State of Oregon
Department of
Environmental
Quality

TITLE V OPERATING PERMIT REVIEW REPORT

Owens-Brockway Glass Container Inc.
9710 NE Glass Plant Road
Portland, OR 97220

SIC	3221
NAICS	327213
EPA ICIS-Air ID	OR0000004 105101876

Source Categories (Part and code)	NA

Compliance and Emissions Monitoring Requirements:

Unassigned emissions	
Emission credits	
Compliance schedule	Yes
Source test [date(s)]	As specified

COMS	Yes
CEMS	
PEMS	
Ambient monitoring	

Reporting Requirements

Annual report (due date)	Feb. 15
Emission fee report (due date)	Feb. 15
SACC (due date)	2/15 & 7/31
Quarterly report (due dates)	As specified

Monthly report (due dates)	As specified
Excess emissions report	As specified
Other reports (type)	

Air Programs

NSPS (list subparts)	CC
NESHAP (list subparts)	SSSSSS (6S)
CAM	
Regional Haze (RH)	Yes
Synthetic Minor (SM)	
Part 68 Risk Management	
CFC	
RACT	

TACT	
Title V	Yes
ACDP (SIP)	
Major HAP source	
Federal major source	Yes
NSR (by pollutant)	
PSD (by pollutant)	
Acid Rain	

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LIST OF ABBREVIATIONS USED IN THE REVIEW REPORT

AQMA	Air Quality Management Area
ASTM	American Society of Testing and Materials
CAO	Cleaner Air Oregon
CAM	compliance assurance monitoring
CCF	Catalytic Ceramic Filter
CEMS	continuous emissions monitoring system
CFR	Code of Federal Regulations
CH_4	methane (greenhouse gas)
CMS	continuous monitoring system
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
COMS	continuous opacity monitoring system
DEQ	Oregon Department of Environmental Quality
dscf	dry standard cubic feet
EF	emission factor
EJ	Earthjustice, nonprofit organization
EPA	United State Environmental Protection Agency
EU	emissions unit
FCAA	Federal Clean Air Act
GHG	greenhouse gas
gr/dscf	grains per dry standard cubic feet
HAP	hazardous air pollutant
ID	identification code
I&M	inspection and maintenance
LPG	liquefied petroleum gas
MAO	Mutual Agreement and Final Order
MB	material balance
Mlb	1000 pounds
MM	million
N_2O	nitrous oxide (greenhouse gas)
NA	not applicable
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standard for Hazardous Air Pollutants
NO_x	oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
O_2	oxygen
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statutes
O&M	operation and maintenance
Pb	lead
PCD	pollution control device
PEMS	predictive emissions monitoring system
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in size
$PM_{2.5}$	particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PSEL	Plant Site Emission Limit
SER	Significant emissions rate
SFO	Stipulated Agreement and Final Order
SO_2	sulfur dioxide
ST	source test
VE	visible emissions
VMT	vehicle mile traveled
VOC	volatile organic compound

INTRODUCTION

1. Pursuant to OAR 340-218-0050(6)(c), 340-218-0200(1)(a)(D) and Permit condition G24.b, DEQ is reopening and revising the permit to assure compliance with the applicable requirements. Owens-Brockway Glass Container Inc. (Owens-Brockway) had the following compliance history since the last permit issued on December 10, 2019:

   a. On January 24, 2020, DEQ issued a Notice of Civil Penalty Assessment and Order No. AQ/V-NWR-2019-260, citing the permittee for violating the 20% opacity limit and ordering the permittee to reset the NSPS opacity values for its furnaces based on the latest source testing results. The order became final by default, and the NSPS opacity value for Furnace D (GM4) was determined to be 4.7% based on the May 2019 source test results. A subsequent test performed in June 2020 determined that the 99 percent upper confidence level of a normal distribution of average opacity values was 6.3%. This permit incorporates the 6.3% opacity value pursuant to 40 CFR 60.293(e).
   b. On June 8, 2020, the permittee shut down Furnace A (GM1); and on July 28, 2021, the permittee filed a Title V Administrative Amendment application (No. 33235) to remove GM1 and all conditions applicable to GM1 from the Permit.
   c. On April 24, 2021, Earthjustice, a non-profit Environmental organization, submitted a memorandum to DEQ raising concerns about the facility's emissions potentially causing or contributing to exceedances of short-term National Ambient Air Quality Standards (NAAQS), specifically the 1-hr SO_2, 1-hr NO_2, and 24-hr $PM_{2.5}$ standards. After evaluating Earthjustice's analysis, on August 27, 2021, DEQ requested the permittee to submit a modeling protocol to evaluate the facility's potential contribution to NAAQS exceedances. Following DEQ's review of the modeling protocol, the permittee submitted the modeled results to DEQ on December 17, 2021, which DEQ approved. Pursuant to the modeling results and OAR 340-226-0140(1) and OAR 340-202-0050(2), this permit incorporates production limits to ensure the facility's emissions (without CCF control) do not cause or contribute to violations of one-hour NO_2, one-hour SO_2, and 24-hour $PM_{2.5}$ NAAQS.
   d. On May 10, 2021, EPA issued Order No. X-2020-2, responding to Earthjustice's petition seeking EPA's objection to the Title V permit that was issued by DEQ on December 10, 2019. EPA responded to the Petitioners' request by granting in part and denying in part, and directed DEQ to revise the permit. This proposed permit addresses the deficiencies identified by EPA in the Petition Order. (See paragraphs 10.d through 10.g and 14.b of the Review Report for further discussion of how the permit addresses the Petition Order).
   e. On June 3, 2021, DEQ issued Notice of Civil Penalty Assessment and Order No. AQ/V-NWR-2020-208 for violations of the Total PM limit (0.10 gr/dscf) and the 20% opacity limit, and requiring the permittee to install PM pollution controls Furnace D (GM4). DEQ and the permittee resolved the enforcement action in Mutual Agreement and Final Order (MAO) No. AQ/V-NWR-2020-208 that was fully executed on October 22, 2021. The MAO requires the permittee to either shut down or install PM pollution controls on Furnace D (GM4) according to a

compliance schedule. The MAO also includes an 8.5% interim opacity limit to mitigate further violations of the 0.10 gr/dscf Total PM limit until the furnace is shut down or pollution controls are installed.

f. On August 9, 2021, the permittee and DEQ executed Stipulated Agreement and Final Order No. 26-1876 (Regional Haze SAFO) to be compliant with the Regional Haze program. Regional Haze is a program that large stationary sources of air pollution are required to go through in order to improve visibility in certain areas in Oregon and neighboring states. The Regional Haze SAFO requires the permittee to shut down Furnace A (GM1) permanently, remove the allowable emissions (i.e., PSEL) for Furnace A, Furnace B and Furnace C from the total netting basis of the facility and requires reductions in Plant Site Emissions Limits as of January 1, 2022. This permit action incorporates requirements of the Regional Haze SAFO.

g. In this permit reopening, DEQ also revised emission factors for the remaining Furnace D (GM4) based on source testing conducted in May 2019, June 2020 and August 2020.

h. On June 30, 2022, Owens-Brockway submitted a Construction Air Contaminant Discharge Permit (ACDP) application (No. 34116) to install a Catalytic Ceramic Filter (CCF) pollution control system to abate PM, NO_X, and SO_2 emissions from Furnace D (GM4) as required in MAO No. AQ/V-NWR-2020-208. DEQ issued Construction ACDP No. 26-1876-CS-01 on November 9, 2022, authorizing construction of the CCF system. This permit includes applicable operation requirements for Furnace D and CCF once the construction of CCF is complete.

i. Owens Brockway submitted a complete Title V renewal application on 11/30/2023.

j. On January 23, 2024, DEQ issued a Final Order and Stipulated Demand Notice, AQ-TV-NWR-2023-149, in the amount of $54,000 for violations of the Mutual Agreement and Final Order (executed on 10/21/2021) for violated the MAO interim opacity limit (8.5% for a three-hour block) on three occasions in June 2023.

2. Owens-Brockway has been determined to be an existing source for the purposes of Cleaner Air Oregon in accordance with OAR 340-245-0020 because the air quality permit application was submitted and deemed complete, or construction had commenced on this facility prior to November 16, 2018. As an existing source the permittee is required to perform a risk assessment in accordance with OAR 340-245-0050, and demonstrate compliance with the Risk Action Levels for an “Existing Source” in OAR 340-245-8010 Table 1 when called in by DEQ. Owens-Brockway has been called in and therefore, has performed a risk assessment.

   On April 9, 2022, Owens-Brockway submitted a complete Cleaner Air Oregon Permit Application. DEQ approved Owens-Brockway’s revised Level 4 Risk Assessment as a final step on September 7, 2022. As a result of the assessment, the permittee proposed to limit arsenic and lead emissions as well as glass production rate in order to lower the risk level. This draft permit will incorporate these limits.

3. In addition to the parts of the compliance issues addressed by the EPA as a result of the petition described in Section 1 of this review report, the following changes are included in the proposed permit:

Permit Condition No.		Description of Change	Reason for Change
New	**Old**		
2	2	Included Cleaner Air Oregon requirements as State-only enforceable	Administrative change
3	3	EU Description Table Removed Furnace A (GM1) from the EU4 grouping	Administrative change to EU ID Table that reflects Requirements of the DEQ's Order and Regional Haze SAFO
3	3	EU Description Table Separated mold-swabbing operations from EU5 to its own unit, EU9.	The mold swabbing is a separate operation and it is not controlled by HEST Abatement (HEST-A)
3	3	EU Description Table Identify plasma cutting and heated parts cleaning as emissions unit for CAO requirements	Administrative change
4	--	Created a separate Emission Unit table to include a CCF and associated emission units.	New/future CCF and devices identified, MAO No. AQ/V-NWR-2020-208
4 - 11	5 - 12	Reorganized and renumbered	Administrative
13 -14	--	Added annual, hourly and daily glass production rate limits and monitoring requirements.	NAAQS Compliance
15	--	Added a modeling analysis requirement to demonstrate compliance with the short term NAAQS after CCF.	NAAQS Compliance
16	--	CCF Installation Schedule	Construction ACDP Requirements
16.b	--	This Notification also meets the NSPS notification required in 60.296(a)	
17	14	Removed Furnace A (GM1) from the grain load standard requirement.	Furnace A (GM1) is removed from the permit.
18.a	35 *(for grain loading)*	Changed the required testing frequency on GM4 without CCF from every 5 years to annually.	Per EPA's Petition Order No. X-2020-2.

Permit Condition No.		Description of Change	Reason for Change
New	Old		
18.b	--	Added a source testing requirement for Furnace D (GM4) after installing a CCF.	DEQ initiated for compliance verification testing
19.a	12	Removed Furnace A (GM1) form the requirement.	The emission unit is removed from the permit.
19.b	--	New stringent NSPS PM limit of 0.2 lbs/ton applicable to GM4 operating with the CCF control, 40 CFR 60.292	MAO No. AQ/V-NWR-2020-208
19.c	--	Added a minimum filterable PM control efficiency of 95% for the CCF.	MAO No. AQ/V-NWR-2020-208
20.a	13	The frequency of PM source testing increased from 5-year interval to annually until CCF installed	Per EPA's Petition Order No. X-2020-2.
20.b	--	Added filterable PM testing requirements for Furnace D (GM4) with the CCF control system	DEQ initiated for compliance assurance, MAO No. AQ/V-NWR-2020-208
20.c	--	Added an accessible sampling ports installation requirement on CCF.	Source testing specifications, OAR 340-212-0120(2)(a)
20.d	13.a	Modified the PM emission calculation equation for EU4 to add emissions from GM4 Refiner and GM4 Forehearth.	To include emissions from natural gas combustion in the refiner and the forehearth.
20.e & f	13.b & c	Renumbered	Administrative
21, 22	15, 16	Administrative updates and Re-numbered	Administrative
21.e	15.e & f	Added a specific opacity value of 6.3% established per June 2020 testing	Per 40 CFR 60.293(e)
23	--	Added an interim opacity limit of 8.5% until the CCF is operational. COMs monitoring, recordkeeping and reporting requirements are also added based on 3-hour block averaging.	Enhanced compliance assurance – EPA Order responding to EJ Petition; and required per MAO No.AQ/V-NWR-2020-208

Permit Condition No.		Description of Change	Reason for Change
New	**Old**		
24	17	Added specific emission points for visible emission limits including refiner and forehearths. Removed GM1 from this standard.	Needed to include emission points from refiner and forehearths. GM1 is removed from the permit.
25.a-25.d, 25.g	18.a-18.d, 18.e	Renumbered	Administrative
25.e, 25.f	--	Added a weekly inspection requirement for COMS and preventive maintenance requirements to ensure accuracy of COMS.	Compliance assurance – DEQ initiated, MAO No. AQ/V-NWR-2020-208
26	--	Added visible emissions monitoring requirements for GM4 with CCF.	New visible emissions monitoring method after COMS is no longer required
27	19	Revised corrective action requirements to reflect the DEQ enforcement order. COMS related monitoring sunsets after CCF.	DEQ initiated for enhanced monitoring and additional compliance assurance per MAO No. AQ/V-NWR-2020-208
28	20	Renumbered and revised to incorporate an equivalent/ alternative NESHAP limit and testing.	DEQ initiated Administrative
29	21	Requires additional testing to determine compliance with the NESHAP subpart 6S production-HAP limit when glass that has the potential to emit higher HAP (e.g., Cr) emissions than previously tested glass. See item 14 of this review report for explanation: and renumbered.	Additional compliance assurance measure – DEQ initiated in response to EPA recommendation
30	22	Renumbered	Administrative
30.h	--	Requires additional monitoring and reporting after CCF installed	NESHAP Requirements
--	Reserved Blank Cond. 23	Removed	Administrative
31	24	Updated PM emission standards for EU6 & EU7	Rule updates
32	25, 30.h	Combined and renumbered	Administrative

Permit Condition No.		Description of Change	Reason for Change
New	**Old**		
33	26	Removed the fuel oil sulfur limits and require boiler to burn natural gas only	Administrative
--	27	Removed fuel oil analysis requirements	Administrative
34	28	Omit the 0.24 gr/scf limit that expired on 12/31/2019	Administrative
35	29	Re-numbered	Administrative
32, 36	30	Re-numbered and relocated 30.h (waiver for natural gas burning equipment) to No.32	Administrative
37	--	Added CCF parametric monitoring NH_3 testing requirements	Administrative
38	31	Re-numbered	Administrative
39.a	32	Revised annual PSEL effective January 1, 2022	Reduced PTE, SAFO and MAO requirements
39.b	--	Removed PM, SO_2, and NOx PSEL for Furnaces GM1, GM2, GM3 from netting basis. Refer to emissions detail sheet	
39.c	--	Added a condition to limit total combined PSEL for PM_{10}, NO_x, and SO_2 to 275 tons/yr effective July 31, 2025	Stipulated Agreement and Final Order No. 26-1876, fully executed on August 9, 2021
39.d	--	Added another set of PSEL after the CCF become operable.	Voluntary reduction of SO_2 and NO_X
40.a **40.b.i**	33.a 33.b.i	Edited the monitoring and recordkeeping table for clarity: Separated EU9 swabber from EU5 HEST.	Administrative - EU9 swabber is a manual operation separate from the EU5 baghouse
40.b.ii	33.b.ii	Omit references to GM1 and all emission factors associated with GM 1.	Removed GM1 from the permit.
40.b.ii	33.b.ii	Updated the emission factor table. Based on 2019 and 2020 source test results, emission factor for Pb is revised from $1.65x10^{-3}$ to $5.6x10^{-3}$ lbs/ton; and emission factors for PM and SO_2 are revised from 0.6 and 2.1 to 0.8 and 2.9 lbs/ton respectively. PM	Emission factors were revised due to most recent stack testing. Compliance Assurance with PSEL, OAR 340-222-0035(2)(a)

Permit Condition No.		Description of Change	Reason for Change
New	**Old**		
		and SO_2 emissions depend on the type of raw materials used, % sulfur-compound in salt cake for an example, and the recent tests were performed using types of raw materials currently being used in lieu of old recipe. All EFs for defunct furnace GM1 are deleted.	
40.b.ii	33.b.ii	Based on all previous source test results, including 2019 and 2020 source test results, the NO_x emission factor for GM4 remains at 3.7 lbs/ton.	Compliance Assurance with PSEL, OAR 340-222-0035(2)(a)
40.b.ii	33.b.ii	The previous AP-42 Natural Gas combustion EFs for CO and VOC are replaced with the 2019 source test results.	Compliance Assurance with PSEL, OAR 340-222-0035(2)(a)
40.b.iii	--	Added an emission factor table for CCF based on the manufacturer's information (to be verified by source testing after CCF installation.).	Requirement for a CCF installation.
40.b.iv	33.b.iii	Added R4, FH3 and FH4 to the natural gas combustion units table. Removed EU7 Boiler EFs for distillate oil.	Identified additional natural gas burning emission units.
41	--	Incorporated Cleaner Air Oregon requirements that include arsenic and lead emissions limits and glass production cap	Cleaner Air Oregon Requirements
42	--	Added Greenhouse Gas Emissions Reporting Condition	Administrative
43	--	Added an Emissions Fee Condition	Administrative
44 – 45	34 - 35	Renumbered	Administrative
45	35	Updated the emission factor verification source testing requirements.	Due to the CCF installation requirements.
46 – 61	36 - 52	Reformat and Re-numbered	Administrative
57.b.vi, vii	--	Annual Emissions Reporting	Administrative
57.b.viii	--	Revised to add CAO Reporting	Administrative
G30 – G35	--	New CAO General Conditions	Administrative

Permit Condition No.		Description of Change	Reason for Change
New	Old		
Numbering & Cross-references		With additional conditions, the permit numbers and cross references were updated throughout the permit	Administrative
Conditions and references to glass melting furnace GM1		With permanent removal of GM1, references to GM1 are purged from the permit.	Administrative

4. In accordance with OAR 340-218-0120(1)(f), this review report is intended to provide the legal and factual basis for the draft permit conditions. In most cases, the legal basis for a permit condition is included in the permit by citing the applicable regulation. The factual basis for the requirement may be the same as the legal basis. However, when the regulation is not specific and only provides general requirements, this review report intends to provide a more thorough explanation of the legal and factual basis for the draft permit conditions.

