P0866
MANUAL

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

P086645720

FACILITY: Verndale Products		**SRN / ID:** P0866
LOCATION: 8445 Lyndon, DETROIT		**DISTRICT:** Detroit
CITY: DETROIT		**COUNTY:** WAYNE
CONTACT: Fred Kreger , Vice-President/General Manager		**ACTIVITY DATE:** 08/09/2018
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** Minor
SUBJECT: Compliance inspection of the VernDale Products, Inc. facility on Lyndon Street in Detroit. The VernDale facility is scheduled for inspection in FY 2018.		
RESOLVED COMPLAINTS:		

Location:
VernDale Products, Inc.
(SRN P0866)
8445 Lyndon Street
Detroit 48238

Date of Activity:
Thursday, August 9, 2018

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Fred Kreger, Vice-President/General Manager, VernDale Products, Inc.

Purpose of Activity

A self-initiated inspection of the VernDale Products. Inc. facility (hereinafter "VernDale") on Lyndon Street in Detroit was conducted on Thursday, August 9, 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 Lyndon Street is one of two VernDale facilities located in Detroit. The other facility is located at 18940 Weaver Street, on the north side of Plymouth Road west of the Southfield Freeway; the two facilities are four miles from each other (five miles by vehicle). The Lyndon Street facility is located on the south side of Lyndon Street about ¼ mile east of Wyoming Avenue, roughly between across from and between the intersections of Lyndon and Cherrylawn and Northlawn Streets. The facility is located on a 3 acre parcel, and it includes a 29,000 square foot building that houses facility manufacturing operations and company offices.

The areas to the north and south of the VernDale facility are residential areas. The nearest residences are located approximately 150 yards to the south of the tall stack at the VernDale facility. The properties along the south side of Lyndon in the vicinity of the VernDale facility contain various commercial and light industrial facilities. The immediate neighbors to the VernDale facility are Motown Snack Foods (8341 Lyndon) and a building identified as MRM/IRA Products Windows and Doors (8385) to the east and Universal Bearing Company (8521) and DART Disposal and Recycling Technologies, Inc. (8647) to the west.

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, which was formerly the location of the Twin Pines Farm Dairy.

As referenced previously in this report, VernDale's Lyndon Street location consists of a 3 acre parcel, and there is roughly 29,000 square feet of building space. The facility's main building includes offices and the company's headquarters in the front portion of the building near Lyndon, with the facility's manufacturing operations taking up the rest of the building.

The processing operations are located in the western portion of the building. 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 then undergoes separation of the skim milk and the cream, 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. 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 four dryers at VernDale's Lyndon facility. Each dryer consists of two drums which are heated to 300° F via steam from the facility's boilers. 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 to screw conveyors. The conveyers send the dried milk to a mill which pulverizes the dried milk to a powder. I have attached an illustration from VernDale's company website (www.verndaleproducts.com) that provides a schematic as to how the drum dryers process the milk. The milk powder is conveyed to the east side of the building where it is packaged to await shipping to VernDale's customers.

There are two specific emission points to the ambient air – the boiler stacks, and the dryer stack. The four dryers exhaust to a large blower fan that draws the exhaust from all four dryers to a common manifold that vents to a single stack that has a diameter of 44.5 inches and a height of 100 feet above grade. There are two boilers at the facility, each having its own exhaust stack. Both of the boilers were manufactured by Cleaver-Brooks, and are natural gas fired with no fuel oil back-up. One of the boilers is a model CB-405-500, was installed on February 8, 1973, and has a maximum rated heat input capacity of 25,106,000 BTU per hour. The other boiler is a model CB-400-500, was installed on December 20, 1972, and has a maximum rated heat input capacity of 20,920,00 BTU per hour.

VernDale purchased a truck-mounted diesel-fired emergency generator early this year that is shared between their Lyndon and Weaver Street facilities. The generator was parked in the east rear lot at the Lyndon facility at the time of my visit. 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. The operation includes cleaning, which takes place every few days and is a 6 to 24 hour process.

Inspection Narrative

I arrived at the facility at 2:45pm. I entered the facility from Lyndon Street, which led me to a lobby area that is adjacent to the company's offices. I was greeted by Fred Kreger, Vice-President and General Manager of the company. I introduced myself and stated the purpose of my visit to the facility. Fred and I went to his office to discuss company and facility operations. Fred provided me with the history of the company, and he gave me an overview of the facility operations. He described the product that the company produces, and the customer base for and use of the dried milk product. He told me that the primary customer is the milk chocolate confection

industry, and that the company recently began supplying a new customer base associated with yogurt production; the yogurt component comes from VernDale's Weaver Street facility.

