

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

A199163547

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: 07/06/2022
STAFF: Monica Brothers	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced scheduled inspection		
RESOLVED COMPLAINTS:		

Staff, Monica Brothers and Chuku Oje, arrived on-site at 9:00am. I did not see any visible emissions or smell odors off-site upon arrival. We signed in at the security booth and then met with Stephen Kuhnert, the Senior Environmental Manager. He led us to a conference room where I first asked him a few introductory questions about the facility and whether any major changes have occurred since the last inspection or are being planned for the future. 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.

We discussed some changes that Kalsec will be making soon. They are currently starting up their new pilot plant building, which will operate under Rule 291. Steve said that they may sell some product from the pilot plant, so they cannot use the Rule 283 exemption for pilot processes. Long-term plans are to also add a CO₂ extraction process, which will operate under Rule 290. This will be an extension to Building 400. Currently they receive their hops in a pre-extracted form, but adding the CO₂ extraction process would allow them to do this part themselves and simply start with fresh hops. They are in the engineering phase of this project and hope to start it up in 2023. They are also planning to put in a new extraction process within the next two years. This will replace the older extraction equipment and will be housed in a brand new building.

Kalsec obtained an opt-out permit for HAPs in 2021, which kept them from being subject to the Miscellaneous Organic Chemical Manufacturing (MON) NESHAP, under 40 CFR, Part 63, Subpart FFFF. They are now a Synthetic Minor for HAPs, but are still a Major Source of VOC.

After records were reviewed, Steve took me on a tour of the facility.

Source-wide Conditions: I reviewed their records for their HAPs opt-out. They are 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. They have a limit of 10.0 tpy for each individual HAP and 25 tpy for aggregate HAPs. They also have a limit of 9.78 tpy for n-hexane. The highest number I viewed for aggregate HAPs in their records for the past couple of years was 2.79 tpy, which is far under their limit. They also have methanol emissions limits of 4.0 tpy for methanol emissions from stacks and fugitive sources combined and 4.13 tpy for wastewater operations. Steve said that they haven't used methanol at all in the past couple of years.

FGGRIND: In this building, there are two hammer mills, three drying conveyors, hoppers, and destoners, however, the hammer mills are not used much anymore since most of their starting material comes pre-pelletized now. So, now they are using mostly 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 (#1 is FL43001 and #2 is FL43002), and there are two stacks associated with the baghouses, one that vents downward and the other that vents horizontally. This process was not running during the inspection. They are conducting the monthly VE readings and implementing their MAP if visible emissions are seen. They reported a throughput for the grinding operations as 5,671 tons for 2021, with 30 lbs of filterable PM10 emissions.

EU41-EXT-01: This building takes the ground material from FGGRIND and uses solvent to extract the oils from the seed material. A screw conveyor takes the material to a hopper, which then deposits it into multiple baskets in the extraction machine (EX41005). Solvent sprays over the baskets of material and they are 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 tour, the processes in this building, including the final tail condenser were not operating, so no temperature reading was taken. This condenser is grandfathered, and therefore does not have a temperature limit. While looking at records, Steve showed me that they were conducting the required weekly tail condenser temperature readings, and their MAERS report showed that their total VOC emissions for 2021 were 426,074 lbs or 213 TPY. They are keeping records of their annual solvent usage.

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. During the inspection, the facility had an issue with the silo, so all production shut down. They are conducting the monthly VE readings and implementing their MAP if visible emissions are seen. Their 2021 MAERS report showed 5,671 tons throughput of material for this emission unit, with 869.71 lbs PM10 Filterable for the vacuum receiver and 118.43 lbs PM10 Primary and 1,438 lbs VOC for the silo baghouse.

EUDBO63050: This is a 20.4 MMBTU per hour boiler with low NOx burners. Steve showed me the natural gas combustion records for the boiler. He records how much fuel is used daily and then sums this to get the total for each month. Their MAERS report showed that they used 46.62 MMBTU of natural gas in 2021.

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 3.6°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 3.1°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, and 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 3.3°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. The idea here is 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 2.0°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.