PERMITTEE IDENTIFICATION

5. Owens-Illinois, Inc., through its subsidiaries, manufactures and sells glass containers to food and beverage manufacturers all over the world. Glass containers are offered in a range of sizes, shapes, and colors. The company sells its products directly to customers or through distributors. Owens-Illinois, Inc. was founded in 1903 and is headquartered in Perrysburg, Ohio. Owens-Brockway Glass Container, Inc., a subsidiary of Owens-Illinois, Inc., owns and operates a glass container manufacturing plant in Portland, Oregon regulated under Title V permit no. 26-1876-TV-01. The Owens-Brockway plant occupies approximately 78 acres of property located at 9710 NE Glass Plant Road, adjacent to Interstate-205.

FACILITY/PROCESS DESCRIPTION

6. The Owens-Brockway glass plant produces a variety of glass bottles and jars. At present time beer and wine bottles are the core products manufactured at the facility.

Batch House – Raw Materials Handling (EU1)

Railcars and trucks deliver the raw materials such as sand, salt cake, limestone and soda ash to the plant. Raw materials are gravity fed into an unloading pit and the elevators transport the materials to designated storage silos in the batch house. Individual components are weighed on scale located under each silo and conveyed to the mixer where cullet (i.e., recycled glass) is added last to minimize wear and tear of the mixer. The batch baghouse abates dusts generated during the raw materials transport and mixing operations.

Cullet Process and Storage

Owens currently purchases cullet from another company (eCullet Inc.), which comes sorted according to color (e.g., amber) and type. Owens no longer accepts recycled bottles and process (i.e., crush) (EU2) them to cullet at the permitted site. Owens still uses cullet generated in-house (i.e., rejects) and recycles the in-house cullet back into the furnace. A covered structure was built in 2022 to store cullet piles.

Material Blending/Mixing (EU3)

The raw materials and cullet are placed into a surge bin, and liquid wetting agent (e.g., water) is added to the bin as needed along with small quantities of color additives. The final mixture/batch is loaded into the batch charger that feeds the glass-melting furnace.

Glass Melting Furnace (EU4)

The Owens-Brockway facility operates a single glass-melting furnace "D" (GM4), which is a continuous regenerative furnace capable of producing about 82,125 tons/yr of glass. The largest furnace A (GM1 - 98,550 tons/yr capacity) was permanently shut down in June of 2020. There are also shells of furnaces "B" and "C" that physically occupy the space, but they are not functional; furnace-B was shut down after 1978 and furnace-C was last operated in 1990. The only remaining permitted furnace, D (GM4), is an end-port furnace with a single stack. A Continuous Opacity Monitoring System (COMS) is installed on the GM4 exhaust stack and continuously measures visible emissions from GM4 furnace when it is operating.

The batch-mixture is charged into the furnace at the same rate as molten-glass is pulled out to achieve steady-state operation. The pre-mixed batch is fed into the furnace through the feeder and it initially floats on the top then gradually melts into the molten glass. Sodium sulfate (salt cake) is used as a fining agent to remove small air bubbles from molten glass. Along with sodium carbonate (soda ash), it fluxes the molten glass and prevent scum formation during refining. The molten glass at a temperature of approximately 2,800 degrees Fahrenheit (°F) passes through the melter and eventually flow through a "throat" at the bottom of furnace that leads into the GM4 refiner (R4). The refiner section of the furnace functions as a holding basin where the glass is allowed to cool to uniform temperature before entering the forehearth (FH4). The forehearths are long ceramic "bathtubs" where molten glass is typically cooled from 2,350 °F at the entrance to 2,150 °F at the exit. The glass conditioning process in the refiner and forehearths is a controlled reduction in temperature to prepare a consistent molten glass for the forming process. Viscosity (measured in "poise") of molten glass varies inversely with temperature. Molten glass in the forehearths at 2,200 °F has viscosity of about 1,000 poise. For comparison, water at room temperature has about 1/100 poise and honey has about 100 poise.

Bottle Forming

Molten glass[-1-] flows gravitationally from the refiner through the forehearth, where it is cooled to a uniform temperature and desirable viscosity prior to reaching the feeder. The hot glass then flows through the orifice and the shape and size of glass "gob" is carefully controlled. A 7-oz gob is typical for a 12-oz beer bottle. After the gob has been sheared from the feeder it falls through a series of chutes where it is delivered and blown into the blank mold on the Individual Section (I.S.) machine.

Mold Preparation is an inherent part of the bottle-forming process. The mold preparation involves cleaning, lubricating, curing, and heating. The operator periodically swabs molds with a graphite/oil solution as needed. A defective mold is purged from the production line for maintenance and repair. A purged-mold is cleaned in the burnout ovens and grit blasters, and then solid film lubricant (1-gallon lasts about a week) is applied in the mold coating spray booth and cured in the mold curing ovens. The repaired mold's temperature is elevated in the mold heat ovens and quick-fire ovens prior to re-entering the bottle forming production line.

Surface Treatment: Molded glass bottles are further treated in the hot end surface treatment (HEST) process that applies mono-butyl-tin trichloride (MBTT). The HEST process deposits tin (Sn) compounds/radicals into the glass surface. The exhaust from HEST process vents through an abatement device (i.e., HEST-A baghouse). Ammonia (NH_3) is added to the HEST hood exhaust to combine with excess tin (Sn) to form solid particulate matter (PM) that baghouse can collect and filter out. Following the HEST process the bottles are annealed[-2-] in the lehr, which is a long oven that controls the amount of heat supplied to moving bottles.

Inspection: Between the forming machine and the lehr, hot-faulty bottles are purged from the production line and dropped into water-filled hoppers placed below the production line in the basement. After the lehr, glass containers are inspected, and defective bottles are kicked to a belt conveyor that also goes to the basement. The oil/water separator treats and recirculates the catch water used in the dunk-buckets. In addition to rejecting faulty bottles, the inspection process gathers statistical information to trace the faulty containers being produced to the defective mold. This is accomplished by reading the mold number on the container, which was encoded as a numeral or a binary code of dots on the container by the mold that made it. Operators also perform a range of manual inspections on samples of containers, usually visual and dimensional checks. The I.S. machine allows operator to take one or more sections out of production line for repairs without shutting down the entire production line.

[-1-] Traditionally glass is defined as super cooled liquid because it does not behave like other solid materials (e.g., metal, ceramic) upon cooling from the molten state. Glass does not undergo structural changes. Glass can be described as being a very viscous liquid. The classic verification of the super-cooled-liquid theory is that if a windowpane of very old house is measured, the bottom will be thicker than the top – indicating very slow flow has occurred over a long period of time.

[-2-] As glass cools it shrinks and uneven cooling causes weak glass due to stress. An even slow cooling process is achieved by annealing over a long period of time depending on the glass thickness.

Warehouse Operations

Finally, the finished bottles are coded and packaged for shipping. The laser coder etches/engraves the identification number on glass. Owens eliminated a bottle coder (ink-jet printer) that used Methyl ethyl ketone (MEK) containing inks and stopped using MEK as cleanup solvent. Lastly the finished glass containers are packed into cartons or bulk-loaded for shipping.

Boiler

Owens Brockway operates a boiler rated at 10.5 million Btu/hr (B1) and small space heaters strictly for space heating. There are also hot water heaters to heat water for showers and restrooms. Space heaters and water heaters are categorically insignificant activities.

Miscellaneous Activities

Maintenance activities include four "Safety-Kleen" parts cleaners, welding operations, and minor machining and painting activities. The plant has one vertical fixed roof storage tank for storing fuel oil and several horizontal tanks storing propane. There are also storage tanks for used oil, machine lube oil, and ammonia. The Quality and Standards (Q/S) lab uses bench scale laboratory equipment for chemical and physical analysis.

EMISSIONS UNIT (EU) AND POLLUTION CONTROL DEVICE (PCD) IDENTIFICATION

7. Emissions units identified in this permit are grouped primarily with respect to the common applicable requirements and the associated common monitoring protocols as follows:

EU ID		EU Description	SCC	Year Installed	PCD Description	PCD ID	Year Inst.
EU1	RMU1-3	Batch house raw material handling equipment/activities; conveyor, elevator, silos, etc.	30510405 30510499	1956	Raw material baghouse Batch house baghouse	RMBH-1 RMBH-2 RMBH-3	1978 1956 --
EU2	CC5	Cullet crusher	30501413	1956	None	--	--
EU3	RMB1-3	Conveyor, weigh bins, surge bin, mixers, chargers, etc.	30510199 30510299	1956	Batch house baghouse	RMBH-2	1956
EU4	GM4 R4 FH4	Glass Melting Furnace D Refiner 1-2 Forehearth 1-2	30501401	1970	Catalytic Ceramic Filter N/A N/A	CCF -- --	TBD*

EU ID		EU Description	SCC	Year Installed	PCD Description	PCD ID	Year Inst.
EU5	HEST1-4	hot-end surface treatment	30501406	pre-1975	HEST Abatement (NH_3 injected baghouse)	HEST-A	1982
EU6	MO1 MH1 QF1 LH-4	3 Mold burnout/ cure oven 4 Mold heat ovens 2 Quick fire ovens Lehrs	30590003	1956	none	--	--
EU7	B1	Boiler 10.5 MMBtu/hr	10100602 10100501	1956	none	--	--
EU9	MS1-4	Mold swabbers (Manual operation)	--	1956		--	--
EU10	Machine repair dust collector. Mold bench dust collector		--	1956	Dust Collectors	MRD-1 MBD-1	1956 1956
EU20	Plasma torch cutting of metal		--	Unk.	None		--
EU30	Heated parts cleaning tank		--	Unk.	None		--
EU11	Future Dry sorbent Silo		--	Future	Static Filter	SS02	TBD*
EU12	Future Solids Handling Facility		--	Future	Static Filters	BB03 WH04 WS06 WR07 FF08	TBD*

* 18 months after the issuance of Construction ACDP 26-1876-CS-01

Emissions Unit 1 (EU1) includes all raw materials unloading and transport equipment and associated activities. A small baghouse RMBH-1 (with 9-bags) located inside the truck-unloading shed operates when truck unloads raw materials. A "batch house" baghouse RMBH-2 (with 240-bags) is the main dust collector that operates continuously to abate particulate-dust generated from raw materials unloading and transport operations.

Emissions Unit 2 (EU2) includes one cullet crusher (CC5) and the conveyor belt used to transport cullet from the storage pile to the mixing bin. The facility used to crush post-consumer glass in house until they began outsourcing glass-crushing operation in 2013. Four cullet crushers (CC1 through CC4) and all four post-consumer cullet processors (CP1 through CP4) have been removed from the site. In 2013 Owens-Brockway formed “Glass to Glass” joint venture with eCullet Inc. and began outsourcing glass-crushing and cullet-sorting operations to eCullet Inc.

Emissions Unit 3 (EU3) includes raw-material blenders (RMB1 through RMB3) and other auxiliary equipment such as surge bins, weigh bins, mixers, and chargers. Particulate matter emissions from silos, weigh bin, mixers, and chargers are all collected and routed to a "batch" baghouse RMBH-2 (240 bags) for abatement.

Emissions Unit 4 (EU4) consists of a single glass melting furnace D (GM4). The Portland facility used to operate four furnaces (GM1 through GM4), but furnace-B (GM2) was shut down permanently in 1979 and furnace-C (GM3) followed suit in 1990. The largest Furnace-A (GM1) operated until June 2020 before being taken out of service. Furnace-D (GM4) is the only

remaining furnace that burns natural gas as the primary fuel and utilizes electric boost for an additional energy. Electrodes heat the lower regions of the glass-bath that are difficult to reach by the NG-firing ports. The GM4 furnace is currently operating without any pollution control equipment with the maximum allowable production of 70,000 tons of glass per year as a result of a NAAQS compliance evaluation and a CAO analysis.

Glass melting furnace as defined in 40 CFR 60.291 includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendages for conditioning and distributing molten glass to forming apparatuses.

GM4 Refiner and forehearths are integral parts of the GM4 furnace but the emissions from these parts of the furnace are not discharged via the furnace stack. Non-stack emissions from these natural gas-fired units are still accounted for in compliance determination ($E_{R\&FH}$, permit condition 20.d) with respect to the applicable limit and the PSEL. For the practical purpose of calculating emissions from these natural gas combustion sources, natural gas usage from R4, FH3, FH4, and other natural gas combustion units (e.g., EU6, EU7) are combined to calculate the emissions using common EFs as specified in the permit PSEL monitoring section (permit condition 40.b.iv).

Future EU4 – CCF controlled GM4: The permittee is required to install and operate a "Catalytic Ceramic Filter" (CCF) air pollution control system according to compliance schedule outlined in Construction ACDP 26-1876-CS-01 and incorporated into this permit. The proposed CCF system consists of high temperature, light-weight ceramic filters impregnated with vanadium pentoxide catalyst to reduce NOx emissions from the furnace exhaust-gas. Aqueous ammonia is injected upstream (into ductwork) to react with NOx and the catalyst speed up the reaction to convert NO_X emissions to nitrogen and water. Hydrated lime (sorbent) is also injected upstream of the filters to react with (gas-phase) SO_2 and convert to (solid-phase) sulfates/sulfites that filters remove as PM. The filters also remove heavy metals (i.e., PM) that exist as oxides with the help of sorbent. The solid particulate matters removed (by screw conveyor) from the CCF (filters) are either reused in the glass making process or bagged and transfer to off-site.

CCF Devices Description	Pollutant(s) Controlled	Emission Point ID
Sorbent Silo (EU-11) with Static Dust Filter	PM	SS02
NG direct-fired, inline Duct Burner: Max. capacity = 7.5 MMBtu/hr	--	CCF
Sorbent Injection (in ductwork) Inject rate = 155 lbs/hr	SO_2	CCF
Ammonia Storage tank	--	Enclosed sys.
Ammonia Injection (in ductwork): The injection rate controlled by measuring the inlet NOx rate	NO_X	CCF

CCF Devices Description	Pollutant(s) Controlled	Emission Point ID
CCF rated efficiency > 95% Inlet PM Design inlet = 26,365 acfm Design air to cloth ratio 2.0-2.7 Total 510 bags **Pressure drop 1 – 18 inches H_2O	PM SO_2 NO_X	CCF
Solids Handling (EU-12) Bulk bagging Weigh hopper Waste Silo Waste Receiver Feeder Filter [Note – PM control by Static Dust Filter, NOL-TEC Model 279 or equivalent]	PM	 BB03 WH04 (WS06) (WR07) (FF08)

** The optimum pressure drop range to be determined during compliance testing

The CCF air pollution control system is comprised of the following devices/processes:

- Duct Burner: Flue gas exiting GM4 stack first passes through a direct-fired inline duct burner that only comes on during low flow/temperature conditions which occur infrequently. Natural gas fired duct burner has a maximum capacity of 7.5 MMBtu/hr, and its natural gas combustion by-products (e.g., NOx, GHG) exhaust through CCF stack along with GM4 flue gas (emission point CCF01).

- Ammonia Injection: Ammonia reacts with NOx in the presence of catalyst and converts to nitrogen and water compounds. The 10,000-gallons pressurized storage tank (9 ft. diameter by 25 ft. height) will be constructed to store 19% aqueous ammonia. A compressed-air atomizer will inject the aqua ammonia into the ductwork. The NH_3 injection rate is controlled by measuring the mass rate of NOx in flue gas, and less than 10 ppmv ammonia slip is expected. The NOx control rate is estimated to be about 90% (emission point CCF01).

- Dry Sorbent injection: Hydrated lime (i.e., calcium hydroxide) or similar chemicals will be injected in the ductwork to convert SO_2-gas in flue gas to form calcium sulfate (solid/PM) that is captured by the CCF (filters) system. A new 2,250 cubic foot storage silo will be constructed to store dry sorbents. The PM emissions during silo filling or product transfer operations will be controlled by a side-entry dust collector with static cartridge filters (emission points CCF01 & SS02 for silo).

- CCF System: The combined exhaust gas containing the required levels of dry sorbent and aqua ammonia flows to the inlet plenum of the CCF system. The retention within the ductwork provides vaporization of aqua ammonia, mixing of sorbent and ammonia gas with the process/flue gas, and the first step of the gas reaction with the dry sorbent. The exhaust gas stream is then routed to the filter housing array, divided equally between the housings, and flows through the ceramic filter elements within each housing. The filtered PM is removed, the SO2 gas is more fully reacted by the sorbent cake that forms on the filters, and

the NOx and ammonia are converted to nitrogen and water vapor by contact with the catalyst contained within the filter element walls.

- The catalytic ceramic filters are capable of reducing inlet filterable PM by at least 95%. Treated gas stream that exits each of the filter housings is combined to a single stream in the outlet plenum, and then is pulled through the fan and discharged to the CCF stack (emission point CCF01).

- Solid Handling: Processed solids generated by the CCF system are collected from each filter housing and transferred from the hopper of each filter housing into a common collection auger (enclosed screw conveyor). At the collection auger discharge, a diverter valve will be used to convey material to either a bulk bagging station, or transported by a pressure vessel to an existing silo located in the Batch House for reuse of the solids (e.g., calcium sulfate) in the glass bottle manufacturing process. New project equipment associated with the solids handling includes bulk bagging, a weigh hopper, waste silo, waste receiver and feeder filter (emission points BB03, WH04, WS06, WR07, and FF08 respectively). All these emission points will have static dust filters to control PM emissions.

- See Paragraph 38 for CCF parametric monitoring to ensure the compliance with PM/PM_{10}, NOx and SO_2 emission limits and factors.

Emissions Unit 5 (EU5) consists of two hot end surface treatment equipment, HEST1 to HEST2:

EU5 Devices	Material Type	Material Usage	Year Installed
HEST1-2	MBTT	70,000 lbs/yr	Pre-1975

Emissions Unit 6 (EU6) includes miscellaneous natural gas burning equipment; Mold burnout and curing oven (MO-1), Mold heat oven (MH-1), Quick fire oven (QF-1), Lehrs (LH1-2) and space heaters[-3-].

