CATEGORY TYPE: **STERILIZER**

BACT Category: Small Emitter BACT (PTE < 10 lb/day)

BACT Determination Number: 335	**BACT Determination Date: 2/14/2024**	**ACTIVE**

Equipment Information

Permit Number: 27695
Equipment Description: BOTTLE STERILIZER
Unit Size/Rating/Capacity: < 10 lbs/day VOC
Equipment Location: HP HOOD, LLC
8340 BELVEDERE AVE SACRAMENTO, CA

BACT Determination Information

District Contact: Jeff Weiss Phone No.: (916) 704-9995 email: Jweiss@airquality.org

ROCs	**Standard:**	Refer to Comment Section (below)
	Technology Description:	Refer to Comment Section (below)
	Basis:	Achieved in Practice
NOx	**Standard:**	
	Technology Description:	
	Basis:	
SOx	**Standard:**	
	Technology Description:	
	Basis:	
PM10	**Standard:**	
	Technology Description:	
	Basis:	
PM2.5	**Standard:**	
	Technology Description:	
	Basis:	
CO	**Standard:**	
	Technology Description:	
	Basis:	

Comments Sterilization of food containers and production equipment is limited to 200 g/l VOC or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3
Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3

777 12th Street, St. 300

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento, CA 95814

BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

DETERMINATION NO.: 335

DATE: February 14, 2024

ENGINEER: Jeff Weiss

Category/General Equip Description: Bottle Sterilizer (Small Emitter BACT)

Equipment Specific Description: Bottle Sterilizer < 10 lb/day VOC

Equipment Size/Rating: VOC PTE < 10 lb/day (Small Emitter BACT)

Previous BACT Det. No.: #274

This BACT determination will update Determination #274 for Bottle Sterilizers that was made on March 9, 2021. The equipment category is for a bottle sterilization process for food containers at HP Hood (A/C 27696). It has been revised for a VOC emission of less than 10 lb/day. A review of the EPA, CARB, SMAQMD, SCAQMD, SJVAPCD, BAAQMD, and SDAPCD BACT clearinghouses was performed according to the District's draft BACT Guidelines (6/22). Any applicable rules and regulations from the aforementioned air pollution control agencies were also reviewed that apply to this type of operation.

The District's Small Emitter and "Otherwise-Exempt Equipment" BACT Determinations policy states that units which are classified as small emitters (less than 10 lbs/day of VOC, NOx, SOx, PM10, or PM2.5 and less than 550 lbs/day of CO) and are located at non-major stationary sources are only required to meet BACT standards that have been achieved in practice. Therefore, this BACT determination will only be based on what is achieved in practice and will be only applied to small emitters at non-major sources. BACT will be evaluated on a case-by-case basis for units that do not fit these criteria.

After noticing some other options in SMAQMD Rule 466 Solvent Cleaning for meeting rule limits, this final document will incorporate these alternatives as also achieved in practice. Since the previous District BACT #274 also relied on the limits of this rule, the final BACT #335 will incorporate these options for equivalency. See discussion in the SMAQMD BACT and Rules section on pages 2 & 3.

BACT/T-BACT ANALYSIS

A. ACHIEVED-IN-PRACTICE (Rule 202, §205.1a)

The following control technologies are currently employed as BACT for bottle sterilizer processes by the following air pollution control districts and state and federal agencies.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

RACT/BACT/LAER
Source: https://cfpub.epa.gov/rblc/index.cfm?Action=search.BasicSearch

None.

RULE Requirements
Sources: https://www.epa.gov/stationary-sources-air-pollution/new-source-performance-standards

https://www.epa.gov/stationary-sources-air-pollution/national-emission-standards-hazardous-air-pollutants-neshap-8

None.

CALIFORNIA AIR RESOURCES BOARD

BACT
Source: https://ww2.arb.ca.gov/BACT-Tool

None.

RULE REQUIREMENTS
Source: https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures

None.

SACRAMENTO METROPOLITAN AQMD

BACT
Listed under BACT Determination #274 – Bottle Sterilizers (3-9-21)

Sterilization of Food Containers:
Sterilization of food containers is limited to 200 g/l VOC or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95%.

