



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 109368**

I. INTRODUCTION

This Class II synthetic minor permit is for the construction and operation of OTODIS, LLC's Quartzsite Used Motor Oil Refinery.

A Class II permit is required because the Quartzsite Used Motor Oil Refinery has potential to emit sulfur dioxide (SO₂) greater than the significant threshold identified in A.A.C. R18-2-101.132. As a result of the potential to emit for sulfur dioxide being greater than the permitting exemption threshold, Minor New Source Review (NSR) was triggered for SO₂ and fine particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}). In order to satisfy the requirements of Minor NSR, OTODIS elected to conduct an ambient air impact assessment to demonstrate the emissions resulting from operation of the Quartzsite Used Motor Oil Refinery will not result in ambient air concentrations exceeding the National Ambient Air Quality Standards (NAAQS) for SO₂ and PM_{2.5} in accordance with Arizona Administrative Code (A.A.C.) R18-2-334.C.

- A. Company Name: OTODIS, LLC
- Mailing Address 15411 West Waddell, Suite 102
Surprise, AZ 85379
- Facility Name: Quartzsite Used Motor Oil Refinery
- Facility Address: 3005 West Dome Rock Road
Quartzsite, AZ 85346

B. Attainment Classification

The OTODIS Quartzsite Used Motor Oil Refinery is proposed to be located in La Paz County, which is designated attainment or unclassified for all criteria air pollutants.

II. PROCESS DESCRIPTION

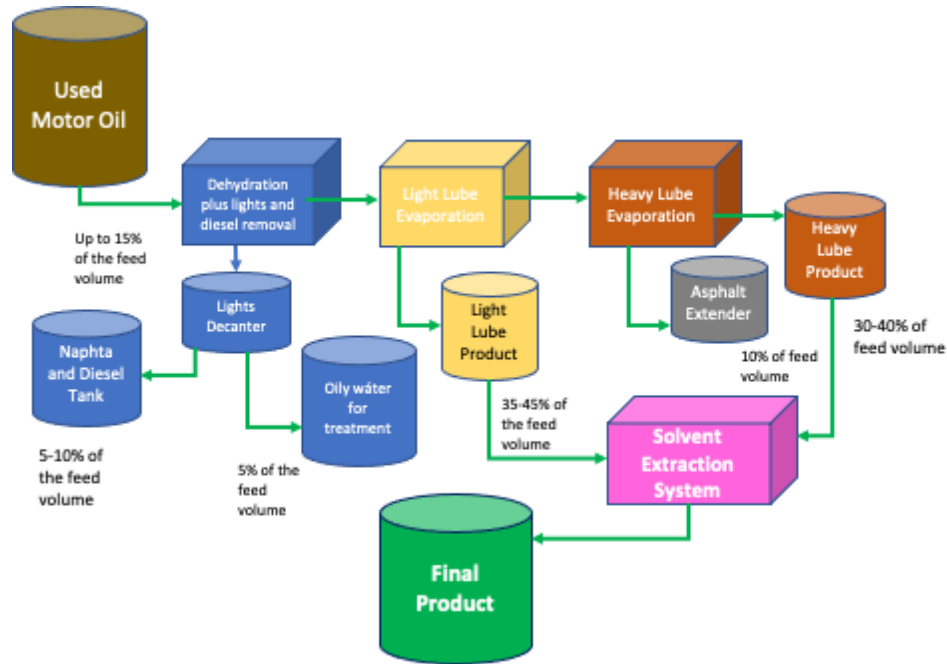
A. Process Equipment

The Quartzsite Used Motor Oil Refinery is designed to refine used motor oil to produce Group 2 Base Oil. The refinery consists of a 2-stage process: the first stage of the process where the used motor oil undergoes distillation through forced circulation and wiped film evaporation systems to separate lube fractions from the used motor oil, and the second stage being a solvent extraction system utilizing N-Methyl-2-Pyrrolidone (NMP) as a solvent to further refine the lube fractions to produce Group 2 Base Oil.

The distillation system is designed to process 3,300 liters per hour (approximately 871.8 gallons per hour) of used motor oil. The used motor oil is fed to a forced circulation evaporator consisting of a flash tank intended to separate lube fractions from residual water and gas-oil mixtures in the used motor oil. The lube fractions exiting the flash tank continue to the wiped film evaporator systems while residual water and gas-oil mixtures are recirculated to the flash tank through a reboiler. Water and gas-oil mixtures exiting the evaporator are separated in the light ends condenser and decanter before being pumped to separate storage tanks. The de-watered lube fraction is pumped to the first wiped film evaporator, intended to vaporize the light lube fraction and condense the product before pumping it to a storage tank. The remaining heavy lube fraction is pumped to a second wiped film evaporator, where the remaining heavy lube fraction is condensed and pumped to a storage tank. The residual, non-lube fraction from the wiped film evaporator consists of solids and asphalt, which flows by gravity from the evaporator before being pumped to a storage tank. Process heat for the evaporation systems is supplied by the thermic fluid heater heating a heat transfer fluid, which combusts fuel oil and process gases from the distillation system.