EU6 Devices:	MO1-3	MH1-2	QF1-2	LH1-2
Capacity (10^6 Btu/hr):	2.0	2.0	2.0	2.5
Year Installed:	1956	1956	1956	1956

Emissions Unit 7 (EU7) is a "Kewanee, Type-C" boiler with the rated capacity of 10.5 x 10^6 Btu/hr. The Kewanee boiler is primarily fueled by natural gas, but it can burn fuel oil as a back-up fuel. The boiler is used for space heating and hot water. The boiler was installed in 1956 and no modification has been made to it since.

Emissions Unit 9 (EU9) describes the manual mold swabbing operations. The operators manually apply graphite/oil mixture to molds as needed with hand-held swab sticks. The PM

[-3-] Space heaters with the capacity less than 2 MMbtu/hr are grouped under categorically insignificant activities, but emissions are included in the PSEL calculations.

emissions from swabbing operations are estimated by tracking the usage but unused swabbing material is often tossed at the end of the shift and the actual calculated emissions could be much less.

EU9 Devices	Material Type	Material usage	Year Began
MS1-2	graphite/oil mix.	10,000 lbs/yr	1956

Emissions Unit 10 (EU10) consists of machine repair and mold grinding operations that are done sporadically on as-needed basis. Machine repair dust collector (MRD-1) and a mold bench dust collector (MBD-1) are therefore operated infrequently.

Emission Unit 20 (EU20) consists of plasma torch cutting of metal in a maintenance and repair shop.

Emissions Unit 30 (EU-30) consists of fugitive building emissions of sodium hydroxide from a heated parts cleaner.

Emissions Unit 11 (EU11) will consist of a (future) sorbent silo with the 2,250 cubic foot storage capacity to store dry chemicals; hydrated lime (i.e., calcium hydroxide) or similar chemicals. The PM emissions during silo filling or product transfer operations will be controlled by a side-entry dust collector with static cartridge filters.

Emissions Unit 12 (EU12) will consist of (future) processed solids handling equipment to process solids filtered by the CCF system. As described earlier, new project equipment associated with the solids handling includes bulk bagging, a weigh hopper and day bin; and all new emission points will be controlled by static dust filters to abate PM emissions.

Pollution Control Devices (PCD) at the Owens plant include the following baghouses. The HEST-A baghouse control tin-compounds released from the hot end surface treatment process.

PCD ID	Baghouse Type (EU controlled)	Number of bags	Design flow (acfm)	Rated Efficiency	Year Installed	Hours Operated
RMBH-1	Baghouse (EU1)	9	180	99%	1978	~ 6-8 hrs/day
RMBH-2	Baghouse (EU1&3)	240	9,000	99%	1956	24 hrs/day
RMBH-3	Baghouse (EU1)	9	135	99%	--	~ 6-8 hrs/day
HEST-A	Baghouse (EU5)	144	3,500	99%	1982	24 hrs/day
		NH_3 inj.	30 - 35/unit			
MRD-1	Baghouse (EU10)	9	1,400	99%	1956	(not in use)
MBD-1	Baghouse (EU10)	18	2,100	99%	1956	6-8 hrs/day

8. The permittee has identified the following categorically insignificant activities:

- Constituents of a chemical mixture present at less than 1% by weight of any chemical or compound regulated under Divisions 200 through 268 excluding divisions 248 and 262 of this chapter, or less than 0.1% by weight of any carcinogen listed in the US Department of Health and Human Service's Annual Report on Carcinogens when usage of the chemical mixture is less than 100,000 pounds/year
- Evaporative and tailpipe emissions from on-site motor vehicle operation
- Distillate oil, kerosene, gasoline, natural gas or propane burning equipment, provided the aggregate expected actual emissions of the equipment identified as categorically insignificant do not exceed the de minimis level for any regulated pollutant, based on the expected maximum annual operation of the equipment. If a source's expected emissions from all such equipment exceed the de minimis levels, then the source may identify a subgroup of such equipment as categorically insignificant with the remainder not categorically insignificant. The following equipment may never be included as categorically insignificant:
    - Any individual distillate oil, kerosene or gasoline burning equipment with a rating greater than 0.4 million Btu/hour;
    - Any individual natural gas or propane burning equipment with a rating greater than 2.0 million Btu/hour.
- Distillate oil, kerosene, gasoline, natural gas or propane burning equipment brought on site for six months or less for maintenance, construction or similar purposes, such as but not limited to generators, pumps, hot water pressure washers and space heaters, provided that any such equipment that performs the same function as the permanent equipment, must be operated within the source's existing PSEL
- Office activities
- Food service activities
- Janitorial activities
- Personal care activities
- Grounds keeping activities including, but not limited to building painting and road and parking lot maintenance
- On-site recreation facilities
- Instrument calibration
- Maintenance and repair shop
- Air cooling or ventilating equipment not designed to remove air contaminants generated by or released from associated equipment
- Refrigeration systems with less than 50 pounds of charge of ozone depleting substances regulated under Title VI, including pressure tanks used in refrigeration systems but excluding any combustion equipment associated with such systems
- Bench scale laboratory equipment and laboratory equipment used exclusively for chemical and physical analysis, including associated vacuum producing devices but excluding research and development facilities
- Temporary construction activities
- Warehouse activities
- Accidental fires
- Air vents from air compressors

- Demineralized water tanks
- Pre-treatment of municipal water, including use of deionized water purification systems
- Electrical charging stations
- Fire Brigade training
- Instrument air dryers and distribution
- Routine maintenance, repair, and replacement such as anticipated activities most often associated with and performed during regularly scheduled equipment outages to maintain a plant and its equipment in good operating condition, including but not limited to steam cleaning, abrasive use, and woodworking
- Electric motors
- Storage tanks, reservoirs, transfer and lubricating equipment used for ASTM grade distillate or residual fuels, lubricants, and hydraulic fluids
- On-site storage tanks not subject to any New Source Performance Standards (NSPS), including underground storage tanks (UST), storing gasoline or diesel used exclusively for fueling of the facility's fleet of vehicles
- Natural gas, propane, and liquefied petroleum gas (LPG) storage tanks and transfer equipment
- Pressurized tanks containing gaseous compounds
- Emissions from wastewater discharges to publicly owned treatment works (POTW) provided the source is authorized to discharge to the POTW, not including on-site wastewater treatment and/or holding facilities
- Fire suppression and training
- Paved roads and paved parking lots within an urban growth boundary
- Health, safety, and emergency response activities
- Non-contact steam vents and leaks and safety and relief valves for boiler steam distribution systems
- Industrial cooling towers that do not use chromium-based water treatment chemicals
- Uncontrolled oil/water separators in effluent treatment systems, excluding systems with a throughput of more than 400,000 gallons per year of effluent located at the following sources:
  - Petroleum refineries;
  - Sources that perform petroleum refining and re-refining of lubricating oils and greases including asphalt production by distillation and the reprocessing of oils and/or solvents for fuels; or
  - Bulk gasoline plants, bulk gasoline terminals, and pipeline facilities
- Combustion source flame safety purging on startup

EMISSION LIMITS AND STANDARDS

9. Facility-Wide Applicable Requirements

a. NAAQS Compliance: The hourly, daily and annual production limits specified in the permit ensure compliance with one-hour NO_2, one-hour SO_2, and 24-hour $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS). DEQ reviewed the air quality analysis of the Owens-Brockway facility based on the proposed annual and daily glass production limits, measured stack and building parameters, and

locations of emission sources as they currently (i.e., before CCF) exist at the plant. Out of all the contributing emissions sources at the plant, furnace D stack (EU4) was by far the most significant source of $PM_{2.5}$, NO_2, and SO_2 modeled impacts. The NAAQS analysis used a conservative approach by selecting highest individual NO_2 and SO_2 emission rates out of all test results and then added a 20% buffer. DEQ concluded $PM_{2.5}$, SO_2, and NO_2 emissions from Owens-Brockway will not cause an exceedance of the Class II NAAQS provided the hourly, daily and annual glass production remains below the limits specified in the permit condition 13. Detailed analysis is provided in "DEQ Memo of Owens Brockway's NAAQS Modeling Analysis".

b. Source Emission Reduction Plan (SERP) required by OAR 340-206-0050 is applicable to Owens-Brockway since it operates inside the Portland AQMA. Portland is a maintenance area for ozone and carbon monoxide, as designated in OAR 340-204-0040. Owens-Brockway currently emits over 100 tons of NO_x per year before control but is a minor source of VOC. After the CCF control, regulated air pollutant (ozone precursors VOC, NO_x) emissions will fall below the 100 tons/yr threshold and the SERP no longer applies.

c. Fugitive emissions control requirements specified at OAR 340-208-0210 are applicable to any material handling processes/equipment and apply to all fugitive dust emission sources.

d. Nuisance prevention requirements of OAR 340-208-0300, and large particle (i.e., PM > 250 micron in size) fall-out limitations of OAR 340-208-0450 are state-only enforceable requirements that apply to Owens-Brockway.

10. Requirements for EU4 Furnace D (GM4)

a. The Permit requirements for EU4 furnace D (GM4) reflect the May 1, 2021, EPA Petition Order and Mutual Agreement and Final Order (MAO) No. AQ/V-NWR-2020-208, executed on October 22, 2021. The Petition Order and the MAO contain overlapping requirements to ensure compliance with the permit's particulate matter limits, which are addressed in the permit and explained below.

DEQ Enforcement & Mutual Agreement and Final Order No. AQ/V-NWR-2020-208

b. In the DEQ enforcement case issued on June 3, 2021, DEQ cited the permittee for violations of the permit's 20% opacity limit, which were part of a pattern of opacity violations at Furnace D and the former (now defunct) Furnace A. DEQ also cited the permittee for violations of the 0.10 gr/dscf Total PM limit (aka the SIP PM limit), detected during two source tests in June 2020 and August 2020. The December 2019 Permit renewal had updated the limit from 0.1 gr/dscf (one significant figure) to 0.10 gr/dscf (two significant figures), consistent with the SIP rule (OAR 340-226-0210). Based on the two source tests in 2020 and a source test in May 2019 (which measured emissions above 0.10 gr/dscf but in compliance with the 0.1 gr/dscf limit under the Permit in effect at the time), DEQ determined

that the facility was not able to consistently comply with the 0.10 gr/dscf Total PM limit. In addition, opacity data reported to DEQ by the permittee indicated that a significant percentage of Furnace D's operating time (ranging from 18%-44% of total operating time) was over the NSPS "Opacity Value" (reset to 4.7% in February 2020 under a Final Order in Case No. AQ/V-NWR-2019-260) which was the 99 percent upper confidence level of a normal distribution of 6-minute average opacity values from the May 2019 PM source test. DEQ determined that the permittee must install pollution controls on Furnace D in order to ensure continuous compliance with the Total PM and opacity limits in the Permit and to restrain further violations.

c. On October 22, 2021, DEQ and the permittee executed Mutual Agreement and Final Order (MAO) No. AQ/V-NWR-2020-208 to resolve the enforcement case described in item 10.b, above. The MAO required the permittee to, by June 30, 2022, submit an application to DEQ to install pollution control devices on Furnace D (GM4) that reduce filterable PM emissions by at least 95% and ensure compliance with applicable PM and opacity limits, or notify DEQ that Furnace D had been permanently shut down and submit an application to DEQ to terminate coverage under the Permit. On June 30, 2020, the permittee submitted an application to DEQ to install CCF controls on GM4, triggering a schedule in the MAO that requires the permittee to install the pollution control devices within 18 months of DEQ's written approval of the control's application. The 18 month schedule commenced when DEQ issued Construction ACDP No. 26-1876-CS-01 on November 9, 2022, authorizing construction of the CCF system. Until the controls are installed and operating, the MAO requires the permittee to comply with an interim 8.5% opacity limit, to mitigate further violations of the 0.10 gr/dscf Total PM limit. The interim opacity limit is intended to encourage the permittee to use all available air pollution control practices to minimize PM emissions prior to the installation of controls. There are stipulated penalties in the MAO for violating the interim opacity limit. The interim opacity limit is not intended to ensure continuous compliance with the 0.10 gr/dscf Total PM limit or any other permit limit.

<u>EPA Petition Order, Claims A, B and G</u>

d. On February 4, 2020, Earthjustice, a nonprofit environmental organization, filed a petition requesting EPA to object to the final air quality operating permit 26-1876-TV-01. The EPA Petition Order granted petitioner's Claims A, B and G. The Petition Order, under Claims A and B, generally directs DEQ to include sufficient monitoring, recordkeeping and reporting requirements in the permit to ensure compliance with the NSPS Subpart CC Filterable PM limit of 0.2 lbs/ton (Claim A), the SIP Total PM limit of 0.10 gr/dscf (Claim B), and to document the rationale for the selection of those monitoring requirements in the permit record. Under Claim G, the Petition Order directs DEQ to include a compliance schedule in the permit to bring back the facility into compliance with applicable opacity and PM limits. The permit provisions that address EPA's direction under Claims A, B and G are described in detail below.

e. *Claim A: ensuring compliance with the NSPS for Glass Manufacturing (40 CFR Part 60, Subpart CC).* To address Claim A, Section IV of the Petition Order first directs DEQ to "evaluate whether the 5-year stack testing in combination with the opacity monitoring alone is sufficient to assure compliance with the NSPS PM limit." The Petition Order further directs DEQ to "modify the title V permit to include the correlated value used to assure compliance with the NSPS PM limit and include information in the permit record based on the Method 5 testing to support the selection of the correlated opacity value. Further, ODEQ should either require corrective action if the opacity value is exceeded or establish that an exceedance of the opacity value that corresponds to compliance with the NSPS PM limit is an exceedance of the underlying NSPS PM limit."

DEQ evaluated the Furnace D Filterable PM Method 5 source test results from May 2019, June 2020, and August 2020, against the opacity data collected during those tests. The source test data is summarized in the Table below. Each source test demonstrated compliance with the 1 lb PM/ton NSPS PM limit. The source test results include the 99 percent upper confidence level (UCL) of a normal distribution of 6-minute average opacity values, calculated according to NSPS subpart CC, 40 CFR 60.293. Due to the limited number of data points, there is not a strong statistical relationship between the opacity values and the PM values. Therefore, DEQ has selected the highest 99 percent UCL value (6.3%, Permit condition 21.e), where the facility has recently demonstrated compliance with the NSPS PM limit, to include as the "Opacity Value" in the permit. This approach is consistent with 40 CFR 60.293(e), which allows the permittee to reset the opacity value in a subsequent source test that demonstrates compliance with the NSPS PM limit.

Furnace D	May 2019 Source Test	June 2020 Source Test	August 2020 Source Test	Permit Limit
Filterable PM	0.63 lb PM/ton glass	0.60 lb PM/ton glass	0.52 lb PM/ton glass	1 lb PM/ton glass
Opacity average	4.6%	6.1%	5.0%	(20% SIP Limit)
Opacity 99% UCL	4.7%	6.3%	5.1%	

The permittee must report "excess emissions" above the 6.3% opacity value to DEQ on a quarterly basis. In addition, permit Condition 20.a requires source testing to demonstrate compliance with the NSPS PM limit within 1 year from the date of the permit issuance and every year thereafter until the CCF pollution control system is installed.

The compliance schedule in the permit requires CCF controls to be installed and operating on Furnace D by May 2024. Once the CCF pollution control device is installed and operating on Furnace D, the applicable NSPS PM limit is 0.1 grams per kilogram of glass produced (0.2 lb PM/ton glass), pursuant to 40 CFR

60.292(a)(1) and the opacity value provisions of the NSPS no longer apply. However, the permittee must conduct a source testing to evaluate compliance with the new, more stringent NSPS PM limit within 90 days after controls are installed and operating, and then perform testing every 24 months thereafter (under permit condition 20.b).

f. *Claim B: ensuring compliance with the SIP PM Limit.* To address Claim B, Section IV of the Petition Order directs DEQ to "determine if the 20 percent opacity limit assures compliance with the SIP PM limit based on information gathered during the stack test required by Permit Condition 35 and include that information in the permit record." DEQ evaluated the Furnace D total PM source test results from May 2019, June 2020, and August 2020, against the opacity data collected during those tests. The source test data is summarized in the Table below. Due to the limited number of data points, there is not a strong statistical relationship between the opacity values and the PM values. However, based on the test data and the known relationship between opacity and particulate matter, it is clear that the 20% opacity limit in the permit does not ensure compliance with the SIP PM limit of 0.10 gr/dscf.

Furnace D	May 2019 Source Test	June 2020 Source Test	August 2020 Source Test	Permit Limit
Total PM	0.12 gr/dscf	0.13 gr/dscf	0.11 gr/dscf	0.10 gr/dscf
Opacity Average	4.6%	6.1%	5.0%	20%
Opacity 99% UCL	4.7%	6.3%	5.1%	

DEQ determined in enforcement Case No. AQ/V-NWR-2020-208, that the permittee could not continuously comply with the SIP PM limit. MAO No. AQ/V-NWR-2020-208 required the permittee to shut down Furnace D by June 30, 2022, or submit a pollution controls application to DEQ and then comply with a schedule to install pollution controls. As discussed above, the permittee elected to install CCF pollution controls, which must be installed and operating by May 2024, based on the compliance schedule in the MAO, which was incorporated into Construction ACDP No. 26-1876-CS-01 and also into the Title V permit. Compliance with an 8.5% interim opacity limit is required under the MAO to encourage the facility to use all available air pollution control practices to minimize PM emissions until controls are installed. This interim limit is incorporated into the permit in Condition 23. In addition, under the MAO, within 90 days of operating the newly installed pollution control devices, the permittee must conduct a source test to demonstrate compliance with the SIP PM limit. The source testing will provide reliable data to evaluate compliance with the SIP PM limit once pollution control devices are installed. These testing provisions of the MAO are incorporated into the permit as Condition 18.b. Testing must be repeated once every five years after the initial test.

