

**San Joaquin Valley  
Unified Air Pollution Control District  
Best Available Control Technology (BACT) Guideline XXX\***

**Emissions Unit:** Snack Chip Seasoning System    **Industry Type:** Food Processing

**Equipment Rating:**    All

**Last Update:** October 6, 2022

Pollutant	Achieved-in-Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
PM <sub>10</sub>		At least 95% reduction of captured particulate matter emissions using wet scrubber, or equivalent dust control system	

\*BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

**\*This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

# New Best Available Control Technology Analysis

## Snack Chip Seasoning System

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## I. Introduction

Frito-Lay Inc. has proposed to install a seasoning system for the onion fried snack (OFS) manufacturing line. The potential emissions from the seasoning system are above 2 pounds per day and triggers Best Available Control Technology (BACT) for particulate matter emissions of 10 microns or less (PM<sub>10</sub>). Currently, the District BACT clearinghouse does not have a guideline to address BACT for the snack chip seasoner system. Therefore, a new BACT guideline is needed.

Snack chip seasoning system involves a seasoner, typically a circular drum or reel or similar other devices that uniformly coats seasoning on the snack chips, support equipment that supply seasoning from a vessel, and a duct or vacuum system to capture small particles that becomes air born during the application. In general, snack chips are produced, seasoned and cooled. Seasoning includes with various blend of spices or flavorings depending on the type of snack being produced on a snack manufacturing line.

## II. BACT Categories

This BACT guideline will belong to commercial food production category - snack chip seasoning system.

As stated in section I above, this BACT guideline can be applied to any commercial snack making operation that produces snack chips (e.g., potato chips, corn chips, etc.) and applying dry/semi-dry or liquid (oil emulsified) seasonings to the chips. The seasoner system generates particulate matter emissions during seasoning application operation. Therefore, discussion is limited to particulate matter emissions control only.

## III. Top-Down BACT Analysis

### A. BACT analysis for PM<sub>10</sub> Emissions

PM<sub>10</sub> is generated from applying seasoning to snack chips.

#### **Step 1 - Identify All Possible Control Technologies**

#### ***BACT Clearinghouse Survey:***

The following BACT clearinghouses were consulted to determine whether any seasoner at commercial snack making operation have been required to employ emission controls to reduce PM<sub>10</sub> emissions:

- EPA RACT/BACT/LAER clearinghouse
- CARB BACT clearinghouse
- South Coast AQMD BACT clearinghouse
- Bay Area AQMD BACT clearinghouse
- Sacramento Metro AQMD BACT clearinghouse
- San Joaquin Valley APCD BACT clearinghouse

EPA RACT/BACT/LAER clearinghouse

The database was searched using the following criteria:

Permit Date: 1/1/2012 to 8/28/2022

Process Type: All Process Types

Process Name Contains: Snack chip, snack, chip

Pollutant Name: All pollutants

No results were found.

CARB BACT clearinghouse

The database (<https://ww3.arb.ca.gov/bact/bactnew/rptpara.htm>) was searched using the following criteria:

Search: Snack

**BACT Guideline List** Data Last Updated 5/19/2022

Agency: San Joaquin Date Filter: 6/27/1991 to 2/3/2022

(All)  
 San Joaquin

snack

Agency	District ID	Date	Title	
San Joaquin	1.6.3	2/21/2020	Snack Chip Fryer with Indirect-Fired Heat Transfer System	●
San Joaquin	1.6.4	6/16/1999	Oven - Snack Food	●
San Joaquin	5.5.1	1/15/2003	Snack Chip Steam-heated Conditioning Units - Fryer and De-oiler	●

None of the guidelines identified above is for the snack chip seasoner system.

South Coast AQMD BACT clearinghouse

The existing determinations under “Part B: Section I – SCAQMD LAER/BACT” were reviewed (<http://www.aqmd.gov/home/permits/bact/guidelines/i---scaqmd-laer-bact>). No relevant BACT determination was found.

The existing determinations under “Part B: Section II – Other LAER/BACT” were reviewed (<http://www.aqmd.gov/home/permits/bact/guidelines/ii---other-laer-bact>). No relevant BACT determination was found.

