

STATE OF MICHIGAN

Rick Snyder, Governor



DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

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PUBLIC PARTICIPATION DOCUMENTS

For

Marathon Petroleum Company LP
Detroit, Michigan

PERMIT APPLICATION NUMBERS

63-08C

197-10A

96-11

142-11

148-11

NOVEMBER 2, 2011

FACT SHEET

November 2, 2011

Purpose and Summary

The Michigan Department of Environmental Quality (MDEQ), Air Quality Division (AQD), is proposing to act on five Permit to Install (PTI) applications from Marathon Petroleum Company LP.

Application Number	Proposed equipment or change
63-08C	Detroit Heavy Oil Upgrade Project (DHOUP): minor changes in project scope
197-10A	Truck loading rack for asphalt cement at the Rouge Asphalt Terminal
96-11	Two storage tanks to manage the "rag layer" from the desalting operation
142-11	Railcar loading operation for asphalt cement at the Melvindale Tank Farm
148-11	Barge loading operation for asphalt cement at the Rouge Asphalt Terminal

The proposed projects are all subject to permitting requirements of the Department's Rules for Air Pollution Control. Prior to acting on these applications, the AQD is holding a public comment period and a public hearing to allow all interested parties the opportunity to comment on the proposed PTIs. All relevant information received during the comment period and hearing will be considered by the decision maker prior to taking final action on the applications.

Background Information

Marathon Petroleum Company LP (Marathon) operates a refinery at 1300 South Fort Street, Detroit, along with adjacent storage and transfer operations. While operating control of the refinery and adjacent operations is divided between two entities, the facility is considered one stationary source. One of the adjacent operations is the Rouge Asphalt Terminal, which receives and stores asphalt cement from the refinery. The Melvindale Tank Farm is another adjacent operation. It includes asphalt cement storage for material from the refinery. The asphalt terminal also transfers asphalt cement to trucks and to barges, while the tank farm includes equipment to transfer asphalt cement to railcars. The Rouge Asphalt facility is located at 301 South Fort Street, Detroit, on the Rouge River between West Fort Street and I-75. The Melvindale Tank Farm is located across South Schaefer Highway from the refinery, to the southwest.

The "rag layer" storage tanks application (No. 96-11) is for two new storage tanks that Marathon proposes to install.

Three applications are for asphalt cement loading operations: for trucks (No. 197-10A), for railcars (No. 142-11), and for barges (No. 148-11). While preparing to renew Marathon's Renewable Operating Permit, the AQD determined that these three asphalt cement loading operations had never been permitted. The AQD further determined that these operations and equipment were not exempt from the requirement to obtain a PTI. Marathon has applied for PTIs in response to the AQD's request.

The application for minor changes to the scope of the Detroit Heavy Oil Upgrade Project (DHOUP), No. 63-08C, addresses several minor changes at the refinery that are associated with that project, as well as minor changes to the permit conditions for the DHOUP.

Proposed Facility and Present Air Quality

The facility, in general: The Marathon refinery receives crude oil and produces a variety of oil-based products, including transportation fuels, asphalt, and commodity chemicals. Construction continues on a capacity expansion and a coking operation, referred to as the Detroit Heavy Oil Upgrade Project (DHOUP), which was permitted under PTI No. 63-08 on June 20, 2008. This permit has been modified twice, and the current PTI is No. 63-08B. The first modification incorporated elements of an agreement between Marathon and the Sierra Club. It also included additional provisions requested by Marathon that reflected matters raised by the US EPA. The second modification addressed an equipment change based on more refined design information. It also included an independent project that involved replacing a reboiler.

Marathon's Rouge Asphalt Terminal includes storage tanks for asphalt cement, storage tanks for asphalt polymer mix, equipment to load barges and trucks, and natural gas-fired asphalt heaters. Except for the truck loading rack and barge loading operation, equipment at the facility either is grandfathered from the PTI requirement or has been permitted.

Marathon's Melvindale Tank Farm includes storage tanks for asphalt cement. There is also a railcar loading facility able to transfer asphalt cement to six railcars at once.

This equipment is located in an area that is considered to be an "attainment area" for all of the National Ambient Air Quality Standards (NAAQS) except for the standard for particulate matter less than 2.5 microns in diameter (PM_{2.5}). The area is considered to be a "nonattainment area" for PM_{2.5}. However, the MDEQ has submitted to EPA data showing that the area is now meeting the PM_{2.5} NAAQS, and has asked EPA to redesignate the area as an attainment area.

The "rag layer" storage tanks (application No. 96-11): An early step in the petroleum refining process involves removing water-soluble inorganic substances from the crude oil. This is commonly called "desalting." The desalting process tends to produce an emulsion of water in oil that separates from the crude oil. This separated material is called a "rag layer." This "rag layer" causes complications in processing later in the refining process. Marathon wants to build two storage tanks, each holding about 35,000 gallons. With these tanks, Marathon would be able to separate this "rag layer" from the desalted crude oil. Putting the "rag layer" into separate storage tanks will allow the facility to better manage the material in the refining process and so reduce the processing complications.