In addition to the MAO requirements, the permit requires source testing to evaluate compliance with the SIP PM limit within 1-year from the date of the permit issuance and every 1-year thereafter (Condition 18.a), until the permittee installs pollution controls, at which point Condition 18.a becomes nullified and the testing requirements in Condition 18.b apply. The same holds true for the testing specified in Condition 20.a.

g. *Claim G: compliance schedule.* To address Claim G, Section IV of the Petition Order directs DEQ to "include a compliance schedule in Owens-Brockway's title V permit" to address PM violations identified in the Petition and DEQ's administrative orders. The Petition Order states that DEQ "should consider using the 2019 and/or 2020 Administrative Orders for the basis of the compliance schedule aimed at bringing Owens-Brockway into compliance with the applicable opacity and PM limits."

DEQ's 2019 administrative order (case no. AQ/V-NWR-2019-016, issued on April 22, 2019) and 2020 administrative order (case no. AQ/V-NWR-2019-260, issued on January 24, 2020) are superseded by Mutual Agreement and Final Order (MAO) No. AQ/V-NWR-2020-208, executed on October 22, 2021. The MAO includes a compliance schedule aimed to bring the permittee into compliance with the applicable opacity and PM limits. The compliance schedule to install and operate the CCF controls is incorporated into Construction ACDP No. 26-1876-CS-01 and also into the Title V permit.

11. Other Emissions Unit-Specific Applicable Requirements

a. The visible emissions standard of OAR 340-208-0110 applies to GM4 glass melting furnace and all emissions units routed to baghouses and dust collectors (e.g., RMBH-2, HEST-A, etc.) located throughout the plant.

b. The 0.10 gr/scf grain loading limit of OAR 340-226-0210 applies to GM4 furnace both before and after the CCF control; and 0.14 and 0.15 gr/scf limits are applicable to EU6 devices and EU7 boiler respectively.

c. The 0.15 gr/scf grain loading limit of OAR 340-226-0210 applies to emissions units routed to baghouses RMBH-2, RMBH-3, MRD-1, MBD-1.

d. For emissions units constructed after June 1, 1970, routed to Baghouses RMBH-1, HEST-A, the 0.14 gr/dscf grain loading limit is the applicable limit. [OAR 340-226-0210(2)(b)(B)]

e. The fuel oil sulfur content limits of OAR 340-228-0110 applies to any distillate fuel-oils used by Owens-Brockway. The EU7 boiler burns natural gas when it is operated but it is also physically capable of burning fuel oil, although unlikely.

f. The interim 8.5% opacity standard based on 3-hour block averaging, increased source testing frequency, and enhanced COMS monitoring requirements are all

designed to reduce periods of excess PM emissions until Owens Brockway install and operate the CCF air pollution control equipment.

12. 40 CFR Part 60, Subpart CC – Standard of Performance for Glass Manufacturing Plants

The glass melting furnace GM1 was installed in 1956 and it was modified during the year 1983. The GM1 furnace-area was enlarged from 566 square-feet to 786 square-feet and additional gas firing ports were installed. While GM1 is no longer operated, it is mentioned for historic perspective and to explain the basis for the 1978 baseline emissions calculations used to establish PSELs. The electric melting furnace GM4 was installed in 1970 and it was converted to gas-fired furnace during the year 1986. A glass melting furnace that commenced construction or modification after June 15, 1979, is subject to the NSPS requirements of 40 CFR, subpart CC – "Standards of Performance for Glass Manufacturing Plants."

a. The GM4 furnace burns natural gas and utilizes electric boost. Owens Brockway typically uses post-consumer cullet as more than 50% of total material input. Currently, the GM4 furnace is considered a glass melting furnace "with modified processes" subject to the PM emissions limit of 0.5 g/kg glass produced (1 lb PM/ton glass) specified at 40 CFR 60.293(b)(1). After the CCF air pollution control devices are installed and operating on Furnace D, pursuant to the MAO and incorporated in the permit, the NSPS PM limit of 0.1 g/kg glass produced (0.2 lb PM/ton glass) becomes applicable, as specified at 40 CFR 60.292(a)(1).

b. According to 40 CFR 60.293(c), the permittee is required to install, calibrate, maintain, and operate Continuous Opacity Monitoring System (COMS) to measure the visible emissions discharged into the atmosphere from GM4. The COMS requirement will terminate once the permittee installs and begins operating PM pollution control device (CCF) on Furnace GM4.

13. Non-applicability of 40 CFR Part 61, Subpart N; "National Emission Standards for Inorganic Arsenic Emissions from Glass Manufacturing Plants" applies to a facility of any size existing prior to August 4, 1986, that uses commercial arsenic as a raw material. The limit for an uncontrolled source is 2.7 tons of arsenic emissions per year based on mass balance. Owens- Brockway is not subject to this subpart because they do not use commercial arsenic as a raw material.

14. 40 CFR Part 63, Subpart SSSSSS & EPA Petition Order Claims D and G

a. *NESHAP subpart 6S Applicability.* National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources (NESHAP subpart 6S) applies to Furnace D (GM4) because the permittee adds iron chromite to the batch as a raw material when it produces green glass. Iron chromite contains chromium. No other metal HAPs listed in subpart 6S are added to the glass batch as raw materials.

The metals that are naturally occurring as trace constituents or contaminants of other substances are not considered to be raw materials as defined in §63.11459. Cullet and materials that are recovered from the process stream and recycled/reused into the glass formulation are also not considered to be raw materials as defined in §63.11459.

According to 40 CFR 63.11451, emissions from Furnace D (GM4) must comply with either 0.2 lbs of PM per ton of glass produced, or 0.02 lbs of metal HAP per ton of glass produced. According to 40 CFR 63.11452(b)(14)(ii), only the metal HAPs added to glass manufacturing formulation as a raw material (i.e., Cr) are measured to determine compliance with the 0.02 metal HAP (i.e., glass manufacturing metal HAPs) standard.

b. *EPA Petition Order Claims D & G.* The EPA Petition Order denied petitioner's Claim D, finding that the conditions of the December 2019 permit included sufficient monitoring, recordkeeping and reporting conditions to assure compliance with the 0.02 lbs HAP per ton of glass emission limit in the permit, as required by the NESHAP subpart 6S. However the Petition Order identified a possible compliance issue. Specifically, the Petition Order points to Condition 21.a in the December 2019 permit, which requires that "source testing must be conducted while the furnace is producing glass that has the highest potential to emit the production based metal HAP. This condition is derived from 40 CFR 63.11452(a)(3)(i), which refers to the initial compliance demonstration under NESHAP subpart 6S. DEQ understands the compliance question to be whether the permittee has conducted source testing while the furnace is producing glass that has the highest potential to emit chromium, which, as described above, is the only glass manufacturing metal HAP required to be measured according to the NESHAP subpart 6S. To address Claim G, Section IV of the Petition Order directs DEQ to "consider whether a compliance schedule is necessary for performance testing for applicable chromium limits that complies with the requirements of the permit, as noted in Claim D."

Of all the glasses manufactured at the plant to date, the "UV Green b*40 (G62)" had the highest potential to emit chromium and the 2008 source test result determined the Cr emission was still 30 times below the 0.02 lbs Cr/ton glass standard. Accordingly, to ensure compliance with the NESHAP subpart 6S going forward, DEQ has required recordkeeping of the glass type and Cr content of the glass manufactured; and require source testing when the permittee start producing glass with the higher metal HAP content than previously manufactured (see permit Condition 29).

Once the CCF is installed and operational the monitoring requirements in permit Condition 30.h are appropriate, align with the NESHAP, and satisfies the requirements of 40 CFR 63.11454(f) for alternative monitoring. This is because for the purpose of meeting the inlet temperature monitoring requirements of 63.11454(c), the CCF meets the definition a "fabric filter" in 63.11459, i.e.,

"Fabric filter means an APCD used to capture PM by filtering a gas stream through filter media." Therefore the permit Conditions 30.h (by referencing 40 CFR 63.11454(a), (c) and (g)) will ensure the compliance with NSEHSP 6S monitoring requirements. In addition the temperature monitoring requirements in the newly proposed permit Condition 37 will also comply with the (c) and (g) requirements.

15. Emissions limits applicable to Insignificant Activities

As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate insignificant emissions, as defined in OAR 340-200-0020. For the most part, the standards that apply to IEUs are opacity (20% limit) and particulate matter (0.10 gr/dscf limit). DEQ does not consider it likely that IEUs could exceed an applicable emissions limit or standard because IEUs are generally equipment or activities that do not have any emission controls (e.g., small natural gas fired space heaters) and do not typically have visible emissions. Since there are no controls, no visible emissions, and the emissions are less than one ton per year, DEQ does not believe routine monitoring, recordkeeping, or reporting is necessary for assuring compliance with the standards.

CLEANER AIR OREGON

16. Owens-Brockway performed a Level 4 risk assessment to determine cancer and noncancer risk from operations and activities related to the production of glass at their Portland facility. The primary toxic air contaminant (TAC) emissions of concern at this facility are arsenic and lead from furnace glass production. Both annual and short-term (24-hour) production levels, in combination with site-specific source testing data, were used to model emissions from the facility using AERMOD dispersion modeling. The summary of emission rates used in the Risk Assessment can be found in Emissions Detail Sheets that include Toxic Air Contaminant Risk Assessment Emissions Summary. The results of the risk assessment demonstrated that all risks were below the Community Engagement Risk Action Level. This means that permit conditions are required to keep risk at or below current levels, but that no further reduction of risk is required at this time. The facility evaluated chronic and acute noncancer risk by target organ as allowed in the CAO program [OAR 340-245-0200(2)(c)(A)&(B)]. In this case, the highest noncancer chronic risk was demonstrated to impact the nervous system from arsenic emissions, and the highest noncancer acute risk impacted developmental systems (in young children and infants from lead emissions. The facility risk is summarized in the table below.

Risk Type	Facility Risk	Risk Assessment Results
Cancer Risk – added cancer risk per million with 70 years of exposure		
Residential (e.g. homes near facility)	**10**	Facility Risk exceeds the Source Permit Risk Action Level* of 5.
Non-Residential Child (e.g. school near facility)	**<0.1**	
Non-Residential Worker (e.g. office near facility)	**1**	

Noncancer Risk – Hazard Index (less than or equal to 1 is considered safe)		
Annual Exposure-Residential (e.g. home)	**0.5**	Facility Risk does not exceed the Source Permit Risk Action Level of 0.5.
Annual Exposure-Non-Residential Child (e.g. school)	**<0.1**	
Annual Non-Residential Worker (e.g. office)	0.1	
24-Hour Exposure (acute)	1	Facility Risk exceeds the Source Permit Risk Action Level of 0.5

**DEQ requires CAO permit conditions if risk is above these Risk Action Levels.*

Because this facility's risk assessment demonstrated that risk estimates meet or exceed the Source Permit Level in OAR 340-245-8010 Table 1 for existing sources, and risks were calculated based on the source's requested Potential to Emit, Source Risk Limits are required to manage both cancer and noncancer acute risk. As a result the facility must comply with the following conditions:

a. Arsenic and Lead 3-hour block average emission limits;
b. Annual facility-wide glass production limit;
c. Daily facility-wide glass production limit;
d. Annual facility-wide plasma torch cutoff limit;
e. Daily facility-wide plasma torch cutoff limit;
f. Additional TAC emission source testing requirements;
g. Additional monthly monitoring and recordkeeping requirements; and
h. Annual reporting requirements.

PLANT SITE EMISSION LIMITS

17. Provided below is a summary of the baseline emissions rate, netting basis, and plant site emission limits.

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis		Plant Site Emission Limit (PSEL)		
		Previous (tons/yr)	Proposed (tons/yr)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	After CCF PSEL* (tons/yr)
PM/PM_{10}	92	92	83	109	56	17
$PM_{2.5}$	--	91	76	100	53	17
SO_2	145	145	140	184	108	33
CO	16	16	16	99	11	14
NO_x	343	343	157	382	137	62
VOC	12	12	12	39	4	4
Pb	0.1	0.1	0.1	0.5	0.3	TBD

GHG (CO_2e)	46,852	46,852	46,852	100,521	36,300	39,400

* Best estimate – needs adjustment after source testing

a. Baseline Emission Rate is the estimate of actual pollutant emissions that occurred during the baseline period of 1978. Baseline emission rate for each criteria pollutant was calculated based on reported production data from 1978 and the emission factors derived from available source test data and EPA's AP42 emission factors where no test data were available. Emissions Detail Sheets at the end of this review report provide the 1978 production data, test data, and emission factors used to estimate the baseline PSEL.

Any 12 consecutive month period between year 2000 through 2010 can be used to establish the baseline period for greenhouse gas (GHG). The calendar year 2010 was selected for the GHG baseline period.

b. Netting Basis equals the baseline emission rate adjusted down with respect to any emission reductions required by rules or order, plus any emission increases approved through New Source Review. Corrections to netting basis were made in the past permit action that consisted of recalculating the baseline emissions using updated emission factors obtained from multiple source tests conducted over the years. Furthermore, all remaining (after internal netting) allowable emissions (i.e., PSEL) for defunct furnaces A (GM1), B (GM2), and C (GM3) are no longer be available after January 1, 2022 (effective date) pursuant to Stipulated Agreement and Final Order (SAFO) No. 26-1876, fully executed on August 9, 2021, entered under OAR 340-223-0110.

	$PM_{2.5}$	**SO_2**	**NO_X**
Plant-wide Baseline	95	145	343
Original EU4 Baseline	41.7	123.9	337.1
Current GM4 PTE	32.9	119.1	151.9
Remaining EU4 PSEL after offset	8.8	4.8	185.1
Netting Basis per SAFO	86	140	157

Netting Basis after CCF for PM per MAO No. AQ/V-NWR-2020-208 will be adjusted down again to reflect the 95% PM control required in the order:

PM NB after CCF = 86 – (0.95 * 32.9) = 54.7 tons/yr

c. Previous PSEL is the PSEL approved in the previous/existing permit effective until December 31, 2021.

d. January 1, 2022 PSEL is the PSEL effective January 1, 2022, pursuant to Stipulated Agreement and Final Order No. 26-1876, fully executed on August 9, 2021, entered under OAR 340-223-0110. DEQ has added 1.0 tpy to the

$PM/PM_{10}/PM_{2.5}$ and VOC PSELs to include aggregate insignificant activities in accordance with OAR 340-222-0035(6).

e. PSEL after CCF are estimated using PM, SO_2, and NO_X EFs provided by the CCF manufacturer. All criteria pollutants emissions except NO_X were below the generic level PSEL. Emissions Detail Sheets attached to this review report provides the production data, source test results, and all other emission factors used to re-establish the PSELs. DEQ has added 1.0 tpy to the $PM/PM_{10}/PM_{2.5}$ and VOC PSELs to include aggregate insignificant activities in accordance with OAR 340-222-0035(6).

f. All PM and PM_{10} currently emitted at the Owens-Brockway plant are considered PM_{10}.

g. PSEL for $PM_{2.5}$ was established for the first time in the previous permit renewal in 2019. Based on the calculations in the emissions detail sheet, 92% of PM_{10} is assumed to be $PM_{2.5}$.

h. PSEL for CO, VOC, and Pb are set equal to each pollutant's respective Potential to Emit (PTE). The PSEL must be established for all regulated pollutants listed in Table 2 of OAR 340-200-0020 that are emitted above the de-minimis levels defined in 340-200-0020(39).

i. Greenhouse Gas (GHG) emissions were added to the permit in the last permit renewal. Owens-Brockway has selected the calendar year 2010 as the GHG baseline period, and GHG emissions in 2010 were 46,852 tons of carbon dioxide equivalent (CO_2e). The proposed GHG PSEL is 36,300 tons/yr of CO_2e.

j. By installing and operating the CCF controls, Owens-Brockway will create creditable SO_2, and NO_X emission reductions, in the amount of approximately 65 tons for SO_2, and approximately 76 tons for NO_X. These reductions will be verified in the source testing required pursuant to Condition 45. In accordance with OAR 340-268-0030, Owens may bank any SO_2 and NOx emission reduction credits that are established. To do so, in accordance with OAR 340-268-0030, Owens may submit a request to bank these emission reductions that result from operation of the CCF controls**.**

18. Significant Emission Rate

The PSEL increase over the netting basis is less than the Significant Emission Rate (SER) for all pollutants as defined in OAR 340-200-0020. Therefore, no further air quality analysis is required.

Pollutant	SER	Netting Basis	Proposed PSEL	Requested increase over the netting basis	Is PSEL over netting basis more than SER?
PM_{10}	15/5*	86	56	0	No
$PM_{2.5}$	10	79	53	0	No
CO	100	13	11	0	No
NO_x	40	156	137	0	No
SO_2	40	140	108	0	No
VOC	40	12	4	0	No
GHG (CO_2e)	75,000	46,852	36,300	0	No

19. Aggregate Insignificant Emissions

The aggregate insignificant activities identified by Owens-Brockway include the following:

Aggregate Insignificant Activities	Pollutant	Estimate (tons/yr)
Grit blasting (part of mold cleaning) process	PM_{10}	6.4×10^{-3}
Nickel compounds (spray welding)		3.4×10^{-4}
Unpaved road emissions		0.7
Dri-Sorbent Silo (Future EU11)		7.5×10^{-5}
Solids Handling Facility (Future EU12)		2.6×10^{-4}
Total $PM_{10} < 1$		
Solid film lubricant (spraying and cleaning)	VOC	3.9×10^{-2}
Safety-Kleen parts cleaners (parts cleaning)		0.3
Used oil storage		1×10^{-5}
Total VOC < 1		
Nickel compounds (spray welding)	HAP	3.25×10^{-4}
Solid film lubricant (spraying and cleaning)		1.1×10^{-2}
		Total HAP < 0.1

This permit does not intend to limit "aggregate insignificant activities" to only those currently identified in the permit application. No groups of activities are identified in this permit just for the purpose of identifying insignificant activities, which tend to be a moving target. Instead, the permit aggregate limits reflect the rule limits, as defined in OAR 340-200-0020(7). The rules allow the permittee to add more categorical insignificant activities to their existing list, and similarly, the permittee is free to add more insignificant activities to their existing aggregate source list, provided the aggregate

emissions of any individual (regulated) pollutant do not exceed the permit (rule) aggregate insignificant limit.