The existing determinations under “Part B: Section III – Other Technologies” were reviewed (<http://www.aqmd.gov/home/permits/bact/guidelines/iii---other-technologies>). No relevant BACT determination was found.

The draft LAER Part B, Section I and III Draft Proposals were also reviewed ([http://www.aqmd.gov/docs/default-source/bact/proposed\\_updates\\_bact\\_partb\\_draft\\_2-2-18.pdf?sfvrsn=6](http://www.aqmd.gov/docs/default-source/bact/proposed_updates_bact_partb_draft_2-2-18.pdf?sfvrsn=6)). No relevant BACT determination was found.

Further, the draft Major Source, Part D Draft Proposals were also reviewed ([http://www.aqmd.gov/docs/default-source/bact/proposed\\_updates\\_bact\\_guidelines\\_partd\\_draft\\_2-2-18.pdf?sfvrsn=6](http://www.aqmd.gov/docs/default-source/bact/proposed_updates_bact_guidelines_partd_draft_2-2-18.pdf?sfvrsn=6)). No relevant BACT guideline was found.

#### Bay Area AQMD BACT clearinghouse

The BACT guidelines available on BAAQMD website were reviewed (<http://www.baaqmd.gov/permits/permitting-manuals/bact-tbact-workbook>).

No relevant BACT guideline was found.

#### Sacramento Metro AQMD BACT Clearinghouse

The BACT guidelines available on the AQMD website were reviewed ([http://www.airquality.org/businesses/permits-registration-programs/best-available-control-technology-\(bact\)](http://www.airquality.org/businesses/permits-registration-programs/best-available-control-technology-(bact)))

No relevant BACT guideline was found.

#### SJVAPCD BACT clearinghouse

The District BACT clearinghouse does not have a BACT guideline for a snack seasoning system.

### ***Survey of Federal, State and Local Rules and Regulations***

The following rules and regulations were consulted to determine whether any limits apply to seasoner at commercial snack making operation to reduce PM10 emissions:

- New Source Performance Standard
- CARB (no applicable rules)
- South Coast AQMD Regulation XI Rules
- Bay Area AQMD Rules
- Sacramento Metro AQMD Rules
- San Joaquin Valley APCD Regulation IV Rules

Title 40, Chapter I, Subchapter C, Part 60 – Standards of Performance for New Stationary Sources

There is no subpart that is applicable to snack chip production facilities. Therefore, no further discussion is required. Subparts are available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60?toc=1>

CARB (no applicable rules)

CARB’s website includes rules from local air district related to stationary sources. There was no rules applicable specifically to snack chip seasoning systems.

South Coast AQMD Regulation XI Rules

Rules in Regulation VII (<http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xi>) are reviewed. No relevant rule applicable to this were found, except for Rule 1155 applicable to particulate matter control devices. Table 1 (below) in the rule includes summary of the requirements. Visible emissions are required to be monitored at least once for the units vented to a scrubber. There are no emissions standard or other limitation listed in this rule.

Table 1  
Summary of Requirements

Fabric Filtration PM Air Pollution Control Equipment (baghouses)*			Other Fabric and Non-Fabric Filtration PM Air Pollution Control Equipment (dust collectors, cyclones, ESPs, wet scrubbers)*
Tier 1	Tier 2	Tier 3	n/a
≤ 500 square feet	> 500 – 7,500 square feet	> 7,500 square feet	n/a
Once-a-week visible emissions monitoring and recordkeeping (new, existing)	Once-a-week visible emissions monitoring and recordkeeping (new, existing)	Until BLDS is installed, once-a-week visible emissions monitoring and recordkeeping	Once-a-week visible emissions monitoring and recordkeeping (new, existing)
--	--	BLDS installation (new, existing)	--
--	--	Emission limit (0.01 gr/dscf)	--
--	--	Title V facilities conduct initial source test and test every five years relative to compliance with the emission limit.	--

\* Except as provided in subdivision (g) Exemptions.

