

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

A199172080

FACILITY: Kalsec, Incorporated		SRN / ID: A1991
LOCATION: 3713 West Main St, KALAMAZOO		DISTRICT: Kalamazoo
CITY: KALAMAZOO		COUNTY: KALAMAZOO
CONTACT: Steve Kuhnert , Senior Environmental Manager		ACTIVITY DATE: 05/15/2024
STAFF: Michael Cox	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Unannounced Inspection		
RESOLVED COMPLAINTS:		

At approximately 8:00 A.M. on May 15, 2024, Air Quality Division (AQD) staff Michael Cox (MTC) conducted an unannounced on-site inspection of Kalsec Incorporated (A1991) located at 3713 West Main Street, Kalamazoo, Michigan. The purpose of this inspection was to determine compliance with the facility's renewable operating permit (ROP) MI-ROP-A1991-2022. Prior to arriving on site, MTC observed the perimeter of the facility for any visible emissions and odors. No odors or visible emissions other than steam plumes were noted on-site. Accompanying AQD staff on the inspection was Mr. Steve Kuhnert, Senior Environmental Manager, who also provided records following the inspection. Some discussion took place regarding a permit to install (PTI) application for upcoming changes to FGGRIND.

Facility Description

Kalsec makes a variety of spice concentrates and extracts and packages and distributes these products. They commenced operations at this location in 1958 and currently have about 400 employees. Kalsec operates 24 hours per day, 7 days a week, although, the same processes are not necessarily consistently running from day to day. The processes that are run are dependent on what product they are making. They make thirty to forty different products per year, with rosemary and chili peppers being processed the most.

Regulatory Analysis

-

Kalsec is a major source for volatile organic compounds (VOCs) and is a synthetic minor source of hazardous air pollutants (HAPs). Kalsec is currently operating under MI-ROP-A1991-2022. The facility is subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines 40 CFR 63 Subpart CCCCC - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities, New Source Performance Standards (NSPS) 40 CFR 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

Source-wide Conditions:

Kalsec has a source-wide HAP limitation of less than 10 tons per year (tpy) of any single HAP, and less than 25 tons per year of combined or aggregate HAP emissions based on a 12-month rolling time period. The facility is also limited to 4 tpy of Methanol emissions from process batches using methanol as solvent and 4.13 tpy of Methanol emissions from the wastewater operations. Kalsec no longer uses methanol in their process and has not used methanol during the time period covered by this inspection, therefore no methanol emission records were reviewed. Records of single and aggregate HAP emissions were requested and reviewed for the time period of July 2022 through April 2024. The facility was noted to be keeping track of the gallons or lbs of each HAP-containing material used and reclaimed, the HAP content in weight percent, the individual and aggregate HAP emissions in tons/month, and 12-month rolling calculations for individual HAPs, aggregate HAPs, n-hexane usage, and methanol emissions. The highest 12-consecutive month single HAP emission occurred during the 12-month period ending in April 2024 when 2.90 tpy of N-Hexane was emitted. The highest 12-consecutive month aggregate HAP emission occurred during the 12-month period ending in April 2024, when 3.22 tpy of aggregate HAP was emitted.

EU41-EXT-01:

This emission unit consists of equipment contained in the continuous process plant. This building takes raw ground spice from FGGRIND via a screw conveyor that takes the material to a hopper, which then deposits the material into multiple baskets in the extraction machine (EX41005). Solvent sprays over the baskets of material and then rotated in the extractor for a length of time specific to the product. The baskets are then dumped into a screw press that squeezes out much of the solvent. After this, the material is heated so that the rest of the solvent can evaporate off of the spent material, which is then taken to the silo. There is a baghouse in this building that is pulsed with steam and vents internally. During the facility walk through no temperature reading was taken due to the condenser being considered a grandfathered source, and therefore does not have a temperature limit. Records were requested for the time period of June 2023 through May 21, 2024. The records indicate that the facility is conducting the required weekly tail condenser temperature readings. The facility is also keeping track of the annual solvent usage and resulting VOC emissions as required. The facility's total VOC emissions for 2023 was 1.312 tpy.

EU41-EXT-02:

This emission unit covers the equipment used to pneumatically convey the spent materials from the extraction processes to the storage silo. The particulate emissions from the vacuum receiver and baghouse are also conveyed to the silo. This emission unit is limited to PM at 0.10 lbs/1000 lbs of exhaust gas. The emission limitation is verified through testing. No testing has been required at this time. The facility is required to conduct monthly Visible Emission readings and implement their Malfunction Abatement Plan (MAP) if visible emissions are seen. Records of Visible Emission Observations conducted for this emission unit were requested and reviewed for the time period of January 2023 through April 2024. The facility is conducting the required Visible Emission reading and logging them appropriately. During the records review it was noted that facility representatives have not witnessed and visible emissions during the time period covered by this inspection and have not needed to implement the facility's MAP to address any issues.

