**FACT SHEET FOR: CP26-015** **DATE: DRAFT**

**NDWEE ID:** 44141

**Name of Source:** The Western Sugar Cooperative, Corporation

**Source Classification:** Major NSR Source
Area Source of Hazardous Air Pollutants (HAPs)

*Regulatory changes may supersede information in this document. If the source should add or change equipment or change processes such that a NESHAP or NSPS subpart becomes an applicable requirement, it is the source's obligation to comply with that subpart and applicable requirements whether or not they are identified in the associated permitting action or Title 129. Also note that the NESHAP and NSPS subparts are subject to change. Detailed information related to NESHAP and NSPS subparts can be found on the NDWEE Air Toxics Notebook and NDWEE NSPS Notebook located on the NDWEE website (http://dwee.nebraska.gov/). The NDWEE website can also be used to find other permit related and facility specific information that is not identified in this fact sheet.*

## DESCRIPTION OF THE SOURCE OR ACTIVITY:

The Western Sugar Cooperative, Corporation (WSC) operates a sugar beet processing plant in Scottsbluff, Nebraska. The beet manufacturing process includes multiple steps to refine and convert sugar beets.

Sugar beets are grown offsite and stored in piles on factory grounds until they are needed by the factory. Beets are transported to the factory, conditioned for cleaning and impurity removal, and sliced. Hot water is added to the beets to recover sugar via diffusion and is separated for further purification, while the spent beets are further processed via pulp presses for dewatering before it is sold as livestock feed.

The wet pulp passes through processing and chemical addition steps to remove impurities and manage pH so that a refined sweet juice is achieved for downstream processing. The juices undergo further processing steps for evaporation to remove water and increase solids content of the juices, crystallization to form sugar crystals from the juices, and centrifuging to separate sugar crystals from syrups. The solids are washed and conditioned before the various sugar products are packaged and shipped, while the left-over liquids are further processed to recover sugar from the stream that ends up as molasses. Molasses is treated via desugarization processes to recover additional sugars, and the remaining betaine and molasses fractions are sold as byproducts.

The facility operates warehouses for packaging and shipping operations to distribute final products to the market. In addition, natural gas-fired boilers are used to provide steam heat for condensing and, secondarily, to supplement some of the electrical needs of the factory. The facility operates various stages of wastewater treatment to handle excess water resulting from the processing of beets, which are approximately 70% water. In addition, the facility manages byproduct piles of precipitated calcium carbonate (PCC), beet flume topsoil (BFT), and coal combustion residual (CCR) which are made available to a variety of customer types for offsite beneficial reuse.

## PERMIT HISTORY:

| Date Issued | Number | Status |
|---|---|---|
| 9/14/1987 | - | Not active; |
| 03/21/1989 | - | Not active; |
| 04/19/1993 | - | Not active; |
| 07/13/1994 | - | Not active; Superseded by 10/12/1994 permit; |
| 10/12/1994 | - | Not active; Superseded by CP96-0012; |
| 02/18/1997 | CP96-0012 | Not active; Superseded by CP97-0074; |
| 09/17/1997 | CP97-0074 | Not active; Superseded by MOD-008; |

| Date Issued | Number | Status |
|---|---|---|
| 06/26/1998 | MOD-008 | Not active; Superseded by CP19-015; |
| 06/11/2001 | M01-0004 | Not active; Superseded by M03-0005; |
| 06/01/2004 | M03-0005 | Not active; Superseded by CP19-015; |
| 08/23/2017 | CP16-014 | Not active; Superseded by CP19-010; |
| 06/07/2019 | CP19-010 | Not active; Superseded by CP21-001; |
| 01/26/2021 | CP19-015 | Not active; Superseded by CP21-001; |
| 05/10/2022 | CP21-001 | Partially active; Condition III.(B) superseded by CP26-015 |
| tbd | CP26-015 | Active |

**PERMIT ACTION:**

On April 21, 2026, the NDWEE received an application from WSC for a significant permit revision to Construction Permit CP21-001, issued May 10, 2022. WSC requested two scrubbers, Sugar Dryer Scrubber (EP-3B) and Production Scale Scrubber (EP-3C), be reclassified as inherent process equipment rather than required control devices. WSC requests removal of the monitoring and testing requirements for EP-3B and EP-3C and removal of the associated emission limitations on the basis that these units should be classified as "*process equipment*".

Process Inherency Determination:

WSC has requested that the following scrubbers be classified as inherent process equipment:

- EP-3B: Sugar Dryer Scrubber
- EP-3C: Production Scale Scrubber

For process equipment inherency determinations, the Department has historically referred to the 1995 EPA letter sent to Timothy J. Mohin of Intel Government Affairs (Intel) regarding the "Criteria for Determining Whether Equipment is Air Pollution Control Equipment of Process Equipment"[1] regarding whether exhaust conditioners used in tool operations in the semiconductor industry can be considered process equipment. The letter states that three things must be considered to determine if control equipment is process inherent:

- Is the primary purpose of the equipment to control air pollution?
- Where the equipment is recovering product, how do the cost savings compare to the cost of the equipment?
- Would the equipment be installed if no air quality regulations are in place?