The truck loading rack (application No. 197-10A): The application for the truck loading rack covers the same equipment that was presented for public comment in July, 2011, for application No. 197-10. Marathon withdrew application No. 197-10 in order to submit a new application that includes information on hydrogen sulfide emissions from asphalt cement transfer operations at the Marathon facility. Note that Marathon has included hydrogen sulfide emissions information in all three asphalt cement transfer applications discussed in this Fact Sheet.

The equipment on site can load up to eight trucks at once and it includes a carbon adsorption control device. In the previous application, No. 197-10, Marathon did not claim any "credit" for this control device. In application No. 197-10A, Marathon is proposing to improve the ability of

the emission control system to capture emissions from the loading operation and is claiming emission reductions after the improved capture system is installed. The equipment's maximum transfer rate is 24,000 gallons per hour to each truck, or 192,000 gallons per hour total. Marathon has asked for an interim throughput limit of 724,000 gallons per day in order to meet the health-based screening level for hydrogen sulfide. This restriction is the less than four hours' operation at the maximum hourly rate. The interim throughput limit would be removed after the AQD has determined that the improved capture system has demonstrated satisfactory performance.

The railcar loading operation (application No. 142-11): The railcar loading operation can load up to six rail cars at the same time. It has a maximum transfer rate of 25,200 gallons per hour of asphalt cement to each railcar, or 151,200 gallons per hour total. The application also addresses hydrogen sulfide emissions, as discussed below.

The barge loading operation (application No. 148-11): Barge loading involves filling one vessel at a time. The barge loading operation has a maximum daily average transfer rate of 92,100 gallons per hour. The application also addresses hydrogen sulfide emissions, as discussed below.

Proposed minor changes in the scope of the DHOUP (application No. 63-08C):

- Changes potentially affecting emissions:
 - Minor equipment changes including revising the number of compressors in three emission units and adding two new emission units. The new emission units will help to minimize flaring from the coker and the new distillate hydrotreater and will compress refinery fuel gas for use as a feedstock in the hydrogen plant.
 - Increase fugitive leak monitoring in two existing emission units.
 - Account for small amounts of VOC that may be emitted from the hydrogen plant's steam and condensate system.
- Revise the emission testing requirements for several existing emission units that are not being modified by the DHOUP to allow Marathon to conduct the emission testing prior to startup of the DHOUP.
- Other changes:
 - Allow the Hydrogen Plant Heater to use syngas as a fuel and correct an error in the existing permit conditions. The error wrongly prohibits use of pressure swing absorption gas as a fuel in the Hydrogen Plant Heater.
 - Remove the NOx Budget Trading Program conditions because the program expires on January 1, 2012.
 - Editorial changes to rename two storage tanks and clarify language related to the amount of hydrogen sulfide allowed in the refinery fuel gas burned in the flares.
 - Revise the netting summary table (Section H) in Appendix B of the permit conditions to ensure all emission changes that are projected to occur during the DHOUP "contemporaneous period" are included in the netting analysis.

Key Permit Review Issues – Overview

Staff evaluated the proposed projects to identify all state rules and federal regulations which are, or may be, applicable. Appendix 1 summarizes these rules and regulations.

Key Permit Review Issues – Are these all separate projects under major NSR rules?

The requirements for major NSR can apply to emissions of several pollutants. For all the equipment addressed in this Fact Sheet, VOC (volatile organic compounds) is the pollutant most likely to trigger the major NSR requirements. This Fact Sheet will not address these pollutants further.

The Marathon facility is a “major stationary source” for purposes of both the Prevention of Significant Deterioration (PSD) requirements and the nonattainment new source review (NANSR) requirements. Under both sets of requirements, a company may not split a project into two or more projects in an effort to avoid major NSR.

The three asphalt cement transfer operations are clearly separate projects from one another and from the other projects because they were installed far apart in time. The equipment for barge loading was installed in 1968, for truck loading in 1978, and for railcar loading in 1997. The “rag layer” storage tanks will not be installed any sooner than 2012. This time gap clearly separates these tanks from the asphalt cement transfer projects. Therefore, these four projects are separate projects. Note that the DHOUP was permitted, and began construction, in 2008. The AQD considered these dates and other information on how and why the “rag layer” storage tanks were planned and concurs with Marathon’s determination that these projects are also separate projects from the DHOUP.

Key Permit Review Issues – Is one of these projects subject to major NSR on its own?

As noted above, the Marathon facility is a “major stationary source” for purposes of both the PSD requirements and the NANSR requirements. The AQD review determined that none of these projects is subject to either PSD or NANSR on its own, for the reasons below.