20. Emission Factors used to calculate uncontrolled emissions from glass melting furnaces are based on multiple source test data and other available information that best correspond to Owens' past and current operations:

Baseline EFs for Pre-renovation Glass Melting Furnace-A		
PM EF	6.3E-01 lbs/ton	Average of all PM and SO_2 source tests performed (from 1983 to 2007) on furnaces A and D were used for pre-renovation furnace A.
SO_2 EF	2.1E+00 lbs/ton	
NOx EF	6.2E+00 lbs/ton	No source test data available for pre-renovation furnace A. EPA's AP42 EF for NOx was determined to be the best data available for pre-renovation furnace A. The furnace size and type affect NOx emissions unlike PM and SO2 emissions that are more dependent on type of materials used.
Baseline EFs for Glass Melting Furnace-B Furnace-B was shut down permanently in December 1978		
PM EF	6.3E-01 lbs/ton	Averages of all PM and SO2 source tests performed on furnaces A and D (from 1983 to 2007) were deemed the best available data.
SO_2 EF	2.1E+00 lbs/ton	
NOx EF	6.2E+00 lbs/ton	No NOx source test data available for Furnace-B. EPA's AP42 EF for NOx was determined to be the best available data.
Baseline EFs for Glass Melting Furnace-C Furnace-C was shut down permanently in April 1990		
PM EF	6.8E-01 lbs/ton	1984 source test data for Furnace C used.
SO_2 EF	2.1E+00 lbs/ton	Average of all SO2 source tests performed on furnaces A and D since 1983. SO2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the batch material chemistry remains essentially the same for all furnaces.
NOx EF	5.2E+00 lbs/ton	1984 Source test data for Furnace C used.
Baseline EFs for Electric Glass Melting Furnace-D		
PM EF	2.4E-01 lbs/ton	1983 source test performed on electric furnace D
SO_2 EF	2.0E-01 lbs/ton	1983 source test performed on electric furnace D
NOx EF	0 (not detected)	1983 source test performed on electric furnace D
Previous EFs for Glass Melting Furnace-A (shutdown as of 2020) The modification to Furnace-A completed on 4/07/1983; enlarged the melt area from 566 to 786 ft^2 and increased the number of firing ports from 8 to 10		
PM EF	7.0E-01 lbs/ton	Average of all PM source tests performed on Furnace-A since 1983.

SO_2 EF	2.1E+00 lbs/ton	Average of all SO_2 source tests performed on furnaces A and D since 1983. SO_2 emissions largely depend on decomposition of sulfates in the batch materials and oxidation of sulfur.
NOx EF	4.7E+00 lbs/ton	Average of all NOx source tests performed on Furnace-A since 1983.
Current EFs for Gas-fired Glass Melting Furnace-D In 1986 furnace-D was converted from electric to gas-fired, end-port, regenerative furnace.		
PM EF	8.0E-01 lbs/ton	Average of recent PM source tests performed on Furnace-D from 2019 to 2020.
SO_2 EF	2.9E+00 lbs/ton	Average of recent SO2 source tests performed on both furnace D from 2019 to 2020. SO2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the recent source test data closely reflect the batch material chemistry currently utilized.
NOx EF	3.7E+00 lbs/ton	Average of all three NOx source tests performed in 2019 and 2020, after Furnace-D was re-bricked and its electric boost system upgraded in 2016.
Pb EF	5.6 E-03 lbs/ton	Based on Pb source tests performed on Furnace-D in 2019.
CO EF	4.0 E-03 lbs/ton	2019 source test performed on Furnace-D
VOC EF	9.0 E-03 lbs/ton	2019 source test performed on Furnace-D

HAZARDOUS AIR POLLUTANTS

21. The Owens-Brockway facility is a minor source of hazardous air pollutants (HAPs) because the potential to emit of any individual HAP is less than the 10 tons/yr threshold and total aggregate HAPs emission is less than the 25 tons/yr threshold.

CAS Number	Chemical Name	PTE (tons/yr)
7440382	Arsenic Compounds	1.01×10^{-2}
71432	Benzene	1.51×10^{-3}
7440417	Beryllium Compounds	2.48×10^{-5}
7440439	Cadmium Compounds	1.38×10^{-2}
25321226	Dichlorobenzenes (mixed isomers)	8.69×10^{-4}
7440484	Cobalt Compounds	6.09×10^{-5}
100414	Ethylbenzene	1.84×10^{-3}
50000	Formaldehyde	5.43×10^{-2}

CAS Number	Chemical Name	PTE (tons/yr)
110543	Hexane	1.30
7647010	Hydrochloric Acid	2.43×10^{-2}
7439921	Lead Compounds	2.85×10^{-1}
7439965	Manganese Compounds	1.05×10^{-2}
7439976	Mercury Compounds	3.80×10^{-4}
7440020	Nickel Compounds	4.60×10^{-3}
91203	Naphthalene	4.42×10^{-4}
1330207	Xylenes (isomers)	8.76×10^{-3}
7782492	Selenium Compounds	3.06×10^{-2}
0	Chromium Compounds	1.71×10^{-1}
0	Hex-Chromium	1.97×10^{-4}
	Total Aggregate:	**Less than 2 ton/year ***

* The HAP estimate in this table came from the previous 2019 permit action when two furnaces were operating. The current HAP emissions with only one furnace (GM4) operating would be close to less than half the 2019 estimate. After the CCF control, the HAP emissions would decrease significantly from the current level.

A review of the AQ source files indicates Owens-Brockway removed "Wrap Shrink Labeler" from their process in 1998 that eliminated 9.78 tons/yr of hydrochloric acid, 0.65 tons/yr of methylene chloride, and 0.4 tons/yr of methyl ethyl ketone (MEK). On December 13, 2005, the Environmental Protection Agency (EPA) issued a final rule that removes MEK from the list of hazardous air pollutants regulated under the Clean Air Act.

22. The Toxics Release Inventory (TRI) is federal program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment, over which DEQ has no regulatory authority. It is a resource for learning about toxic chemical releases and pollution prevention activities reported by certain industrial facilities. Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI Program. In general, chemicals covered by the TRI Program are those that cause:
    (A) Cancer or other chronic human health effects;
    (B) Significant adverse acute human health effects; or
    (C) Significant adverse environmental effects.

23. There are currently over 650 chemicals covered by the TRI Program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual TRI reports on each chemical. The 2022 TRI report was submitted to EPA.

MONITORING REQUIREMENTS

24. Code of Federal Regulation, Section 70.6(a)(3)(i) requires that all monitoring and analysis procedures or test methods required under applicable requirements be contained in Title V permits. In addition, where the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time that is representative of the source's compliance with the permit. The requirement to include in a permit testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor with respect to all emissions units and applicable requirement situations. It does not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. Where compliance with the underlying applicable requirement for an insignificant emission unit is not threatened by a lack of a regular program of monitoring and where periodic testing or monitoring is not otherwise required by the applicable requirement, then in this instance, the status quo (i.e., no monitoring) will meet section 70.6(a)(3)(i).

    CAM Applicability: Compliance Assurance Monitoring (CAM) requirements under 40 CFR 64 do not apply to Owens Brockway after the CCF system is installed. CAM applies to major sources only as specified in 40 CFR 64.2(a) and OAR 340-212-0200(1). After the CCF system is installed Owens Brockway will no longer be a major source because the PSELs are below the major source thresholds.

25. Facility-wide monitoring associated with the facility-wide applicable requirements include investigation of public complaints and taking corrective action as need arises. Owens-Brockway staff also need to conduct periodic visual inspections to ensure there are no excessive fugitive emissions from materials handling operations. The Owens-Brockway facility currently uses natural gas only and the fuel monitoring for sulfur contents are not triggered until they start to use fuel oils.

26. Visible emissions monitoring for Glass Melting Furnace GM4: This section contains continuous opacity monitoring requirements (pre-CCF) to ensure the visible emissions from glass melting furnaces meet the opacity standards set forth in the permit. After CCF, EPA method 22 may be used to monitor visible emissions from the CCF stack and progress to EPA method 9 if necessary, as specified in permit condition 26.

27. Visible emissions monitoring related to opacity standards and grain loading limit applicable to other emissions units (e.g., boiler, baghouse) are established in a progressive manner. Periodic monitoring requirements start with frequent (i.e., weekly) periodic opacity readings, and accumulated results are used to establish the next level (frequency) of monitoring for each individual source of emissions. Visible emission monitoring is waved for miscellaneous fuel burning equipment that burn natural gas only.

28. Monitoring for Insignificant Activities: As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate insignificant emissions – as defined in OAR 340-200-0020. For the most part, the standards that apply to IEUs are for opacity (20% limit) and particulate matter (0.1 gr/dscf limit). The Department does not consider it likely that IEUs could exceed an applicable emissions limit or standard because IEUs are generally equipment or activities that do not have any emission controls (e.g., small natural gas fired space heaters) and do not typically have visible emissions. Since there are no controls, no visible emissions, and the emissions are less than one ton per year, the Department does not believe that monitoring, recordkeeping, or reporting is necessary for assuring compliance with the standards.

TEST METHODS AND PROCEDURES

29. The General Testing section contains general instructions and protocols in the event that testing is conducted for any reason. This section does not by itself require the permittee to conduct any more testing than those included in the permit. Although the permit may not require testing because other routine monitoring is used to determine compliance, the Department and EPA always have the authority to require testing if deemed necessary to determine compliance with an emission limit or standard. In addition, the permittee may elect to voluntary conduct testing to confirm the compliance status. In either case, the methods to be used for testing in the event that testing is conducted are included in the permit.

30. Source Testing Requirements specified in this permit are as follow:

Applicable Requirement	Permit Condition	Pollutant	Initial Testing	Frequency After
OAR 340-226-0210	18.a	Total PM before CCF	Within 1-yr of permit issuance	Every 1-year
	18.b	Total PM after CCF	Within 90-days of CCF operation	Every 5-years
§60.293	20.a	Filterable PM before CCF	Within 1-yr of permit issuance	Every 1-year
§60.292	20.b	Filterable PM after CCF	Within 90-days of CCF operation	Every 24-months
MAO: AQ/V-NWR-2020-208	20.b	95% Removal Filterable PM*	Within 90-days of CCF operation	Every 24-months
DEQ initiated EPA Order	29	NESHAP Metal HAPs	Within 90-days of producing high Cr% glass	
OAR 340-245-0100	41.g.i	Sb, As, Be, Cd, Co, Cr, Cu, Pb, Mn, Hg, Ni, Se, V	Within 90-days of CCF operation	

	41.g.ii	Cr^{6+}	Within 90-days of CCF operation, if elected by permittee
DEQ: EF Verification	45	Total PM, SO_2, NO_X, CO, VOC, NH_3, specified HAPs	Within 90-days of CCF operation

* The 95% removal efficiency must be determined by comparing the PM emissions (lbs/unit) in exhaust from the CCF stack to the PM load at the inlet to the CCF system filters. The PM load at the inlet to the CCF system includes sorbent to control SO2 emissions.

RECORDKEEPING REQUIREMENTS

31. Recordkeeping requirements in this permit are drafted pursuant to OAR 340-218-0050(3)(b). The records of all monitoring specified in the Oregon Title-V Operating Permit 26-1876-TV-01 must be kept at the plant site for at least 5 years, unless different timeframe is specified for emissions data. All records necessary to determine compliance with any permit condition shall be made available to the DEQ/EPA inspectors upon request.

REPORTING REQUIREMENTS

32. Reporting requirements in this permit are drafted pursuant to OAR 340-218-0050(3)I. The permittee is required to submit semi-annual compliance certification to the Department twice per year. The annual report consists of the second semi-annual compliance certification, in addition to products throughput and other relevant emissions data needed to determine compliance with the annual PSEL.

GENERAL BACKGROUND INFORMATION

33. Other permits issued or required by the Department of Environmental Quality for this source include the following:

    - Construction ACDP 26-1876-CS-01
    - NPDES Permit 1200-COLS for stormwater discharge; and
    - Registered small quantity (i.e., 220 – 1,200 lbs/month) HW Generator, #ORD009026618

34. A Land Use Compatibility Statement signed by the City of Portland on March 14, 1995, granted approval of the facility operations.

35. The source is located in a maintenance area for ozone and Carbon Monoxide (CO). The area is in attainment for all other criteria pollutants. The facility is a minor (< 100 tons/yr) source of Volatile Organic Compounds (ozone precursor) and CO.

PUBLIC NOTICE

36. This permit was placed on public notice from April 21, 2023 to June 2, 2023. DEQ received e-mail comments from three people during the comment period, and DEQ's responses to these comments are provided at the end of this Review Report. Comments resulted in small reductions in the CO and VOC PSELs. The generic level PSELs for Pb and GHG were also reduced to their respective PTE. DEQ also held a public hearing on May 25, 2023, via Zoom, but the public did not attend. Comments received were responded to in the attached Public Comments and DEQ Responses – 1st Public Comment Period.

37. The proposed significant revision was sent to EPA on June 23, 2023 for a 45-day review period. However, EPA informally informed DEQ by an email on August 1, 2023 that EPA was concerned that the permit did not include adequate monitoring to demonstrate that operation of the CCF would assure compliance with the PM limits in the Oregon SIP and the federal Standards of Performance for Glass Manufacturing Plants (NSPS CC). EPA further requested that DEQ review the adequacy of monitoring associated with NOx and SO_2 limits in the permit where these limits rely on the CCF to control emissions. On August 2, 2023, DEQ withdrew the proposed permit revision from EPA review, and proposed to change the permit and resubmit it to EPA for a new 45-day review period.

38. To ensure continuous compliance with PM/PM_{10}, NOx and SO_2 emission limits, CCF parametric monitoring has been added in new permit Condition 37. Inlet temperature to the CCF must be no less than 500 ^oF. The pressure drop across the CCF must be within the range of 1 to 18 inches of water. The sorbent and ammonia injection rates at a minimum must be at the rates measured during the performance test. When the CCF is operated on a continuous basis and within these operating limits, it is reasonably ensured that the permittee will comply with the PM/PM_{10}, NOx and SO_2 emission limits.

    When a new sorbent is introduced, a new sorbent rate must be determined to maintain the same stoichiometric ratio to convert SO_2-gas in the flue gas to form solids (PM) that can be captured by the CCF system. The new sorbent rate must be confirmed by conducting a new performance test within 90 days of introducing a new sorbent.

    In addition, ammonia (NH_3) emissions from the CCF will be measured by a performance test when a NOx performance test is required. The ammonia injection is used to control NOx emissions, but it will also introduce additional ammonia emissions (ammonia slip). There are no ammonia emission limits in the permit, but the ammonia slip is expected to be less than 10 ppmv. The ammonia testing will establish baseline ammonia emissions and help to determine future risk.

39. Mutual Agreement and Final Order (MAO Case No. AQ/V-NWR-2020-208) was amended (Amendment 2) on December 8, 2023, due to the status of the City of Portland permitting process, to change the following conditions and those changes are also incorporated into the permit:

a. The deadline to begin CCF on-site construction is extended from December 9, 2023 to January 31, 2024.
b. The deadline to complete the CCF installation is extended from May 9, 2024 to June 30, 2024.
c. The deadline to begin operating the CCF is extended from May 9, 2024 to June 30, 2024, or the date that the permittee resumes glass making in Furnace D, whichever is later.
d. The deadline to compete CCF source testing is extended from 90 days after CCF installation to 90 days after the permittee begins operation of the CCF according to paragraph 39.c.

40. This updated permit was placed on a 2nd public notice from: Wednesday, February 28, 2024 to: Wednesday, April 10, 2024 and a virtual public hearing was held on: April 4, 2024. Comments received were responded to in the attached documents listed below and beginning on page 51 of this report as: Public Comments and DEQ Responses – 2nd Public Comment Period.
41. On May 3, 2024, DEQ sent the new proposed permit and DEQ's response to comments to EPA for a 45-day review period following the 2nd public comment period. The EPA's 45-day review period ended on June 18, 2024. EPA did not object to the issuance of the permit and informed DEQ on June 18, 2024 that DEQ may issue the permit after the end of the EPA's 45-day review period. Any person may petition the EPA within 60-days after the expiration of the EPA's 45-day review period to make an objection. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in OAR 340-218-0210, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period.

Attachments

Emissions Detail Sheets A1 – A12
With embedded pages of Toxic Air Contaminant Risk Assessment Emissions Summary

Referenced Documents

Mutual Agreement and Final Order: AQ/V-NWR-2020-208
DEQ Memo of Owens-Brockway Container's NAAQS Modeling Analysis
Stipulated Agreement and Final Order

PUBLIC COMMENTS AND DEQ RESPONSE – 1ST PUBLIC COMMENT PERIOD

The comments and questions received during the first public comment period (April 21, 2023 to June 2, 2023) for Owens-Brockway's reopened Title V Permit No. 26-1876-TV-01 are listed below verbatim. DEQ responses are listed after each person's comments and questions.

e-mail Comment – Mr. Gregory Sotir, Portland Oregon:

Hi all,

The thing I'm most concerned with is that I thought there would be a greater reduction for (Pb) lead. Previously, DEQ said that ambient metals were under the PM category but it is a separate line item on the pollutant list, with a clear discrepancy as to reduction. I also thought there was some kind of add-on to the CCF that DEQ said was being included in the permit.

And, here it is: Scroll down to the 'Dry Sorbent Injection (DSI) Systems'

at https://precisionpartners.llc/technologies/#ccf

I may write up something tomorrow, unless someone else wants to, and will forward it along if people want to sign on.

Gregory Sotir
CAAT (defunct)

DEQ Response to Mr. Gregory Sotir:

The lead PSEL in the proposed permit is based on the GM4 furnace's maximum potential production and the average of 2019 and 2020 source test results. The lead emissions will decrease once the Catalytic Ceramic Filters (CCF) air pollution control system is installed to control particulate matter emissions from glass melting furnace D. This is because lead is contained in PM. The exact amount of lead reduction cannot be quantified at this time, but the source testing required in the proposed permit will determine the exact quantity of lead reduction. Once the source test results become available, the lead PSEL in the permit will be reduced accordingly. If the CCF controlled lead emissions fall below its de minimis level of 0.1 tons/yr, the lead PSEL will be eliminated from the next permit renewal.

e-mail Comment – Mr. Gregg Lande, DEQ Retiree, Portland Oregon:

Thank you for providing the opportunity to comment on this permit. I am heartened to see a movement to monitor and reduce metal HAP emissions into the adjacent neighborhoods.