The Mohin memo went on to state that "*[i]f the answers to these questions suggest that the equipment should be considered as an inherent part of the process, then the effect of the equipment or practices can be taken into account in calculation potential emission regardless of whether or not enforceable limitations are in effect."* And, *"[t]he above determination regarding the use of localized exhaust conditioners in the semiconductor industry is case-specific. This determination is not intended to set a precedent for localized pollution control equipment for other source types without a similar case-specific review."*

Further, EPA notes in its analysis of the criteria that the exhaust conditioners are small treatment systems that are local to the point-of-use process tool with primary purposes to increase uptime of the process tools, to minimize safety hazards, and to prevent impurities from entering other processes. Although not expanded on in the letter, cleanliness is one, if not the, primary concern in the semiconductor industry. EPA also provided specific direction that the response was not intended to set a precedent for other industries or other types and uses of air pollution control equipment.

[1] EPA, 1995. Criteria for Determining Whether Equipment is Air Pollution Control Equipment of Process Equipment. Timothy J. Mohin Memorandum dated November 27, 1995. U.S. Environmental Protection Agency. Research Triangle Park, NC.

**Criterion 1 – Primary Purpose**

According to WSC, the primary purpose of the scrubbers is not for air pollution control. Instead, the scrubbers are designed with the primary purpose of product recovery. The primary purposes for the recovery scrubbers (EP-3B and EP-3C) are the following:

- Recovery of saleable product for reintegration into the production process.
- Maintenance of safe operating conditions associated with combustible sugar dust.

**Criterion 2 – Cost Savings**

Utilizing the scrubbers will retain the product within the system. The product that will be collected by the scrubbers (EP-3B and EP-3C) is projected to save WSC a total of over $400,000 annually. WSC provided an estimated capital cost of a new scrubber of $200,000, or $400,000 for both scrubbers, based on recent projects at a similar facility. The total annual operating cost was assumed to be 10% of the total capital cost. WSC provided a sugar commodity price of $0.33 per pound, as of February 11, 2026. The estimated investment payback period for EP-3B is 0.75 years and the estimated investment payback period for EP-3C is 1.46 years. NDWEE did not complete an evaluation on product recovery savings. Cost savings that were calculated for product recovery, as submitted by WSC, can be found in the cost analysis summary table below:

| Control Equipment ID# | Total Annual Operating Cost | Total Annual Savings | Total Cost | Investment Payback Period | Expected Lifetime |
|---|---|---|---|---|---|
| EP-3B: Sugar Dryer Scrubber | $20,000 | $268,168 | $200,000 | 0.75 years | 15+ years |
| EP-3C: Production Scale Scrubber | $20,000 | $136,877 | $200,000 | 1.46 years | 15+ years |

**Criterion 3 – Necessity Outside of Air Quality Regulations**

According to WSC, for the reasons described in Criteria 1 and 2 above, the scrubbers would be installed even if no air quality regulations were in place. These scrubbers are utilized regardless of applicable air quality regulations because they are used for product recovery and maintaining safe operating conditions. The scrubbers are necessary to ensure the proper function. WSC states that the scrubbers are interlocked with their associated emission units, meaning the emission units will not be able to operate without the scrubbers. Each scrubber is tied to a process unit that runs in series. Failure of the scrubbers would automatically shut down the granulator system.

High concentrations of sugar are flammable, explosive even, due to the high ratio of surface area to volume of the crystals. Because of this correlation, smaller particles of sugar are more susceptible. At high temperatures, sucrose decomposes into 5-(hydroxymethyl)furfural (HMF). HMF has a flashpoint at 79°C (compared to sucrose at 186°C) which then ignites the remaining sugar particles. A room with at least 5 percent of its surface area covered with 1/32nd or more of an inch of organic dust presents an explosion hazard, according to National Fire Protection Association (NFPA) and Occupational Safety and Health Administration (OSHA) dust training.

WSC must operate the process equipment in accordance with NFPA 654 – Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids and NPFA 652 – Standard on Fundamentals of Combustible Dust. While not formally adopted in OSHA regulations, OSHA does rely on both NFPA 654 and NFPA 652 as part of health and safety inspections under the combustible dust National Emphasis Program (NEP).

The scrubbers will prevent accumulation of dust on the ground. This will act as a facility safety measure as it will eliminate combustible dust, respirable dust, and slipping hazards. It will also provide sanitation

benefits by reducing contamination issues and improving the overall cleanliness of the facility. For the purpose of minimizing hazards and recovering product, the units would be run regardless of air quality regulations.

