3.14

Land Restoration Facilities

#	Brownfields Master Inventory Number (BMI #). BMI #s are formatted MD####.	Site Name	Other names the site may be known by	Location of Site	City of Site	State of Site	County of Site	Zip code of site	ShapeArea	Count
1	MD0293	Biochem Management Inc.	Former Multichem Corp; Delaware Hospital Service	1917 Benhill Avenue	Baltimore	Maryland	Baltimore City	21226	0.00	1
2	MD0019	Browning Ferris Industries - Quarantine Road	Portion of SCM Corp. Quarantine Rd Dump MD-009; Quarantine Road - BFI	5901 Quarantine Road	Baltimore	Maryland	Baltimore City	21226	32.00	1
3	MD0312	Striegel Supply	*No Data*	6001 Chemical Road	Baltimore	Maryland	Baltimore City	21226	3.14	1
4	MD0977	Gambel Property	American Recovery Corp (MD-11/MD-103)	5301 Andard Avenue	Baltimore	Maryland	Baltimore City	21226	21.09	1
5	MD0009	SCM Corp. - Quarantine Road Site	SCM Millenium Hpp; Robb Tyler; Glidden; Dupont	5901 Quarantine Road	Baltimore	Maryland	Baltimore City	21226	50.98	1
6	MD0015	WR Grace & Co. - Davidson Chem Div.	*No Data*	5500 Chemical Road	Curtis Bay	Maryland	Baltimore City	21226	110.00	1
7	MD0014	Olin Corp. - Curtis Bay	Olin Chemical	5501 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226	6.80	1
8	MD0114	Estech General Chemical Co.	*No Data*	5500 Chemical Road	Baltimore	Maryland	Baltimore City	21226	9.00	1
9	MD1319	Former Reichold Site	NL Chemicals, NL Industries Baltimore, Textron Inc	6401 Chemical Road	Baltimore	Maryland	Anne Arundel	21226	6.90	1
10	MD0559	Leading Point	*No Data*	5400 Quarantine Road	Baltimore	Maryland	Baltimore City	21226	18.00	1
11	MD0011	American Recovery Company, Inc. (Curtis Bay Facility)	American Recovery Corporation (MD-103); 2001 Benhill Avenue (MD-103)	1901 Birch Street	Baltimore	Maryland	Baltimore City	21226	0.00	1
12	MD1422	Olin Chemical	See also MD-0014	5701 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226	20.69	1
13	MD0406	U.S. Coast Guard - Curtis Bay	Coast Guard Yard	2401 Hawkins Point Road	Baltimore	Maryland	Anne Arundel	21226	113.00	1
14	MD0112	Crown Central Petroleum (6000 Pennington Avenue)	*No Data*	6000 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226	0.00	1
15	MD0258	Locomotive Junkyard	*No Data*	Near 6000 Chemical Road	Baltimore	Maryland	Baltimore City	21226	0.00	1
16	MD1946	Origin Baltimore	Includes Olin Corp, General Chemical and 5501 Pennington Avenue (previous VCP properties)	5501 and 5701 Pennington Avenue, 5501 Andard Avenue, unaddressed property desribed as Rear 5501 Pennington Ave k/a 5401	Baltimore	Maryland	Baltimore City	21226	41.10	1
17	MD2070	5101 Andard Avenue	WPN Recycling	5101 Andard Avenue	Baltimore	Maryland	Baltimore City	21226	8.77	1

Determinations (areas)

#	Site Name	Entity receiving the determination from the LRP.	Issue Date	Type of determination issued: NFA (No Further Action), NFRD (No Further Requirements Determination), or COC (Certificate of Completion)	Last inspection date	Indicates whether the determination includes an environmental covenant (EC)	Property has Unrestricted residential use	Property has Restricted residential use	Area(mi²)
1	95 Stahl Point Road	95 Stahl Point Road, LLC	7/15/2018, 8:00 PM	NFA w/EC	*No Data*	Yes	No	No	< 0.01
2	FMC Corp.	FMC Corporation	12/9/2020, 7:00 PM	EC Only	*No Data*	Yes	No	No	< 0.01
3	4501 Curtis Avenue	Alliance HSP Curtis LLC	12/27/2016, 7:00 PM	NFRD	*No Data*	Yes	No	No	< 0.01
4	Amoco Baltimore Asphalt Terminal	BP Products North America	1/20/2004, 7:00 PM	NFRD	9/11/2017, 8:00 PM	No	No	No	0.02
5	Amoco Baltimore Asphalt Terminal	Fishing Point Properties, LLC	5/5/2005, 8:00 PM	NFRD	8/18/2013, 8:00 PM	No	No	No	0.02
6	Amoco Baltimore Asphalt Terminal	Deenah, LLC	4/1/2007, 8:00 PM	NFRD	8/18/2013, 8:00 PM	No	No	No	0.02

