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

N735641633

FACILITY: JENKINS FOOD PRODUCTS		SRN / ID: N7356
LOCATION: 14245 BIRWOOD, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 09/05/2017
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT: Compliance inspection of the Uncle Rays Potato Chip (Jenkins Food Products) facility in Detroit. The Uncle Rays facility is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:

Uncle Ray's Potato Chips (SRN N7356)
14245 Birwood
Detroit 48238

Date of Activity:

Tuesday, September 5, 2017

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Terry Hutchins, Facilities and Maintenance Manager, Uncle Ray's

Purpose of Activity

A self-initiated inspection of the Uncle Ray's Potato Chip facility (hereinafter "Uncle Ray's") was conducted on Tuesday, September 5, 2017. The Uncle Ray's facility is on my list of sources targeted for an inspection during FY 2017. The purpose of this inspection is to determine compliance of operations at the Uncle Ray's facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), applicable Federal standards, and any applicable permits and orders.

Facility Description

The Uncle Ray's facility is a potato chip production facility that is located in Detroit on the north side of Intervale Street at Birwood. The potato chip production and facility offices are located in a 75,000 square foot building that occupies the northwest quadrant of the intersection. The company also has a storage building and parking area on the east side of Birwood north of Intervale.

The area around the facility contains a mix of property zonings and uses. The areas to the south and east of the Uncle Ray's facility consist of residential properties. The closest residence is located directly across Intervale Street from the facility. The areas to the north and west consist of commercial and industrial properties. The Quaker Chemical facility (14301 Birwood, SRN B0785) is located directly to the north and west of Uncle Ray's property line.

The site of the Uncle Ray's facility has been home to a snack food/potato chip production facility since the 1940's. The original snack food/potato chip company operating at the site was Superior Potato Chips. The facility was purchased by Jenkins Food Products/Cabana Foods in 1983. The facility was sold to AmeriFoods in 1994, but Jenkins Foods bought the business back in 1996, and began marketing their potato chips under the Uncle Ray's brand name. In 2008, the company was purchased by The H.T. Hackney Company, a wholesale grocery warehousing and distribution company that is headquartered in Knoxville, TN. Since the 2008 sale, the Uncle Ray's facility has been operated by Uncle Ray's LLC, a wholly-owned subsidiary of H.T. Hackney. The potato chips that are produced at the facility are distributed to several retailers in the United States east of the Mississippi River, including Family Dollar, Doller General, Piggly Wiggly, and Aldi. I was told that 60% of the

product is distributed under the Uncle Ray's name, and the rest, while produced at the facility, is distributed under a different, private label that is associated with a particular customer.

The facility currently has two production lines that can produce 4,500 pounds of finished product (i.e. potato chips) per hour.

Facility Operations

The Uncle Ray's facility currently operates two shifts, 5-6 days per week. The facility has 175 employees.

As mentioned in the previous section, the Uncle Ray's facility has two potato chip production lines that are located in the roughly 75,000 square foot building that occupies the northwest quadrant of the intersection of Birwood and Intervale Streets. The two production lines, which operate side by side in parallel to one another, each consist of potato processing equipment and fryers. I was told during the site visit that the facility uses 300,000 pounds of potatoes each day that the facility is in operation. The potatoes are delivered to the facility via truck, and fed to bins from which they are inspected. After inspection, the potatoes are fed to the production lines, where they are washed, dewatered, and mechanically peeled, after which the peeled potatoes are inspected. The peeled potatoes that pass inspection are mechanically sliced via rotary blades, then washed and rinsed to remove starch, and finally cooked in the fryers with vegetable oil. Currently, one of the production lines makes flat potato chips, and the other produces wavy potato chips. I was told during the site visit that the facility produces 4,000 pounds of starch per day. The starch is collected and sold for offsite uses, which include use as a food filler, and industrial uses, such as use as a drilling binder.

After frying, the potato chips are directed to the flavoring process, in which various spices and flavorings are sprinkled onto the fried potato chips based on the particular flavor variety this is being produced. The flavored potato chips are directed to the bagging area, where they are placed into the final packaging which is sealed, and placed into boxes for distribution.