**Process Equipment Determination**

After reviewing the information received in the application, NDWEE has determined that the analysis provided is sufficient to consider EP-3B and EP-3C as process equipment for the following reasons:

- Product recovery process equipment serves as dust prevention for health and safety reasons,
- Units are interlocked,
- The process will not function without the equipment, and
- Cost savings from product recovery financially incentivize the units to be operating any time the process is running.

Although the corresponding permit requirements will be removed, WSC is still expected to run the process equipment any time the process is running, as well as properly operate and maintain the units. In addition, if there is an unexpected emission increase due to the removal of the permitted air quality requirements, the Department may reevaluate the determination.

**TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:**

The emissions for this project, including fugitive emissions, are shown in the potential-to-emit (PTE) table below:

| Regulated Pollutant | Previous PTE[1] (tons/year) | Current PTE (tons/year) | Change in PTE (tons/year) |
|---|---|---|---|
| Particulate Matter (PM) | 216.35 | 213.02 | -3.33 |
| PM smaller than or equal to 10 microns ($PM_{10}$) | 136.41 | 133.08 | -3.33 |
| PM smaller than or equal to 2.5 microns ($PM_{2.5}$) | 94.71 | 91.38 | -3.33 |
| Sulfur Dioxide ($SO_2$) | 1.75 | 1.75 | - |
| Oxides of Nitrogen ($NO_x$) | 394.51 | 394.51 | - |
| Carbon Monoxide (CO) | 244.77 | 244.77 | - |
| Volatile Organic Compounds (VOC) | 17.44 | 17.44 | - |
| Greenhouse Gases (GHGs) | 349,681 | 349,681 | - |
| Carbon Dioxide Equivalents ($CO_2e$) | 351,746 | 351,746 | - |
| Hazardous Air Pollutants (HAPs): | | | |
| Hexane | 5.25 | 5.25 | - |
| Total HAPs | 6.87 | 6.87 | - |

[1] Previous PTE obtained from CP21-001 fact sheet, issued May 10, 2022.
[2] Change in PTE is from the change in emission factors for EP-3B and EP-3C from prescribed limits to testing-based factors.

**SUPPLEMENTAL INFORMATION:**

**Title 129, Chapter 2 – Ambient Air Quality Standards**

The change in potential emissions from this permitting action are below the threshold for which modeling is required as summarized below; therefore, the NDWEE is not requiring ambient air quality dispersion modeling to support this permitting action. The NDWEE generally follows these thresholds.

| Pollutant | Project Potential Emissions Change (tpy) | Emission Change Threshold (tpy) |
|---|---|---|

| | | |
|---|---|---|
| CO | - | 100 |
| $NO_2$ | - | 40 |
| $SO_2$ | - | 40 |
| $PM_{10}$ | -3.33 | 15 |
| $PM_{2.5}$ | -3.33 | 10 |

**Title 129, Chapter 4 - Prevention of Significant Deterioration (PSD)**

WSC operates under the primary SIC code 2063 (Beet Sugar), which is subject to a Major NSR source category threshold of 250 tons per year (tpy) for each regulated NSR pollutant. Additionally, WSC operates fossil fuel-fired boilers with a heat input greater than 250 million British thermal units (Btu) per hour, constituting a nested source, which is listed as a 100 tpy Major NSR source category under Title 129, Chapter 2, Section 002.26 (40 CFR §52.21 (b)(1)(i)(a)).

WSC is considered a major source with respect to the NSR program under both source categories because potential emissions of $NO_X$ and CO exceed the 100 tpy nested source threshold for fossil fuel-fired boilers with a heat input greater than 250 million Btu per hour and potential emissions of $NO_X$ exceed the 250 tpy facility-wide major source threshold.

According to 40 CFR §52.21(a)(2)(iv)(a), a modification is major in nature if it causes two types of emissions increases: (1) a significant emissions increase (as defined in 40 CFR §52.21(b)(4)) **and** (2) a significant net emissions increase (as defined in 40 CFR §52.21(b)(3) and (23)). If the modification is classified as being major in nature, the project needs to be evaluated as such, including but not limited to pre-application monitoring, a best available control technology (BACT) analysis, ambient air dispersion modeling, and an additional impacts analysis.

*(1) Significant Emissions Increase Evaluation*

The calculation procedure for determining if a "*significant emissions increase*" would result from the project is prescribed in 40 CFR §52.21(a)(2)(iv)(b) and is demonstrated below:

| | | | | |
|---|---|---|---|---|
| Projected Actual Emissions (PAE) | - | Baseline Actual Emissions (BAE) | ≥ | Significant emissions increase rates for each NSR regulated pollutant |

The projected actual emissions (PAE) were calculated in accordance with 40 CFR §52.21(b)(41)(ii)(d) on a potential-to-emit basis. The PAE alone was below the significant emissions increase rate, thus the NDWEE did not evaluate BAE since these emissions would be subtracted from the PAE in accordance with 40 CFR §52.21(a)(2)(iv)(d).

