

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

B184668884

<b>FACILITY:</b> Occidental Chemical Corporation		<b>SRN / ID:</b> B1846
<b>LOCATION:</b> 1600 S. Madison St., LUDINGTON		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> LUDINGTON		<b>COUNTY:</b> MASON
<b>CONTACT:</b> Steve Jones , HESS Manager		<b>ACTIVITY DATE:</b> 08/03/2023
<b>STAFF:</b> Rob Dickman	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Inspection of this major source.		
<b>RESOLVED COMPLAINTS:</b>		

The Occidental Chemical Corporation facility inside the city of Ludington, Michigan with the shoreline of Pere Marquette Lake on the south and west sides of the facility. Immediately to the north is residential neighborhoods and to the east is an industrial park with several industrial and commercial facilities including an electric utility and an office furniture manufacturer.

The facility manufactures calcium chloride pellet and flake products from calcium chloride rich brine piped to Ludington from a facility in Manistee. Evaporation and drying are the major processes in the manufacturing sequence in Ludington. In the evaporation step, steam is used to boil water out of the intermediate strength solution and make strong calcium chloride solution for direct sale or for production of dry calcium chloride products. Steam for this process is provided by the electric utility near the facility. Dry calcium chloride manufacturing is the final process in the manufacturing sequence. Concentrated calcium chloride solution is converted into either flakes or pellets for consumer or industrial use by boiling off most of the remaining water.

EUFLAKEDRY creates flakes of calcium chloride on the Flaker drum and then dries them in Flake "D" dryer. The flakes are then cooled in a cooler and sized by a crusher and screen. The process is controlled by a venturi scrubber. EUPELLETCDRY creates pellets or prill by spraying a super saturated solution of calcium chloride into "C" Dryer where hot air removes moisture. This process is controlled by a venturi scrubber. EUFLAKEDBULK and EUPELLETBULK are portions of the plant that load rail cars or trucks with the dry calcium chloride. Emissions from these processes are controlled by venturi scrubbers. EUPELLETHNDL processes and sizes the pellets. These emissions are also controlled by a venturi scrubber. EUDGDCCFIBC is the part of the plant that packages the dry calcium chloride into totes (super sacks) and also produces tablets of calcium chloride. Here also, emissions are controlled by a venturi scrubber.

The various spent-brine streams from the production plants are collected and re-injected into the Filer sandstone to re-pressurize the formation. Any solids that collect on the sandstone face of the well bore are dissolved by periodic injection of hydrochloric acid into the re-pressuring fluid stream at each injection well.

AQD staff visited the Occidental Chemical facility to perform an inspection. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) No. MI-ROP-B1846-2021. Mr. Seth Garrity, Environmental Manager, accompanied me during the inspection.

Regarding records at the facility, control equipment parameters such as flow rate and pressure drop are required to be recorded. These records are recorded and are summarized in a monthly report which is reviewed by facility staff. Any parameter out of specification is resolved at the time of occurrence, but are also flagged, reviewed, and investigated to see if further action is necessary. A cursory review of the last 12 months of these reports was performed and these records appeared complete. Two months, August of 2022 and March of 2023 were reviewed in detail. The monitored control equipment parameters for these months demonstrated no issues. Also, all testing and reporting for this facility has been previously reviewed and documented. Those items are not addressed in this report.

Following are the findings of this inspection:

#### **SOURCE-WIDE CONDITIONS**

##### Emission Limits

There are no source wide emission limits.

##### Material Limits

There are no source wide material limits.

Process or Operational Restrictions

There are no source wide process or operational restrictions.

Design or Equipment Parameters

There are no source wide design or equipment parameters.

Monitoring and/or Recordkeeping Requirements

This section contains an explanation of minimum data requirements for monitoring at the facility. Records review indicates this facility is meeting these requirements.

Stack/Vent Restrictions

There is no source wide stack or vent restrictions.

Other Requirements

There are no source wide additional requirements.

**EUDGDCCFIBC**

This unit consists of a dry calcium chloride process, super sack tote and drum packaging controlled by Spray Tower Scrubber S-300. At the time of the inspection, this process was not in operation.

