



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-1863F
Plant ID No.: 031-00010
Applicant: Pilgrim's Pride Corporation
Facility Name: Moorefield Prepared Foods Plant
Location: Hardy County
SIC/NAICS Code: 2015/311615
Application Type: Class II Administrative Update
Received Date: September 16, 2016
Engineer Assigned: Joe Kessler
Fee Amount: \$300
Date Received: September 16, 2016
Complete Date: September 27, 2016
Due Date: November 26, 2016
Applicant Ad Date: September 21, 2016
Newspaper: *The Moorefield Examiner*
UTM's: 675.7 km Easting • 4,325.0 km Northing • Zone 17
Latitude/Longitude: 39.05841°/-78.97191°
Description: Installation of a new cook line that will consist of a new 20.412 mmBtu/hr Clayton Model EG-504 natural gas-fired boiler and a new 15.00 mmBtu/hr Kemco natural gas-fired water heater. Also requesting the removal from the existing permit two (2) boilers (5S and 22S), a heater (33S), and a breading unit (30S).

On September 16, 2016, Pilgrim's Pride Corporation (PPC) submitted a permit application for a Class II Administrative Update for the Moorefield Prepared Foods Plant. The facility was originally constructed in 1953 by the Pierce Foods Corporation and was operated at least from 1995-2007 under the name of Hester Industries, Inc. At some point after 2007 the plant was purchased by PPC. The facility has been the subject of several previous permitting actions as described below:

- On December 6, 1996, Permit Number R13-1863 was issued to Hesters for the after-the-fact installation of four (4) Clayton Steam Generators and a new Hurst waste boiler;
- On April 6, 2000, Permit Number R13-1863A was issued to Hesters to add three (3) additional indirect heat exchangers. Two of the three units were Fulton units, and the units transfer heat using a heat transfer fluid (oil). The third unit was an additional Clayton Steam Generator;

- On August 30, 2000, Permit Number R13-1863B was issued to Hesters for the installation of an additional processing line. The processing line consisted of three (3) indirect heat exchangers. Two of the units were Fulton hot oil heaters (27S & 28S) and the third was an additional Clayton steam generator (26S);
- On January 4, 2005, Permit Number R13-1863C was issued to Hesters to replace an existing boiler (4S) with a new boiler of similar size (32S);
- On January 16, 2007, Permit Number R13-1863D was issued to Hesters to replace two existing boilers (23S and 32S) with two new boilers of similar size (33S and 34S); and
- On July 11, 2016, permit Number R13-1863E was issued to PPC as a Class II Administrative update for the replacement of an existing 12.4 mmBtu/hr (26S) natural gas-fired boiler with a new natural gas-fired 14.29 mmBtu/hr boiler (36S).

Additionally, several "no-permit needed" determinations (PD98-188, PD98-218, and PD99-072) have been issued for the facility for installation of space heating units and a painting booth for tractor-trailers.

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing Facility Description

PPC's Moorefield Prepared Foods Plant is a chicken processing facility that cooks, marinates, packages, and freezes chicken for the commercial food service industry. The facility processes raw chicken by cutting, cooking, breading with flour, marinating, packaging, and freezing; thus generating more than three hundred different products for the commercial food service industry.

Proposed Modifications

PPC is now proposing the installation of a new cook line that will consist of the following emission units: a new 20.412 mmBtu/hr Clayton Model EG-504 natural gas-fired boiler (37S) and a new 15.00 mmBtu/hr Kemco natural gas-fired water heater (38S). Additional non-emission units that are part of the proposed new cook line include three (3) nitrogen tanks, a breading system, a steam oven, a nitrogen dip, and a freezer. The breading system will not generate emissions as it recycles air instead of venting to the atmosphere like other breading units and the steam oven will only vent steam.

In the proposed cook line, raw chicken will be breaded in the breading machine before being cooked in a steam oven. Breaded and cooked chicken is then dipped in nitrogen to quickly freeze the outside in order to preserve the breading before being packaged. The chicken is then completely frozen in the freezer and transferred to cold storage until shipment.

PPC is also requesting the removal from the existing permit the following emission units: one (1) 2.4 mmBtu/hr Fulton Thermal Fluid Boiler (5S), one (1) 14.35 mmBtu/hr Hurst Waste Boiler (22S), one (1) 10.00 mmBtu/hr Fulton Heater, and one (1) 10,000 lbs/hr Nothum breeding Unit (30S).

SITE INSPECTION

Due to the nature of the proposed modification, the author did not perform a site inspection of the facility for this permitting action. The facility was last “Full On-Site” inspected by DAQ Compliance/ Enforcement (C/E) Inspector Joseph Kreger on June 4, 2015. This inspection found the facility be “Status 30 - In Compliance.”