- **Installed before any major NSR rules were in effect** – The barge loading operation was installed in 1968.
- **Continues to “net out” of major NSR** – The DHOUP was previously determined to “net out” of major NSR. The minor changes in the scope of the DHOUP result in no increase in pollutants that could trigger major NSR review. The only pollutant that will have a change in emissions for this project is VOC, with a 0.86 ton per year decrease in emissions. Adding the “rag layer” storage tanks (increase of 0.13 ton per year) means that the net emissions increase for the DHOUP is still being reduced by about 0.7 ton per year.
- **Project emissions are less than the “significant” level that applies** – This is true for each of the remaining projects: the “rag layer” storage tanks, the truck loading rack, and the railcar loading operation.

Therefore, none of these projects is subject to major NSR on its own.

Key Permit Review Issues – Major NSR related to the DHOUP

On June 20, 2008, the MDEQ approved a Permit to Install for the DHOUP. The permit application claimed, and the MDEQ concurred, that the project was not subject to major NSR under either the PSD or NANSR requirements because the project did not cause a “significant net emissions increase” – it “netted out.” To “net out,” a project must include in its net emissions increase analysis all creditable emissions increases and decreases in the “contemporaneous period” for a project. The contemporaneous period goes on into the future after permit issuance

and only ends when the project begins to operate. The DHOUP has not started operating. Therefore, the permit review for each of these projects must consider whether, and how, the project's emissions affect the DHOUP netting demonstration.

- **Asphalt cement transfer operations (truck, railcar, and barge)** – These emission units were all installed, and began operating, before the contemporaneous period for the DHOUP began. None of them has been modified during the contemporaneous period. In terms used in the rules for major NSR, none of them is experiencing a change that would cause a “creditable” emissions increase or decrease. Therefore, none of them needs to be included in the “netting” for the DHOUP.
- **Minor changes in the scope of the DHOUP** – As noted above, the emissions resulting from the minor changes in the scope of the DHOUP make the net emissions increase smaller.
- **Rag layer storage tanks** – The storage tanks are new emission units being installed during the contemporaneous period for the DHOUP. At the time Marathon prepared the DHOUP netting analysis, the company did not expect to need the tanks, and so did not include their emissions in the netting. With this application, Marathon is now including their emissions in the netting. However, adding the “rag layer” storage tanks means that the net emissions increase for the DHOUP is still being reduced by about 0.7 ton per year, when all these projects are considered.

Key Permit Review Issues – Federal NSPS Regulations

The federal New Source Performance Standards (NSPS) were established under Title 40 of the Code of Federal Regulations (40 CFR), Part 60. The “rag layer” storage tanks (application No. 96-11) are subject to the NSPS for Volatile Organic Liquid Storage Vessels, 40 CFR Part 60 Subpart Kb. This is because each tank will be installed after July 23, 1984, and each has a capacity greater than or equal to 75 cubic meters (about 20,000 gallons). They are also subject to the leak detection and repair (LDAR) requirements of the NSPS in 40 CFR Part 60 Subpart GGGa. This is because each tank will be installed after November 6, 2006.

The proposed new emission units for the DHOUP (application No. 63-08C), the Unit 76 Utilities Including Flare Gas Recovery and the Unit 78 Fuel Gas Recovery, are subject to the consolidated LDAR requirements of 40 CFR Part 60, Subparts VV and VVa, and 40 CFR Part 60, Subparts GGG and GGGa, as cited in the draft permit conditions.

Key Permit Review Issues – Federal NESHAP Regulations

The federal National Emission Standards for Hazardous Air Pollutants (NESHAP) were established under 40 CFR Part 61 and Part 63. The “rag layer” storage tanks are subject to the benzene NESHAP in 40 CFR Part 61, Subpart FF, and also to the requirements of the refinery NESHAP in 40 CFR Part 63 Subpart CC.

The proposed new emission units, the Unit 76 Utilities Including Flare Gas Recovery and the Unit 78 Fuel Gas Recovery (application 63-08C), are subject to the consolidated LDAR requirements of 40 CFR Part 63, Subpart CC, as cited in the draft permit conditions.

Key Permit Review Issues – Rule 224 T-BACT Analysis

Marathon properly addressed Rule 224 in its applications. Most of the toxic air contaminants (TACs) emitted by these projects are also VOCs, and these projects all provide Rule 702 best available control technology (BACT), as noted below. As provided in Rule 224, those TACs are not subject to the BACT for toxics (T-BACT) requirement of Rule 224.

For other TACs emitted from emission units in the DHOUP, similar to what the Rule 225 discussion notes, the previous Rule 224 analysis for the DHOUP remains valid. The DHOUP properly provides Rule 224 T-BACT.

For non-VOC TACs emitted from the other emission units, the AQD agrees with Marathon's analysis that the proposals provide Rule 224 T-BACT.