Bay Area AQMD Rules

BAAQMD rules (<https://www.baaqmd.gov/rules-and-compliance/current-rules>) were reviewed. Regulation 6 Rule 2 – Commercial Cooking Equipment (12/5/07) was reviewed (<https://www.baaqmd.gov/~media/dotgov/files/rules/reg-6-rule-2-commercial-cooking-equipment/documents/rg0602.pdf?la=en&rev=42fc0966398c43f9b585572708a5ea70>). No requirement were found for snack seasoning equipment.

Sacramento Metro AQMD Rules

The AQMD regulation 4 was reviewed (<https://www.airquality.org/Businesses/Rules-Regulations>). Rule 404 – Particulate matter (11/20/1984), <http://www.airquality.org/ProgramCoordination/Documents/rule404.pdf>, limits particulate matter from a facility engaged in the preparation of canned and preserved fruits and vegetables (SIC group 203). Since the operations at Frito-Lay does not involve canning to preserve fruits and vegetables, the requirements in this rule are not applicable to this facility.

San Joaquin Valley APCD Regulation IV Rules

Regulation IV (<https://www.valleyair.org/rules/1ruleslist.htm#reg4>) was reviewed. There is no rule that applies to snack chip manufacturing operations.

***Survey of snack chip food manufacturing operation permits in the SJVAPCD:***

Permits database was queried to identify seasoners listed in active permits at snack chip manufacturing operations. The following units were identified:

Facility Name	Permit #	Equipment Description	Source test data/other relevant information
LA TAPATIA TORTILLERIA INC	C-3252-10-0	3.1 MMBTU/HR CASA HERRERA MODEL TCO-150 NATURAL GAS-FIRED OVEN IN SERIES WITH A CHIP COOLER AND A CONVEYORIZED OIL FRYER WITH VENTILATION HOOD AND OIL MIST ELIMINATOR, HEAT EXCHANGER, FEEDING <b>SEASONING</b> AND PACKAGING EQUIPMENT	No test data
FRITO-LAY INC	N-1919-1-10	UTC 1 (TORTILLA CHIP) CONSISTING OF TWO PERMIT EXEMPT PRE-COOKERS (STEAM-HEATED), TWO 3.2 MMBTU/HR (EACH) OVENS (DIRECT-FIRED), ONE COOKER (STEAM-HEATED), ONE MECHANICAL SEASONER AND A HEAT & CONTROL AMBIENT AIR COOLER SERVED BY A HIGH VELOCITY AIR FILTER. THE WET SCRUBBER SERVES THE <b>SEASONER</b> AND IS SHARED WITH PERMIT UNIT N-1919-2.	No test data
FRITO-LAY INC	N-1919-2-11	UTC 2 (TORTILLA CHIP) CONSISTING OF TWO STEAM-HEATED PRE-COOKER, TWO 5.58 MMBTU/HR (EACH) CASA HERRERA MODEL MACH IV XWXL OVENS (DIRECT-FIRED, INDUCED DRAFT), ONE STEAM-HEATED COOKER AND A MECHANICAL SEASONER. WET SCRUBBER SERVES THE <b>SEASONER</b> AND IS SHARED WITH PERMIT UNIT N-1919-1.	No test data

