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MANILA

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

P086745734

FACILITY: Verndale Products		SRN / ID: P0867
LOCATION: 18940 Weaver, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Rich Perry , Plant Manager		ACTIVITY DATE: 08/10/2018
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT: Compliance inspection of the VernDale Products, Inc. facility on Weaver Street in Detroit. The VernDale facility is scheduled for inspection in FY 2018.		
RESOLVED COMPLAINTS:		

Location:

VernDale Products, Inc.
(SRN P0867)
18940 Weaver Street
Detroit 48228

Date of Activity:

Friday, August 10, 2018

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Rich Perry, Plant Manager, VernDale Products, Inc.

Purpose of Activity

A self-initiated inspection of the VernDale Products. Inc. facility (hereinafter "VernDale") on Weaver Street in Detroit was conducted on Friday, August 10, 2018. The VernDale facility was on my list of sources targeted for an inspection during FY 2018. The purpose of this inspection was to determine compliance of operations at the VernDale facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and with applicable Federal standards.

Facility Site Description

The VernDale facility on Weaver Street is one of two VernDale facilities located in Detroit. The other facility is located at 8445 Lyndon Street, between Wyoming and Livernois; the two facilities are four miles from each other (five miles by vehicle). The Weaver Street facility is located at the terminus of Weaver Street at the CSX railroad tracks north of Plymouth Road, about ½ mile west of the Southfield Freeway. The facility is located on an 8.5 acre parcel, and it includes an 82,000 square foot building that houses facility manufacturing operations and facility offices.

The area around the VernDale facility consists primarily of residential properties. The nearest residences back up to the eastern property line of the VernDale facility; the houses on these residential parcels are less than 100 yards from the building on the VernDale property. The areas to the north and west of the facility are primarily unoccupied land. The CSX Transportation railroad tracks and associated right-of-way property is located on the other side of the western property line of the VernDale property. The property to the north is the site of the former Borman Foods/Farmer Jack warehouse, which has been demolished and is now primarily open land.

Facility Operations

VernDale Products, Inc. manufactures roller-dried, also known as drum-dried, whole milk powder. The roller dried milk powder is used by the confectionary industry to make premium milk chocolate products. VernDale is one of a limited number of companies that dry milk in this way, and their primary customer base includes

European chocolate makers such as Lindt. The company was started in 1958, and the company was originally located at Atwater and Rivard Streets in the downtown area of Detroit. When the construction of the Renaissance Center was being planned, VernDale had to leave their original location to make way for the project, and in 1978 the company moved their operations to the Lyndon Street location.

I was told during my site visits to the two VernDale facilities that the company's customer base expressed a need for VernDale to have a second production facility in case something happened at the Lyndon facility that would idle the milk drying process for any period of time; this need is due to VernDale's role as a leading producer and supplier of whole milk powder to the confectionary industry. To address this issue, VernDale acquired the Weaver Street facility in 2013. The property and building were formerly owned by Bormans, Inc. (operating as Detroit Pure Milk Company) and Wesley Ice Cream. After extensive renovations to the building and the installation of the milk processing equipment, the Weaver Street facility began operations in 2014.

As referenced previously in this report, VernDale's Weaver Street location consists of an 8.5 acre parcel, and there is roughly 82,000 square feet of building space. There are some offices in the front (south) portion of the building, and the rest of the building contains the processing operations. The processing operations at the Weaver Street facility are essentially the same as those at VernDale's Lyndon Street facility. The process begins with the delivery of raw milk to the facility. Raw milk is received at the facility and stored in two stainless steel tanks, each 50,000 gallons in capacity, prior to processing the milk. The milk undergoes a separation process through which the skim milk and the cream are separated, with each component being sent to its own 20,000 gallon stainless steel tank; these tanks are located next to the two 50,000 gallon incoming milk holding tanks on the west side of the building. I have attached a picture that I took of the front of the VernDale Weaver Street facility, and the stainless steel tanks are a prominent feature on the left side of the building. After separation, the milk undergoes reverse osmosis processing to concentrate the milk fats. The fat content of the concentrated milk is monitored, and either cream/milk fat or skim milk is added to adjust the fat content of the concentrated milk, if needed. The milk is then pasteurized, which involves heating the milk product to a set, minimum temperature and holding it at that temperature for a designated amount of time (the temperature and hold time parameters are regulated by food and agriculture regulations).