The following table summarizes the changes attributed to this project, and the project emission accounting analysis for determining if a "*significant emissions increase*" would result from the project:

| NSR Pollutant | Project PTE[1] | Chapter 4 NSR Major Modification Threshold | Exceedance? |
|---|---|---|---|
| | (TPY) | (TPY) | |
| PM | -3.33 | 25 | No |
| $PM_{10}$ | -3.33 | 15 | No |
| $PM_{2.5}$ | -3.33 | 10 | No |
| $NO_x$ | 0 | 40 | No |
| $SO_2$ | 0 | 40 | No |
| CO | 0 | 100 | No |

| NSR Pollutant | Project PTE[1] | Chapter 4 NSR Major Modification Threshold | Exceedance? |
|---|---|---|---|
| | (TPY) | (TPY) | |
| VOC | 0 | 40 | No |
| Pb | 0 | 0.6 | No |
| $CO_2e$ | 0 | 75,000 | No |

[1] Project PTE was obtained from the PTE for the new units.

The emissions from the project did not meet the definition of a "*significant emissions increase*" because the NSR regulated pollutants did not exceed the thresholds prescribed in 40 CFR 52.21(b)(23). Since the project did not meet the definition of a "*significant emissions increase*", the procedure for determining if a "*significant net emissions increase*" would result from the project was not conducted.

Based on NDWEE's evaluation, the proposed project does not qualify as a major modification under the NSR program since the project is not expected to result in a "*significant emissions increase*".

**Title 129, Chapter 12 - New Source Performance Standards (NSPS)**

The NDWEE has not identified any NSPS subparts applicable to this project. For a complete discussion of NSPS subparts applicable to WSC, please refer to the fact sheet discussions accompanying construction permits previously issued to WSC.

WSC must comply with all applicable NSPS requirements regardless of their inclusion in this permitting action or Title 129. These rules are subject to change. Additional and updated information on all NSPS is available on the NDWEE NSPS Notebook, which can be located by visiting the NDWEE website at https://dwee.nebraska.gov/, by first selecting "Menu" at the top of the page, then the "Air" dropdown menu tab, then the "NSPS Program" dropdown menu tab, and then "NSPS Notebook".

**Title 129, Chapter 13 - National Emission Standards for Hazardous Air Pollutants (NESHAP)**

The NDWEE has not identified any NESHAP subparts applicable to this project. For a complete discussion of NESHAP applicability, please refer to the fact sheet discussions accompanying construction permits previously issued to WSC.

WSC must comply with all applicable NESHAP requirements regardless of their inclusion in this permitting action or Title 129. These rules are subject to change. Information regarding NESHAP is available on the NDWEE Air Toxics Notebook, which can be located by visiting the NDWEE website https://dwee.nebraska.gov, by first selecting "Menu" at the top of the page, then the "Air" dropdown menu tab, then the "Air Toxics Program" dropdown menu tab, and then "Air Toxics Notebook".

**Title 129, Chapter 15, Section 001 - Particulate Emissions; Limitations and Standards**

Process Weight Rate (Section 001.01)

Title 129, Chapter 15, Section 001.01, limits PM (filterable) emissions to the amounts shown in Table 15-1 during any one hour. These process weight rate limits, which are based on throughput of the emission units, vary as throughputs change. Since the potential to emit for each emission point is less than the process weight rate limitations, these PM limitations were not included in Condition III. of this permit.

Particulate Emissions from Combustion Sources (Section *001.02*)

All of the PM emission points subject to the Chapter 15, Section 001.02 limitations are in compliance with those limitations, as the PTE for each emission point is less than the limitations. Therefore, these PM limitations were not included in any Specific Condition of this permit.

Opacity Limitations from Emission Units (Section *001.04*)

Specific Condition I.(J) specifies that no person shall cause or allow emissions, from any source, which has an opacity equal to or greater than twenty percent (20%). Opacity must be determined using an EPA-

approved method or recorded by a continuous opacity monitoring system which has been operated and maintained pursuant to 40 CFR Part 60 Appendix B except as provided for in Chapter 15, Sections 001.05 and 001.06 (Title 129, Chapter 15, Section 001.04). Therefore, while not specifically stated in Condition III., this requirement is still applicable to all emission units at the source.

**REVISED SPECIFIC PERMIT CONDITIONS:**

Below is a mark-up that identifies all of the revisions to the original conditions. Additions are **bolded and underlined**, deletions are in ~~strikethrough~~, and NDWEE comments are in *italics*.