Entities

#	Brownfields Master Inventory Number (BMI #). This is the site ID number LRP uses to identify sites. BMI #s are formatted MD####.	Site Name	Other names the site may be known by.	Location of Site	City of Site	State of Site	County of Site	Zip code of site
1	MD0293	Biochem Management Inc.	Former Multichem Corp; Delaware Hospital Service	1917 Benhill Avenue	Baltimore	Maryland	Baltimore City	21226
2	MD0019	Browning Ferris Industries - Quarantine Road	Portion of SCM Corp. Quarantine Rd Dump MD-009; Quarantine Road - BFI	5901 Quarantine Road	Baltimore	Maryland	Baltimore City	21226
3	MD0312	Striegel Supply	*No Data*	6001 Chemical Road	Baltimore	Maryland	Baltimore City	21226
4	MD0977	Gambel Property	American Recovery Corp (MD-11/MD-103)	5301 Andard Avenue	Baltimore	Maryland	Baltimore City	21226
5	MD0009	SCM Corp. - Quarantine Road Site	SCM Millenium Hpp; Robb Tyler; Glidden; Dupont	5901 Quarantine Road	Baltimore	Maryland	Baltimore City	21226
6	MD0015	WR Grace & Co. - Davidson Chem Div.	*No Data*	5500 Chemical Road	Curtis Bay	Maryland	Baltimore City	21226
7	MD0014	Olin Corp. - Curtis Bay	Olin Chemical	5501 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226
8	MD0114	Estech General Chemical Co.	*No Data*	5500 Chemical Road	Baltimore	Maryland	Baltimore City	21226
9	MD1319	Former Reichold Site	NL Chemicals, NL Industries Baltimore, Textron Inc	6401 Chemical Road	Baltimore	Maryland	Anne Arundel	21226
10	MD0559	Leading Point	*No Data*	5400 Quarantine Road	Baltimore	Maryland	Baltimore City	21226
11	MD0011	American Recovery Company, Inc. (Curtis Bay Facility)	American Recovery Corporation (MD-103); 2001 Benhill Avenue (MD-103)	1901 Birch Street	Baltimore	Maryland	Baltimore City	21226
12	MD1422	Olin Chemical	See also MD-0014	5701 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226
13	MD0406	U.S. Coast Guard - Curtis Bay	Coast Guard Yard	2401 Hawkins Point Road	Baltimore	Maryland	Anne Arundel	21226
14	MD0112	Crown Central Petroleum (6000 Pennington Avenue)	*No Data*	6000 Pennington Avenue	Baltimore	Maryland	Baltimore City	21226
15	MD0258	Locomotive Junkyard	*No Data*	Near 6000 Chemical Road	Baltimore	Maryland	Baltimore City	21226
16	MD2070	5101 Andard Avenue	WPN Recycling	5101 Andard Avenue	Baltimore	Maryland	Baltimore City	21226
17	MD1946	Origin Baltimore	Includes Olin Corp, General Chemical and 5501 Pennington Avenue (previous VCP properties)	5501 and 5701 Pennington Avenue, 5501 Andard Avenue, unaddressed property desribed as Rear 5501 Pennington Ave k/a 5401	Baltimore	Maryland	Baltimore City	21226

#	Area of site in acres	File Available Electronically. Please note that a PIA request must be completed to review LRP files. In addition, only a portion of a file may be available electroncally.	Provides a link to the fact sheet for the property.	Count
1	0.00	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/Brownfields/Biochem_Manag.pdf	1
2	32.00	Yes	factsheet not available	1
3	3.14	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/Brownfields/striegel.pdf	1
4	21.09	Yes	Fact Sheet Not Available.	1
5	50.98	No	Fact Sheet Not Available.	1
6	110.00	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/WR%20GRACE%20DAVIDSON%20CHEM.pdf	1
7	6.80	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/Brownfields/Olin_Chem.pdf	1
8	9.00	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/Brownfields/estech.pdf	1
9	6.90	Yes	Fact Sheet Not Available.	1
10	18.00	Yes	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/Leading%20Point.pdf	1
11	0.00	Yes	Fact Sheet Not Available.	1
12	20.69	No	https://mde.maryland.gov/programs/land/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/Brownfields/Olin_Chem.pdf	1
13	113.00	No	https://mde.maryland.gov/programs/LAND/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/brownfields/Coast%20Guard%20Yard.pdf	1
14	0.00	Yes	https://mde.maryland.gov/programs/LAND/MarylandBrownfieldVCP/Documents/www.mde.state.md.us/assets/document/brownfields/crown.pdf	1
15	0.00	No	Fact Sheet Not Available.	1
16	8.77	No	Fact Sheet Not Available.	1
17	41.10	Yes	Fact Sheet Not Available.	2