This BACT standard was based on the same standard required per Rule 466. However, the 50 ppm option was erroneously omitted for the minimum control efficiency as allowed in the District Rule 466. It is important to note that at low concentrations of VOC, it is difficult to

achieve a 95% minimum control efficiency. For added flexibility in allowing alternative non-combustion control devices, this BACT determination will add this option to the BACT analysis.

Sterilization of Production Equipment
Sterilization of food product manufacturing equipment is limited to 200 g/l or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95%.

This BACT standard was also based on the same standard required per Rule 466. However, the 50 ppmv option was erroneously omitted for the minimum control efficiency as allowed in the District rule. This alternative will likewise be considered as an option to the BACT analysis.

Cleaning of Production Equipment
Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution.

RULE REQUIREMENTS
Source: Rule 466 – Solvent Cleaning (10/28/10)

Rule 466 – Solvent Cleaning
Sterilization of food manufacturing and processing equipment is limited to 200 g/l (1.68 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution. In addition, Section 304.3 requires that the air pollution control equipment shall result in VOC emissions per calendar quarter no greater than would have resulted from compliance with the 200 g/l (1.68 lb/gal) VOC limit for Sterilization, as calculated by the following equation:

$$\left[1-\left(\frac{CE}{100}\right)\left(\frac{CL}{100}\right)\right]\sum_{i=1}^{n} ACT_i(U_i) \le \sum_{i=1}^{n} LIM_i(U_i)$$

Where: CE = Control device efficiency, % by mass
CL = Collection efficiency, % by mass
ACTi = Actual VOC content of material "i," grams per liter
LIMi = Applicable VOC limit for material "i" in Section 301, grams per liter
Ui = Usage of material "i," liters per calendar quarter

Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a minimum collection efficiency of 90% and either a minimum destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution. In addition, the air pollution control equipment shall result in VOC emissions per calendar quarter no greater than would have resulted from compliance with the 25 g/l (0.21 lb/gal) VOC limit for General Cleaning, as calculated by the same equation previously listed.

These standards do not apply to the sanitizing of products that are labeled and applied to food-contact surfaces that are used to process dry and low-moisture food products and are not rinsed prior to contact with food.

SOUTH COAST AQMD

BACT
Source: SCAQMD BACT Guidelines for Non-Major Polluting Facilities (9/2/22)

None.

RULE REQUIREMENTS
Source: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book

Rule 1131 – Food Product Manufacturing and Processing Operations (6/6/03) Sterilization of food product manufacturing equipment is limited to 200 g/l or must vent to an APC device with a minimum collection efficiency of 90% and a minimum destruction efficiency of 95%.

Operations exclusively using solvents containing no more than 50 grams of VOC per liter of material are not subject to any provision of this rule.

Rule 1171 – Solvent Cleaning (5/1/09)
Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a minimum collection efficiency of 90% and either a minimum destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution.

SAN DIEGO COUNTY APCD

BACT
Source: https://www.sdapcd.org/content/dam/sdc/apcd/PDF/Misc/APCD_bact.pdf (6/11)

None.

RULE REQUIREMENTS
Source: https://www.sdapcd.org/content/sdapcd/rules.html

None (Note: San Diego Rule 1203 – Ethylene Oxide Sterilizers and Aerators (7/26/00) pertains only to the control of ethylene oxide gas.)

BAY AREA AQMD

BACT
Source: Bay Area BACT Clearinghouse

None.

RULE REQUIREMENTS
Source: http://www.baaqmd.gov/rules-and-compliance/current-rules

Regulation 8, Rule 4 - General Solvent and Surface Coating Operations (10/16/02)

Cleaning solvents must not exceed 50 g/l (0.42 lb/gal) as applied or be vented to a control device with a capture/control efficiency of at least 85%. This rule does not apply to sterilization activities.

SAN JOAQUIN VALLEY APCD

BACT
Source: San Joaquin Valley BACT Clearinghouse

None.