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*References to the "Nebraska Department of Environmental Quality" or "Nebraska Department of Environment and Energy" have been revised to "Nebraska Department of Water, Energy, and Environment" and references to "NDEQ" or "NDEE" have been revised to "NDWEE" to reflect the agency name change, effective July 01, 2025.*

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## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION UNITS

### (B) [Reserved] ~~Specific Conditions for Crystallization and Separation~~

~~(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table and shall be controlled by the required control equipment as indicated:~~

| ~~Emission Point ID#~~ | ~~Required Control Equipment ID# and Description~~ | ~~Emission Unit ID# and Description~~ |
|---|---|---|
| ~~3B~~ | ~~CE 3B-02: Sugar dryer scrubber~~ | ~~EU 3B-01: Sugar dryer~~ |
| ~~3C~~ | ~~CE 3C-61: Sugar recovery scrubber~~ | ~~EU 3C-09 through EU3C-14: Conveyors~~ |
| | | ~~EU 3C-DC1 and EU3C-DC3: Drag conveyors #1 and #3~~ |
| | | ~~EU 3C-EL1 and EU3C-EL2: Wet sugar elevators #1 and #2~~ |
| | | ~~EU 3C-RM1 and EU3C-RM2: Remelt conveyors~~ |
| | | ~~EU 3C-East: Scale truck bin~~ |
| | | ~~EU 3C-West: Scale truck bin~~ |

~~(2) Emission Limitations and Testing Requirements:~~

~~(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Conditions I.(M) and II.(G).~~

| ~~Emission Point ID#~~ | ~~Pollutant~~ | ~~Permitted Limit~~ | ~~Averaging Period~~ | ~~Basis for Permit Limit~~ | ~~Initial Performance Testing Required~~ |
|---|---|---|---|---|---|
| ~~3B~~ | ~~PM (filterable)~~ | ~~1.5 lb/hr[1]~~ | ~~Three 1-hour test runs or test method average~~ | ~~Chapter 19~~ | ~~No[1]~~ |

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Initial Performance Testing Required |
|---|---|---|---|---|---|
| | $PM_{10}$ | 1.5 lb/hr[1] | | | |
| 3C | PM (filterable) | 1.0 lb/hr[1] | Three 1-hour test runs or test method average | Chapter 19 | No[1] |
| | $PM_{10}$ | 1.0 lb/hr[1] | | | |

[1] Initial performance testing completed January 13, 14, and 15, 1998.

(b) The PM emission rate from the sugar dryer scrubber EP-3B and the sugar recovery scrubber EP-3C for PM and $PM_{10}$, (filterable), shall be tested in accordance with Conditions III.(B)(2)(b)(i)-(iii), Condition I.(M) and Condition II.(G) and shall be conducted, to demonstrate compliance with emission limits in III.(C)(2)(a): (Chapter 19, 34)

(i) The owner/operator shall design and conduct a program of compliance testing.

(ii) Compliance testing required shall be conducted by an independent testing firm within 60 days after achieving the maximum production rate but not later than 180 days after initial startup. The source shall notify the Department of the anticipated testing date at least 30 days prior to such date. A written report of performance tests shall be furnished to the Department within 45 days after completion of the tests.

(iii) The source shall prepare a plan for required compliance testing, which must be submitted to the NDEE for review and approval at least 30 days prior to the date of the required compliance testing.

(iv) The plan for the testing of $PM_{10}$ emissions shall detail equipment and methods for monitoring emissions in accordance with requirements of 40 CFR Part 60, Appendix A and alternatives thereto.

(3) Operational and Monitoring Requirements and Limitations:

(a) The sugar dryer (EU 3B-01) shall be equipped with a scrubber (CE 3B-02) to control emissions of particulate matter. (Chapter 19)

(i) The sugar dryer scrubber shall be properly maintained and operated in accordance with the manufacturer's instructions at all times the associated emission unit is in operation.

(ii) The sugar dryer scrubber shall be equipped with pressure drop monitoring equipment.

(iii) The sugar dryer scrubber pressure drop shall be recorded, at a minimum, weekly during weeks in which the scrubber is operating.

(iv) An acceptable scrubber pressure drop operating range shall be determined by the source and submitted to the Department for approval within 180 days of initial startup of the emission unit.

~~(v) Corrective action shall be taken if the pressure drop is not within the accepted operating range. Corrective action shall be taken within ten (10) days of a recorded pressure drop deviation, unless a longer time period is approved by the Department. All corrective action steps shall be recorded.~~

~~(b) Particulate matter emissions from the sugar scales, screens, remelt tank and melter, and sugar transfer equipment between the sugar production scale and the sugar bins shall be controlled by use of a scrubber collection system (CE 3C-61). (Chapter 19)~~

~~(i) The scrubber system shall be properly maintained and operated in accordance with the manufacturer's instructions at all times an associated emission unit is in operation.~~

~~(ii) The scrubber shall be equipped with pressure drop monitoring equipment.~~

~~(iii) The scrubber pressure drop shall be recorded, at a minimum, weekly during weeks in which the scrubber is operated.~~

~~(iv) An acceptable scrubber pressure drop operating range shall be determined by the source and submitted to the Department for approval within 180 days of initial startup of the emission unit.~~

~~(v) Corrective action shall be taken if the pressure drop is not within the accepted operating range. Corrective action shall be taken within ten (10) days of a recorded pressure drop deviation, unless a longer time period is approved by the Department. All corrective action steps shall be recorded.~~