Key Permit Review Issues – Rule 225 Toxics Analysis

The MDEQ Rules for Air Pollution Control require that the ambient air concentration of TACs be compared against health-based screening levels. AQD staff reviewed Marathon's air quality modeling and its evaluation of TAC impacts for each project. The AQD review found that the impacts of all TACs meet the established health-based screening levels and will comply with the requirements of Rule 225. See the tables listed below for the individual TACs emitted from each project, the emission rates, and how they comply with Rule 225. Some discussion follows below this table. Note that there is no table of TACs for the minor changes in scope of the DHOUP. See the discussion below on this project for the reason.

<i>Project (PTI Application No.)</i>	<i>Tables of TACs and Emissions</i>
Rag layer storage tanks (96-11)	Table A
Truck loading rack for asphalt cement (197-10A)	Table B
Railcar loading operation for asphalt cement (142-11)	Table C
Barge loading operation for asphalt cement (148-11)	Table D

- **“Rag layer” storage tanks (96-11)** – The rag layer storage tanks will receive a water-in-oil emulsion from the desalting process. The TACs identified for these tanks are crude oil and benzene. The applicant used standard methods to estimate emissions from storage and transfer with these tanks. The AQD confirmed the results. These emissions comply with Rule 225. See Table A for a summary.
- **Asphalt cement transfer, in general (197-10A, 142-11, and 148-11)** – Marathon has estimated TAC emissions from asphalt cement transfer by using published emission factors for hot mix asphalt manufacturing plants. The AQD believes that this is the most useful data available. However, it does not include any information on hydrogen sulfide (H₂S) emissions. The applicant has also provided information collected at their facility on H₂S emissions from asphalt cement transfer.
- **Truck loading rack for asphalt cement (197-10A)** – The truck loading rack includes a vapor recovery unit (VRU), which is a carbon adsorber. Before this application, Marathon has not claimed any emission reduction credit for the VRU. In this application, Marathon proposes to improve the capture efficiency of the VRU. Marathon states that after this improvement is completed, the VRU will reduce emissions of VOCs and of H₂S. The AQD agrees that with proper capture, the VRU will reduce emissions of these pollutants.

Marathon's analysis shows that all TACs but H₂S meet their health-based screening levels without taking any "credit" for capture and control by the VRU. For H₂S, the draft conditions establish a two-phase approach. In the first phase, the conditions limit the daily throughput of asphalt cement at the truck loading rack to a rate where the H₂S emissions can meet the screening level with no "credit" for emission control. The conditions also include a first-phase VOC emission limit that corresponds to this daily throughput limit. The conditions require Marathon to demonstrate that the improved capture system is functioning as expected. After the AQD has approved this demonstration, the conditions remove the first-phase limits on daily throughput and VOC emissions and establish H₂S and VOC emission limits based on the capture and control effectiveness of the VRU with the improved capture system.

See Table B for a summary.

- **Railcar loading operation for asphalt cement (142-11)** – Marathon estimated TAC emissions from the railcar loading operation in the same way as for the truck loading rack. Marathon's analysis shows that the emissions of all TACs, including H₂S, meet their screening levels. The AQD concurs with this conclusion. See Table C for a summary.
- **Barge loading operation for asphalt cement (148-11)** – Marathon estimated TAC emissions from the railcar loading operation in the same way as for the truck loading rack. Marathon's analysis shows that the emissions of all TACs but H₂S meet their screening levels. For H₂S, Marathon is taking additional steps to meet the health-based screening level. Because a barge heats its storage areas, the H₂S concentrations emitted during barge loading are higher than those emitted while loading trucks or railcars. Marathon's analysis reflected this fact. Marathon proposes to comply with Rule 225 for H₂S by adding an H₂S "scavenger" chemical to the asphalt cement transferred to barges. The scavenger reacts with H₂S molecules and prevents them from being emitted. Marathon also provided a Rule 225 analysis for the organic compounds that accompany the scavenger chemical. The AQD concurs with Marathon's conclusion that, with use of the H₂S "scavenger," the emissions of all TACs meet their screening levels. See Table D for a summary.
- **Minor changes in the scope of the DHOUP (63-08C)** – The addition of compressors to the Coker Unit, the addition of two new emission units, and accounting for potential VOC emissions from the Hydrogen Plant steam and condensate system are all potentially subject to Rule 225.

The proposed changes, including monitoring 50% of the flanges and connectors in light liquid and gas service in the CCR Platformer Unit and the Cracking Plant Treaters for VOC leaks, will result in an overall reduction in VOC emissions. Therefore, AQD has determined that the previous Rule 225 evaluation for TACs that are VOCs is still valid and the proposed changes comply with Rule 225.

The original permit application review for the DHOUP included an extensive evaluation of the H₂S emissions from the refinery. The AQD reviewed the H₂S emission estimates for the DHOUP and determined that the H₂S emission rate after the proposed changes have been made will be the same as the H₂S emission rate previously evaluated under Rule 225. Therefore, the previous Rule 225 evaluation for H₂S is still valid and the proposed changes comply with Rule 225.