We discussed the two VernDale facilities, and Fred provided me with an overview of the two sites (the background and description of the Weaver Street facility are discussed in the site visit report for that facility). He described the production of milk powder at the facility, starting with the source of the milk (Michigan dairy farms, primarily in the Thumb region), the delivery of the milk to the facility, and the process of receiving, handling and concentrating the milk, adjusting the milk fat content, pasteurizing and drying the milk. Fred told me that in the early days of the Lyndon Street facility, the facility received odor complaints related to the milk drying process from the surrounding neighborhood. At that time, each of the dryers had its own ambient exhaust stack, which were lower in height that the boiler stacks. In response to the complaints, the facility had the exhaust system assessed by an outside engineering consulting company, who designed the current configuration through which the exhaust from the four dryers is drawn via a fan to a single stack with a discharge point at 100 feet above grade.

We then proceeded to walk around the facility. We started at the beginning of the process, the point where the milk enters to building from the 50,000 gallon receiving tanks and is directed to the reverse osmosis process to concentrate the milk. We walked past the pasteurizing area, and into the room in which the dryers are located. The dryer is open on the ends, so Fred was able to point out the steam feed lines to the drums. We observed as thin sheets of dried milk were 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. We proceeded to the packaging area of the process. 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 the product.

We then looked at the two boilers, which are located in the south/back end of the building. Both boilers had boiler plate labels affixed to them, and I noted the information from the labels for both boilers; this information included the model number, installation date, and maximum rated heat input capacity. Fred told me that there are the only two boilers at the facility. Building heat is provided by HVAC units for the office and part of the manufacturing portions of the building, and a few small natural gas-fired ceiling-mounted heaters provide supplemental heat to the manufacturing and warehousing areas of the building.

We walked outside to look at the truck/trailer-mounted emergency generator. Fred told me that the company purchased the unit earlier in 2018 for use at both of the VernDale locations. According to Fred, the generator has been started a few times, in accordance with the vendors instructions, for maintenance and operation checks. I confirmed that the generator is to be used for emergency use only, to provide power in the case of an interruption in electrical service. The generator will be able to provide power to the electrical controls associated with the process for a certain amount of time. Fred opened the sided panel of the generator, and I was able to gather information about the unit from the label that is affixed to it. The label 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 4:00pm.

Permits/Regulations/Orders/Other

Permits

There is one permit in the file for VernDale's Lyndon Street facility – Wayne County Installation Permit C-7258, which addresses the installation of a new exhaust system for odor abatement on milk dryers at the Lyndon Street location. This permit was issued by the former Wayne County Air Pollution Control Division on June 20, 1986 to address the reconfiguration of the ambient exhaust to the current, single exhaust stack configuration. The Special Conditions (SC) in the Wayne County permit consist of the following:

- SC 16, which states that the dryers shall not operate without the exhaust fan in place and operating properly. The dryers only operate when the exhaust fans are operating.
- SC 17, which puts for the minimum stack diameter of 44 inches, the minimum stack height of 100 feet above grade, and the minimum exhaust flow rate of 55,000 cfm. These are the exhaust parameters that

were provided by the company and their engineering consultant and evaluated as part of the permit evaluation. This information was not confirmed during this site visit.

- SC 18 requires that the connecting stacks, ductwork, and exhaust stack be cleaned via a spray system at least once per week. During the site visit, Fred stated that cleaning takes place every few days to remove accumulated milk solids/milkstone, and that a cleaning cycle can take anywhere between 6 and 24 hours. We did not discuss the specifics of the cleaning procedure, just the frequency and duration of the cleaning events.

- SC 19 contains standard odor language that was included in many permits issued by Wayne County. This condition is no longer valid as it requires action by the former Wayne County air agency.

There are no other permits for the facility. The two boilers meet the DEQ-AQD permit exemption criteria put forth in Michigan Administrative Rule 282(b)(i). 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 two boilers at the VernDale facility pre-date New Source Performance Standard applicability. 40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) applies to boilers having the heat input rating of those at the facility that were installed, modified or reconstructed after June 9, 1989.

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 combined maximum heat input for the two boilers is 46.026 MMBTU per hour. Estimating the potential NOx and CO emissions from the boilers using MAERS emission factors associated with boilers of their size yields a NOx potential to emit (PTE) of 19.2 tons per year (tpy), and a CO PTE of 16.13 tpy from the boilers. For the 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 the product packaging area via closed piping. Unlike spray drying, there is no "fog-like mist" generated by the 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.

Compliance Determination

Based upon the results of the August 9, 2018 site visit and a review of the facility's compliance records, the VernDale Products, Inc. facility on Lyndon Street in Detroit appears to be **in compliance** with applicable rules and regulations.

Attachments to this report: an illustration showing how the roller/drum milk dryers operate; print outs of the specifications for the truck-mounted diesel emergency generator.

NAME Steve Weis DATE 8/22/18 SUPERVISOR JK