

San Joaquin Valley Air Pollution Control District

Risk Management Review and Ambient Air Quality Analysis

To: Jag S Kahlon – Permit Services
 From: Diana Walker – Technical Services
 Date: February 10, 2021
 Facility Name: FRITO-LAY INC
 Location: 600 GARNER RD, MODESTO
 Application #(s): N-1919-18-0, -19-0, -20-0, -21-0
 Project #: N-1203844

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
18	0.00	0.00	0.00	3.89E-13	No	No
19	N/A ¹	N/A ¹	N/A ¹	N/A ¹	No	No
20	0.07	0.00	0.00	2.22E-09	No	No
21	N/A ¹	N/A ¹	N/A ¹	N/A ¹	No	No
Project Totals	0.07	0.00	0.00	2.22E-09		
Facility Totals	>1	0.00	0.00	2.22E-09		

Notes:

1. A prioritization was not performed since it was determined that no hazardous air pollutants were present. No further analysis was required.

1.2 AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass		Pass		
NO_x	Pass				Pass
SO_x	Pass	Pass		Pass	Pass
PM10				Pass ³	Pass ³
PM2.5				Pass ⁴	Pass ⁴

Notes:

1. Results were taken from the attached AAQA Report.
2. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
3. Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 µg/m³ for the 24-hour average concentration and 1 µg/m³ for the annual concentration.
4. Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 µg/m³ for the 24-hour average concentration and 0.2 µg/m³ for the annual concentration.

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 18-0, 19-0, 20-0, 21-0

1. No special requirements.

2. Project Description

Technical Services received a request on December 22, 2020 to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit -18-0: FRIED CHEESE PUFF PROCESS LINE CONSISTS OF TWO CORNMEAL SIFTERS WITH BAG FILTER, ONE CORNMEAL TRANSFER WITH FILTER, A BLENDING SYSTEM, SIX EXTRUDERS CONTROLLED VIA TWO ROTOCLOVES, A VEGETABLE OIL FRYER (STEAM HEATED) EQUIPPED WITH OIL MIST ELIMINATOR, AND A SEASONING SYSTEM WITH A TRI-MER 10-H, ORIFICE WATER SCRUBBER
- Unit -19-0: CORN MEAL RECEIVING AND STORAGE EQUIPMENT CONSISTING OF TWO CORN MEAL SILOS EQUIPPED WITH BIN VENT FILTERS AND ONE CORN MEAL UNLOAD FILTER/RECEIVER
- Unit -20-0: DORITO TORTILLA CHIP PROCESS LINE CONSISTS OF A CORN CLEANER WITH BIN VENT FILTER, FOUR KETTLES (STEAM-HEATED) FOR CORN COOK, SOAK AND WASH SYSTEM, A VEGETABLE OIL FRYER (STEAM HEATED) WITH OIL MIST ELIMINATOR, AN 8.5 MMBTU/HR OVEN WITH LOW-NOX BURNER, ONE AMBIENT AIR COOLER SERVED BY HIGH VELOCITY FILTER, AND A SEASONING SYSTEM EQUIPPED WITH A TRI-MER 28-H WATER SCRUBBER
- Unit -21-0: CORN RECEIVING AND STORAGE EQUIPMENT CONSISTING OF TWO NEW CORN SILOS EQUIPPED WITH BIN VENT FILTERS AND TWO CORN UNLOADERS WITH BIN VENT FILTERS

3. RMR Report

3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit's or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required.

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices (Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For units that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Unit 19 and 21 PM₁₀ emissions occur from pre-cleaned food grade products which are considered non-hazardous by the District.
- Toxic emissions for Units 18 and 20 (Process 1) were derived based on emission factors from the 2009 study, Emissions of volatile aldehydes from heated cooking oils, done by the University of Dayton, Environmental Sciences and Engineering Group.
- Toxic emissions for Unit 20 (Process 2) were calculated using 2001 Ventura County's Air Pollution Control District's emission factors for Natural Gas Fired external combustion.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2013-2017 from Modesto (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	Process ID	Process Material	Process Units	Hourly Process Rate	Annual Process Rate
18	1	Canola Oil Evaporated	Gallons	0.004	35.04
20	1	Canola Oil Evaporated	Gallons	0.01	112.64
20	2	Natural Gas VOC	MMscf	0.01	74.46

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/Horizontal/Capped
18	Fried Cheese Puff Manufacturing Line Fryer	17.37	394	2.87	0.46	Vertical
20	8.5 MMBTU/HR NG OVEN	17.68	422	2.38	0.71	Vertical
20	Tortilla Chip Manufacturing Line Fryer	17.07	394	5.01	0.61	Vertical

4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO₂ standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so background data may need to be collected from multiple sources. The following stations were used for this evaluation:

Monitoring Stations				
Pollutant	Station Name	County	City	Measurement Year
CO	Modesto-14th Street	Stanislaus	Modesto	2018
NOx	Turlock	Stanislaus	Turlock	2018
PM10	Modesto-14th Street	Stanislaus	Modesto	2018
PM2.5	Modesto-14th Street	Stanislaus	Modesto	2018
SOx	Fresno - Garland	Fresno	Fresno	2018

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

Emission Rates (lbs/hour)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
18	1	0.00	0.00	0.00	0.43	0.03
19	1	0.00	0.00	0.00	0.01	0.0002
20	1	0.31	0.02	0.30	0.52	0.10
21	1	0.00	0.00	0.00	0.03	0.001

Emission Rates (lbs/year)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
18	1	0.00	0.00	0.00	3,722	236.12
19	1	0.00	0.00	0.00	80.00	1.60
20	1	2,681	212	2,606	4,516	905
21	1	0.00	0.00	0.00	225	9.50

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2013-2017 from Modesto (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/Horizontal/Capped
18	Two Rotoclones	13.87	316	52.39	0.20	Vertical
18	Scrubber	3.96	316	6.79	0.30	Vertical
18	Cooler	17.37	322	12.45	0.61	Vertical
18	Fryer 1	17.37	394	2.87	0.46	Vertical
18	Cornmeal Sifters	4.57	Ambient	9.46	0.20	Vertical
18	Cornmeal Transfer	15.85	334	10.19	0.20	Vertical
19	Cornmeal Silo Dust Collector	4.57	339	6.55	0.20	Vertical
19	Cornmeal Unload Filter	4.57	Ambient	16.82	0.15	Vertical
20	Corn Cleaner	15.85	Ambient	11.36	0.51	Vertical
20	Scrubber	2.74	316	26.08	0.25	Vertical
20	Cooler	16.46	339	17.20	0.79	Vertical
20	8.5 MMBTU/HR Oven	17.68	422	2.38	0.71	Vertical
20	Fryer 2	17.07	394	5.01	0.61	Vertical
21	Corn Silo	2.43	Ambient	2.91	0.10	Vertical
21	Corn Unloaders	6.71	Ambient	16.82	0.15	Vertical

5. Conclusion

5.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

5.2 AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

6. Attachments

- A. Modeling request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score w/ toxic emissions summary
- D. Facility Summary
- E. AAQA results