Emission Limits

Particulate matter emissions from the process are limited to 2.3 pounds per hour and 0.10 pounds per 1,000 pounds of exhaust gases. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate are the methods used to demonstrate compliance with the particulate matter limits. Stack testing, which was performed in 2020, indicated particulate matter emissions were 0.2 pounds per hour and 0.03 pounds per 1,000 pounds of exhaust gases while the scrubber was operating at an average flow rate of 87 gallons per minute (gpm).

Material Limits

There are no material restrictions on this unit.

Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 80 gallons per minute. During the inspection, this process was not in operation. A review of facility records indicated compliant operation.

Design/Equipment Parameters

The scrubber is required to be equipped with a continuous liquid flow rate monitor. This scrubber is so equipped.

Monitoring/Recordkeeping

The scrubbing liquid flow rate is required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 80 gallons per minute. Records of the scrubbing liquid flow rate were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with this parameter. For August of 2022, approximate average flow for the month was 113 gpm, for March of 2023, 114 gpm. All records relating to this monitoring were available for review.

Stack/Vent Restrictions

The maximum stack diameter for this unit is 19.7 inches. The minimum height for it is 29.9 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

Other Requirements

There are no additional requirements associated with this emission unit.

**EUPELLETCBULK**

This emission unit consists of a dry calcium chloride process C Bulk rail car and truck loading controlled by venturi scrubbing system (S-1307/S-1308)

Emission Limits

Particulate matter emissions are limited to 0.016 pounds per 1,000 pounds of exhaust gases. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate and differential pressure when the emission unit is operating are the methods used to demonstrate compliance with the emission limit. Stack testing performed in 2021 indicates the particulate emissions from the emission unit are 0.004 pounds per 1,000 gallons of exhaust gases while the scrubber is operating at an average flow rate of 30 gallons per minute and an average differential pressure of 3.7 inches of water.

Material Limits

There are no material limits associated with this emission unit.

Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 25 gallons per minute and a minimum differential pressure of 3 inches of water. During the inspection, AQD staff observed a liquid flow rate of 50 gallons per minute and a differential pressure of 4.8 inches of water.

Design or Equipment Parameters

Pursuant to the requirements of the ROP, the scrubber was equipped with a continuous liquid flow rate monitor and a continuous differential pressure monitor.

Monitoring and/or Recordkeeping Requirements

The scrubbing liquid flow rate and differential pressure are required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 25 gallons per minute and a minimum differential pressure of 3 inches of water. Records of the scrubbing liquid flow rate and differential pressure were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with these parameters. Approximate average flow and pressure drop for each month are listed below. All records relating to this monitoring were available for review.

	Flow	Delta P
Aug-22	53	7.5
Mar-23	48	7.5
Minimum	25	3

Flow - Gallons per minute

Delta P - Differential pressure, inches of water

Stack/Vent Restrictions

The maximum stack diameter for this unit is 20.4 inches. The minimum height for it is 110 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

Other Requirements

There are no additional requirements associated with this emission unit.

**EUPELLETHNDL**

This emission unit consists of a dry calcium chloride process pellet material handling controlled by a venturi scrubber (S-1302).

Emission Limits

Particulate matter emissions are limited to 0.03 pounds per 1,000 pounds of exhaust gases. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate and differential pressure when the emission unit is operating are the methods used to demonstrate compliance with the emission limit. Stack testing performed in 2020 indicates the particulate emissions from the emission unit are 0.02 pounds per 1,000 gallons of exhaust gases while the scrubber was operating at an average flow rate of 120 gallons per minute and an average differential pressure of 18.0 inches of water.

Material Limits

There are no material limits associated with this emission unit.

Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 120 gallons per minute and a minimum differential pressure of 14 inches of water. During the inspection, AQD staff observed a liquid flow rate of 175 gallons per minute and a differential pressure of 19.0 inches of water.

Design or Equipment Parameters

The scrubber is required to be equipped with a continuous liquid flow rate monitor and a continuous differential pressure monitor. This scrubber is so equipped.

Monitoring and/or Recordkeeping Requirements

The scrubbing liquid flow rate and differential pressure are required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 120 gallons per minute and a minimum differential pressure of 14 inches of water. Records of the scrubbing liquid flow rate and differential pressure were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with these parameters. Approximate average flow and pressure drop for each month are listed below. All records relating to this monitoring were available for review.