The second stage of the process consists of a solvent extraction system capable of processing 2,500 liters per hour (approximately 660.4 gallons per hour) of lube oil distillate produced by the distillation system to produce Group 2 Base Oil. The lube oil distillate is mixed with NMP in a liquid-liquid extractor system to wash the oil feed and remove any aromatic compounds. The washed oil is distilled to separate the NMP from the mixture, and the final product is pumped to a storage tank. NMP solvent containing polycyclic aromatics (PCA) is removed in a 2-step distillation process, while PCA concentrate is pumped to storage. The NMP solvent is undergoes distillation prior to being pumped to the clean solvent tank for reuse. Process heat for the solvent extraction system is provided by a steam boiler, which combusts fuel oil. Cooling for the process will be provided by an evaporative cooling tower.

B. Process Flow Diagram



III. EMISSIONS

The potential to emit for the thermic fluid heater and the steam boiler were evaluated based on emissions factors from AP-42, Chapter 1.3, for Light Fuel Combustion and the maximum fuel consumption for each combustion unit. The SO₂ emissions were evaluated based on the sulfur content of the fuels fired and fuel consumption rate for each combustion unit.

The potential to emit for the internal combustion engine was evaluated based on emission factors from AP-42, Chapter 3.3, for Gasoline and Diesel Industrial Engines.

The potential to emit for the cooling tower was evaluated based on the water circulation rate for the cooling tower, the drift rate, and the total dissolved solids within the cooling water. All PM is assumed to be PM₁₀, while PM_{2.5} is evaluated as a fraction of PM₁₀ emissions based on guidance from the South Coast Air Quality Management District.

The facility has potential to emit (PTE) greater than the significant thresholds of SO₂. The facility's PTE is provided in Table 1 below:

Table 1: Potential to Emit (tpy)

Pollutant	Potential to Emit	Permitting Exemption Threshold	Significant Thresholds	Minor NSR Triggered?
NO _x	10.07	20	40	No
PM ₁₀	2.01	7.5	15	No
PM _{2.5}	1.53	5	10	Yes ¹

CO	3.84	50	100	No
SO ₂	52.5	20	40	Yes
VOC	8.21	20	40	No
Pb	0	0.3	0.6	No
HAPs	0.40	N/A	10 (single)/ 25 (combined)	N/A

¹Minor NSR is triggered for PM_{2.5} due to minor NSR being triggered for SO₂ of which it is a precursor to PM_{2.5}.

IV. MINOR NEW SOURCE REVIEW (NSR)

Minor NSR is triggered if a new stationary source has the potential to emit any regulated air pollutant at an amount greater than or equal to the permitting exemption threshold (PET) in Table 1 above.

The applicant has the option to implement reasonably available control technology (RACT) or conduct an ambient air impact assessment demonstrating the emissions resulting from the operation of the source will not interfere with attainment of the NAAQS in order to satisfy the requirements of minor NSR. In this case, OTODIS elected to conduct an ambient air assessment to satisfy the requirements of minor NSR Requirements. A detailed discussion of the ambient air impact assessment can be found in Section VIII below.

V. APPLICABLE REGULATIONS

Table 2 identifies applicable regulations. The table also contains a discussion of any regulations an emissions unit may be exempt from.

Table 2: Applicable Regulations

Unit	Control Device	Rule	Discussion
Used Motor Oil Refinery	Thermal Oxidation; Wet Gas Scrubber; Carbon Filter	A.A.C. R18-2-730	The used motor oil refinery processes are not subject to an existing source standard or new source performance standard under Article 9. Therefore, the used motor oil refinery is subject to the requirements of A.A.C. R18-2-730 for Unclassified Sources.

Unit	Control Device	Rule	Discussion
Thermic Fluid Heater	Wet Gas Scrubber; Carbon Filter	A.A.C. R18-2-724	<p>The thermic fluid heater is subject to A.A.C. R18-2-724 because it is fossil fuel-fired equipment with maximum rated capacity greater than 500,000 Btu where the products of combustion do not come into direct contact with process materials.</p> <p>The thermic fluid heater is not subject to 40 CFR 63 Subpart JJJJJ because it does not produce steam or heat water.</p>
Steam Boiler	Wet Gas Scrubber; Carbon Filter	A.A.C. R18-2-724 40 CFR 63 Subpart JJJJJ	<p>The steam boiler is subject to A.A.C. R18-2-724 because it is fossil fuel-fired equipment with maximum rated capacity greater than 500,000 Btu where the products of combustion do not come into direct contact with process materials.</p> <p>The steam boiler is subject to 40 CFR 63 Subpart JJJJJ because it is an oil-fired boiler.</p>
Cooling Tower	N/A	A.A.C. R18-2-730	<p>The cooling tower is not subject to an existing source standard or new source performance standard under Article 9. Therefore, the cooling tower is subject to the requirements of A.A.C. R18-2-730 for Unclassified Sources .</p>
Emergency Internal Combustion Engine		40 CFR 60 Subpart IIII	<p>The emergency internal combustion engine was manufactured after April 1, 2006. Therefore it is subject to 40 CFR 60 Subpart IIII.</p>

Unit	Control Device	Rule	Discussion
Fugitive Dust sources	Water Trucks;, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet Blasting; Dust Collecting Equipment; Other Approved Methods	A.A.C. R-18-2- 702 A.A.C. R-18-2- 726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2- 727	These standards are applicable to any spray painting operation.
Demolition/Rrenovation Operations	N/A	A.A.C. R18-2- 1101.A.12	This standard is applicable to any asbestos related demolition or renovation operations.