Key Permit Review Issues – Rule 702 VOC Emissions

- **“Rag layer” storage tanks (96-11)** – These storage tanks have internal floating roofs that comply with the federal NSPS for storage tanks. This complies with Rule 702(b).
- **Asphalt cement transfer (197-10A, 142-11, and 148-11)** – The AQD concurs with Marathon’s analysis that add-on emission control for VOC emissions would be unreasonably costly. Therefore, the use of no add-on control constitutes Rule 702 BACT for this equipment.
- **Minor changes in the scope of the DHOUP (63-08C)** – The emission units being changed or added will be subject to LDAR for VOC under various NSPS and NESHAPs, as described above. Compliance with these federal standards constitutes compliance with Rule 702.

Key Permit Review Issues – Odors

- **“Rag layer” storage tanks (96-11)** – The emissions from these tanks are quite small, and will have no noticeable affect on odors from the facility.
- **Asphalt cement transfer operations: truck (197-10A), railcar (142-11), and barge (148-11)** – These are existing operations at the facility, and none of them has been identified as a source of odors in violation of Rule 901. For H₂S, a known odorous compound, Marathon is proposing to improve dispersion or reduce emissions, or both, for these sources. These steps will reduce the impact on the public of the H₂S emissions from these sources. Marathon is also improving dispersion for other emissions from the railcar loading operation and is reducing emissions of other compounds from the truck loading rack. Therefore, each of these permits will reduce the impact on the public of possibly odorous emissions from these asphalt cement transfer operations.

Key Permit Review Issues – Hydrogen sulfide (H₂S) emissions

Marathon has identified hydrogen sulfide as a pollutant emitted during asphalt cement transfer. This is new information for AQD permit review. The truck (197-10A), railcar (142-11), and barge (148-11) loading applications all include H₂S emissions estimates. Marathon has proposed measures that reduce H₂S emissions from some of the operations (truck and barge loading) and reduce public exposure to H₂S from these sources by improving dispersion for the railcar loading operation. The draft permits include these measures. These are all existing operations for which the draft permit requires steps that reduce public exposure to H₂S by either emission reduction or improved dispersion.

Key Aspects of Draft Permit Conditions

- **“Rag layer” storage tanks (96-11)** – The draft permit conditions include a VOC emission limit and a throughput limit, record-keeping requirements, and requirements to comply with the NSPS and NESHAP that apply.
- **Asphalt cement transfer operations, in general** – The draft permit conditions for these operations include VOC emission limits and throughput limits, with associated record-keeping requirements.

- **Truck loading rack (197-10A)** – The draft permit conditions include requirements related to the interim operation, before the improved capture system is installed: throughput limits and a VOC emission limit. They also include an emission limit for H₂S from the control device and requirements for the emission control device vents. There are also requirements for a malfunction abatement plan for the emission control device and for an operating plan for the improved capture system and the control device. The draft conditions also require Marathon to demonstrate that the improved capture system is working as designed.
- **Railcar loading operation (142-11)** – The draft permit conditions include requirements for the stacks related to the dispersion required for H₂S emissions to comply with Rule 225.
- **Barge loading operation (148-11)** – The draft permit conditions include requirements to use the H₂S scavenger additive and to demonstrate that the emissions with use of the additive are meeting the expected H₂S concentration. The draft permit also requires Marathon to keep records of H₂S scavenger addition.
- **Minor changes in the scope of the DHOUP (63-08C)** –
 - The two new emission units, Unit 76 Utilities Including Flare Gas Recovery and Unit 78 Fuel Gas Recovery, are required to monitor at least 90% of the flanges and connectors in gas/vapor and light liquid VOC service for fugitive VOC leaks.
 - The CCR Platformer Unit and the Cracking Plant Treaters are required to monitor at least 50% of the flanges and connectors in gas/vapor and light liquid VOC service for fugitive VOC leaks.
 - Add emission unit EG71-H2STEAMSYS to account for potential VOC emissions from the hydrogen plant steam and condensate system.
 - For several emission units not being modified by the DHOUP, allow emission testing to be done before startup of the DHOUP, as long as operation during testing is representative of operation after startup of the DHOUP.
 - Allow the Hydrogen Plant Heater to use pressure swing absorption gas and syngas as fuel.
 - The netting summary table (Section H) in Appendix B of the permit conditions was revised to ensure the netting analysis includes all emission changes that are projected to occur during the DHOUP contemporaneous period.

Conclusion

Based on the analyses conducted to date, staff concludes that each of the proposed projects would comply with all applicable state and federal air quality requirements. Staff also concludes that the projects, as proposed, would not violate the federal National Ambient Air Quality Standards or the state and federal PSD increments.

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

If you would like additional information about any of these proposals, please contact the appropriate engineer listed below.