AIR EMISSIONS AND CALCULATION METHODOLOGIES

PPC included in Attachment N of the permit application the potential-to-emit (PTE) for the new 20.412 mmBtu/hr Clayton Model EG-504 natural gas-fired boiler (37E) and the new 15.00 mmBtu/hr Kemco natural gas-fired water heater (38E). Emissions from the Clayton boiler were based on emission factors provided by the boiler manufacturer and emissions from the Kemco water heater were based on emission factors provided for natural gas combustion as given in AP-42 Section 1.4 (AP-42 is a database of emission factors maintained by USEPA). Maximum emissions of both units were based on the units operating at maximum design heat inputs (MDHI) and 8,760 hours/year. Emissions from the equipment removed from the permit were based on the emission limits given in the existing permit.

Based on the PTE calculations as described above, the change in the facility-wide PTE as a result of the boiler replacement is given in the following table:

Table 1: Net Change in Facility-Wide PTE

Source	CO		NO _x		PM _{2.5} /PM ₁₀ /PM		SO ₂		VOCs	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
New Emission Units										
Boiler (37S)	0.75	3.29	2.28	9.99	0.16	0.70	0.01	0.04	0.11	0.48
Water Heater (38S)	1.24	5.41	1.47	6.44	0.11	0.49	0.01	0.04	0.08	0.35
<i>New EUs Total →</i>	<i>1.99</i>	<i>8.70</i>	<i>3.75</i>	<i>16.43</i>	<i>0.27</i>	<i>1.19</i>	<i>0.02</i>	<i>0.08</i>	<i>0.19</i>	<i>0.83</i>
Removed Emission Units										
Waste Boiler (22S)	4.20	18.40	1.64	7.18	2.60	11.39	0.82	3.59	0.24	1.05
Fluid Boiler (5S)	0.51	2.23	0.24	1.05	0.03	0.13	0.00	0.00	0.00	0.00
Breader (30S)	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00
Heater (33S)	0.84	4.38	1.00	3.68	0.08	0.33	0.01	0.03	0.06	0.24
<i>Rem. EUs Total →</i>	<i>5.55</i>	<i>25.01</i>	<i>2.88</i>	<i>11.91</i>	<i>2.72</i>	<i>11.90</i>	<i>0.83</i>	<i>3.62</i>	<i>0.30</i>	<i>1.29</i>
<i>Net PTE Change →</i>	<i>-3.57</i>	<i>-16.31</i>	<i>0.87</i>	<i>4.52</i>	<i>-2.45</i>	<i>-10.71</i>	<i>-0.81</i>	<i>-3.54</i>	<i>-0.11</i>	<i>-0.46</i>

The post-modification facility-wide PTE was calculated to be that given in the following table:

Table 2: Change In Facility-Wide Annual PTE

Pollutant	R13-1863E ⁽¹⁾	Change	R13-1863F
	tons/year	tons/year	tons/year
CO	57.46	-16.43	41.03
NO _x	78.02	4.52	82.54
PM _{2.5} /PM ₁₀ /PM	22.05	-10.71	11.34
SO ₂	3.69	-3.54	0.15
VOCs	3.77	-0.46	3.31

(1) Emissions taken from R13-1863E Fact Sheet.

REGULATORY APPLICABILITY

The following will discuss each rule applicable or potentially applicable to only the modifications evaluated herein.

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

Pursuant to the definition of “fuel burning unit” under 45CSR2 (“producing heat or power by indirect heat transfer”), 45CSR2 will apply to the proposed new Clayton Model EG-504 natural gas-fired boiler (37E) and 15.00 mmBtu/hr Kemco natural gas-fired water heater and they are, therefore, subject to the applicable requirements therein. Each substantive 45CSR2 requirement is discussed below.

45CSR2 Opacity Standard - Section 3.1

Pursuant to 45CSR2, Section 3.1, the boiler and the water heater are subject to an opacity limit of 10%. Proper maintenance and operation of each unit (and the use of natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR2 Weight Emission Standard - Section 4.1.b

The allowable particulate matter (non-condensable total particulate matter) emission rates for the units (as part of a facility-wide 45CSR2 fuel burning allowable emission rate), identified as a Type “b” fuel burning units, per 45CSR2, Section 4.1(a), is the product of 0.09 and the total design heat inputs of the units in million Btu per hour. The maximum aggregate design heat inputs (short-term) of the boiler and water heater is 20.412 mmBtu/hr and 15.00 mmBtu/hr, respectively. Using the above equation, the 45CSR2 particulate matter emission limits of the boiler and water heater will be 1.84 lb/hr and 1.35 lb/hr, respectively. The maximum potential hourly PM emissions (including condensables) from the boiler and water heater are estimated to be 0.16 lb/hr and 0.11 lb/hr, respectively. These emission rates are in compliance with the 45CSR2 limit.

45CSR2 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 2 requires testing for initial compliance with the limits therein, monitoring for continued compliance, and keeping records of that compliance. The TMR&R requirements are clarified under 45CSR2A and discussed below.

45CSR2A Applicability - Section 3

Pursuant to §45-2A-3, as an individual applicable “fuel burning unit” under 45CSR2 with an MDHI less than 100 mmBtu/hr, the boiler and water heater are not subject to the Testing and MRR Requirements under 45CSR2A.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

45CSR10 has requirements limiting SO₂ emissions from “fuel burning units,” limiting in-stack SO₂ concentrations of “manufacturing processes,” and limiting H₂S concentrations in process gas streams. The proposed new boiler and water heater are each defined as a “fuel burning unit” and subject to the applicable requirements discussed below.