Steve showed me that they were keeping track of the number of batches performed, batch emission factors, gallons processed in solvent recovery, and hours of operation. They are also keeping track of their acetone and VOC emissions. The 12-month rolling emission rates for acetone and VOC between 2020 and 2022 were around 1.0 tpy and 20.0 tpy, respectively. Their limit for acetone is 40 tpy, and their limit for VOC is 47.3 tpy. The highest pound per hour (pph) emission rate for acetone in 2021 was 0.8 pph, and the highest pph emission rate in 2020 for VOC was around 15. Their limit for acetone is 20 pph, and their limit for VOC is 19.1 pph.

I also obtained some of their emissions records from Kalsec's MAERS report for 2021. Their material throughput for FGCOMB was 672 tons. The storage tank working loss emissions were 2,284 lbs or 1.14 tons of VOC (excluding Methylene Chloride) and the rest of the processes emitted 15,823 lbs of VOC (excluding Methylene Chloride), bringing the overall total VOC emissions to 9.05 tons for FGCOMB for 2021. This is well under the 47.3 TPY limit set forth in their

ROP. Kalsec has not used Methylene Chloride in over a decade, so no emissions records were seen for this.

Steve showed me the daily records for the tail condenser temperature readings. There was one date that showed temperatures above the 5.0C limit in Building 100 on December 28, 2020, but they indicated that the MAP was followed and corrective actions were taken. This incident was also reported in their semi-annual and annual ROP certification reports.

Boilers: Along with the larger boiler in EUPDBO63050, there are three other 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. The MAERS report shows that Boiler 63031 used 2.45 MMCF of natural gas for 2021. 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.

Emergency Generators: Kalsec has seven generators, three that fall under the 40 CFR, Part 63, Subpart ZZZZ regulation, and four newer units that fall under the 40 CFR, Part 60, Subpart JJJJ regulation. All of them are spark-ignition, natural gas generators that range from 26-131 HP. Steve gave me a log of the emergency generator usage, as well as the maintenance documents for each generator. They are under the hourly limits for emergency, non-emergency, and testing and maintenance usage. Their MAERS report showed that their gas usage for 2021 was 0.0942 MMCF.

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, EU-SILO-TK91001, EUPDAG46039, EUSPCLARIFIER, and EU200FILTER. Kalsec's 2021 MAERS report shows that the five tanks emit a total of 2,145.4 lbs VOC per year (Hexane), which means they are far under their 1000lb/month limit for VOCs. EUSILO has a throughput 5,671 TPY, with VOC (hexane) emissions of 1,438 lbs/year 12-month rolling for December 2021. The highest amount of hexane emitted for one month in 2021 was 305 lbs, which is under their 500 lbs/month limit. EUSPCLARIFIER had a throughput of 0 tons and emitted a total 0 lbs of VOC in 2021. They are limited to 500 lbs/month under Rule 290. EU200FILTER has a 198 TPY throughput of various herbs and spices for 2021, with 263 lbs/year VOC(IPA) emissions. They are limited to 500lbs/month, so they are under this limit. EUPDAG46039, the Dry Products Mixer, is a ribbon blender with particulate emissions. The throughput for this mixer is 91.4 tons of various dried spices and herb mixtures for 2021. They have a filter associated with this equipment and are assuming 80% capture efficiency, so the uncontrolled particulate from the mixer is 44.8 lbs PM10/year, and the controlled particulate calculated out to be 9.0 lbsPM10 Filterable/year.

FGCOLDCLEANERS: They have only one parts washer in the maintenance building. It is a SafetyKleen unit that uses Armakleen 4-in-one aqueous cleaner. Their MAERS report showed that their throughput for 2021 was 24 gallons of the cleaning solution, with VOC emissions of 27 lbs/year.

FGGASDISPGACT:

This 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.

I thanked Steve for his time and left the facility around 4:30pm. Kalsec seemed to be in compliance at the time of this inspection.

NAME Monica Brothers

DATE 9/20/22

SUPERVISOR RAJ 9/21/22