	Flow	Delta P
Aug-22	170	19
Mar-23	174	18.8
Minimum	120	14

Flow - Gallons per minute

Delta P - Differential pressure, inches of water

Stack/Vent Restrictions

The maximum stack diameter for this unit is 36 inches. The minimum height for it is 130 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

Other Requirements

There are no additional requirements associated with this emission unit.

**EUPELLETCDRY**

This emission unit consists of a dry calcium chloride process pellet C dryer controlled by a venturi scrubber and spray tower (S-501\S-701).

#### Emission Limits

Particulate matter emissions are limited to 0.03 pounds per 1,000 pounds of exhaust gases. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate and differential pressure when the emission unit is operating are the methods used to demonstrate compliance with the emission limit. Stack testing performed in 2019 indicates the particulate emissions from the emission unit are 0.02 pounds per 1,000 gallons of exhaust gases while the scrubber was operating at an average flow rate of 1550 gallons per minute and an average differential pressure of 24 inches of water.

#### Material Limits

There are no material limits associated with this emission unit.

#### Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 1,200 gallons per minute and a minimum differential pressure of 20 inches of water. During the inspection, AQD staff observed a liquid flow rate of 1748 gallons per minute and a differential pressure of 25 inches of water.

#### Design or Equipment Parameters

The scrubber is required to be equipped with a continuous liquid flow rate monitor and a continuous differential pressure monitor. This scrubber is so equipped.

#### Monitoring and/or Recordkeeping Requirements

The scrubbing liquid flow rate and differential pressure are required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 1,200 gallons per minute and a minimum differential pressure of 20 inches of water. Records of the scrubbing liquid flow rate and differential pressure were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with these parameters. Approximate average flow and pressure drop for each month are listed below. All records relating to this monitoring were available for review.

	Flow	Delta P
Aug-22	1748	24
Mar-23	1747	24
Minimum	1200	20

Flow - Gallons per minute

Delta P - Differential pressure, inches of water

#### Stack/Vent Restrictions

The maximum stack diameter for this unit is 96 inches. The minimum height for it is 130 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

#### Other Requirements

There are no additional requirements associated with this emission unit.

#### **EUFLAKEDBULK**

This emission unit consists of D bulk loading, dry calcium chloride material handling and truck and car rail loading process with pneumatic conveyor. The emission unit is controlled by a venturi scrubber (S-50). At the time of this inspection, this process was not in operation.

Emission Limits

Particulate matter emissions are limited to 0.1 pounds per 1,000 pounds of exhaust gases. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate and differential pressure when the emission unit is operating are the methods used to demonstrate compliance with the emission limit. Stack testing performed in 2023 indicates the particulate emissions from the emission unit are 0.0009 pounds per 1,000 gallons of exhaust gases while confirming a 2018 test approving new parameters of an average flow rate of 25 gallons per minute and an average differential pressure of 3 inches of water.

Material Limits

There are no material limits associated with this emission unit.

Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 25 gallons per minute and a minimum differential pressure of 3 inches of water. At the time of this inspection, this process was not in operation. A review of facility records indicated compliant operation.

Design or Equipment Parameters

The scrubber is required to be equipped with a continuous liquid flow rate monitor and a continuous differential pressure monitor. This scrubber is so equipped.

Monitoring and/or Recordkeeping Requirements

The scrubbing liquid flow rate and differential pressure are required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 50 gallons per minute and a minimum differential pressure of 10 inches of water. Records of the scrubbing liquid flow rate and differential pressure were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with these parameters. Approximate average flow and pressure drop for each month are listed below. All records relating to this monitoring were available for review.

	Flow	Delta P
Aug-22	50	4
Mar-23	50	4
Minimum	25	3

Flow - Gallons per minute

Delta P - Differential pressure, inches of water

Stack/Vent Restrictions

The maximum stack diameter for this unit is 24 inches. The minimum height for it is 35 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

Other Requirements

There are no additional requirements associated with this emission unit.

**EUFLAKEDRY**

This emission unit consists of a dry calcium chloride process including a 45 MMBtu furnace, flaker drums, D-Dryer, cooler, crusher, and a screen. All process equipment except the flaker drums are controlled by S405 venturi scrubber. The facility received a PTI, Number 200-19, in June of 2020 that increases the limit on the size of the burner in the furnace for this process.