~~(4) Applicable NSPS, NESHAP, and MACT Requirements:~~

~~At this time the NDEE has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).~~

~~(5) Reporting and Recordkeeping Requirements:~~

~~(a) The source shall maintain clear and readily accessible records of all measurements, results, inspections, and observations, listed above, as conditions of this permit. (Chapter 19)~~

*Specific Condition III.(B) was removed to reflect the reclassification of the sugar dryer scrubber (EP-3B) and the production scale scrubber (EP-3C) as being process inherent equipment from previously being required control equipment. NDWEE has determined that the analysis provided is sufficient to consider EP-3B and EP-3C as process equipment for the following reasons: product recovery process equipment serves as dust prevention for health and safety reasons, units are interlocked, the process will not function without the equipment, and cost savings from product recovery financially incentivize the units to be operating any time the process is running. As previously stated, although the corresponding permit requirements will be removed, WSC is still expected to run the process equipment any time the process is running, as well as properly operate and maintain the units. In addition, if there is an unexpected emission increase due to the removal of the permitted air quality requirements, the Department may reevaluate the determination.*

# Fact Sheet Attachment

Criteria PTE Summary

| Process or Unit | Pollutant Emissions (tpy) | | | | | | |
|---|---|---|---|---|---|---|---|
| | PM | $PM_{10}$ | $PM_{2.5}$ | $SO_x$ | $NO_x$ | CO | VOC |
| Lime Slaker (EP 2) | 7.45 | 7.45 | 7.45 | - | - | - | - |
| Sugar Cooler (EP 3A) | 15.33 | 15.33 | 15.33 | - | - | - | - |
| Sugar Dryer (EP 3B) | 5.05 | 5.05 | 5.05 | - | - | - | - |
| Product Scale (EP 3C) | 2.58 | 2.58 | 2.58 | - | - | - | - |
| Bin Conveyor (EP 3D) | 2.19 | 2.19 | 2.19 | - | - | - | - |
| Sugar Conveyor (EP 3E) | 2.19 | 2.19 | 2.19 | - | - | - | - |
| Loadout (EP 3F) | 2.19 | 2.19 | 2.19 | - | - | - | - |
| Lime Kiln #1 (EP 13-1) | 0.92 | 0.69 | 0.69 | 0.07 | 12.12 | 10.18 | 0.67 |
| Lime Kiln #2 (EP 13-2) | 1.63 | 1.22 | 1.22 | 0.13 | 21.47 | 18.04 | 1.18 |
| NG Boiler (EP 15-1) | 9.80 | 9.80 | 9.80 | 0.77 | 180.46 | 108.28 | 7.09 |
| NG Boiler (EP 15-2) | 9.80 | 9.80 | 9.80 | 0.77 | 180.46 | 108.28 | 7.09 |
| Soda Ashe (EP FA8401) | 2.28 | 2.28 | 2.28 | - | - | - | - |
| DI Filter (EP FA8402) | 6.83 | 6.83 | 6.83 | - | - | - | - |
| Cooling Tower (EP CT-01) | 26.30 | 18.41 | 11.05 | - | - | - | - |
| Carb. Process (FC-01 and SC-01) | - | - | - | - | - | - | 1.42 |
| Hoffman Vacuum (EP HF1 and HF2) | 4.38 | 4.38 | 4.38 | - | - | - | - |
| Limestone Handling (EP LH1-01 through LH1-09) | 20.41 | 14.84 | 5.14 | - | - | - | - |
| Warehouse Process Units | 0.12 | 0.12 | 0.12 | - | - | - | - |
| Haul Roads (FUG-HL) | 42.48 | 9.85 | 0.99 | - | - | - | - |
| Storage Piles (FUG-LP, ASH, & PCC) | 51.11 | 17.89 | 2.12 | - | - | - | - |
| Total (without fugitives) | 119.43 | 105.33 | 88.27 | 1.75 | 394.51 | 244.77 | 17.44 |
| Total (with fugitives) | 213.02 | 133.08 | 91.38 | 1.75 | 394.51 | 244.77 | 17.44 |
| Pre-Project (with fugitives)[1] | 216.35 | 136.41 | 94.71 | 1.75 | 394.51 | 244.77 | 17.44 |
| Change in emissions (with fugitives) | -3.33 | -3.33 | -3.33 | 0.00 | 0.00 | 0.00 | 0.00 |

[1] Obtained from the fact sheet attachment to CP21-001.