RULE REQUIREMENTS
Source: https://www.valleyair.org/rules/1ruleslist.htm#reg4

Rule 4663 – Organic Solvent cleaning, Storage, and Disposal (9/20/07)
Whenever organic solvent use exceeds 55 gallons/year, maintenance cleaning activities must be limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and have either a destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution.

The following control technologies from the aforementioned air pollution control agencies have been identified and are ranked based on stringency:

Summary of Achieved-in-Practice Control Technologies	
Pollutant	Control Technology
VOC	Sterilization of Food Containers: Sterilization of food containers is limited to 200 g/l VOC or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (A) (SMAQMD)
	Sterilization of Production Equipment 1. Sterilization of food manufacturing and processing equipment is limited to 200 g/l (1.68 lb/gal) or must vent to an APC device with a minimum collection efficiency of 90% and either a minimum destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (SMAQMD)

Summary of Achieved-in-Practice Control Technologies	
Pollutant	Control Technology
VOC	2. Sterilization of food product manufacturing equipment is limited to 200 g/l or must vent to an APC device with a minimum collection efficiency of 90% and a minimum destruction efficiency of 95%. Operations exclusively using solvents containing no more than 50 grams of VOC per liter of material are not subject to any provision of this rule. (SCAQMD)
	<u>Cleaning of Production Equipment</u> 1. Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (SMAQMD, SCAQMD, SJVAPCD) 2. Cleaning solvents must not exceed 5 tons/year VOC or be vented to a control device with a minimum capture/control efficiency of at least 85%. This rule does not apply to sterilization activities. (BAAQMD)

(A) See discussion on Alternative Control Strategies in Sec. B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE, for the addition of this option.

The following has been identified as the most stringent, achieved-in-practice control technology.

Best Control Technologies Achieved	
Pollutant	Control Technology
VOC	<u>Sterilization of Food Containers</u>: Sterilization of food containers is limited to 200 g/l VOC or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (SMAQMD) <u>Sterilization of Production Equipment</u> Sterilization of food product manufacturing equipment is limited to 200 g/l or must vent to an APC device with a minimum collection efficiency of 90% and a minimum destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (SMAQMD) <u>Cleaning of Production Equipment</u> Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a destruction efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 (SMAQMD)

B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.)

The District's Small Emitter and "Otherwise-Exempt Equipment" BACT Determinations policy (5/16/19) states that units that are classified as small emitters and are located at non-major stationary sources are only required to meet BACT standards that have been achieved-in-practice. A small emitter is a unit that emits less than 10 lb/day of VOC, NOx, SOx, PM10, or PM2.5 or less than 550 lb/day of CO and is located at a non-major stationary source. BACT will be evaluated on a case-by-case basis for units that do not fit these criteria.

Since this BACT determination is for equipment that qualify as small emitters, only those technologies that have been achieved-in-practice will be considered. Therefore, this section does not apply.

Alternative Control Strategies:

As previously stated, the Rule 466 option for achieving the 95% minimum control efficiency by having a VOC concentration output of less than 50 ppm calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3 should be added to the BACT standard for Sterilization of Food Containers. As noted, it is important to allow the low concentrations of VOC standard due to the difficulty to achieve a 95% minimum control efficiency without the use of combustion control devices. This would give more control device alternative to combustion control devices. The original basis of BACT 274 for this category was the Rule 466 standards.

C. SELECTION OF BACT:

BACT will be the most stringent emissions strategy that is deemed to be achieved-in-practice.

BACT for a Bottle Sterilizer < 10 lb/day VOC		
Pollutant	Control Technology	Source
VOC	Sterilization of Food Containers and Production Equipment: Sterilization of food containers and production equipment is limited to 200 g/l VOC or must vent to an APC device with a minimum collection efficiency of 90% and a minimum control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3	SMAQMD
	Cleaning of Production Equipment Maintenance cleaning activities are limited to 25 g/l (0.21 lb/gal) or must vent to an APC device with a collection efficiency of 90% and either a control efficiency of 95% or have an output of less than 50 ppmv calculated as carbon with no dilution and compliance with Rule 466 Sec. 304.3	SMAQMD

APPROVED BY: *Brian F Krebs* **DATE:** 02-14-2024