45CSR10 Fuel Burning Units - Section 3

The allowable SO₂ emission rates for the new boiler and water heater (located in Region III), each identified as a Type “b” fuel burning unit, per 45CSR10, Section 3.3(f), is the product of 3.2 and the total design heat inputs of the units in million Btu per hour. The maximum aggregate design heat input (short-term) of the boiler and water heater are 20.412 mmBtu/hr and 15.00 mmBtu/hr, respectively. Using the above equation, the 45CSR10 SO₂ emission limits of the boiler and water heater will be 1.84 lb/hr and 1.35 lb/hr, respectively. The maximum potential hourly SO₂ emissions from each unit is estimated to be 0.01 lb/hr. These emission rates represent only a trace of the 45CSR10 limit.

45CSR10 Testing, Monitoring, Record-keeping, & Reporting (TMR&R) - Section 8

Section 8 of Rule 10 requires to test for initial compliance with the limits therein, monitor for continued compliance, and keep records of that compliance. The TMR&R requirements are clarified under 45CSR10A and discussed below.

45CSR10A Applicability - Section 3

Pursuant to §45-10A-3.1(b), as each unit combusts “natural gas, wood or distillate oil, alone or in combination,” the units are not subject to the Testing and MRR Requirements under 45CSR10A.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed changes to the Moorefield Prepared Foods Plant will increase the PTE of a regulated pollutant (see Table 1 above). However, all increases in PTE are below six (6) lbs/hour and ten (10) TPY of any regulated pollutant that would, pursuant to §45-13-2.17, define the installation as a “modification” under 45CSR13. Therefore, pursuant to §45-13-4.2(b)(1), PPC is requesting a Class II Administrative Update to make a “[c]hange in a permit condition as necessary to allow changes in operating parameters, emission points, control equipment or any other aspect of a source which results in an increase . . . of any existing regulated air pollutant . . . “

As required under §45-13-8.3 (“Notice Level A”), PPC placed a Class I legal advertisement in a “newspaper of *general circulation* in the area where the source is . . . located.” The ad ran on September 21, 2016 in *The Moorefield Examiner* and the affidavit of publication for this legal advertisement was submitted on September 27, 2016.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The modified Moorefield Prepared Foods Plant does not meet the definition of a “major source under §112 of the Clean Air Act” as outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The post-modification facility-wide PTE (see Table 2 above) does not exceed 100 TPY of any regulated pollutant and does not exceed 10 TPY of any individual HAP or 25 TPY of aggregate HAPs.

However, as the facility has several emission units that are subject to a New Source Performance Standard (NSPS) - 40 CFR 60, Subpart Dc - that does not contain a Title V permitting exemption, the facility is subject to Title V as a non-major source. Non-major sources subject to Title V, pursuant to DAQ policy, are deferred from having to submit a Title V application.

40 CFR 60, Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60 Subpart Dc is the New Source Performance Standard (NSPS) for industrial-commercial-institutional steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that have a maximum design heat input capacity between 10 and 100 mmBtu/hr. The proposed boiler and water heater are subject to 40 CFR 60, Subpart Dc under the above applicability requirements of §60.40c(a). Subpart Dc does not have any emission standards for units that combust only natural gas. The units are, however, subject to the record-keeping and reporting requirements given under §60.48c.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed modification and that are not classified as “criteria pollutants.” Criteria pollutants are

defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM₁₀), Particulate Matter less than 2.5 microns (PM_{2.5}), and Sulfur Dioxide (SO₂). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULPPCRY APPLICABILITY.

There is no substantive net facility-wide increases in non-criteria regulated pollutants as a result of the proposed modifications.

AIR QUALITY IMPACT ANALYSIS

The proposed modification does not meet the definition of a “major modification” pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the proposed modification, modeling was not required under 45CSR13, Section 7.

MONITORING, COMPLIANCE DEMONSTRATIONS, RECORD-KEEPING, AND REPORTING REQUIREMENTS

No substantive changes are being made in the monitoring, compliance demonstrations, record-keeping, and reporting requirements in the draft permit.

TESTING OF OPERATIONS

No substantive changes are being made to the performance testing requirements in the draft permit.

CHANGES TO PERMIT R13-1863E

The substantive changes made to R13-1863E were limited to:

- Removal of all references in the draft permit to the following emission units: the 2.4 mmBtu/hr Fulton Thermal Fluid Boiler (5S), the 14.35 mmBtu/hr Hurst Waste Boiler (22S), the 10.00 mmBtu/hr Fulton Heater, and the 10,000 lbs/hr Nothum breeding Unit (30S); and
- Addition of emission and operating limits for the proposed new water heater (38S) and boiler (37S) under SPECIFIC REQUIREMENTS A.4 and A.15, respectively.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-1863F to Pilgrim's Pride Corporation for the above discussed changes to the Moorefield Prepared Foods Plant located in Moorefield, Hardy County, WV.



Joe Kessler, PE
Engineer



Date