After the milk is pasteurized, it is routed to the dryers. There are two dryers at VernDale's Weaver Street facility. The dryers were purchased new when the facility was being renovated, and they were manufactured by Andritz Gouda BV in the Netherlands. Each dryer consists of two drums which are heated to 300° F via steam from the facility's steam generator. The milk is dropped onto the heated, rotating drums, and the water portion of the milk evaporates, while the milk solids are collected on the drums. The dried milk solids form a thin sheet, which is dropped from the dryer drums directly to a mill, which pulverizes the dried milk to a powder. The dryers at the Weaver Street facility differ from the four at the Lyndon facility in that they are equipped with what is called a Gouda hood, which is a temperature controlled hood. The hood is equipped with a thermocouple that keeps the temperature of the hood at 166°F, which prevents condensation on the surface of the hood. The exhaust from the dryer and hood is vented to a scrubber. The scrubber is manufactured by Fisher-Klosterman. It contains a HEPA filter, spray nozzles on the inlet, and impingement trays to remove water droplets prior to ambient discharge.

The whole milk powder that is produced via the dryers and the pulverizing mill is cooled in a multi stage fluid bed. In the first stage, the milk is cooled to 120-140°F, which is followed by a second stage which cools the product to 90°F. From the fluid beds, the product is vented through a small cyclone that removes fines from the cooling process (the fines are collected in a drum), then directed to the packaging area.

There are two specific emission points to the ambient air at the facility – the scrubber stack, and a stack that vents a steam generator. The steam generator, which is natural gas-fired, is manufactured by Circulatic, and is a model MG-5907-SHK-400-DS Vapor Power Steam Generator. This model is rated at 400 hp, and it has a maximum rated heat input capacity of 17.25 MMBTU per hour. There are two Cleaver-Brooks steam receivers that operate adjacent to the steam generator. The steam receivers receive condensate from the dryers, reduces the oxygen content and supplements the condensate with makeup water, which is sent back to the steam generator as feedwater.

VernDale purchased a truck-mounted diesel-fired emergency generator early this year that is shared between their Lyndon and Weaver Street facilities. The generator is a Taylor Power Systems unit that is distributed by

Southwest Products. The generator is a model TMC400 (the engine for the unit is a model TGDF7127), and it is rated at 400kW.

The VernDale facility operates 24 hours per day, 7 days per week.

Inspection Narrative

I arrived at the facility at 9:40am. I was met at the main entrance by Rich Perry, Plant Manager. I visited VernDale's Lyndon Street facility the previous afternoon, and I arranged to meet Rich at this location on this date and time. Rich and I put on the sanitary clothing (coat, head net) required to enter the processing area, and we went through a shoe wash station, then we entered the processing area. We started the walkthrough by looking at the dryers. Rich explained how they work, and he pointed out the Gouda hood that is used to vent the water vapor from the dryers to the dryer exhaust system while preventing condensation on the hood and in the exhaust ducts. We were able to look down at the side of the dryers and observe the dried milk sheets being dropped to the mill where it is processed into a powder.

We then followed the process and observed the fluid bed, which cools the whole milk powder prior to it being sent to the packaging area. Rich explained that the small cyclone after the fluid beds is used to remove fine particles from the cooling process. The fines are collected in a drum, the powder is directed to the packaging area, and the warm, treated air from the cyclone is vented through the side of the building.

We proceeded to the next room, where the packaging area of the process is located. The milk powder is conveyed to this area via closed piping, sized via sifters, run through metal detector and sampled for quality purposes prior to bagging.