EUPDBO63050:

This emission unit consists of a 500 BHP natural gas-fired boiler with a rated heat input capacity of 20.4 MMBTU per hour boiler with low NOx burners. Records of natural gas consumption were requested and reviewed for the time period of January 2023 through December 2023. The records indicate that EUPDB063050 used 47.67 MMBTU of natural gas in during the time period reviewed.

FGGRIND:

This flexible group consists of two hammer mills, three drying screw conveyors, hoppers, and destoners, however, the hammer mills are not used much anymore since most of their starting material comes pre-pelletized now. The facility utilizes a crumbling machine that turns the pellets into a coarse powder. They also have a roller mill in the building that is used to crush open spices that are in kernel form, like black pepper corns and cloves. This building has two baghouses (FL43001 and FL43002). and there are two stacks associated with the baghouses, one that vents downward and the other that vents horizontally. This area was processing peppers at the time of the inspection, and AQD staff was not able to access the building due to the irritants of the peppers. PM is limited to 0.10 lbs/1000 lbs of exhaust gas. The emission limit is verified through testing. No testing has been required at this time. The facility is required to conduct month Visible Emission readings and implementing their MAP if visible emissions are seen. Records of Visible Emission Observations conducted for this emission unit were requested and reviewed for the time period of January 2023 through April 2024. The facility is conducting the required Visible Emission reading and logging them appropriately. During the records review it was noted that facility representatives have not witnessed and visible emissions during the time period covered by this inspection and have not needed to implement the facility's MAP to address any issues.

Steve and I discussed at length the changes to the process for this flexible group that the facility is proposing. Steve stated that an upcoming Permit to Install (PTI) application will be submitted soon to modify this flexible group and the emission units contained therein.

FGCOMB:

This flexible group covers three buildings, 100, 200, and Specialty, along with the tanks in Tank Farm V (four tanks) and seven storage tanks in Tank Farm E. All of these emission units are combined because they all converge at a common stack and have combined emission limits. These buildings are three batch processing areas where oils and oleoresins are processed by liquid/liquid extraction using solvents.

The Specialty Building is where the hops extraction occurs. The hops are sent to Kalsec in a kind of sludge form that is not fluid at room temperature, so they have to first put it through a steamer box to heat it up to a more liquid state. Then it goes into tanks to be combined with various solvents, acids, and bases that precipitate out the unwanted gums and waxes that are naturally in the hops sludge. They conduct this process in twelve 1,500-2,000-gallon tanks in this building. There are multiple process and vent condensers associated with this equipment, along with final condenser HE44006, which was reading 1.5 °C at the time of the inspection. There is

also a condenser, HE44005, in this building that is associated with the centrifuge and was reading 0.20 °C during the inspection. Their permit requires that the temperatures of these final tail condensers be at or below 5°C.

The products from the Specialty Building are then taken into Building 100 for further processing and distillation. There are six processing vessels in this building, which includes the hydrogenator. The hydrogenator has a scrubber and a different stack in a separate room (R-103) on one side of the building because it uses hydrogen. The slurry tank for this equipment has a pressure gauge on the scrubber. The other distillation equipment is a hexane recovery system that distills out hexane so that it can be shipped off as non-hazardous waste. There are also some storage tanks in this room as well. There are various process and vent condensers and two (primary and backup) final tail condensers for the hexane distillation equipment (HE 48121 and HE48122). There is also a condenser (HE48103) associated with the R-103 Vessel (RE48103). HE48121 and HE48122 do not operate at the same time, with one always being a backup to the other. During the inspection HE4812 was operating at a temperature of 1.0 °C. Their permit requires that the temperatures of these final tail condensers be at or below 5°C.

Building 200 is where the solvent is removed from the products of the extraction processes. There are distillation tanks and some wipe film evaporators in the building that are used to accomplish this. This area is used to bring the product to a temperature that will evaporate off the solvents but not harm the quality of the final product itself. The wipe film evaporators allow for the least amount of contact time between the product and the heating element, so more delicate products, like their orange coloring they make from carrots, are processed in this equipment. They may have to run certain products through multiple times before all of the solvent is taken out of the product. There are other distillation vessels in this room as well. The PFAUDLER vessels are for small batches, and Steve said that they process turmeric in these most of the time. There are 2 larger distillation vessels (AG49020 and AG49010). This building has two final tail condensers (HE49002 and HE49001), one as a primary unit and the other for backup. During the inspection HE49002 had a temperature of 0.1 °C. In 2018, Kalsec submitted a PTI application for a new 3,000-gallon distillation vessel, which is now located in Building 200. It is also controlled by the same final tail condensers.

This flexible group is limited to Acetone emissions of 20 pound per hour (pph) on a calendar month average as well as Acetone emissions of 40 tpy per a 12-month rolling time period basis. VOC emissions are limited to 19.1 pph on a calendar month average and 47.3 tpy on a 12-month rolling time period basis. PM is limited to 0.10 lbs/1000 lbs of exhaust gas on an hourly basis. The PM emission limit is verified through testing. No testing has been required at this time. Records of the number of batches performed, batch emission factors, gallons processed in solvent recovery, hours of operation, and VOC emissions were requested and reviewed for the time period of June 2023 through April 2024.