Facility Name	Permit #	Equipment Description	Source test data/other relevant information
FRITO-LAY INC	N-1919-3-9	LINE #1 (POTATO CHIP) CONSISTING OF STEAM POWERED HEAT EXCHANGER SYSTEM PROVIDING HEAT TO A COOKER THAT IS SERVED BY AN OIL MIST ELIMINATOR, AND A MECHANICAL <b>SEASONER</b>	July 25, 1996 source test results: 0.333 lb-PM/hr (average); production rate unknown
FRITO-LAY INC	N-1919-4-7	LINE #2 (LIGHT POTATO CHIP): ONE COOKER (WITH A STEAM-POWERED HEAT EXCHANGER) SERVED BY AN OIL MIST ELIMINATOR, TWO POST COOKER CONDITIONING UNITS (ONE HEATED BY STEAM, ONE HEATED BY PERMIT EXEMPT 0.5 MMBTU/HR DRYER DIRECT-FIRED BURNER) AND A MECHANICAL <b>SEASONER</b> .	No test data
FRITO-LAY INC	N-1919-7-8	LINE #5 (SUN CHIP) CONSISTING OF A HAMMERMILL SERVED BY AN AAF TYPE-W ROTOCLONE EMISSIONS CONTROL SYSTEM, THREE HAMILTON MODEL SA300GAL PERMIT-EXEMPT PRE-COOKERS (STEAM HEATED), AND A HEAT & CONTROL MODEL E41 FRYER (STEAM HEATED) SERVED BY A HEAT AND CONTROL MODEL ONE OIL MIST ELIMINATOR AND A <b>SEASONER</b>	No test data
FRITO-LAY INC	N-1919-8-7	FRIED CHEESE PUFF LINE (LINE #7) CONSISTING OF PNEUMATIC CORN MEAL TRANSFER SYSTEM SERVED BY A SHICK TUBE-VEYOR CORPORATION MODEL STS-26 DUST COLLECTOR, TWO AMERICAN PROCESS MODEL DRB-18 BLENDERS, SIX R & D MACHINE MODEL FCP EXTRUDERS EACH SERVED BY A COMMON AMERICAN AIR FILTRATION W-TYPE ROTOCLONE, ONE FRITO-LAY EQUIPMENT MODEL #77 CHAFF TUMBLER, ONE HEAT AND CONTROL STEAM-HEATED FRYER SERVED BY AN OIL MIST ELIMINATOR, ONE FRITO-LAY EQUIPMENT <b>SEASONER</b> , CONVEYORS AND PACKAGING EQUIPMENT	No test data
FRITO-LAY INC	S-2076-2-9	236 HP POTATO CHIP LINE #1 INCLUDING FRYER VENTILATION HOOD, ANDERSEN MODEL WAV-123 SCRUBBER, SCREEN CONVEYOR, SALTER AND <b>SEASONER</b>	No test data
FRITO-LAY INC	S-2076-3-9	CORN CHIP PRODUCTION LINE #1 INCLUDING FRYING VAT WITH VENTILATION HOOD AND MIST ENTRAINMENT SEPARATOR, EXHAUST FAN, FRYER HOOD LIFT, <b>SEASONER</b> , FRYER FINES REMOVAL SCREEN WITH AIR CLEANING SYSTEM, AND AMBIENT AIR COOLER SERVED BY HIGH VELOCITY AIR FILTER	No test data



Facility Name	Permit #	Equipment Description	Source test data/other relevant information
FRITO-LAY INC	S-2076-4-9	TORTILLA CHIP LINE #1 WITH CONVEYORIZED OIL FRYER, HEAT EXCHANGER, <b>SEASONER</b> , 6.83 MMBTU/HR NATURAL GAS FIRED CASA HERRERA OVEN, AND ONE AMBIENT AIR COOLER SERVED BY HIGH VELOCITY DUCT FILTER AND HEAT RECOVERY AND HOT WATER STORAGE SYSTEM SHARED WITH S-2076-5	No test data
FRITO-LAY INC	S-2076-5-9	TORTILLA CHIP LINE #2 WITH CONVEYORIZED OIL FRYER, HEAT EXCHANGER, <b>SEASONER</b> , 6.83 MMBTU/HR NATURAL GAS FIRED CASA HERRERA OVEN, AND ONE AMBIENT AIR COOLER SERVED BY HIGH VELOCITY DUCT FILTER AND HEAT RECOVERY AND HOT WATER STORAGE SYSTEM SHARED WITH S-2076-4	No test data
FRITO-LAY INC	S-2076-8-11	CORN CHIP PRODUCTION LINE #2 INCLUDING FRYING VAT WITH VENTILATION HOOD AND MIST ENTRAINMENT SEPARATOR, EXHAUST FAN, HEAT EXCHANGER, CIRCULATING PUMP, TRANSFER PUMP, FRYER HOOD LIFT, <b>SEASONER</b> , FRYER FINES REMOVAL SCREEN WITH AIR CLEANING SYSTEM, AND AMBIENT AIR COOLER SERVED BY HIGH VELOCITY AIR FILTER	No test data
FRITO-LAY INC	S-2076-21-16	9.56 MMBTU/HR TORTILLA CHIP LINE #3, INCLUDING: 9.56 MMBTU/HR OVEN, FRYER, <b>SEASONER</b> , AIR COOLER, AND <b>ON MACHINE SEASONING (OMS) SYSTEM</b> SERVED BY DUST COLLECTOR	No test required; OMS served by dust collector (99%); permitted limit - 0.02 lb-PM <sub>10</sub> /hr; permitted chip production - 3,300 lb/hr;
JIMMYASH LLC	S-8715-1-0	POTATO CHIP PRODUCTION OPERATION CONSISTING OF A 5.0 MMBTU/HR (OUTPUT) / 6.4 MMBTU/HR (INPUT) VAPOR POWER MODEL OG-5937-SHK-50, SN 24057, THERMAL FLUID HEATER WITH A POWER FLAME MODEL NP2-G-840, SN 091455357 ULTRA-LOW NOX BURNER; AND PERMIT EXEMPT RAW POTATO RECEIVING, PRE-TREATMENT, BLANCHER, OIL-DIP SEASON, CHIP DRYER, <b>SEASONING SYSTEM</b> , AND CHIP PACKAGING LINE (LESS THAN 2.0 LB PM10/DAY)	No test data