I am wondering about the relationship between Conditions 28 and 29 in the proposed permit. If metal HAP emissions are measured by source testing, which can only measure a TOTAL metal emissions rate, what's the point of distinguishing metals added as raw material, present as contaminants in raw materials, or in cullet. Is there a calculation involved, or an analytic procedure?

Thanks for your consideration.

Gregg Lande
Portland

DEQ Response to Mr. Gregg Lande:

40 CFR 63 Subpart SSSSSS - National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources (NESHAP 6S) applies to Owen's glass melting furnace only when it manufactures container glass with one or more glass manufacturing metal HAPs (chromium, lead, arsenic, cadmium, manganese, or nickel) as raw materials as defined in 40 CFR §63.11459. Permit condition 28 was based on this NESHAP 6S applicability. Condition 28.a identifies the metal HAPs regulated by NESHAP 6S. For Owens Brockway, when glass furnace is used to manufacture green (wine) bottles that uses iron chromite containing chromium (i.e., one of the six glass manufacturing metal HAPs), the mass emissions rate of chromium must be less than 0.02 pounds per ton of glass produced. Chromium is the only metal HAP used in the glass manufacturing.

In other words, metals added as raw materials trigger NESHAP 6S applicability and usage is therefore important to track. The source test (Condition 29) measures the total metal emissions rate from the stack to determine compliance with the NESHAP 6S limit. Source testing Method 29, specified in Condition 44, measures the total metal emissions rate and additional analytical testing can indeed separate specific metals from the total as needed. For example, EPA SW-486 Method 0061, specified in Condition 44, can even isolate the valence state of chromium (Cr^{+6}) from total unoxidized chromium (Cr), which is used to determine compliance with the 0.02 pound per ton of glass produced chromium emission limit. Of all the glasses manufactured at the plant to date, the "UV Green b*40 (G62)" had the highest potential to emit chromium and the previous source test determined the Cr emission was far below the 0.02 lbs Cr/ton glass standard. Accordingly, to ensure compliance with the NESHAP subpart 6S going forward, DEQ has required recordkeeping of the glass type and Cr content of the glass manufactured; and requires source testing when the permittee starts producing glass with a higher metal HAP content than previously manufactured.

e-mail Comment – Mr. Gary Andes, DEQ Retiree, Nehalem Oregon:

DEQ Response to Mr. Gary Andes: Comments and questions provided by Mr. Andes were many and therefore DEQ responses are itemized and listed directly below each comment.

This is Gary Andes, a citizen of Oregon residing in Nehalem, OR. I have reviewed the proposed permit modification referenced above and have the following comments based on my years of experience as a AQ permit writer and inspector for DEQ's Western Region.

Overall, I am in great support for the construction and eventual operation of the new ceramic catalytic filter (CCF) to be installed at the facility and its attendant reduction in pollutants. Although the proposed emissions from Furnace D and the overall facility do not exactly match those shown in the Construction ACDP issued 11/9/22, it is entirely conceivable that minor changes in the emission estimates after CCF were made in this proposed permit modification based on better information. However, I do have some comments on the emission estimates themselves, both before and after the installation of CCF.

Page 11 (of 12) of the emission detail sheets provides a summary of the source test results on Furnace D for NOx since 1986. However, I believe that the 1986 source test should not be utilized to calculate the average emission factor for NOx as it appears that furnace operating characteristics were different than for the other tests. In particular the % cullet used is considerably less than in more recent tests and it also appears that no electrical boost was used in this test. Therefore, I believe the 1986 test should be eliminated from the average. Using only the 1993-2020 tests results would yield a new emission factor for NOx of 3.43 lb/ton glass from Furnace D.

DEQ Response: The 3.7 lbs NO_X/ton glass EF in the proposed permit is the average of the most recent NO_X source test data since 2016. Furnace D was rebricked and its electric boost system was upgraded in 2016. The average of NO_X test results since 2016 best reflect the current operating characteristics of Furnace D. Coincidently the average of all source test data since 1986 is also 3.7 lbs NO_X/ton glass.

That said, Mr. Andes makes a valid point about excluding the 1986 test data but his comment is relevant to the NO_X EF in the current permit used to calculate the PSEL that includes 1986 data. It is true that higher cullet usage has been observed to correlate with lower emissions, and higher electric boost rate in theory yields lower NO_X emissions. However, 2003 and 2007 NO_X test data contradict this conventional theory. When working with limited data set, no perfect correlation can be established to relate the NO_X emission rate to various process parameters such as electric boost and cullet usage. The NO_X EF in current permit includes the 1986, 2003, and 2007 test data as they were the best available data at the time the current permit was issued. The average of NO_X test data since 2016 is the best available data at present time and it was used in the proposed permit to update the NO_X PSEL and will be used to determine compliance with the NO_X PSEL annually.

Page 12 (of 12) of the emission detail sheets provides a summary of the source test results on Furnace D for PM, Pb, SO2, CO, VOC, and Cr. It appears that only the last three source tests were utilized to calculate the average emission factor for PM and SO2 despite there being data for four other tests. Why were only the last 3 tests used? This should be justified on the detail sheet or all the data should be used. If all the data were used, both the PM and SO2 emission factors would be smaller.

DEQ Response: Item 20 of the permit review report summarizes the basis for all baseline and current EFs established in the proposed permit. As you have noted, the average of the most recent source tests since 2019 were used to establish the PM and SO_2 EFs in the proposed permit. The SO_2 emissions depend on decomposition of sulfates in the batch materials and oxidation of sulfur; and the test data since 2019 best reflect the SO_2 emissions associated with batch chemistry currently utilized as they are much higher than the previous tests that are more than a decade old. Higher SO_2 emissions can lead to higher visible emissions and/or higher total PM emissions that include both filterable and condensable PM. The high PM emissions rate determined during these source tests was the basis for the enforcement case that led to requiring Owens to install PM control by May 2024.

Also consider the higher SO_2 EF has the potential to encourage Owens to reduce SO_2 emissions with respect to any future production increase since the allowable emissions (i.e., SO_2 PSEL) would have been reached quicker with the higher SO_2 EF. This maybe a moot point now since Owens volunteered to install SO_2 controls but the intent of this decision was to improve the air quality to the extent the rules allow.

Were any of the PM source tests listed on page 12 done wherein the emissions exceeded the 0.10 gr/dscf grain loading limit? If so, those tests should be excluded from the calculation of an emission factor as the furnace would have been in violation during the source test.

DEQ Response: The referenced PM test results that exceeded the 0.10 gr/scf limit were used exclusively to set the PM EF in the proposed permit but were not used to set the PM PSEL. The PM PSEL in the proposed permit was set by Stipulated Agreement and Final Order No. 26-1876 (SAFO) signed on August 9, 2021. Mutual Agreement and Final Order (MAO Case No. AQ/V-NWR-2020-208) also cites these PM exceedances and requires Owens to install controls to reduce PM emissions by May 2024. The MAO also requires Owens to meet the 8.5% interim opacity limit to mitigate further

violations of the total PM limit until the PM control is installed. The 8.5% opacity limit is far more stringent than the 20% state opacity limit. As discussed previously with the NOx EF, the highest EF is the strictest EF that reaches the PSEL with the least production. The proposed PM EF is an interim EF that best reflect the current operating characteristics of Furnace D operating without controls. After the CCF control is installed, there will be more testing to determine the accurate PM EF and the PM PSEL will be adjusted at that time.

Emission calculations on pages 5, 7, and 8 of the emission detail sheets for Furnace D are based on 82,125 tons/year of glass production. However, the permit limits annual glass production to 70,000 ton/year in order to meet NAAQS and CAO requirements in Conditions 13 and 40. Therefore, the PTE of the facility should be based on 70,000 ton/year glass production and the emission calculations adjusted accordingly. This will decrease the proposed PSEL of the facility somewhat. In addition, because the glass production is limited and reduced, it is likely that other aspects of the operations will be accordingly reduced in production, such as raw materials through EU1 and EU3, cullet processing in EU2, and mold swab operations in EU9. These potential changes in materials throughput should be accounted for due to the limited glass production rate.

DEQ Response: Emissions calculations on pages 5, 7, and 8 of the emissions detail sheets summarize the facility's PTE, but they were not used as the basis for establishing the PSELs in the proposed permit. The PM_{10}, SO_2, and NO_X PSELs in the proposed permit were set by Stipulated Agreement and Final Order No. 26-1876 (SAFO) signed on August 9, 2021. The SAFO also set the netting basis for PM_{10}, SO_2, and NO_X to zero to prevent future growth (without controls). For example, the facility's SO_2 PTE is 119 tons/yr based on the 82,125 tons/yr glass production as shown on page 7 of the emissions detail sheets but the SO_2 PSEL is set at 108 tons/yr in the proposed permit per the SAFO. The PM, NOx, and SO_2 PSEL will be adjusted down further (e.g., 39 tons SO_2/yr) in the next permit renewal after the CCF control is installed.

The 70,000 tons/yr annual glass production limit in the proposed permit is strictly for showing compliance with respect to the NAAQS and the CAO risk levels. Consider for example while the source test result is directly compared against the applicable limit to determine compliance, the production limit (e.g., 70,000 tons/yr) is one of the input parameters that goes into the modeling to determine whether the modeled outcome/result is below the NAAQS and/or CAO risk level. When the source test result is below the applicable standard, the PSEL is not set at the source test result but rather at the applicable standard level. The 70,000 tons/yr production does not represent the NAAQS or CAO ceiling. The 70,000 tons/year production was chosen by Owens for their modeling analyses because this was a production limit that was acceptable even though the facility could increase the production above 70,000 tons/yr without add-on controls and still meet the NAAQS and CAO requirements. Also note that even without NAAQS and CAO production limits, the permittee would have reached the same production limit due to the high SO_2 EF set in the permit. While the EF is not an enforceable limit, it indirectly limits the production and thus the PSEL. Furthermore, the NO_X PSEL set per the SAFO is more stringent than the potential NO_X emissions based on 70,000 tons/yr glass production.

Often the permit establishes a limit that is far below the regulatory ceiling because that is the easiest path to compliance. As an illustrative example, consider the CAO source risk condition 40.e that limits the plasma torch cutting maintenance activity to less than 10 hours in any consecutive 12-month period. This CAO limit does not mean that there is unacceptable risk after 10 hours of plasma torch cutting maintenance activity. The 10 hour limit is one that Owens could easily comply with and does not allow for more emissions than necessary. These types of limits are born out of necessity and ease in satisfying the regulatory requirements while meeting production needs.

As to reducing other process parameters proportional to the glass production rate, such as mold swab operations in EU9, no definitive linear correlation exists. For example, the swabbing material usage is not always dependent on the glass production rate.

The emission factor for SO2 from EU6 and EU7 is shown as 2.6 lb/MM ft3 NG. However DEQ's AQ-EF05 for NG boilers shows 1.7 lb/MM ft3 for the long term factor which is usually used for annual calculations. The emission factor for NOx from EU7 is shown as 140 lb/MM ft3 NG. From AQ-EF05, this would appear to be the factor for a controlled low NOx burner on a large boiler. These is nothing in the review report to indicate this boiler has a low NOx burner and it is a small, not large, boiler. So, I believe the proper emission factor for NOx from the EU7 boiler should be 100 lb/MM ft3 NG. Both the SO2 and NOx emission factor changes would slightly reduce emissions from the NG sources.

The emission factor for CO from EU7 is shown as 35 lb/MM ft3 NG. However, AQ-EF05 essentially uses 84 lb/MM ft3 NG for nearly all boilers and should be used in the calculations. Similarly, for VOCs from EU6 and EU7, the emission factor shown is 5.8 lb/MM ft3 NG, when AQ-EF05 shows 5.5 lb/MM ft3NG for all boilers. Revising the calculations to use these numbers would change the emissions slightly.

DEQ Response: The SO_2, CO, NOx, and VOC EFs that you referenced are established mainly for the miscellaneous natural gas combustion devices that include EU6 lehrs and mold-ovens, refiners, forehearths, and also for the EU7 boiler which is seasonally used for space heating. The emissions from boiler contribution is very small, and the combined emissions from all these miscellaneous natural gas combustion devices are a small part of the over-all plant site emissions. Furthermore, these natural gas fired devices have no significant potential to violate any underlying regulatory requirements (e.g., 20% opacity) applicable to them. These miscellaneous devices simply do not require the same level of rigor as other significant emissions units (e.g., GM4), and for this reason the common EFs are used in lieu of developing separate EFs for each type of device. In fact, there are no specific EFs published for these small devices. However, DEQ acknowledges the boiler EFs that you have provided are the best available data and will use them to adjust the CO and VOC EFs and PSELs.

That said the permit (Condition No. 39.b.iv) indeed uses the NOx EF of 100 lbs/MM ft3 NG as you have suggested. The 140 NOx EF for EU7 in the emissions detail sheet page 7 was a typo and it has been corrected. This correction in the emissions detail sheet does not affect the NOx PSEL set in the permit per SAFO. Likewise, changing SO_2 EF from 2.6 to 1.7 lb/MMft3 SO_2 EF will have no effect on the SO_2 PSEL due to EU7's small contribution (e.g., 0.1 tons/yr) to over-all plant site emissions. The SO_2 PSEL was also set per SAFO.

The permit (Condition No. 39.b.iv) also uses the CO EF of 84 lb/MMft3. The 35 lb/MMft3 CO EF for EU7 in the emissions detail sheet page 8 was inadvertently carried over from the previous permit and it has been corrected in the emissions detail sheet. Likewise using 5.5 in place of 5.8 lb/MMft3 VOC EF decreases the VOC emissions by less than 0.1 tons/yr and the change does not affect the permit VOC PSEL. The VOC EF has been changed to 5.5 lb/MMft3 as you have suggested.

I also discovered an error while re-evaluating the emissions detail sheets. The GM4 natural gas usage used to calculate the CO and VOC emissions were inadvertently carried over from the previous permit and this had an effect of double counting CO and VOC emissions from GM4. The CO and VOC emissions from GM4 are calculated based on the glass production in the proposed permit. The excess natural gas usage has been deleted and this correction reduced the CO and VOC PSELs.

The 16 tons/yr CO PSEL in the proposed permit is the netting basis that has been reduced from the 99 tons/yr generic level in the current permit. After corrections, the current PTE/PSEL of CO emissions is

11 tons/yr before the CCF and 14 tons/yr after the CCF. The 12 tons/yr VOC PSEL in the proposed permit is the netting basis that has been reduced from the 39 tons/yr generic level in the current permit. After corrections, the current PTE/PSEL of VOC emissions is 2.7 tons/yr before the CCF and 2.9 tons/yr after CCF.

Also note that the Pb and GHG PSELs before the CCF are reduced to their respective PTE from the generic level. The corrections made to EFs resulted in small reductions of CO, VOC, Pb, GHG PSELs. Also be advised that the PSELs in the proposed permit are temporary and will be updated once source testing has been performed on the CCF abated emissions, per permit condition 44.

Emission factors for Furnace D after CCF appear to be based on manufacturer estimates (guarantee?) for PM, SO2, NOx, CO, and VOC. The 72% value shown on page 7 under SO2 is not described as to what it means.

DEQ Response: The 95% reduction in filterable PM is the only guarantee required per permit condition No. 19.c. There are no regulatory requirements to abate SO_2 and NOx emissions, which were voluntary reductions. The 72% figure was simply a math calculation that represents 72% reduction in SO_2 emission after CCF installation. It was estimated for an information purpose only and was inadvertently left in a spreadsheet-cell. It is now omitted in the final proposed version of the spreadsheet. Again, SO_2 and NO_X emissions will be tested and the PSEL will be adjusted at the next permit renewal.

As previously discussed above, the permit contains a glass production limit of 70,000 tons/year. However, 82,125 ton/year was also used for Furnace D after CCF. Although the facility may eventually request a production increase under Permit Condition 15, the PSEL calculations for Furnace D before and after CCF should be both based on 70,000 tons/year glass production.

DEQ Response: As discussed previously, the NOx and SO_2 PSELs were set based on the SAFO. As you have noted, Owens may request to increase their production to their true potential (i.e., 82,125 tons/yr) once the CCF is installed and operating. The Oregon bottle bill, the first of its kind in the U.S., was originally passed in 1971, and updated in 2007 and 2011. Washington State has no bottle bill to date. Consequently Owens is the only glass recycler in the region and the beneficial use of recycled glass (i.e., cullet) is the highly desirable option over landfilling. From the cross media perspective, provided air quality is not compromised, DEQ's recycling and reuse program encourages additional glass reuse/recycling over landfilling. The NAAQS and CAO requirements are currently being met and will continue to be met if production increases in the future.

In OAR 340-222-0010 Policy for Plant Site Emission Limits, it states:

> "The EQC recognizes the need to establish a more definitive method for regulating increases and decreases in air emissions of permit holders. However, except as needed to protect ambient air quality standards, PSD increments and visibility, the EQC does not intend to: limit the use of existing production capacity of any air quality permittee; cause any undue hardship or expense to any permittee who wishes to use existing unused productive capacity; or create inequity within any class of permittees subject to specific industrial standards that are based on emissions related to production."

The EQC also established DEQ's permitting process for businesses to access the facility's existing capacity by applying for permit modifications to request increases in Plant Site Emission Limits. Therefore, as long as ambient air quality standards, PSD increments and visibility are protected, a facility can ask for increases in emissions to utilize unused capacity.

Some of the emission factor discussions above may also be applicable to the baseline calculations for the NG units but really don't have any significance anymore since the netting basis was set by order in the 1/1/22 SAFO.

DEQ Response: Yes, that is correct. As with the PSEL, the SAFO ordered the netting basis to be set at zero to prevent any future growth or production increases without going through the new source review process.

