

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

A199152733

|                                                       |                               |                           |
|-------------------------------------------------------|-------------------------------|---------------------------|
| 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: 03/05/2020 |
| STAFF: Monica Brothers                                | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR       |
| SUBJECT: Unannounced scheduled inspection             |                               |                           |
| RESOLVED COMPLAINTS:                                  |                               |                           |

Staff (Monica Brothers) arrived on-site at 10:15am. I did not see any visible emissions or smell odors off-site upon arrival. I signed in at the security booth and then met with Stephen Kuhnert, the Senior Environmental Manager. He led me to a conference room where James Barren, Senior Vice President of Global Manufacturing, and Ian Kennedy, Vice President and General Counsel, joined us a few minutes later. I asked them 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 over 300 employees. Kalsec operates 24 hours per day, Monday through Friday, although, the same processes are not necessarily consistently running from day to day. They have not had shifts on the weekend for some time, but they are talking about perhaps starting some weekend shifts in the near future. 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 building a new pilot plant building, which they said would meet the Rule 283 exemption for pilot plants. They plan to send the AQD some documentation about the project and why they believe it complies with the exemption. Kalsec expects the pilot plant to commence operations in early 2021. Long-term plans are to also add a CO<sub>2</sub> extraction process. Currently they receive their hops in a pre-extracted form, but adding the CO<sub>2</sub> extraction process would allow them to do this part themselves and simply start with fresh hops. They are already in discussions about submitting a PTI application for this, but this project will likely still be a couple of years down the road.

Ian then gave me an update on new developments with the EPA and their determination of whether 40 CFR, Part 63, Subpart FFFF, the NESHAP for Miscellaneous Organic Chemical Manufacturing (MON) applies to Kalsec. Ian said that the EPA determined that Kalsec is subject to the MON and that their options were to either comply with the MON or seek to obtain Synthetic Minor or True Minor status. If Kalsec were to no longer be considered a Major Source, they would no longer be subject to the MON. Ian said that they are looking into this possibility for the future and believes that with all of the emission reduction efforts that they have made over the years, they may be able to be considered a True Minor.

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

**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. No visible emissions from these stacks were seen during the inspection or recorded in their Visible Emissions log for the past couple of years. They reported a throughput for the grinding operations as 4,757 tons for 2019, with 25 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 2019 were 358,028 lbs or 179 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. No visible emissions were seen during the inspection, and Steve showed me the visible emissions records, which also indicated no times of VEs. Their 2019 MAERS report showed 4,757 tons throughput of material for this emission unit, with 815.54 lbs PM10 Filterable for the vacuum receiver and 111.05 lbs PM10 Primary 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 47.09 MMBTU of natural gas in 2019.

**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 2.2°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 1.7°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 HE48121 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 2.1°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.

Steve showed me that they were keeping track of the number of batches performed, batch emission factors, and hours of operation. Records showed that they processed 108,840 gallons in the solvent recovery process in 2019, and the highest 12-month rolling emission rate for acetone and VOC in 2019 were 4.47 tpy and 13.39 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 2019 was 0.34 pph, and the highest pph emission rate for VOC was 3.85. Their limit for acetone is 20 pph, and their limit for VOC is 19.1 pph.

Since this inspection occurred so close to when MAERS reports are due, I got some of their emissions records from Kalsec's MAERS report for 2019. Their material throughput for FGCOMB was 840 tons. The storage tank working loss emissions were 1,489 lbs or 0.74 tons of VOC (excluding Methylene Chloride) and the rest of the processes emitted 30,522 lbs of VOC (excluding Methylene Chloride), bringing the overall total VOC emissions to 16 tons for FGCOMB for 2019. 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 were a couple of dates that showed temperatures above the 5.0C limit (5/23/17 for HE48121 and 6/14/17 for HE49001), but they indicated that the MAP was followed in each circumstance. These were 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 2.48 MMCF of natural gas for 2019. 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 five generators, three that fall under the 40 CFR, Part 63, Subpart ZZZZ regulation, and two 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 2019 was 0.0578 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 2019 MAERS report shows that the five tanks emit a total of 1,281 lbs VOC per year (Hexane), which means they are far under their 1000lb/month limit for VOCs. EUSILO has a throughput 4,757 TPY, with VOC (hexane) emissions of 1,339 lbs/year 12-month rolling for December 2019. The highest amount of hexane emitted for one month in 2019 was 305 lbs, which is under their 500 lbs/month limit. EUSPCLARIFIER had a throughput of 20.3 tons and emitted a total of 91 lbs of VOC in 2019. They are limited to 500 lbs/month under Rule 290, and each month, they are far under this limit. EU200FILTER has a 53.7 TPY throughput of various herbs and spices for 2019, with 72 lbs/year VOC(IPA) emissions. They are limited to 500lbs/month, so they are significantly under the limits. EUPDAG46039, the Dry Products Mixer, is a ribbon blender with particulate emissions. The throughput for this mixer is 85.3 tons of various dried spices and herb mixtures for 2019. They have a filter associated with this equipment and are assuming 85% capture efficiency, so the uncontrolled particulate from the mixer is 41.8 lbs PM10/year, and the controlled particulate calculated out to be 8.4 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 2019 was 24 gallons of the cleaning solution, with VOC emissions of 27 lbs/year.

I thanked Steve and Jim for their time and left the facility around 3:15pm. Kalsec seemed to be in compliance at the time of this inspection.

NAME 

DATE 9/29/2020

SUPERVISOR RIL 10/2/20