- | | | |
|---|------------------|--------------|
| • DHOUP changes | Andrew Drury | 517-335-3107 |
| • All other applications | Paul Schleusener | 517-335-6828 |
| • Matters involving all five applications | Paul Schleusener | 517-335-6828 |

Table A
Rag Layer Storage Tanks (96-11):
Toxic Air Contaminant Impacts Compared to Screening Levels

CAS No.	Toxic Air Contaminant	Potential Emission Rate (lb/hr)	Pollutant Impact ($\mu\text{g}/\text{m}^3$)	ITSL or IRSL ($\mu\text{g}/\text{m}^3$)	Averaging Time	Pass / Fail
71-43-2	Benzene	5.37×10^{-4}	0.0060	0.1	Annual	Pass
			0.0699	30	24-hour	Pass
68410-00-4	Crude oil	0.0278	0.3100	19	Annual	Pass

Table B
Truck Loading Rack (197-10A):
Toxic Air Contaminant Impacts Compared to Screening Levels
For Compounds with an Emissions Impact Greater than 5% of the Screening Level*

CAS No.	Toxic Air Contaminant	Potential Emission Rate (lb/hr) ¹	Pollutant Impact ($\mu\text{g}/\text{m}^3$)	ITSL or IRSL ($\mu\text{g}/\text{m}^3$)	Averaging Time	Pass / Fail
71-43-2	Benzene	1.84×10^{-3}	0.0285	0.1	Annual	Pass
			0.569	30	24-hour	Pass
98-82-8	Cumene	3.84×10^{-3}	0.0596	0.1	Annual	Pass
			1.19	400	24-hour	Pass
100-41-4	Ethylbenzene	0.010	0.155	3	Annual	Pass
			3.10	1,000	24-hour	Pass
50-00-0	Formaldehyde	3.09×10^{-3}	0.0479	0.08	Annual	Pass
91-20-3	Naphthalene	3.59×10^{-3}	0.0557	0.08	Annual	Pass
			1.11	3	24-hour	Pass
85-01-8	Phenanthrene	5.56×10^{-4}	0.0363	0.1	Annual	Pass
None	Total PAH ²	1.57×10^{-5}	2.17×10^{-4}	5×10^{-4}	Annual	Pass
1330-20-7	Xylenes	0.017	5.25	100	24-hour	Pass
7783-06-4	Hydrogen sulfide:					
	Interim (daily average)	7.46×10^{-3}	2	2	24-hour	Pass
	Final	0.0290	1.99	2	24-hour	Pass

* All other TACs either have impacts less than 5% of all of the screening levels that apply or are exempt from Rule 225 by Rule 226(a)³.

¹ Except for hydrogen sulfide, all emission rates for the truck loading rack presume the "final" throughput rate and take no credit for emission reduction from the improved capture system and vapor recovery unit.

² PAH refers to "polycyclic aromatic hydrocarbon." "Total PAH" includes the following compounds: benz(a)anthracene (CAS No. 56-55-3); benzo(a)pyrene (50-32-8); benzo(b)fluoranthene (205-99-2); benzo(k)fluoranthene (207-08-9); chrysene (218-01-9); dibenzo(a,h)anthracene (53-70-3); and indeno(1,2,3cd)pyrene (193-39-5). To calculate "total PAH," each compound's impact is weighted by its carcinogenic potency relative to benzo(a)pyrene.

³ Rule 226(a) provides that the Rule 225 requirement does not apply to emissions of a toxic air contaminant (TAC) if all of the statements below are true.

a) Its emissions are less than 10 pounds per month and less than 0.14 pound per hour.

b) The TAC is not a carcinogen.

c) The TAC is not listed in Table 20 in Rule 226 ("List of High Concern Toxic Air Contaminants").

Table C
Railcar Loading Operation (142-11):
Toxic Air Contaminant Impacts Compared to Screening Levels
For Compounds with an Emissions Impact Greater than 5% of the Screening Level*

CAS No.	Toxic Air Contaminant	Potential Emission Rate (lb/hr)	Pollutant Impact ($\mu\text{g}/\text{m}^3$)	ITSL or IRSL ($\mu\text{g}/\text{m}^3$)	Averaging Time	Pass / Fail
7783-06-4	Hydrogen sulfide	0.0400	0.93	2	24-hour	Pass

* All other TACs either have impacts less than 5% of all of the screening levels that apply or are exempt from Rule 225 by Rule 226(a)⁴.