Based on my discussions above I believe that the emissions from Furnace D at 70,000 ton glass/year before and after the CCF should be as follows:

Prior to CCF:

Pollutant	*EF(lb/ton glass)*	*Emission (T/Y)*
PM/PM10	*0.79*	*27.65*
PM2.5	*96% PM10*	*26.54*
SO2	*2.9*	*101.5*
NOx	*3.43*	*120.1*
CO	*4.00E-03*	*0.1*
VOC	*9.00E-03*	*0.3*
Pb	*5.6E-03*	*0.23*

After CCF Installation:

PM/PM10/PM2.5	*0.20*	*7.0*
SO2	*0.80*	*28.0*
NOx	*1.20*	*42.0*
CO	*35 lb/MM ft3 NG*	*4.38*
VOC	*5.5 lb/MM ft3 NG*	*0.69*
Pb	*5.6E-03*	*0.23*

DEQ Response: Yes, based on 70,000 tons/yr production and the EFs that you have proposed, those numbers seem to be accurate but are mostly irrelevant to this proposed permitting action. The PM, SO2, and NOx PSELs are set per SAFO. The PSELs after CCF will be corrected as needed after source testing the CCF system. DEQ responses to your comments explain the reasons for not using the EFs that you proposed.

It is interesting to note that the CO and VOC emissions after CCF are higher than prior to CCF. The calculations are based on two differing information sources. Prior to CCF the estimates are based on source tests while after CCF the estimates are based on NG usage EFs. Since neither the construction permit for the CCF or this permit modification proposal indicate that the CCF will change CO or VOC emissions, it seems prudent to also use the prior source test information for those pollutants to estimate the Furnace D emissions of CO and VOCs after installation of the CCF.

Emissions of other equipment and emission units at the facility including the new duct burner need to be added to the revised Furnace D emissions above to estimate the PTE or PSEL for the whole facility both before and after CCF.

DEQ Response: The CCF Air Pollution Control system will reduce PM, SO_2, and NOx emissions, but it is not designed to control CO or VOC emissions, which may increase slightly due to additional fuel used in the CCF duct burner. Both CO and VOC emissions are minor and the EF verification testing required in permit condition 44 will determine the CCF controlled CO and VOC EFs that will be used to established the CO and VOC PSELs in the next permit renewal.

The lead emission estimate after CCF from the furnace may be an overestimate since the CCFs are designed to reduce PM emissions by at least 95%. The CCFs are therefore likely to reduce Pb emissions by this same percentage.

DEQ Response: Lead (Pb) and all other metals are emitted as PM. The Pb reduction will be quantified by source testing the CCF controlled emissions once is the CCF is constructed. If the CCF controlled Pb emissions fall below the de-minimis level, the lead PSEL will be omitted from the next permit renewal. To alleviate any concerns, the Pb PSEL in Conditions 38.a (before CCF) and 38.d (after CCF) has been changed to 0.3 tons/yr and "TBD" respectively.

PSEL emissions should be reestimated based on the information above both before and after CCF installation. In the current proposed PSEL, DEQ appears to have used Generic PSELs for PM, SO2, and GHG. On 3/1/23, the revised rules passed last year by the EQC became effective and did away with Generic PSELs. According to Jill Inahara at DEQ AQ HQ who was instrumental in writing the new rules, any permits issued after 3/1/23 cannot contain Generic PSELs, even if the application was received prior to 3/1/23. Thus, the eventual issued permit modification for this source should contain source specific PSELs for all pollutants emitted at greater than de minimum rates and not contain any Generic PSELs.

DEQ Response: As mentioned previously, the PM and SO_2 PSELs before the CCF were set based on the SAFO. The PM and SO_2 PSELs after CCF in Condition 38.d are estimates and they will be reset after source test data becomes available. This is precisely the reason Condition 38.d includes a provision for resetting the PSELs based on future source testing. Also, the PM and SO_2 emissions after CCF are only estimates and the PSELs will be adjusted with verified EFs after source testing. The estimated SO_2 also happens to be very close to the generic level.

The generic level GHG PSEL has been reduced to the facility's PTE.

Although the proposed permit contains PSELs for PM10 and PM2.5, its dos does not contain a PSEL for PM either before or after CCF. A PM PSEL needs to be added to the permit for both situations as it is a regulated pollutant.

DEQ Response: As indicated in paragraph 17.f on page 33 of this review report, all PM and PM_{10} emitted from the facility is considered PM_{10}: PM = PM_{10}. The Permit now contains a PM/PM_{10} PSEL.

The Title V permit for this facility will expire on 12/1/2024, meaning that a renewal application must be submitted by 12/1/2023. This application date will precede the completion of construction of the CCF according to permit condition 16. Therefore, no operating data or emissions data on Furnace D with the CCF will be available by renewal application time. DEQ should not proceed with processing the renewal application until the source test data required by permit conditions 18b, 29, 40g, and 44 has been received and analyzed. In addition the company may wish to request an expansion of production under Condition 15 and that would also have to occur after the modeling in Condition 15 is completed. Those source test results should then be used to set the PSEL in the renewal permit.

DEQ Response: DEQ is fully aware of the timeline and agrees with the procedures that you outlined. The proposed permit is scheduled to expire on December 1, 2024, and therefore the permittee will need to submit a complete and timely permit renewal application by December 1, 2023. If Owens submits a timely and complete permit renewal application, the current permit can be administratively extended. All source testing after CCF required in conditions 18.b, 20.b, 29, 40.g, and 44 are scheduled to be completed by mid-August 2024, and DEQ should receive the test results by the end of September 2024. The next permit renewal will be issued with updated EFs and adjustments to the PSELs will be made.

Permit condition 15 indicates that the facility may perform air dispersion modeling after the CCF is installed to demonstrate compliance with the NAAQS. It would seem that this should be a must requirement as the emission characteristics (volume, velocity, temperature, stack height(?), will likely change as a result of the CCF installation and the prior modeling results will be meaningless for the configuration of the future facility. This modeling should also be done again for the CAO program.

DEQ Response: The prior modeling results are not meaningless and have provided a solid basis for assessing NAAQS and CAO impacts before the CCF control. DEQ agrees that changes to the emissions profile will affect the future NAAQS and CAO modeling results but cannot predict whether the resulting impact will be positive or negative. However, I can say with high confidence that the 173 tons/yr emissions reduction of PM, SO_2, and NOx realized from the CCF control will offset any negative impact from relocating the stack a few feet from its previous location. If there is any negative impact resulting from relocating the stack within the plant, it will be small in comparison to the positive improvement gained by the CCF control. The net impact will be positive. The proposed permit already contains the modeling requirement that will be triggered if the permittee requests to remove the production limit or any of the CAO source risk limits from the permit.

As discussed above, if any changes are made to the emission factors or emissions, a number of places in the review report and permit will need revising including the PSELs.

DEQ Response: As discussed in previous responses, corrections were made where needed. The Pb PSEL before CCF is reduced to 0.3 tons/yr and the GHG PSEL is reduced from its generic level to 36,300 tons/yr in the final proposed permit.

I am submitting these comments now as I will be unable to attend the May 25 virtual public hearing on this permit modification.

If you have any questions concerning my above comments please feel free to call me at 503/930-5540.

I would request a copy of DEQ's response to my comments and a copy of the final permit, review report, and detail sheets when issued.

Gary Andes
Nehalem, OR

PUBLIC COMMENTS AND DEQ RESPONSE – 2ND PUBLIC COMMENT PERIOD

The comments and questions received during the second public comment period (February 28, 2024 to April 10, 2024) for Owens-Brockway's reopened and modified Title V Permit No. 26-1876-TV-01 are listed below. DEQ responses are listed after each person's comments.

Verbal Comments Received During the Zoom Public Hearing on March 4, 2024
Below is the summary of verbal comments from Gregory Sotir, Coordinator, Cully Air Action Team:

The commenter praised the activism of the community addressing emissions from this facility and the potential health impacts over the past few decades. The commenter commends DEQ for diligence and the scientific approach and rationales in implementing Cleaner Air Oregon statutes, and reducing emissions from the facility. Finally the commenter encourages DEQ to try to modify the permit to increase testing frequency given the history of this facility.

DEQ's Response:
DEQ appreciates commenter's encouragement to work with the community in developing this permit and improve the air quality around the community. As to more frequent performance testing please see below the response to the comments from Earthjustice et al - DEQ's Response to Comments on Particulate Matter Source Testing.

*** End of Response to Gregory Sotir's Comments ***

Written Comments from Gary Andes, Nehalem, Oregon, Received March 19, 2024

This is Gary Andes, a citizen of Oregon, residing in Nehalem, OR. I have reviewed the proposed permit, review report, and detail sheets associated with the above source and have the following comments on the revised draft.

First, let me thank DEQ staff for the excellent detailed explanations in response to the comments on this permit that I submitted in May 2023. Those responses helped clarify many of the concerns and questions I had with the initial draft permit. None the less, I still have some comments and questions concerning the current draft on public notice.

Review Report

Comment #1:
The current Title V has an expiration date of 12/1/24. Was a Title V renewal application received by DEQ on or before 12/1/2023 as it should have been despite this current modification being processed? If so, that should be noted and included in Item 1 of the review report.

DEQ's Response:
Owens Brockway submitted a complete Title V renewal application on 11/30/2023. This is noted in the new paragraph 1.i of this review report.

Comment #2:
On 1/23/24, DEQ issued a Final Order and Stipulated Demand Notice to the company in the amount of $54,000 for violating the interim opacity limit in the MAO signed 10/21/21. This enforcement action

should be noted and included in the review report. I suggest replacing Item 39 in the review report with this narrative and moving the existing Item 39 narrative concerning the City of Portland to Item 1 where other permit changes are described. As an alternative, both of these narratives could be put in Item 1.

DEQ's Response:
This enforcement action is noted in the new paragraph 1.j of this review report. However, paragraph 39 is for the permitting actions taken after the 1st public notice period and it will not be moved to paragraph 1.

Comment #3:
The review report cover sheet does not show CAM (compliance assurance monitoring)(40 CFR Part 64 or OAR 340-212-0200 through 0280) as one of the applicable air programs and no discussion of CAM exists in the review report. Although CAM would not have applied to the main emission point, Furnace D, in the past because it had no controls, I believe CAM may apply when the CCF system is installed. However, since a NESHAP applies to the furnace and it appears that pre control PM emissions are less than 100 T/Y, it may not apply. In addition, other smaller emission units, although CAM will not likely be applicable, should be evaluated for CAM. In WR DEQ, we usually did this for all emission units at a facility in a table in the review report (see GP Toledo 21-0005 2023 review report pages 15-20 or Arauco 22-0143 2019 review report pages 14-15 as examples). A CAM discussion should be added to the review report, probably under Monitoring Requirements.

DEQ's Response:
Compliance Assurance Monitoring (CAM) requirements under 40 CFR 64 do not apply to Owens Brockway after the CCF system is installed. CAM applies to major sources only as specified in 40 CFR 64.2(a) and OAR 340-212-0200(1). After the CCF system is installed Owens Brockway will no longer be a major source because the PSELs are below the major source thresholds. The discussion regarding CAM applicability is added to Paragraph 24 of this review report.

Comment #4:
The PSEL Table in Item 17 of the review report doesn't show a PM PSEL. The PM10 row should be relabeled to PM/PM10. Why not round the baseline GHG value to 46,900 T/Y as I thought all GHG values were being rounded to the nearest 100 tons?

DEQ's Response:
The PM10 row is now labeled "PM/PM10" and all GHG values are rounded to nearest hundred tons.

Comment #5:
Item 23 says the 2021 TRI report was submitted to EPA. I suspect 2022 and 2023 were also submitted.

DEQ's Response:
Based on EPA's TRI facility report the latest TRI report from Owens Brockway is the 2022 report. Paragraph 23 is revised to specify that the 2022 TRI report was submitted to EPA.

Detail Sheets

Comment #6:
The 2nd footnote to the first table should be placed at the bottom of the first page rather than on the second page. This 275 ton/yr limit comes from the SAFO. However, does it have any relevance since the after CCF PSELs will add to only 125 T/Y, half that limit, according to page 1?

DEQ's Response:
The 2nd footnote to the first table is corrected to be placed at the bottom of the first page. The 275 ton/yr combined limit for PM10, NOx and SO2 comes from the SAFO and it will be effective on and after 7/31/2025. If Owens Brockway complies with post-CCF PSELs they will definitely comply with the SAFO limit. However, the SAFO is still an appliable requirement and it must be included in the permit regardless.

Comment #7:
On page 6, the Furnace D PM/PM10 EF is shown as 0.80 lbs/ton, whereas the ST avg shown on page 14 is 0.79 lbs/ton.

DEQ's Response:
This is merely rounding up a stack test result from 0.79 to 0.8 lbs/ton and no changes are made to the permit and review report.

Comment #8:
There seems to be a conflict regarding the after CCF PM/PM10 PSEL. On page 1, it shows 24 T/Y, while on page 6 it shows 16 T/Y, which I believe is the correct value. Page 6 also references the old 24 T/Y PM Generic PSEL which no longer exists.

DEQ's Response:
DEQ agrees and corrected the PM/PM10 PSELs from generic 24 tpy to 17 tpy (= 16 tpy + 1 tpy AIA) because PM/PM10/PM2.5 PSELs should have 1.0 tpy for aggregate insignificant activities. See additional details in the response to comment #15 below. Corresponding corrections are made in permit Condition 39.d and paragraph 17 of this review report.

Comment #9:
Page 7 shows the current PM2.5 PSEL but no calculation is shown for the after CCF PM2.5 PSEL. Page 1 shows the PM2.5 PSEL at 24 T/Y, which I believe is incorrect. I believe the PM2.5 PSEL should be 16 T/Y since all future emissions after CCF I believe are PM=PM10=PM2.5.

DEQ's Response:
DEQ agrees and corrected the PM2.5 PSEL from generic 24 tpy to 17 tpy (= 16 tpy + 1 tpy AIA) because PM/PM10/PM2.5 PSELs should have 1.0 tpy for aggregate insignificant activities. See additional details in the response to comment #15 below. Corresponding corrections are made in permit Condition 39.d and paragraph 17 of this review report.

Comment #10:
There also seems to be a conflict regarding the after CCF SO2 PSEL. On page 1, it shows 39 T/Y, while on page 8 it shows 33 T/Y, which I believe is the correct value. Page 8 also references the old 39 T/Y Generic SO2 PSEL which no longer exists.

DEQ's Response:
DEQ agrees and corrected the SO2 PSEL from generic 39 tpy to 33 tpy. Corresponding corrections are made in permit Condition 39.d and paragraph 17 of this review report.

Comment #11:
Footnote K on page 9 indicates the NOx EF is the average of Furnace D Is from 1986 to 2020 but should state 2016-2020 according to the response given to my previous May 2023 comments on page 44 of the review report. This footnote should also be placed on the previous page to save space.

DEQ's Response:
The NOx EF for Furnace D is the average of stack test results from 2019 (not 2016 as previously stated) to 2020. The footnote is corrected to be placed on the previous page.

Comment #12:
The VOC PSEL after CCF on page 1 should be rounded to 3.

DEQ's Response:
DEQ agrees and the VOC PSEL after CCF is rounded to 4 tpy (= 3 tpy + 1 tpy AIA) because VOC PSELs should have 1.0 tpy for aggregate insignificant activities. See additional details in the response to comment #15 below. Corresponding corrections are made in permit Condition 39.d and paragraph 17 of this review report.

Comment #13:
The after CCF GHG PSEL on page 1 should be 39,400 T/Y when it is rounded on page 12.

DEQ's Response:
DEQ agrees and the after CCF GHG PSEL is rounded to 39,400 tpy. Corresponding rounding is made in permit Condition 39.d and paragraph 17 of this review report.

Comment #14:
If my above after CCF values are correct, then the PSEL table in the review report in Item 17 will need to be also revised.

DEQ's Response:
All corresponding corrections and rounding are made.

Comment #15:
Item 19 lists aggregate insignificant activities at the facility for PM and VOCs. However, I do not see that they were added to the PSEL details sheets for these pollutants either before or after CCF. AI of 1

T/Y should be added to the PM/PM10, PM2.5, and VOC PSEL calculations if not already somehow included in the PSEL values.

DEQ's Response:
DEQ agrees and added 1.0 tpy to PM/PM10/PM2.5 and VOC PSEL to PSEL details sheets and updated or added permit Conditions 39.a, 39.d, 39.e (newly condition), 40.b.v (new condition) and paragraph 17 of this review report. The updates are to comply with OAR 340-222-0035(6).

Permit

Comment #16:
Condition 5 contains the word Department twice. I thought all reference to the Department were being changed to DEQ and it appears to have been done everywhere else.

DEQ's Response:
Department is changed to DEQ as noted in permit Condition 5.

Comment #17:
Is Condition 5 only Federally enforceable?

DEQ's Response:
Condition 5 (Source Emission Reduction Plan (SERP)) is federally and State enforceable. SERP is codified in OAR 340-205 and it is therefore state enforceable. SERP is federally enforceable because division OAR 340-205 has been adopted in Oregon State Implementation Plan. However, this Condition will no longer be applicable to Owens Brockway after the CCF is installed and operating because the potential emissions will be less than 100 tpy of any regulated pollutant.

Comment #18:
Condition 39.a. I believe the GHG PSEL should be 36,300 (see detail sheet page 1).

DEQ's Response:
DEQ agrees and GHG PSEL is changed to 36,300 tpy in permit Condition 39.a.

Comment #19:
Condition 39.d. I believe the PM/PM10 and PM2.5 PSELs should be 16, the SO2 PSEL 33, the NOx PSEL 62, and the GHG PSEL 39,400 (see comments above).

DEQ's Response:
DEQ agrees and all of the changes are made in permit Condition 39.d.

Comment #20:
Condition 40.b.ii. Should the EF for PM10 be 0.79 rather than 0.8 (see comment above)?

DEQ's Response:
As specified in the response to comment #7, this is merely rounding up a stack test result from 0.79 to 0.8 lbs/ton and no changes are made to the permit and review report.

Comment #21:
Condition 40.b.iii. Emission factors for CO and VOC should be added to this table for the duct burner (EFs shown on page 10 of the detail sheets).

DEQ's Response:
The CCF Air Pollution Control system will reduce PM, SO2, and NOx emissions, but it is not designed to control CO or VOC emissions, which may increase slightly due to additional fuel used in the CCF duct burner. It is not necessary to specify the CO and VOC emission factors for the duct burners because the emissions of duct burners will be a part of the total emissions from the Furnace D (CCF) stack. Both CO and VOC emissions are expected to be minor and the EF verification testing required in permit Condition 44 will determine the CO and VOC EFs that will be used to calculate actual emissions and establish the CO and VOC PSELs in the next permit renewal.