We then looked at the steam generator and the two Cleaver-Brooks steam receivers. I looked at the information plate on the Circulatic steam generator and wrote down the model and serial numbers for the unit, the year of manufacture, the maximum natural gas feed rate (16,750 scfh) and the horsepower output. Rich explained the role that the steam receivers play in the steam distribution process, receiving condensate from the dryers, conditioning it and returning it as feedwater for the steam generator. Rich mentioned that VernDale is considering installing a second steam generator/boiler at some point in the future. I advised Rick that if VernDale decides to install a new boiler, the company should notify DEQ-AQD prior to the installation of the boiler so that the regulatory applicability of the boiler can be addressed in a timely manner. I described the DEQ-AQD permit exemptions, and I provided Rich with a copy of the Permit to Install handbook.

I asked how the building is heated, and Rich told me that building heat is provided by HVAC units for the office and part of the manufacturing portions of the building, and some small natural gas-fired ceiling-mounted heaters provide supplemental heat to the manufacturing and warehousing areas of the building.

Next, we looked at the scrubber unit. Rich said that that scrubber is considered part of the exhaust process for the Gouda dryers; the manufacturer of the dryer recommends the scrubber as part of the system. Rich explained the air flow through the scrubber and the types of filters and nozzles in the unit, and he told me that the scrubber has a preventative maintenance plan that the company follows.

We concluded our walkthrough of the facility by walking through the milk receiving area. Rich pointed out and explained the separation and pasteurization processes.

This facility shares a truck/trailer-mounted emergency generator with the Lyndon Street facility. The generator was at the Lyndon Street facility at the time of this site visit. The regulatory requirements associated with the generator are discussed in the next section of this report. I looked at the generator when I was at the Lyndon Street facility on August 9. The label that is affixed to the generator provides that the unit was manufactured in September 2017, and there is a statement printed on the label providing that the generator meets the EPA standards at 40 CFR 1039.625. I was able to find information about the generator on the Southwest Products and Taylor Power Systems websites. This information provides that the engine in the generator is an EPA Tier 3 certified engine. Copies of this information is attached to this report.

We returned to the office area and, after some conversation summarizing the site visit, I left the facility at 10:50am.

Permits/Regulations/Orders/Other

Permits

There are currently no DEQ-AQD permits in place for VernDale's Weaver Street facility. The Circulatic steam generator meets the DEQ-AQD permit exemption criteria put forth in Michigan Administrative Rule 282(b)(i); the unit fires natural gas, and it has a maximum rated heat input capacity of less than 50 MMBTU per hour. The specification sheets for the emergency generator provide a worst case diesel fuel usage rate of around 29 gallons per hour. Combining this with a diesel fuel heating value of 138,500 BTU per gallon yields a maximum hourly heat input capacity of 4.085 MMBTU per hour, which meets the permit exemption criteria put forth in Administrative Rule 285(g).

Regulations

The steam Circulatic steam generator is subject to the New Source Performance Standard at 40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units); the unit has a maximum rated heat input capacity between 10 and 100 MMBTU per hour, and it was installed after June 9, 1989. The unit fires only natural gas. I discussed the potential applicability of Subpart Dc to the steam generator with Rich during the site visit, and I sent him an e-mail message later on August 10 that summarized the regulatory applicability for the steam generator, and provided the requirements associated with Subpart Dc. A copy of the e-mail message is attached to this report. I also provided Rich with a copy of DEQ's "New Source Performance Standards for Boiler Burning Natural Gas Only" publication during the site visit. This includes a copy of the necessary NSPS notification form. Subpart Dc requires that the company submit a notification form, and keep monthly records of natural gas usage for the steam generator (40 CFR 60.48c(g)(2)).

The truck-mounted emergency generator was manufactured in September 2017 and installed earlier this year. Based on this installation date, the generator appears to meet the applicability criteria associated with 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines), as put forth in 60.4200(a). This paragraph states that Subpart IIII applies to owners and operators of engines that commence construction after July 11, 2005. The information on the generator's information plate, as well as on the manufacturer and distributor's websites, states that the generator engine is EPA Tier 3 certified.