VI. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 3 contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the facility is required to demonstrate compliance with the emission limits in the permit. Records are required be kept for a minimum of 5 years as outlined in Section XIII of Attachment “A” of the permit.

Table 3: Permit No. 109368

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Used Motor Oil Refinery	Hydrogen Sulfide	0.03 ppm	<p>Inspect (pipe fittings, valves, etc.) on a weekly basis to identify any leaks from processes associated with the used motor oil refining process</p> <p>Perform hydrogen sulfide monitoring on a weekly basis or when leaks are identified.</p>	<p>Maintain records of the quantity and sulfur content of used motor oil delivered to the facility</p> <p>Maintain records of weekly hydrogen sulfide monitoring results.</p>	
Thermic Fluid Heater	SO ₂	9.02 lb/hr	<p>Conduct tune-ups of the thermic fluid heater every 5 years.</p> <p>Conduct initial performance test to demonstrate</p>	<p>Maintain records of date of tune-up, performance tests and their results, occurrences of malfunctions for the heater, and actions taken to minimize emission to restore</p>	<p>Submit Notification of Initial Startup within 15 days of commencing operation.</p>

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>compliance with emissions limitation.</p> <p>Conduct subsequent testing within 12 months if results are greater than 75% of the standard, or 24 months if less than 75% of the standard.</p>	<p>malfunctioning equipment to its normal manner of operation.</p>	
Steam Boiler	SO ₂	0.35% Fuel Sulfur Content		<p>Maintain records of sulfur content of fuels fired in the steam boiler.</p>	
	HAPs		<p>Conduct biennial tune-ups for the steam boiler.</p>	<p>Maintain records of each tune-up, occurrence and duration of malfunctioning periods for the boiler, and actions taken to minimize emissions including actions to restore the malfunctioning boiler to its normal manner of operation.</p>	<p>Submit biennial compliance report demonstrating compliance with biennial tune up requirement, no solid waste was combusted, and periods of startup and shut down were minimized.</p>

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Cooling Tower		20% Opacity			
Emergency Internal Combustion Engine			Install non-resettable hours meter prior to startup of the engine.		Submit an annual report documenting non-emergency use for the purposes of dispatching power to external entities.
Fugitive Dust	PM	40% Opacity	Conduct a monthly survey of visible emissions.	Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the opacity of any excess emissions.	N/A
Abrasive Blasting	PM	20% Opacity	N/A	Record the date, duration and pollution control measures of any abrasive blasting project.	N/A
Spray Painting	VOC	20% Opacity Control 96% of the Overspray	N/A	Maintain records of the date, duration, quantity of paint used, any applicable material safety data sheets, and pollution control	N/A

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
				measures of any spray painting project.	
Demolition/ Renovation	Asbestos	N/A	N/A	Maintain records of all asbestos related demolition or renovation projects including the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.	N/A

VII. LEARNING SITE EVALUTATION

In accordance with ADEQ’s Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools in the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

The proposed facility is not located within 2 miles of a learning site and thus, it is not subject to the Learning Sites Policy.

VIII. AMBIENT AIR IMPACT ANALYSIS

OTODIS, LLC. elected to perform an air dispersion modeling to satisfy the requirements of Minor NSR. The modeling results below in Table 4 illustrate that the facility will not interfere with the NAAQS.

Table 4: Air Dispersion Modeling Results

Pollutant	Averaging Period	Concentrations (µg/m³)			NAAQS (µg/m³)
		Modeled Concentration	Background	Total	
PM _{2.5}	Annual	1.13	5.6	6.73	9
	24-hour	3.77	13.7	17.47	35
SO ₂	1-hour	178.81	13.1	191.91	196.445
	Annual	6.22	0.71	6.93	26.193

IX. LIST OF ABBREVIATIONS

- A.A.C..... Arizona Administrative Code
- ADEQ..... Arizona Department of Environmental Quality
- CFR..... Code of Federal Regulations
- EPA..... Environmental Protection Agency
- HAPs..... Hazardous Air Pollutants
- lb/hr..... Pounds per Hour
- NAAQS..... National Ambient Air Quality Standard
- PM..... Particulate Matter
- PM₁₀..... Particulate Matter less than 10 µm nominal aerodynamic diameter

PM_{2.5}Particulate Matter less than 2.5 μm nominal aerodynamic diameter
ppm Parts per Million
PTE Potential to Emit
SO₂.....Sulfur Dioxide
TPY Tons per Year
VOCs.....Volatile Organic Compounds