Emission Limits

Particulate matter emissions from the flaker drum and flake D-Dryer are limited to 0.05 pounds per 1,000 pounds of exhaust gases and 0.03 pounds per 1,000 pounds of exhaust gases, respectively. Stack testing and continuously monitoring and recording the scrubbing liquid flow rate and differential pressure when the emission unit is operating are the methods used to demonstrate compliance with the flake D-Dryer emission limit. Stack testing performed in 2023 indicates the particulate emissions from the dryer are 0.01 pounds per 1,000 gallons of exhaust gases while the scrubber was operating at an average flow rate of 650 gallons per minute and an average differential pressure of 7.0 inches of water.

#### Material Limits

There are no material limits associated with this emission unit.

#### Process or Operational Restrictions

The emission unit is not allowed to operate unless the scrubber is installed and operating properly. Proper operation consists of having a minimum scrubbing liquid flow rate of 550 gallons per minute and a minimum differential pressure of 12 inches of water. Stack testing performed in 2023 confirmed an AQD approved lower differential pressure of 7 inches of water. During the inspection, AQD staff observed a liquid flow rate of 713 gallons per minute and a differential pressure of 8 inches of water.

#### Design or Equipment Parameters

Pursuant to the requirements of the ROP, the scrubber was equipped with a continuous liquid flow rate monitor and a continuous differential pressure monitor.

#### Monitoring and/or Recordkeeping Requirements

The scrubbing liquid flow rate and differential pressure are required to be continuously monitored and recorded. Proper operation consists of having a minimum scrubbing liquid flow rate of 550 gallons per minute and a minimum differential pressure of 7 inches of water. Records of the scrubbing liquid flow rate and differential pressure were made available for review. A review of all of August of 2022 and March of 2023 indicated compliance with these parameters. Approximate average flow and pressure drop for each month are listed below. All records relating to this monitoring were available for review.

	Flow	Delta P
Aug-22	751	7
Mar-23	742	7
Minimum	550	7

Flow - Gallons per minute

Delta P - Differential pressure, inches of water

#### Stack/Vent Restrictions

The maximum stack diameter for this unit is 60 inches. The minimum height for it is 90 feet. Upon inspection, the stack did not appear to have been recently modified and appears compliant with these parameters.

#### Other Requirements

There are no additional requirements associated with this emission unit.

### **EUGARAGE**

This emission unit includes the service garage which includes the site vehicle refueling station, one 5,000-gallon gasoline storage tank and one 5,000-gallon diesel fuel storage tank. The AQD is currently not delegated authority on 40 CFR Part 63, Subparts A and CCCCC. The table in the ROP was supplied by the facility. The conditions for this unit were not reviewed as part of this inspection.

**FGCAM**

This group includes emission units that are subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM). The emission units contained in this flexible group are: EUDGDCCFIBC, EUPELLETHNDL, EUPELLETCDRY, EUFLAKEDBULK.

Emission Limits

There are no emission limits associated with this group.

Material Limits

There are no material limits associated with this group.

Process or Operational Restrictions

There are no specific restrictions associated with this flexible group. The only special condition contained in this section is one that defines an excursion consistent with the CAM regulation.

Design or Equipment Parameters

There are no design or equipment restrictions associated with this group.

Monitoring and/or Recordkeeping Requirements

The differential pressure and liquid flow rate of the scrubbers are monitored and recorded per the requirements of the ROP.

Stack/Vent Restrictions

There is no stack or vent restrictions associated with this group.

Other Requirements

There were no periods in which the facility failed to comply with the monitoring requirement associated with CAM and the facility did not need to modify the existing monitoring.

**FGRULE287(2)(c)** This group consists of one maintenance paint booth (103) equipped with dry fabric filters. Another booth (94) was dismantled and removed from the ROP upon renewal.

Emission Limits

There are no emission limits associated with this group.

Material Limits

Coatings used in each emission unit are limited to 200 gallons per month, minus water. Records maintained by the facility indicate coating usage varies but is well below the 200-gallon limit. Usage is tracked by the gallon through usage. A running, handwritten log of coating used was available for inspection.

Process or Operational Restrictions

There are no process or operational restrictions associated with this group.

Design or Equipment Parameters

A properly installed and operating particulate control system is required for the booth. The booth was not in operation at the time of the inspection. Filters appeared in good condition and were installed properly. The booth also had a pressure drop gauge installed.

