

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

A199133999

FACILITY: Kalsec, Incorporated		SRN / ID: A1991
LOCATION: 3713 West Main St, KALAMAZOO		DISTRICT: Kalamazoo
CITY: KALAMAZOO		COUNTY: KALAMAZOO
CONTACT: Steve Kuhnert , Safety/Environmental Director		ACTIVITY DATE: 03/04/2016
STAFF: Monica Brothers	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

This was an unannounced inspection. Staff (Monica Brothers and Dale Turton) arrived at Kalsec at 9:15am and met with Mr. Stephen Kuhnert, the Safety and Environmental Director. He took us to a conference room where I asked him a few introductory questions. Kalsec makes a variety of spice concentrates and extracts, and also packages and distributes these products. They commenced operations at this facility in the 1950s and have grown to support about 300 employees. Kalsec operates 24/7, although, the same processes are not necessarily consistently running from day to day. Processes run are dependent on what product they are making. They make thirty to forty different products per year, with carrots, rosemary, and chili peppers being processed the most. Jim Justice, the VP of Manufacturing, came in briefly to say hello and discuss recent complaints from Mr. Fred Dutton. Steve then took us on a tour of the plant.

The first stop was the building where the oil-finishing used to be done before it was moved to the new Harry Todd Finishing Center (HTFC). This room had tumbling drums with polished rocks that would crumble the spices to an appropriate particle size. These drums could also be used to emulsify spices with oils as well. Steve showed us the 5-gallon pails that they send out their finished products in most of the time.

**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. They have two baghouses (#1 is FL43001 and #2 is FL43002) for this building's equipment, which showed that the latest calibration date was 08/15.

The actual grinding process was not happening at the time we were there. They were in the clean-up process, and therefore, the baghouses were not operating. The appropriate pressure gauges for the baghouses were located up in a restricted area, so we did not get a pressure reading during this inspection. 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 4,577 tons for 2015, with 24lbs 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. The final tail condenser was not operating at the time, so the temperature was reading close to ambient temperature. 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 2015 were 343,256lbs or 171.6 TPY.

Steve also mentioned that they are planning on getting some new control equipment installed in the near future. He said that they had been in discussions lately with the EPA about whether or not they are subject to 40 CFR Part 63, Subpart FFFF for miscellaneous chemical manufacturing. Dale and I spoke with Alexandra Letuchy from the EPA about this matter on April 5, 2016 over the phone and she explained that because Kalsec uses certain organic chemicals in their mixing and blending processes,

this federal regulation can apply. Depending on what is decided on this matter, Kalsec may be required to implement new monitoring and recordkeeping requirements, or install new control equipment in the future.

**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 us the visible emissions records, which also indicated no times of VEs. Their MAERS report showed 4,577 tons throughput of material for this emission unit, with 950.34lbs PM10 Filterable for the vacuum receiver and 129.42lbs PM10 Primary for the silo baghouse.

**EUDBO63050:** This is a 20.4 MMBTU per hour boiler with low NOx burners. Steve showed us 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 49.02 MMCF of natural gas in 2015.

**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 is 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 12 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 0.0C at the time of the inspection. There is also a condenser in this building that is associated with the centrifuge and was reading 0.5C during the inspection.

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). HE48121 was operating at the time of the inspection and read 0.2C. There is also a condenser (HE48103) associated with the R-103 Vessel (RE48103).

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. HE49002 was operating at 3.1C at the time of the inspection.

Since this inspection occurred so close to when MAERS reports are due, I got most of their emissions records from Kalsec's MAERS report for 2015. Their material throughput for FGCOMB was 1,026 tons. The storage tank working loss emissions were 1527lbs or 0.76 tons of VOC (excluding Methylene Chloride) and the rest of the processes emitted 24,164lbs of VOC (excluding Methylene Chloride), bringing the overall total VOC emissions to 12.85 tons for FGCOMB for 2015. This is well under the 47.3 TPY limit set forth in their ROP. The records for the process emissions of Acetone show that they are way under their limit of 40 TPY and 20 PPH. The 12-month rolling average for December 2015 was only 1.47 TPY, and the average lb/hr for every month in 2015 was below 1 PPH. Kalsec has not used Methylene Chloride in over a decade, so no emissions records were seen for this.

During the inspection Steve showed us the records for the tail condenser temperature readings. There were four dates from 2013-2015 that I noticed that had exceedances of their 5.0C limit that were not due to shutdowns or steam sparge cleanup times. 5/31/13, 9/14/13, 12/03/13, and 7/22/14 all had deviations, and all of them were due to problems with the chiller system. The records indicated that the MAP was followed in all circumstances, and all of these exceedances were reported in their ROP certifications. Steve also showed us the records of the number and types of batches performed, the amount of solvent used and recovered, and the hours of operation. The throughput records and the emissions calculations for all of the processes and working losses for the storage tanks were submitted to MAERS.

**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 2.58 MMCF of natural gas for 2015. These boilers get inspected annually.

**Emergency Generators:** Kalsec has five generators, three that fall under the 40 CFR, Part 63, Subpart ZZZZ regulation, and two newer ones 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 us 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 2015 was 0.0845MMCF.

**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 MAERS report shows that the five tanks emit a total of 1,397lbs VOC per year (Hexane), which means they're way under their 1000lb/month limit for VOCs. EUSILO has a throughput 4,577TPY, with VOC (hexane) emissions of 1,372lbs/year 12-month rolling for December 2015. The highest amount of hexane emitted for one month in 2015 was 173lbs, which is far under their 1000lbs/month limit. EUSPCLARIFIER has a throughput of 40.5TPY and emits 189 lbs VOC (methanol)/year. They are significantly under their 500lbs/month limit. EU200FILTER has a 162TPY throughput of various herbs and spices for 2015, with 216lbs/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 71.6 tons of various dried spices and herb mixtures for 2015. They have a filter associated with this equipment and are assuming 85% capture efficiency, so the uncontrolled particulate from the mixer is 35.1lbs PM10/year, and the controlled particulate calculated out to be 5.3lbsPM10 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, and heats it to about 110-125F. Their MAERS report showed that their throughput for 2015 was 24 gallons of the cleaning solution, with VOC emissions of 27lbs/year. The lid was closed and the unit was not in use at the time of the inspection.

**Other:** We also toured the Harry Todd Finishing Center, but there are no emissions associated with this building because only bulking and packaging occur here.

Dale and I thanked Steve for his time and left the facility around 4:30pm. Kalsec seems to be in compliance at the time of this inspection, as long as the requested Methylene Chloride and Acetone emissions records are also compliant. I will follow up when I receive these documents.

NAME *Mona [Signature]*

DATE 4/7/16

SUPERVISOR *MQ 4/7/2016*