The 12-month rolling emission rates for acetone and VOC for this time period were noted to be 0.47 tpy and 2.88 tpy, respectively. The highest pound per hour (pph) emission rate for acetone was 0.64 pph occurring during the month of November 2023, and the highest pph emission rate for VOC was 0.98 pph occurring during the month of June 2023. After reviewing the tail condenser temperature readings, there were no incidents of exceeding the required temperatures at or below 5°C.

Two stacks are listed in association with FGCOMB. The stacks appear to be consistent with the dimensions listed in MI-ROP-A1991-2022.

FGRICE-MACT:

This flexible group consists of engines subject to 40 CFR Part 63 Subpart ZZZZ- 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 considered existing per Subpart ZZZZ if the date of installation is before June 12, 2006. Kalsec currently has three engines that are subject to Subpart ZZZZ (EUPDGE63002, EUPDGE63003, EUPDGE63004). Records of the hours of operation and preventative maintenance for the engines were requested and reviewed for the time period of July 2022 through April 2024. The three engines were noted to have been last serviced by Total Energy Systems in December 2023 and were also noted to be below 20 hours of operation during the time period covered by this inspection for maintenance and readiness testing. The facility is keeping records as required by Subpart ZZZZ.

FGSIRICE-NSPS:

This flexible group consists of gas-fired emergency generators installed under Rule 285(g) or Rule 285(2)(g), and are subject to 40 CFR Part 60, Subpart JJJJ. Kalsec currently has four engines that are subject to Subpart JJJJ (EUPDGE.630.001, EUPDGE.630.002, EUPDGE.630.003, EUPDGE.630.004). Records of the hours of operation and preventative maintenance for the engines were requested and reviewed for the time period of July 2022 through April 2024. The four engines were noted to have been last serviced by Total Energy Systems in December 2023 and were also noted to be below 50 hours of operation during the time period covered by this inspection for maintenance and readiness testing. The facility is keeping records as required by Subpart JJJJ.

FG-RULE 290:

This flexible group contains five tanks from Tank Farm E (EU-PDTK-E1, EU-PDTK-E2B, EU-PDTK-E4B, EU-PDTK-E5, and EU-PDTK-E7) that are used by EU41-EXT-01. This flexible group also consists of EU-SILO-TK91001, EUPDAG46039, EUSPCLARIFIER, and EUB200FILTER. Emission records for FG-RULE-290 for each emission unit were requested and reviewed for the time period of January 2022 through December 2023. The records indicate that the five tanks emit a total of 0.29 ton of VOC per year (Hexane), which means they are far under their 1000lb/month limit for VOCs. EUSILO-TK91001 has a VOC (hexane) emission of 1,171 lbs/year 12-month rolling total for December 2023. The highest amount of hexane emitted for one month in 2023 was 89.24 lbs, which is under their 500 lbs/month limit. EUSPCLARIFIER had a total of 6 lbs of VOC in 2023, which is limited to 500 lbs/month under Rule 290. EU200FILTER has a total of 96 lbs/year VOC (IPA) emissions, which is limited to 500lbs/month. EUPDAG46039, the Dry Products Mixer, is a ribbon blender with particulate emissions. They have a filter associated with this equipment and are assuming 80% capture efficiency, so the uncontrolled particulate from the mixer is 34.8 lbs PM10/year, and the controlled particulate calculated out to be 7.0 lbsPM10 Filterable/year.

FGCOLDCLEANERS:

Kalsec has only one parts washer in the maintenance building. It is a SafetyKleen unit that uses Armakleen 4-in-one aqueous cleaner. Safety Data Sheets of the solution contained in the coldcleaner was requested and reviewed.

FGGASDISPGACT:

This flexible group is for a 1,100-gallon gasoline storage tank (EU-PDTKD-002) that was installed in 1990. It is subject to 40 CFR Part 63, Subpart CCCCCC. They are keeping track of their gasoline throughput. Records of gasoline throughput was requested and reviewed for the 2023 calendar year. It was noted that this flexible group had a throughput of 4,436.80 gallons of gasoline, which is below the 10,000 gallons specified in MI-ROP-A1991-2022.

Additional Observations:

Kalsec has an additional three boilers, EUPDBO63031, which is a 10MMBTU/hr Cleaver Brooks natural gas boiler, and two 4.474MBTU/hr Weil-McLain water boilers used for indoor heating and installed under Rule 282(b)(i). All of the boilers are also subject to 40 CFR, Part 63, Subpart DDDDD, which limits them to burning only gas 1 subcategory fuels, tune-up requirements, and other operational restrictions and recordkeeping and reporting requirements. These boilers get inspected annually. They are keeping records of fuel usage, hours of operation, maintenance activities, and are reporting deviations in their semi-annual and annual ROP certification reports.

Compliance Determination

Based on the observations made during the inspection and review of the required records and reports, Kalsec, Incorporated appears to be in compliance with MI-ROP-BA1991-2022 as well as all other State and Federal Air Pollution rules and regulations.

NAME Michael T. CoxDATE 5/31/2024SUPERVISOR Monica Brothers