Monitoring and/or Recordkeeping Requirements



Records maintained by the facility indicate coating usage varies but is well below the 200-gallon limit. Usage is tracked by the gallon through usage. A running, handwritten log of coating used was available for inspection.

#### Stack/Vent Restrictions

There is no stack or vent restrictions associated with this group.

#### Other Requirements

There are no additional requirements associated with this group.

### **FGCOLDCLEANERS**

This group consists of any cold cleaner that is grandfathered or exempt from Rule 336.1201 pursuant to Rule 336.1278 and Rule 336.1281(h) or Rule 336.1285(r)(iv). There is a total of five cold cleaners at this facility: EUCOLDCLNR1, EUCOLDCLNR2, EUCOLDCLNR3, EUCOLDCLNR4, EUCOLDCLNR5

#### Emission Limits

There are no emission limits associated with this group.

#### Material Limits

The cleaning solvent used in the emission units is limited to containing no more than five percent of halogenated solvents. A review of material safety data sheet indicates there are no halogenated compounds in the cleaning solvent.

#### Process or Operational Restrictions

Cleaned parts are to be drained no less than 15 seconds. None of the five cold cleaners were in operation at the time of the inspection therefore compliance with this requirement was not able to be directly determined. There were instructions on each cleaner stating how they are to be operated including this parameter. Maintenance of these booths is performed by an outside contractor. Records of this maintenance were available for inspection.

#### Design or Equipment Parameters

The air/vapor interface of each cold cleaner is required to be less than ten square feet and emissions generated are required to be released to the general in-plant environment.

#### Monitoring and/or Recordkeeping Requirements

The solvent contained in each cold cleaner is not heated so the temperature of the solvent does not need to be monitored or recorded. Written operating instructions were posted near each cold cleaner as required by the ROP.

#### Stack/Vent Restrictions

There is no stack or vent restrictions associated with this group.

#### Other Requirements

There are no additional requirements associated with this group.

### **FGEMERGENCYPUMP**

This emergency pump (EUPUMP01) is subject to National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at an area source of HAP emissions, existing emergency, compression ignition (CI) RICE equal to or less than 500 brake hp. A RICE is existing if the date of installation is before June 12, 2006.

#### Emission Limits

There are no emission limits associated with this group.

#### Material Limits

Only diesel fuel in the engine with a maximum sulfur content of 15 ppm (0.0015%) by weight and a minimum Cetane index of 40 or a maximum aromatic content of 35 volume percent is allowed to be used. A receipt from Blarney Castle Oil for this fuel was reviewed on site and found to be in compliance with these parameters.

#### Process or Operational Restrictions

This is an emergency engine and does not typically run. It is tested once monthly for approximately 25 minutes. Maintenance on the engine is performed biannually. Records of this maintenance were available for inspection. No records of non-emergency use were noted.

#### Design or Equipment Parameters

This unit is equipped with a non-resettable hour meter.

#### Monitoring and/or Recordkeeping Requirements

Records of all testing and maintenance are kept as part of a logbook for the engine. This book appeared complete and up to date.

#### Stack/Vent Restrictions

There is no stack or vent restrictions associated with this group.

#### Other Requirements

There are no additional requirements associated with this group.

### **FGEMERGENCYGEN**

These emergency generators (EUGEN01, EUGEN02) are subject to National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at an area source of HAP emissions, existing emergency, spark ignition (SI) RICE equal to or less than 500 bhp. A RICE is existing if the date of installation is before June 12, 2006.

#### Emission Limits

There are no emission limits associated with this group.

#### Material Limits

There are no material limits associated with this group.

#### Process or Operational Restrictions

These are emergency engines and do not typically run. It is tested once monthly for approximately 25 minutes. Maintenance on the engine is performed biannually. Records of this maintenance were available for inspection. No records of non-emergency use were noted.

#### Design or Equipment Parameters

Each engine is equipped with a non-resettable hour meter.

#### Monitoring and/or Recordkeeping Requirements

Records of all testing and maintenance are kept as part of a logbook for each engine. This book appeared complete and up to date.

Stack/Vent Restrictions

There is no stack or vent restrictions associated with this group.

Other Requirements

There are no additional requirements associated with this group.

Based upon the on-site inspection and records review, this facility appears to be in compliance with their Renewable Operating Permit.

NAME DATE 11-14-23SUPERVISOR 