The two potato chip fryers exhaust to hoods (one is affixed over each fryer), which in turn vent to the ambient air via a common stack. There are stainless steel mesh pads located just above/downstream of the hoods in the exhaust stream that serve as mist eliminators that remove frying oil droplets from the exhaust stream. According to Chapter 9.13.3 of the AP-42: Compilation of Air Emission Factors document, which addresses Snack Chip Deep Fat Frying, particulate matter is the primary air pollutant that is emitted during the deep fat frying process. The description goes on to say that:

"Emissions are released when moist foodstuff, such as potatoes, are introduced into hot oil. The rapid vaporization of the moisture in the food stuff results in violent bubbling and cooking oil droplets become entrained in the water vapor stream. The emissions are exhausted from the cooking vat into the ventilation system where the condensed water and oil droplets in the exhaust stream are vented to the atmosphere."

The mesh pads serve to remove cooking oil droplets, which makes up the particulate matter, from the exhaust stream. There is a biaxial fan in the exhaust stack that draws steam and emissions from the potato chip fryers through the hoods, through the mesh pads, and the controlled emissions are vented to the ambient air via the single stack.

I was told during the site visit that the fan's belts and bearings are inspected monthly, and the fan blades are inspected yearly. The mesh pads are cleaned weekly, and the pads are replaced every couple of years. The pads were scheduled to be replaced in the short term, and the replacement pads are already at the facility awaiting installation.

The facility installed two Heat and Control Model HX 11.5 horizontal heat exchangers in 2010. The heat exchangers are used to pre-heat the cooking oil that is used in the fryers. The oil is pre-heated using hot exhaust gas, then it is circulated in the natural gas-fired heat exchanger for final heating.

There are no emergency engines/generators at the Uncle Ray's facility, and no fuel storage tanks.

Inspection Narrative

I arrived at the facility at 1:00pm. I was met by Terry Hutchins, and we began the site visit by meeting in a conference room to discuss the Uncle Ray's facility. Terry provided me with some history relating to the past operations at the facility, and he described the current ownership structure of the facility. Terry then described the operations at the Uncle Ray's facility, beginning with the arrival of potatoes at the facility, all the way through the frying and flavoring of the finished product. Terry provided that the facility uses 300,000 pounds of potatoes per typical production day, and that 4,500 pounds of potato chips are produced in a typical hour of production.

Terry and I then discussed the emissions from the facility. Terry described the way in which the potato chip fryers are exhausted – the exhaust from each fryer is vented to a hood, and there are a series of stainless steel mesh pads located just downstream of the hoods in the exhaust stream to capture cooking oil droplets prior to the air and steam that is collected by the hoods being discharged to the ambient air via a single stack. Terry told me that the mesh pad system has been in place since around 1987-88. At that time, the owners/operators of the facility had been receiving complaints about fallout in the form of oil droplets in the surrounding neighborhood. The mesh pad/de-mister system was installed in response to the complaints and fallout to control particulate emissions (in the form of cooking oil droplets) from the facility. I mentioned that DEQ-AQD has received odor complaints over the past 12 months from someone residing in the residential area to the south of the facility. I told Terry that I have noticed odors of varying intensity when downwind of the facility as far away as I-96 when the wind is coming from a northerly direction. Terry confirmed that he has detected offsite odors at times. He told me that Uncle Rays has not received any complaints about the facility. He described the maintenance schedule for the mesh pads, telling me that the pads are cleaned weekly, and that they are replaced at least once every couple of years. He told me that the pads are to be replaced soon, and that the replacement stainless steel mesh pads are on-site.

I provided Terry with a copy of an air permit that was issued by the State of Missouri's Department of Natural Resources to Backer's Potato Chip Company for reference. While the Uncle Ray's facility appears to be exempt from DEQ-AQD's air permitting requirements, the Missouri permit provides relevant information relating to the air emission control equipment. The Backer's facility also utilizes a mist eliminator to control emissions from their potato chip fryers. Page 3 of the Missouri permit requires that the filters used in the mist eliminators be cleaned once per seven consecutive day period, and that replacement filters be kept on site. The mesh pads that are part of the de-misting system at the Uncle Ray's facility are cleaned once a week, and there are replacement mesh pads kept on site. This is consistent with the requirements for a like facility that is permitted in another state. A copy of the permit for the Backer's facility is attached to this report for reference.

Terry and I briefly discussed the heat exchangers. Terry told me that two heat exchanger units were installed in 2010, and that they are used to pre-heat the frying oil, which helps to save energy. Terry told me that the manufacturer of the units performs maintenance on the heat exchangers once a year.