Table D
Barge Loading Operation (148-11):
Toxic Air Contaminant Impacts Compared to Screening Levels
For Compounds with an Emissions Impact Greater than 5% of the Screening Level*

CAS No.	Toxic Air Contaminant	Potential Emission Rate (lb/hr)	Pollutant Impact ($\mu\text{g}/\text{m}^3$)	ITSL or IRSL ($\mu\text{g}/\text{m}^3$)	Averaging Time	Pass / Fail
98-82-8	Cumene	1.85×10^{-3}	8.63×10^{-3}	0.1	Annual	Pass
			0.115	400	24-hour	Pass
111-90-0	Diethylene glycol monoethyl ether	22.6	1,404	1,750	24-hour	Pass
50-00-0	Formaldehyde	1.49×10^{-3}	6.94×10^{-3}	0.08	Annual	Pass
7783-06-4	Hydrogen sulfide	0.0397	2	2	24-hour	Pass
91-20-3	Naphthalene	1.73×10^{-3}	8.06×10^{-3}	0.08	Annual	Pass
			0.107	3	24-hour	Pass
85-01-8	Phenanthrene	1.13×10^{-3}	5.25×10^{-3}	0.1	Annual	Pass
64742-47-8	Petroleum distillates	0.92	4.3	24	Annual	Pass
			85	3,500	8-hour	Pass
None	Total PAH ⁵	1.57×10^{-5}	2.17×10^{-4}	5×10^{-4}	Annual	Pass

* All other TACs either have impacts less than 5% of all of the screening levels that apply or are exempt from Rule 225 by Rule 226(a)⁶.

⁴ Rule 226(a) provides that the Rule 225 requirement does not apply to emissions of a toxic air contaminant (TAC) if all of the statements below are true.

- a) Its emissions are less than 10 pounds per month and less than 0.14 pound per hour.
- b) The TAC is not a carcinogen.

c) The TAC is not listed in Table 20 in Rule 226 ("List of High Concern Toxic Air Contaminants").

⁵ PAH refers to "polycyclic aromatic hydrocarbon." "Total PAH" includes the following compounds: benz(a)anthracene (CAS No. 56-55-3); benzo(a)pyrene (50-32-8); benzo(b)fluoranthene (205-99-2); benzo(k)fluoranthene (207-08-9); chrysene (218-01-9); dibenzo(a,h)anthracene (53-70-3); and indeno(1,2,3cd)pyrene (193-39-5). To calculate "total PAH," each compound's impact is weighted by its carcinogenic potency relative to benzo(a)pyrene.

⁶ Rule 226(a) provides that the Rule 225 requirement does not apply to emissions of a toxic air contaminant (TAC) if all of the statements below are true.

- a) Its emissions are less than 10 pounds per month and less than 0.14 pound per hour.
- b) The TAC is not a carcinogen.
- c) The TAC is not listed in Table 20 in Rule 226 ("List of High Concern Toxic Air Contaminants").

Appendix 1
STATE AIR REGULATIONS

State Rule	Description of State Air Regulations
R 336.1201	Requires an Air Use Permit for new or modified equipment that emits, or could emit, an air pollutant or contaminant. However, there are other rules that allow smaller emission sources to be installed without a permit (see Rules 336.1279 through 336.1290 below). Rule 336.1201 also states that the Department can add conditions to a permit to assure the air laws are met.
R 336.1205	Outlines the permit conditions that are required by the federal Prevention of Significant Deterioration (PSD) Regulations and/or Section 112 of the Clean Air Act. Also, the same types of conditions are added to their permit when a plant is limiting their air emissions to legally avoid these federal requirements. (See the Federal Regulations table for more details on PSD.)
R 336.1224	New or modified equipment that emits toxic air contaminants must use the Best Available Control Technology for Toxics (T-BACT). The T-BACT review determines what control technology must be applied to the equipment. A T-BACT review considers energy needs, environmental and economic impacts, and other costs. T-BACT may include a change in the raw materials used, the design of the process, or add-on air pollution control equipment. This rule also includes a list of instances where other regulations apply and T-BACT is not required.
R 336.1225 to R 336.1232	The ambient air concentration of each toxic air contaminant emitted from the project must not exceed health-based screening levels. Initial Risk Screening Levels (IRSL) apply to cancer-causing effects of air contaminants and Initial Threshold Screening Levels (ITSL) apply to non-cancer effects of air contaminants. These screening levels, designed to protect public health and the environment, are developed by Air Quality Division toxicologists following methods in the rules and U.S. EPA risk assessment guidance.
R 336.1279 to R 336.1290	These rules list equipment to processes that have very low emissions and do not need to get an Air Use permit. However, these sources must meet all requirements identified in the specific rule and other rules that apply.
R 336.1301	Limits how air emissions are allowed to look at the end of a stack. The color and intensity of the color of the emissions is called opacity.
R 336.1331	The particulate emission limits for certain sources are listed. These limits apply to both new and existing equipment.
R 336.1370	Material collected by air pollution control equipment, such as dust, must be disposed of in a manner, which does not cause more air emissions.
R 336.1401 and R 336.1402	Limit the sulfur dioxide emissions from power plants and other fuel burning equipment.
R 336.1601 to R 336.1651	Volatile organic compounds (VOCs) are a group of chemicals found in such things as paint solvents, degreasing materials, and gasoline. VOCs contribute to the formation of smog. The rules set VOC limits or work practice standards for existing equipment. The limits are based upon Reasonably Available Control Technology (RACT). RACT is required for all equipment listed in Rules 336.1601 through 336.1651.
R 336.1702	New equipment that emits VOCs is required to install the Best Available Control Technology (BACT). The technology is reviewed on a case-by-case basis. The VOC limits and/or work practice standards set for a particular piece of new equipment cannot be less restrictive than the Reasonably Available Control Technology limits for existing equipment outlined in Rules 336.1601 through 336.1651.
R 336.1801	Nitrogen oxide emission limits for larger boilers and stationary internal combustion engines are listed.
R 336.1901	Prohibits the emission of an air contaminant in quantities that cause injurious effects to human health and welfare, or prevent the comfortable enjoyment of life and property. As an example, a violation may be cited if excessive amounts of odor emissions were found to be preventing residents from enjoying outdoor activities.
R 336.1910	Air pollution control equipment must be installed, maintained, and operated properly.