All Permitted Solid Waste Acceptance Facilities

#	county	AI_ID	master_ai_name	Facility_Type	OwnerType	permit_number	ai_physical_address	permit_class	Count
1	Anne Arundel	23,330	Curtis Creek Processing Facility & Transfer Station	Processing Facility & Transfer Station	Private (Commercial)	2018-WPT-0539	23 Stahl Point Rd, Curtis Bay, MD 21226	Renew	1
2	Baltimore City	2,102	W. R. Grace & Co. - Davison Chemical	Industrial Landfill	Private (Commercial)	2017-WIF-0613	5500 Chemical Rd, Curtis Bay, MD 21226-1698	Renew	1
3	*No Data*	439	Curtis Bay Energy, LP	Medical Waste Incinerator	Private (Commercial)	2017-WMI-0036	3200 Hawkins Point Road, Baltimore, MD 21226	Renew	1
4	*No Data*	8,713	Stericycle, Inc	Processing Facility & Transfer Station	Private (Commercial)	2016-WPT-0677	5901 Chemical Rd, Curtis Bay, MD 21226	New	1
5	*No Data*	13,670	Quarantine Road Municipal Landfill	Municipal Solid Waste Landfill	Municipal Government	2019-WMF-0325	6100 Quarantine Road, Curtis Bay, MD 21226	Renew	1

Municipal Solid Waste Acceptance Facilities

#	county	AI_ID	MSW_Landfills	Facility_Type	OwnerType	permit_number	master_ai_name	ai_physical_address	permit_class	Count
1	*No Data*	13,670	Quartantine Road Landfill	Municipal Solid Waste Landfill	Municipal Government	2019-WMF-0325	Quarantine Road Municipal Landfill	6100 Quarantine Road, Curtis Bay, MD 21226	Renew	1

Maryland Pond Locations

#	Facility Type	DAM HEIGHT	County	HAZARD CLASS	6 DIGIT WATERSHED	8 DIGIT WATERSHED	Count

Wastewater Discharge Facilities

#	AID	FAC_NAME	Comments	ValidateCo	GIS_Action	GIS_Comments	Corrective	ZipCodeCom
1	6,867	Baltimore City Composting/Veolia Water North America-Central, LLC	*No Data*	Data Verified Accurate Against Federal HUC 8 Digit Watershed	*No Data*	*No Data*	*No Data*	*No Data*
2	2,102	W. R. Grace & Co. - Grace Davison - Curtis Bay	*No Data*	Data Verified Accurate Against MD 8 Digit Watershed	*No Data*	*No Data*	*No Data*	*No Data*
3	19,004	CSX Transportation - Chesapeake Bay Piers	*No Data*	Data Verified Accurate Against MD 8 Digit Watershed	*No Data*	*No Data*	*No Data*	*No Data*
4	0	HESS CORPORATION-BALTIMORE	*No Data*	Data Verified Accurate Against MD 8 Digit Watershed	*No Data*	*No Data*	*No Data*	*No Data*
5	9,620	United States Gypsum Company	*No Data*	Data Verified Accurate Against Federal HUC 8 Digit Watershed	*No Data*	*No Data*	*No Data*	Changed Zipcode from 212261621 to 21226
6	1,792	US Coast Guard Yard (USCG Yard)	*No Data*	Data Verified Accurate Against Parcel Data	*No Data*	*No Data*	*No Data*	*No Data*
7	1,792	US Coast Guard Yard (USCG Yard)	*No Data*	Data Verified Accurate Against Parcel Data	*No Data*	*No Data*	*No Data*	*No Data*
8	0	CITY OF BALTIMORE - MILLENNIUM CHEMICALS LANDFILL SITE	*No Data*	Data Verified Accurate Against MD 8 Digit Watershed	*No Data*	*No Data*	*No Data*	*No Data*