## Fact Sheet Attachment

HAP/GHG PTE Summary

| Pollutant | Lime Kiln #1 (EP 13-1) | Lime Kiln #2 (EP 13-2) | Natural Gas Boiler (EP 15-1) | Natural Gas Boiler (EP 15-2) | Carb. Process (EP FC-01 and SC-01) | Total (tpy) |
|---|---|---|---|---|---|---|
| Acetaldehyde | - | - | - | - | 1.29 | 1.29 |
| Acrolein | - | - | - | - | 0.07 | 7.19E-02 |
| Benzene | 2.54E-04 | 4.51E-04 | 2.71E-03 | 2.71E-03 | - | 6.12E-03 |
| Bis(2-ethylhexyl)phthalate | - | - | - | - | 3.60E-03 | 3.60E-03 |
| 1,4-Dichlorobenzene | 1.45E-04 | 2.58E-04 | 1.55E-03 | 1.55E-03 | - | 3.50E-03 |
| Formaldehyde | 9.09E-03 | 1.61E-02 | 9.67E-02 | 9.67E-02 | 4.80E-03 | 0.22 |
| n-Hexane | 0.22 | 0.39 | 2.32 | 2.32 | - | 5.25 |
| Lead | 6.06E-05 | 1.07E-04 | 6.45E-04 | 6.45E-04 | - | 1.46E-03 |
| Mercury | 3.15E-05 | 5.58E-05 | 3.35E-04 | 3.35E-04 | - | 7.58E-04 |
| 4-methylphenol | - | - | - | - | 1.98E-04 | 1.98E-04 |
| Naphthalene | 7.39E-05 | 1.31E-04 | 7.86E-04 | 7.86E-04 | 5.99E-04 | 2.38E-03 |
| Nickel | 2.54E-04 | 4.51E-04 | 2.71E-03 | 2.71E-03 | - | 0.01 |
| Phenol | - | - | - | - | 3.90E-04 | 3.90E-04 |
| Polycyclic Organic Matter | 1.07E-05 | 1.89E-05 | 1.14E-04 | 1.14E-04 | - | 2.57E-04 |
| Toluene | 4.12E-04 | 7.30E-04 | 4.38E-03 | 4.38E-03 | - | 9.91E-03 |
| Arsenic Compounds | 2.42E-05 | 4.29E-05 | 2.58E-04 | 2.58E-04 | - | 5.83E-04 |
| Beryllium Compounds | 1.45E-06 | 2.58E-06 | 1.55E-05 | 1.55E-05 | - | 3.50E-05 |
| Cadmium Compounds | 1.33E-04 | 2.36E-04 | 1.42E-03 | 1.42E-03 | - | 3.21E-03 |
| Chromium Compounds | 1.70E-04 | 3.01E-04 | 1.80E-03 | 1.80E-03 | - | 4.08E-03 |
| Cobalt Compounds | 1.02E-05 | 1.80E-05 | 1.08E-04 | 1.08E-04 | - | 2.45E-04 |
| Manganese Compounds | 4.60E-05 | 8.16E-05 | 4.90E-04 | 4.90E-04 | - | 1.11E-03 |
| Selenium Compounds | 2.91E-06 | 5.15E-06 | 3.09E-05 | 3.09E-05 | - | 6.99E-05 |
| Total HAPs | 0.23 | 0.41 | 2.43 | 2.43 | 1.37 | 6.87 |
| Pre-Project HAPs[1] | | | | | | 6.87 |
| Change in HAPs | | | | | | 0.00 |
| Change in Hexane | | | | | | 0.00 |

[1] Obtained from the fact sheet attachment to CP21-001.

| Pollutant | Cobalt Compounds | Cobalt Compounds | Natural Gas Boiler (EP 15-1) | Natural Gas Boiler (EP 15-2) | Carb. Process (EP FC-01 and SC-01) | Total (tpy) |
|---|---|---|---|---|---|---|
| GHG | | | | | | |
| $CO_2$ | 14541.60 | 25,765 | 154,681 | 154,681 | - | 349,668 |
| $N_2O$ | 0.27 | 0.47 | 2.84 | 2.84 | - | 6.41 |
| $CH_4$ | 0.28 | 0.49 | 2.96 | 2.96 | - | 6.70 |
| Total (as Mass) | 14542.15 | 25,766 | 154,687 | 154,687 | - | 349,681 |
| Total (as $CO_2e$) | 14628.01 | 25,918 | 155,600 | 155,600 | - | 351,746 |

## Fact Sheet Attachment

Sugar Dryer (EP 3B)

| | | |
|---|---|---|
| Sugar Dryer Throughput | 42.00 | tpy |
| | 8,760 | hour/yr |

| Pollutant | Emission Factor (lb/hr) [1] | Potential Annual Emissions (tpy) |
|---|---|---|
| PM | 1.2 | 5.05 |
| $PM_{10}$ | 1.2 | 5.05 |
| $PM_{2.5}$ | 1.2 | 5.05 |

[1] Emission factors represent the highest average emission rate from 2021 and 2023 performance testing with an applied 20% safety factor. $PM_{10}$ and $PM_{2.5}$ are assumed to be equivalent to PM.