STATE AIR REGULATIONS

State Rule	Description of State Air Regulations
R 336.1911	When requested by the Department, a facility must develop and submit a malfunction abatement plan (MAP). This plan is to prevent, detect, and correct malfunctions and equipment failures.
R 336.1912	A facility is required to notify the Department if a condition arises which causes emissions that exceed the allowable emission rate in a rule and/or permit.
R 336.2001 to R 336.2060	Allow the Department to request that a facility test its emissions and to approve the protocol used for these tests.
<p>R 336.2801 to R 336.2804 Prevention of Significant Deterioration (PSD) Regulations</p> <p>Best Available Control Technology (BACT)</p>	<p>The PSD rules allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the National Ambient Air Quality Standards (NAAQS). The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing the BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
R 336.2901 to R 336.2903 and R 336.2908	<p>Applies to new "major stationary sources" and "major modifications" as defined in R 336.2901. These rules contain the permitting requirements for sources located in nonattainment areas that have the potential to emit large amounts of air pollutants. To help the area meet the NAAQS, the applicant must install equipment that achieves the Lowest Achievable Emission Rate (LAER). LAER is the lowest emission rate required by a federal rule, state rule, or by a previously issued construction permit. The applicant must also provide emission offsets, which means the applicant must remove more pollutants from the air than the proposed equipment will emit. This can be done by reducing emissions at other existing facilities.</p> <p>As part of its evaluation, the AQD verifies that no other similar equipment throughout the nation is required to meet a lower emission rate and verifies that proposed emission offsets are permanent and enforceable.</p>

FEDERAL AIR REGULATIONS

Citation	Description of Federal Air Regulations or Requirements
<p>Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)</p>	<p>The United States Environmental Protection Agency has set maximum permissible levels for seven pollutants. These NAAQS are designed to protect the public health of everyone, including the most susceptible individuals, children, the elderly, and those with chronic respiratory ailments. The seven pollutants, called the criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and sulfur dioxide. Portions of Michigan are currently non-attainment for either ozone or PM2.5. Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.</p>
<p>40 CFR 51 Appendix S Emission Offset Interpretive Ruling</p>	<p>Appendix S applies during the interim period between nonattainment designation and EPA approval of a SIP that satisfies nonattainment requirements specified in Part D of the Clean Air Act. Appendix S would apply in nonattainment areas where either no nonattainment permit rules apply or where the existing state rules are less stringent than Appendix S.</p>

FEDERAL AIR REGULATIONS

Citation	Description of Federal Air Regulations or Requirements
<p>40 CFR 52.21 – Prevention of Significant Deterioration (PSD) Regulations</p> <p>Best Available Control Technology (BACT)</p>	<p>The PSD regulations allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the NAAQS. The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant’s determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
<p>40 CFR 60 – New Source Performance Standards (NSPS)</p>	<p>The United States Environmental Protection Agency has set national standards for specific sources of pollutants. These New Source Performance Standards (NSPS) apply to new or modified equipment in a particular industrial category. These NSPS set emission limits or work practice standards for over 60 categories of sources.</p>
<p>40 CFR 63— National Emissions Standards for Hazardous Air Pollutants (NESHAP)</p>	<p>The United States Environmental Protection Agency has set national standards for specific sources of pollutants. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) (a.k.a. Maximum Achievable Control Technology (MACT) standards) apply to new or modified equipment in a particular industrial category. These NESHAPs set emission limits or work practice standards for over 100 categories of sources.</p>
<p>Section 112 of the Clean Air Act</p> <p>Maximum Achievable Control Technology (MACT)</p> <p>Section 112g</p>	<p>In the Clean Air Act, Congress listed 189 compounds as Hazardous Air Pollutants (HAPS). For facilities which emit, or could emit, HAPS above a certain level, one of the following two requirements must be met:</p> <ol style="list-style-type: none"> 1) The United States Environmental Protection Agency has established standards for specific types of sources. These Maximum Achievable Control Technology (MACT) standards are based upon the best-demonstrated control technology or practices found in similar sources. 2) For sources where a MACT standard has not been established, the level of control technology required is determined on a case-by-case basis.

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

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

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