#	CBSEG_92	BAY_TRIB	MD12DIG	County	MDMajorTrib	HUC	Tier2Catchments_yn	Tier2Catchments
1	PATMH	02130903	021309031006	3	4	020600031203	0	*No Data*
2	PATMH	02130903	021309031008	3	4	020600031202	0	*No Data*
3	PATMH	02130903	021309031008	3	4	020600031202	0	*No Data*
4	*No Data*	02130903	021309031008	2	4	020600031202	0	*No Data*
5	PATMH	02130903	021309031006	3	4	020600031203	0	*No Data*
6	PATMH	02130903	021309031008	2	4	020600031202	0	*No Data*
7	PATMH	02130903	021309031008	2	4	020600031202	0	*No Data*
8	PATMH	02130903	021309031006	3	4	020600031203	0	*No Data*

#	Tier3Catchments_yn	Tier3Catchments	SSPRA_yn	SSPRA	Impaired_yn	Impaired	WQA_yn	WQA
1	0	*No Data*	0	*No Data*	1	Ions, Sediments, Stream Modification, Habitat	0	*No Data*
2	0	*No Data*	0	*No Data*	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Biological, Metals, Sediments, (DO)	0	*No Data*
3	0	*No Data*	0	*No Data*	1	Ions, Sediments, Stream Modification, Habitat	0	*No Data*
4	0	*No Data*	0	*No Data*	1	Biological, Nutrients(Nitrogen, Phosphorous), Metals, Sediments, Pesticides, PCB, (DO)	0	*No Data*
5	0	*No Data*	0	*No Data*	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Biological, Sediments, (DO)	0	*No Data*
6	0	*No Data*	0	*No Data*	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Biological, Metals, Sediments, (DO)	0	*No Data*
7	0	*No Data*	0	*No Data*	1	Nutrients(Nitrogen, Phosphorous), Metals, Sediments, Pesticides, PCB, Biological, (DO)	0	*No Data*
8	0	*No Data*	0	*No Data*	1	Metals, Sediments, Nutrients(Nitrogen, Phosphorous), Pesticides, PCB, Biological, (DO)	0	*No Data*

#	T3038Dig_yn	T3038Dig	TMDL8Dig_yn	TMDL8Dig	MHTArcheo_yn	MHTArcheo	Facility_Type	State_Num
1	1	Ions, Sediments	0	*No Data*	0	*No Data*	*No Data*	*No Data*
2	1	Biological, Metals	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Sediments, (DO)	0	*No Data*	*No Data*	*No Data*
3	1	Ions, Sediments	0	*No Data*	0	*No Data*	*No Data*	*No Data*
4	1	Biological, Metals	1	Nutrients(Nitrogen, Phosphorous), Sediments, Pesticides, PCB, (DO)	1	Present	*No Data*	*No Data*
5	1	Biological	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Sediments, (DO)	0	*No Data*	*No Data*	*No Data*
6	1	Biological, Metals	1	Pesticides, Nutrients(Nitrogen, Phosphorous), PCB, Sediments, (DO)	0	*No Data*	*No Data*	*No Data*
7	1	Metals, Biological	1	Nutrients(Nitrogen, Phosphorous), Sediments, Pesticides, PCB, (DO)	0	*No Data*	*No Data*	*No Data*
8	1	Metals, Biological	1	Sediments, Nutrients(Nitrogen, Phosphorous), Pesticides, PCB, (DO)	0	*No Data*	*No Data*	*No Data*

#	WatershedYear	WatershedQuarter	WatershedCode	WatershedName	SimplePermittingAction	PermitAge	CycleYear	PreDraftComplete
1	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
2	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
3	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
4	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
5	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
6	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
7	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*
8	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*	*No Data*

#	DatePreDraftComplete	DraftPermitCompleteBy	IssueBy	AppFee	Bill	Amount	DSCHG_RATE	SW_AUTH_ROD
1	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
2	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
3	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
4	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
5	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
6	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
7	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0
8	*No Data*	*No Data*	*No Data*	*No Data*	0	0.00	0.00	0

#	P2_OR_C_Bay_2000	District	SurWellName	SurWellSource	SurWellDist	CommWellName	CommWellSource	CommWellDist
1	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
2	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
3	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
4	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
5	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
6	0	31B	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
7	0	31B	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00
8	0	46	*No Data*	*No Data*	-99.00	*No Data*	*No Data*	-99.00

#	CommWellProtect	Active	Include	ManualActive	Count
1	0	1	1	1	1
2	0	1	1	1	1
3	0	1	1	1	1
4	0	0	1	0	1
5	0	1	1	1	1
6	0	1	1	1	1
7	0	1	1	1	1
8	0	0	1	0	1