Terry and I then toured the processing area of the facility. We walked along the production line, looking at both fryers. I observed the potatoes being sliced and washed, then fed to the fryers. Terry pointed out the hoods, and the location of the mesh pads/de-mister system. He also pointed out the amount of the starch that is produced by the process, and described how the material is collected and sold for off-site use.

Terry showed me the two heat exchangers, which are located in a separate room from the fryers at the north end of the facility. I looked at the information plate on one of the units, which read that the units are Model HX-11.5, and provided a fuel flow rate of 18,000 scfh of natural gas. Using a heating value of 1,050 BTU/cubic foot of natural gas, this would equate to an hourly heat input of 18.9 MMBTU/hr.

Terry and I then walked over to the facility's storage building on the east side of Birwood. Terry showed me the stainless-steel mesh pads that will be used to replace the pads in the de-mister system. A picture of the mesh pads is included with this report.

We returned to the office area of the facility. After a brief conversation summarizing the site visit, I left the facility at 2:20pm.

Permits/Regulations/Orders/

There are no permits in the facility file, and no permits referenced in DEQ-AQD databases associated with the Uncle Ray's facility.

The potato chip manufacturing/processing equipment would appear to be exempt from DEQ-AQD permitting requirements per the exemption provisions put forth in Michigan Administrative Rule 282. The facility does not have any boilers, and the oil that is used in the fryers is pre-heated using the two heat exchangers. As mentioned in the last section of this report, the information on the plate affixed to the heat exchangers provides that the fuel flow rate of the units is 18,000 scfh of natural gas, which equates to 18.9 MMBTU/hour for each unit. Prior to my site visit, I sent some pre-inspection questions to Terry via an e-mail dated August 30, 2017 that he responded to later that day. He provided that the facility has two "... 32m btu natural gas heat exchangers to heat our cooking oil." It is assumed that the "m" designation was meant to signify million. Whether rated at 18.9 or 32 MMBTU/hour, the heat exchangers are exempt from DEQ-AQD permitting requirements per the provisions of Rule 282(b)(i).

In that same e-mail response, Terry wrote that there are no emergency generators and no fuel storage tanks at the facility. A copy of the e-mail exchange is attached to this report.

There are no Federal regulations that are applicable to the processes at the Uncle Ray's facility. 40 CFR Part 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units) looked to be the only Federal regulation that might apply to the facility at this time. Subpart Dc has requirements that apply to steam generating units for which construction/modification commenced after June 9, 1989, and that have a maximum design heat input capacity between 10-100 MMBTU/hour. This regulation would appear to apply to the heat exchangers based on the date that they were installed, and their heat input capacity. However, US EPA made a determination that Subpart Dc does not apply to heat exchangers that are used to heat vegetable oil. The specific determination (US EPA Applicability Determination Index, Control Number 0300010) addresses a Frito Lay facility in Vancouver, Washington.

Per their determination, EPA provided their position that heat exchangers at the Frito Lay facility meet the definition of a process heater, as defined in 40 CFR 60.41c. Equipment that meets the definition of "process heater" is excluded from meeting the definition of a steam generating unit; the provisions of Subpart Dc only apply to equipment that meets the definition of a steam generating unit. The definition of "process heater" in 40 CFR 60.41c states that "Process heater means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst." In their determination, EPA stated their position that the vegetable oil that is heated in the heat exchangers at the Frito Lay facility is a reactant within the chemical reaction involved in the production of potato chips. As such, EPA determined that the heat exchangers are process heaters, and that NSPS Subpart Dc does not apply to them. A copy of the EPA determination document is attached to this report for reference. Accordingly, Subpart Dc does not apply to the heat exchangers at the Uncle Ray's facility.

Compliance Determination

Based upon the results of the September 5, 2017 site visit and subsequent information review, the Uncle Ray's facility appears to be in compliance with all applicable rules and regulations.

Attachments to this report: a copy of the pages from the permit that was issued to Backer's Potato Chip Company by the State of Missouri; a copy of an e-mail exchange between myself and Terry Hutchins; a copy of the US EPA determination document relating to the applicability of 40 CFR Part 60 Subpart Dc to heat exchangers that are used to heat vegetable oil to fry snack food.

NAME

Steve Wes

DATE

11/15/17

SUPERVISOR

JK