## **Web Search**

Permits for Saratoga Potato Chips LLC, at 6923 Lincoln Parkway, Fort Wayne, Indiana 46802 (<https://permits.air.idem.in.gov/35885d.pdf>) indicates that a dust filter controls particulate matter from all seasoners. It is unknown what type of dust filter controls are being used at this site.

## **List of Control Options:**

Based on the search of *BACT Clearinghouse Survey, survey of snack chip food manufacturing operation permits in the SJVAPCD, and web search* shown above, the following emission control options are used to reduce particulate matter emissions from seasoning application operation:

- Use of a dust collector
- Use of a wet scrubber

The use of these technologies have been in use at Frito-Lay, Inc. (S-2076 and N-1919). Therefore, these technologies are considered to be an as achieved-in-practice standard for the seasoner system. To District's knowledge, control efficiencies of these devices have not been determined.

The technical specification sheet for the wet scrubber under project N-1220099 indicates 95% control of particles equal to or greater than 2.0 micron diameter in size, and 99% for particles equal to or greater than 10.0 micron diameter in size.

Further, the application data for the dust collector serving the seasoner system under S-2076-21 indicates a control efficiency 99.99% for PM<sub>10</sub> emissions. The application does not specify control efficiency for various particle size ranges. No testing was required under S-2076-21-13 to verify the claimed control efficiency.

The District is taking a conservative approach for snack chip seasoner system and assumes that a wet scrubber or dust collector (with polyester bags) is expected to achieve at least 95% for the PM<sub>10</sub> emissions. This standard is deemed technologically feasible at this time and will be administratively moved to achieved-in-practice upon successful compliance demonstration with the required standard. Also, if control efficiency in the actual test is found to be higher than 95%, then those results will be administratively incorporated into the achieved-in-practice standard after considering reasonable margin of compliance.

Pollutant	Achieved in Practice	Technologically feasible	Alternate Basic Equipment
PM <sub>10</sub>		At least 95% reduction of captured particulate matter emissions using wet scrubber, or equivalent dust control system	

### **Step 2 - Eliminate Technologically Infeasible Options**

There is no technologically infeasible option listed in Step 1. Therefore, no further discussion is required.

### **Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. 95% control using wet scrubber or equivalent dust control system

### **Step 4 - Cost Effectiveness Analysis**

Frito Lay-Inc. has proposed to reduce at least 95% of the particulate matter entering in wet scrubber system. Thus, no cost effectiveness analysis is required.

### **Step 5 - Select BACT**

BACT is to reduce at least 95% of the captured emissions. The applicant has proposed to comply with this BACT standard; therefore, BACT requirements are satisfied.

## **IV. Recommendation**

Upon approval, the attached guideline is recommended to be adopted into District's BACT Clearinghouse.

### **Appendices**

Appendix A: Draft BACT Guideline

**Appendix A**  
**Draft BACT Guideline**

**San Joaquin Valley  
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**Emissions Unit:** Snack Chip Seasoning System    **Industry Type:** Food Processing

**Equipment Rating:**    All

**Last Update:**    October 6, 2022

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