## Fact Sheet Attachment

Production Scale (EP 3C)

| | | |
|---|---|---|
| Sugar Throughput | 60.00 | tpy |
| | 8,760 | hour/yr |

| Pollutant | Emission Factor (lb/hr) [1] | Potential Annual Emissions (tpy) |
|---|---|---|
| PM | 0.6 | 2.58 |
| $PM_{10}$ | 0.6 | 2.58 |
| $PM_{2.5}$ | 0.6 | 2.58 |

[1] Emission factors represent the highest average emission rate from 2021 and 2023 performance testing with an applied 20% safety factor. $PM_{10}$ and $PM_{2.5}$ are assumed to be equivalent to PM.

## Fact Sheet Attachment

**Title 129, Chapter 15, Section 001** **Process Weight Rate**

For process weight rates up to 60,000 lb/hr: $E= 4.10\ p^{0.67}$

For process weight rates in excess of 60,000 lb/hr: $E= 55.0\ p^{0.11}-40$

where E = rate of emissions in lbs/hr PM and p = process weight rate in ton/hr.

| Process | P | E | Unit PM emission rate |
|---|---|---|---|
| Lime Slaker (EP 2) | 20,600 lb/hr<br>10.30 ton/hr | 19.6 lb/hr | 1.70 lb/hr |
| Sugar Cooler (EP 3A) | 84,000 lb/hr<br>42.00 ton/hr | 43.0 lb/hr | 3.50 lb/hr |
| Sugar Dryer (EP 3B) | 84,000 lb/hr<br>42.00 ton/hr | 43.0 lb/hr | 1.15 lb/hr |
| Production Scale (EP 3C) | 120,000 lb/hr<br>60.00 ton/hr | 46.3 lb/hr | 0.59 lb/hr |
| Bin Conveyor (EP 3D) | 120,000 lb/hr<br>60.00 ton/hr | 46.3 lb/hr | 0.50 lb/hr |
| Sugar Conveyor (EP 3E) | 120,000 lb/hr<br>60.00 ton/hr | 46.3 lb/hr | 0.50 lb/hr |
| Loadout (EP 3F) | 120,000 lb/hr<br>60.00 ton/hr | 46.3 lb/hr | 0.50 lb/hr |
| Soda Ash (EP FA8401) | 30,000 lb/hr<br>15.00 ton/hr | 25.2 lb/hr | 1.56 lb/hr |
| DI Filter Media (EP FA8402) | 10,000 lb/hr<br>5.00 ton/hr | 12.1 lb/hr | 0.52 lb/hr |
| Hoffman Vacuum (EP HF1 and HF2) | 100 lb/hr<br>0.05 ton/hr | 0.6 lb/hr | 0.50 lb/hr |
| Truck Unloading (EP LH1-01) | 36,600 lb/hr<br>18.30 ton/hr | 28.8 lb/hr | 0.53 lb/hr |
| Hopper Loading (EP LH1-02) | 36,600 lb/hr<br>18.30 ton/hr | 28.8 lb/hr | 0.53 lb/hr |
| Limestone Handling Transfer Points (EPs LH1-03 through LH1-08) | 36,600 lb/hr<br>18.30 ton/hr | 28.8 lb/hr | 0.53 lb/hr |
| Limestone Screening (EP LH1-09) | 36,600 lb/hr<br>18.30 ton/hr | 28.8 lb/hr | 0.46 lb/hr |
| N. Warehouse DC#1 | 14,000 lb/hr<br>7.00 ton/hr | 15.1 lb/hr | 0.01 lb/hr |
| N. Warehouse DC#2 | 14,000 lb/hr<br>7.00 ton/hr | 15.1 lb/hr | 0.01 lb/hr |
| S. Warehouse DC# | 14,000 lb/hr<br>7.00 ton/hr | 15.1 lb/hr | 4.00E-03 lb/hr |
| Cooling Tower (CT-01) | 6,235,200 lb/hr<br>3,118 ton/hr | 93.3 lb/hr | 6.01 lb/hr |

## Fact Sheet Attachment

**Title 129, Chapter 15, Section 002** **PM Limitations for Combustion Sources**

| Total Heat Input (MMBtu/hr) | Maximum Allowable Emissions of PM (lb/MMBtu) |
|---|---|
| 10 or less | 0.6 |
| Between 10 and 10,000 | $1.026/I^{0.233}$<br>Where I = total heat input in MMBtu/hr. |
| 10,000 or more | 0.12 |

| Process equipment | MMBtu/hr | Allowable PM (lb/MMBtu) | Unit PM Emission Rate (lb/MMBtu) |
|---|---|---|---|
| Lime Kiln #1 (EP 13-1) | 28.22 | 0.47 | 7.45E-03 |
| Lime Kiln #2 (EP 13-2) | 50.0 | 0.41 | 7.45E-03 |
| Natural Gas Boiler (EP 15-1) | 300.2 | 0.27 | 7.45E-03 |
| Natural Gas Boiler (EP 15-2) | 300.2 | 0.27 | 7.45E-03 |

Unit PM emission rate = (Unit's lb/hr PM)/(Unit's MMBtu/hr)