The requirements of 40 CFR Part 63, Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines) apply to owners and/or operators of stationary reciprocating internal combustion engines (RICE) at both major and area (or minor) sources of hazardous air pollutant (HAP) emissions, except if the RICE is being tested at a test cell/stand. The VernDale facility is a minor, or area source of HAP emissions, as the potential to emit HAPs is less than 10 tons of any single HAP, and less than 25 tons for combined HAP emissions. The generator at the facility is classified as a new stationary RICE, as defined in Subpart ZZZZ. Paragraph 63.6590(c) states that new stationary RICE located at an area source meets the requirement of Subpart ZZZZ by meeting the requirements of 40 CFR Part 60 Subpart IIII, and that no further requirements of Subpart ZZZZ apply to the RICE.

Potential emissions from the fuel-burning equipment at the facility would look to classify the VernDale facility as a minor source of ambient air emissions. The steam generator has a maximum rated heat input capacity of approximately 17.25 MMBTU per hour. Estimating the potential NOx and CO emissions from the generator/boiler using MAERS emission factors associated with boilers of its size yields a NOx potential to emit (PTE) of 7.33 tons per year (tpy), and a CO PTE of 6.16 tpy from the steam generator. For the emergency generator, per EPA guidance for emergency generators, the PTE is based on 500 hours of annual operation. Using the maximum diesel usage rate of 29.2 gallons per hour and a NOx emission factor of 515 pounds per 1,000 gallons of fuel usage results in a NOx PTE from the generator of 3.76 tpy.

Particulate emissions from the milk drying process at the facility are expected to be minor. There is literature that describes the potential dust/particulate emissions resulting from milk spray drying systems; recall that VernDale utilizes roller-drying to produce milk powder. A document from the International Finance Corporation titled "Environmental, Health and Safety Guidelines for Dairy Processing" provides that potential dust emission sources associated with dairy processing activities "...include fine milk powder residues in the exhaust air from the spray drying systems and bagging of product". This document describes spray drying as follows:

"The final drying is usually achieved by spray drying, in which an atomizer disperses the pre-concentrated milk as a fog-like mist into a large chamber through which hot air is drawn in a spiral pattern. The water in the milk spray evaporates instantly to form powder particles. Alternatively, the older drum drying process may be used, in which the water evaporates on rotating, steam-heated drums."

Recall that with the roller-drying process that is utilized at the VernDale facility, the milk that contacts the roller forms a thin, dried milk sheet on the surface of the drum, which is directed by the rotating drums down into screw conveyors located at the base of the dryers, from where the dried milk is pulverized into the final powder product. The milk powder is conveyed to a multi-stage fluid bed to cool it, through a cyclone to remove powder fines from the cooling process, and to the product packaging area, all via closed piping. Only heat from the fluid bed cooling process is vented to the ambient air. Unlike spray drying, there is no "fog-like mist" generated by the roller drying process. The milk powder that is produced is the company's product, and it is collected and conveyed to the product packaging area, and packaged, so as to direct the milk powder that is produced into packages for shipment to their customers. The only venting associated with the milk drying process is water vapor. The Weaver Street facility also utilizes a scrubber to treat exhaust air from the milk dryers. The scrubber was included as part of the package with the Gouda milk dryer. While the scrubber is not required by air regulations or permitted, it provides an additional level of particulate and water vapor removal from the ambient exhaust stream.

Compliance Determination

Based upon the results of the August 10, 2018 site visit, the VernDale Products, Inc. facility on Weaver Street in Detroit appears to be **in compliance** with applicable rules and regulations.

Attachments to this report: a copy of the e-mail message that was sent to VernDale describing the regulatory requirements associated with the steam generator; print outs of the specifications for the truck-mounted diesel emergency generator; a picture of the Weaver Street facility from the front of the building.



Image 1(VernDale Weaver St) : Front of the VernDale Weaver Street facility.

NAME Steve Was

DATE 8/22/18

SUPERVISOR JK