Comment #22:
It is interesting to note that after the CCF is operational, that the facility will no longer be a major source subject to Title V permitting as all PSELs will be less than 100 T/Y. However, since a NSPS and NESHAPS apply to the facility it will still be required to maintain the Title V permit.

DEQ's Response:
The commenter is correct that Owens Brockway will no longer be a major source after the CCF is installed and operational. However, Owens Brockway is subject to 40 CFR 63 Subpart SSSSSS – National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources (NESHAP 6S). As specified in 40 CFR 63.11449(e) Owens Brockway is still required to obtain a Title V permit because it is subject to NESHAP 6S.

Owens Brockway's Title V applicability is not affected by NSPS subpart CC - Standards of Performance for Glass Manufacturing Plants because this subpart does not require an affected facility to obtain a Title V permit.

*** End of Response to Gary Andes' Comments ***

I am submitting these comments now as I will be unable to attend the April 4 virtual public hearing on this permit modification.

If you have any questions regarding my above comments, please feel free to call me at 503/930-5540.

I would request a copy of the final permit, review report, detail sheets, and Presiding Officer report (required by OAR 340-209-0070(2)(c)) with response to comments. I would like these documents in hard copy, rather than electronically.

Gary Andes
Nehalem, OR

*** End of Gary Andes' Comments ***

Written Comments from Earthjustice et al Received April 10, 2024
For the complete comments please see the attached comment letter from Earthjustice, Cully Air Action Team (CAAT), National Parks Conservation Association, Neighbors for Clean Air, Northwest Environmental Defense Center (NEDC), Oregon Environmental Council, and Verde. Only the summaries of the comments are included below.

Comment I: NAAQS Verification Modeling
Comment Summary: DEQ should amend Condition 15a to ensure that Owens-Brockway uses the most representative data to demonstrate through modeling that the facility's emissions will not cause or contribute to a violation of National Ambient Air Quality Standards ("NAAQS"). DEQ should require Owens-Brockway to model emissions to demonstrate how the facility's emissions will affect Oregon's compliance with NAAQS based on source testing performed after the pollution control is installed and operating. DEQ should also clarify that this modeling is intended to demonstrate "that the facility will not cause or contribute to a projected exceedance of any National Ambient Air Quality Standard (NAAQS)" rather than the vaguer language used in the current draft permit about demonstrating "compliance with" NAAQS.

DEQ's Response to Comment I: NAAQS Verification Modeling
DEQ agrees that the NAAQS verification modeling in permit Condition 15.a must use the emission factors for Furnace D measured during the performance tests after the CCF is installed and operational. Condition 15.a is updated by adding the underlined "and the after-control emission factors for Furnace D measured during the performance tests as required in Condition 45" as follows:

> 15.a. No later than 6 months after the CCF pollution control system is built and operating, unless otherwise approved by DEQ in writing, the permittee may perform air dispersion modeling analysis based on updated facility profile, emission points and the after-control emission factors for Furnace D measured during performance tests as required in Condition 45 to demonstrate compliance with National Ambient Air Quality Standards (NAAQS).

DEQ does not agree that "to demonstrate compliance with National Ambient Air Quality Standards (NAAQS)" is vague. Compliance with NAAQS means the permittee will not cause or contribute to a projected exceedance of any NAAQS. Therefore, no other changes to permit Condition 15.a are necessary.

Comment II: Lifting Production Limits
Comment Summary: DEQ must revise Condition 15.f in the permit to ensure that Owens-Brockway can only lift its current production limits after modeling demonstrates that operating at maximum capacity will not threaten ambient air quality or increase public health risks from the facility's emissions. First, DEQ should clarify that it will only consider lifting production limits based on NAAQS modeling if the modeling reflects the impact of Owens-Brockway's emissions on air quality when the facility is operating at full capacity—that is, producing 82,125 tons per year without any production or operational constraints. Second, because the production limits are partly determined by the health risks identified in Owens-Brockway's Cleaner Air Oregon risk assessment, Condition 15.f needs to clarify that any air dispersion modeling aimed at justifying the lifting of production limits must also examine arsenic and lead emissions—not just NAAQs criteria pollutants—associated with unrestricted production.

DEQ's Response to Comment II: Lifting Production Limits
First, permit Condition 15.a is modified to include the requirements to use after-control emission factors for Furnace D after CCF control is installed and operational to verify the NAAQS modeling. The modeling must use the maximum production rate or any other new production rate the permittee seeks to be the new

production limit to demonstrate compliance with NAAQS. A similar change is not necessary in Condition 15.f.

Secondly, the production limits in permit Condition 13 are associated with NAAQS modeling only. Even if those production limits are changed, it will not impact the Cleaner Air Oregon (CAO) production limits (same annual and daily limits) and the risk limits in permit Condition 41. To change those CAO production and risk limits (including arsenic and lead emission limits) the permittee must re-submit CAO risk assessment with updated after-control emission factors for Furnace D to demonstrate that the health risks are at protective levels. Therefore, no additional changes to permit Condition 15.f are necessary.

Comment III: Particulate Matter Source Testing

Comment Summary: DEQ should revise the permit to require Owens-Brockway to source test every 24 months to ensure compliance with all applicable particulate matter emissions limits, even after the facility's CCF control is installed and operational. Requiring Owens-Brockway to test once every five years is insufficient to ensure that the facility complies with all applicable particulate emissions limits because conditions at Owens-Brockway can change and increase emissions, including the CCF control failing to reduce emissions as efficiently as expected. Accordingly, DEQ and Owens-Brockway should recheck emissions more frequently (at least every 24 months) to ensure that public health and the environment are protected from this harmful air pollutant.

DEQ's Response to Comment III: Particulate Matter Source Testing

Permit condition 19.b specifies a filterable PM limit of 0.2 lb/ton glass (40 CFR 60.292) and permit condition 20.b requires performance tests within 90 days of operating the CCF controls and every 24-months thereafter. If the removal efficiency determined from two consecutive source tests is 98% or better, the permittee may reduce the testing frequency to once every 5-years. This approach is justified based on the results of past tests that were conducted when Furnace D was not controlled.

The following table shows the filterable PM results of 3 tests conducted in 2019 and 2020 without control. The average of those tests is 0.58 lb/ton glass which meets the limit of 1.0 lb/ton glass for uncontrolled Furnace D. When the CCF is operational permit Condition 20.b.i requires a minimum of filterable control efficiency of 95%. With 95% control efficiency the average of the filterable PM emissions would be 0.029 lb/ton which is 14.5% of the limit of 0.2 lb/ton glass for controlled Furnace D. If the control efficiency is 98% the average of the filterable PM emissions would be 0.012 lb/ton which is 6% of the limit of 0.2 lb/ton glass for controlled Furnace D. The compliance margin is expected to remain the same when the CCF control system is operational with a minimum filterable PM control efficiency of 95% or even better to 98%.

In addition to the performance tests, the operational parameters of the CCF control system are monitored on a continuous basis to ensure proper operations as required in permit Condition 37. Therefore, the permit has adequate monitoring to ensure compliance with the filterable PM emission limit of 0.2 lb/ton glass melted.

Filterable PM (lb PM/Ton glass)			
	Without Control	**With (95% CE)**	**With (98% CE)**
May-19 Test	0.63	0.032	0.013
Jun-20 Test	0.60	0.030	0.012
Aug-20 Test	0.52	0.026	0.010

Filterable PM (lb PM/Ton glass)			
	Without Control	**With (95% CE)**	**With (98% CE)**
Average:	0.58	0.029	0.012
Permit Limit	**1.0**	**0.2**	**0.2**
Permit Limit Citation	Condition 19.a	Condition 19.b	Condition 19.b

Permit condition 17 specifies a total PM limit of 0.1 gr/scf (OAR 340-226-0210(2)) and permit condition 18.b requires performance tests within 90 days of operating the CCF controls and every 5 years thereafter. DEQ agrees with commenters to increase the testing frequency from once every 5 years to every 24-months. This change is also to align with the testing frequency for filterable PM in permit Condition 20.b. However, if the filterable PM removal efficiency determined from two consecutive source tests is 98% or better, the permittee may reduce the testing frequency for total PM to once every 5-years. This approach is justified based on the results of past tests that were conducted when Furnace D was not controlled.

The following table shows the total PM results of 3 tests conducted in 2019 and 2020 without control and corresponding filterable PM (FPM), total PM (TPM), condensable PM (CPM). Please note that the permittee did not meet the permit limit of 0.1 gr/scf without the control system.

Total PM (gr/scf) – Without Control				
	FPM	**TPM**	**CPM**	**CPM(%)**
May-19 Test	0.100	0.120	0.020	17%
Jun-20 Test	0.086	0.110	0.024	22%
Aug-20 Test	0.097	0.127	0.030	24%
Average:	0.094	0.119	0.025	21%
Permit Limit	NA	**0.10**	NA	NA
Permit Limit Citation	NA	Condition 17	NA	NA

The following table shows that with control efficiency of 95% on filterable PM the average total PM would be 0.0294 gr/scf which is 29.4% of the limit 0.1 gr/scf.

Total PM (gr/scf) – With Control efficiency of 95%			
	Controlled FPM	**Controlled TPM**	**CPM(%) in Controlled TPM**
May-19 Test	0.0050	0.0250	80%
Jun-20 Test	0.0043	0.0283	85%
Aug-20 Test	0.0049	0.0349	86%
Average:	0.0047	0.0294	84%
Permit Limit	NA	**0.10**	NA
Permit Limit Citation	NA	Condition 17	NA

Furthermore, if the control efficiency is increased to 98% on filterable PM, the average total PM would be 0.0266 gr/scf which is 26.6% of the limit 0.1 gr/scf. See the following table. Therefore, if the filterable PM removal efficiency determined from two consecutive source tests is 98% or better, the permittee is allowed to

reduce the testing frequency for total PM to once every 5-years. This approach is justified based on the results of past tests that were conducted when Furnace D was not controlled.

Total PM (gr/scf) - With Control efficiency of 98%			
	Controlled FPM	**Controlled TPM**	**CPM(%) in Controlled TPM**
May-19 Test	0.0020	0.0220	91%
Jun-20 Test	0.0017	0.0257	93%
Aug-20 Test	0.0019	0.0319	94%
Average:	0.0019	0.0266	93%
Permit Limit	NA	**0.10**	NA
Permit Limit Citation	NA	Condition 17	NA

The compliance margin is expected to remain the same when the CCF control system is operational with a minimum total PM control efficiency of 95% or even better to 98%.

In addition to the performance tests, the operational parameters of the CCF control system are monitored on a continuous basis to ensure the proper operations as required in permit Condition 37. Therefore, the permit has adequate monitoring to ensure the compliance with the total PM emission limit of 0.1 gr/scf.

Please note DEQ has the authority to require more performance testing if there is evidence that the existing requirements cannot ensure compliance with emission limits. In conclusion, the updated monitoring requirements for filterable and total PM emission limits meet the requirements of 40 CFR 70.6(c)(1) and OAR 340-218-0050(3)(a).

In summary, permit Condition 18.b is updated to increase the total PM testing frequency from every 5 years to every 24-months except as specified in the newly added Condition 18.b.i:

“18.b.i. If the removal efficiency of filterable-PM emissions determined from two consecutive source tests is 98% or better in accordance with Condition 20.b.ii, the permittee may reduce the total PM testing frequency to once every 5-years.”

*** End of Response to Earthjustice’s Comments ***

End of Response to Comments

Attachments

- Updated Detail Sheets: “TVDS_26-1876_Issued_June2024”
- Written Comments from Gary Andes, Nehalem, Oregon, received by DEQ on: March 19, 2024
- Comments from Earthjustice et. al., received by DEQ on: April 10, 2024
- Transcribed audio from the Owens-Brockway Glass Container’s Public Hearing DEQ held: 4/4/2024: “OwensBrockway_HearingAudioOnly_04-04-24.”

Plant Site Emissions Limit Summary

	$PM_{2.5}$	PM/PM_{10}	SO_2	NO_x	CO	VOC	GHG	
EU4 "A" Furnace	--	1.8E+01	6.1E+01	1.8E+02	5.8E+00	5.8E+00	24693	tons/yr
EU4 "B" Furnace	--	7.3E+00	2.4E+01	7.2E+01	2.3E+00	2.3E+00	--	tons/yr
EU4 "C" Furnace	--	1.1E+01	3.5E+01	8.6E+01	3.3E+00	3.3E+00	--	tons/yr
EU4 "D" Furnace	--	4.9E+00	4.1E+00	0.0E+00	0.0E+00	0.0E+00	16562	tons/yr
EU1& EU3 (Batch Baghouse)	--	8.5E-02	--	--	--	--	--	tons/yr
EU2: Inhouse Cullet Process	--	1.0E+00	--	--	--	--	--	tons/yr
Cullet Processor	--	1.6E+00	--	--	--	--	--	tons/yr
EU5 - Forming Ventilator	--	1.8E+01	2.1E+01	--	--	--	--	tons/yr
EU9 Mold Swab Operation	--	2.7E+01	--	--	--	--	--	tons/yr
EU6 - Misc. Fuel burning	--	1.3E-01	1.3E-01	5.2E+00	4.3E+00	3.0E-01	5597	tons/yr
EU7 (Boiler) Nat. Gas	--	6.0E-03	6.2E-03	3.4E-01	8.4E-02	1.4E-02	--	tons/yr
EU10 - Machine Repair	--	8.8E-01	--	--	--	--	--	tons/yr
EU10 - Mold Bench	--	8.8E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	tons/yr
1978 Baseline Emissions:	**--**	**92**	**145**	**343**	**16**	**12**	--	**tons/yr**

(Previous) Netting Basis	**91**	**92**	**145**	**343**	**16**	**12**	**46,900**	**tons/yr**
(Previous) PSEL	**100**	**109**	**184**	**382**	**99**	**39**	**100,500**	**tons/yr**
***PSEL, January 1, 2022**	**53**	**56**	**108**	**137**	**11**	**4**	**36,300**	**tons/yr**
***Netting Basis, 01/01/2022**	**76**	**83**	**140**	**157**	**16**	**12**	**--**	**tons/yr**
Aggregate Insign. Activities	**1**	**1**	--	--	--	**1**	--	**tons/yr**
PSEL, after CCF (*Projection*)	**17**	**17**	**33**	**62**	**14**	**4**	**39,400**	**tons/yr**
Increase (Decrease)	**-83**	**(92)**	**(151)**	**(320)**	**(85)**	**(35)**	**-**	**tons/yr**
Unassigned after CCF	**10**	**25**	**40**	**40**	**--**	**--**	**--**	**tons/yr**
SER	**10**	**25**	**40**	**40**	**100**	**40**	**75,000**	**tons/yr**

*Effective 01/01/2022, PSEL reduced pursuant to "Stipulated Agreement and Final Order" signed on August 8/9, 2021. And the remaining PSEL for PM, SO2, NOx for shut-down furnaces A, B, C removed from Netting Basis after internal offset of the original EU4 (i.e., GM1, GM2, GM3, GM4)
Effective 07/31/2025, total combined PSEL for PM10 + NOx + SO2 = 275 tons/yr, 25 tons less than the 01/01/2022 PSEL.

1978 Baseline PM/PM_{10} Emissions

Emissions Unit	1978 Baseline Production		Emission Factor		Ref.	PM/PM_{10} Emissions	
EU1& EU3 (Batch Baghouse)	94098	tons sand+	*1.8E-03*	lbs/ton	AP42	0.08	tons/yr
EU2: Inhouse Cullet Process	23276	tons cullet	8.6E-02	lbs/ton	AP42	1.00	tons/yr
Cullet Processor	37800	tons cullet	8.6E-02	lbs/ton	AP42	1.63	tons/yr
EU4: Furnace-A, pre-renovation	57630	tons glass	6.30E-01	lbs/ton	ST Avg.-A-	18.15	tons/yr
Furnace-B	23284	tons glass	6.30E-01	lbs/ton	ST Avg.-A-	7.33	tons/yr
Furnace-C	33161	tons glass	6.8E-01	lbs/ton	1984 ST	11.27	tons/yr
Furnace-D, electric	41096	tons glass	2.4E-01	lbs/ton	1983 ST	4.93	tons/yr
EU5 - Forming Ventilator-B-	340	days/yr	4.5E+00	lb/hr	OB	18.36	tons/yr
EU9 Mold Swab Operation-C-	54320	lbs swab mat.	1.0E+00	lb/lb	OB	27.16	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	2.5E+00	lb/10^6 ft^3	AP42	0.13	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	2.5E+00	lb/10^6 ft^3	AP42	0.01	tons/yr
EU10 - Machine Repair	365	days/yr	2.0E-01	lb/hr	OB/Mfg.	0.88	tons/yr
EU10 - Mold Bench	365	days/yr	2.0E-01	lb/hr	OB/Mfg.	0.88	tons/yr
						92	**PM_{10}****

Corrugated board shredder ##

Note: *Raw materials (e.g., sand, soda ash, etc.) usage in 1978 obtained from OB's annual report dated 03/21/1979.*

1978 glass production data submitted by OB on 02/23/2010: Furnaces A, B & C mostly produced "Flint" glass, and Furnace-D produced ~90% Amber & ~10% green.

ALL other process throughputs (e.g., cullet, swabbing lubricant/material, NG usage) and operating schedule came from OB's original Title-5 application.

-A- *Average of all PM source tests performed on Furnaces A & D from 1983 to 2007; see page A12. [Note: AP42 PM EF of 1.3 lbs/ton is too high for "modified-process."]*

See 40 CFR 60.291 (subpart CC) for definition of "modified-process." O-B is subject to PM limit of 1 lb/ton applicable to modified process.

-B- *Emissions in 1978 from "Forming Ventilator" before "HEST-A" baghouse was installed in 1982 to abate $SnCl_4$ used in bottle surface treatment process. Currently the surface treatment process applies mono-butyl-tin trichloride (MBTT) in lieu of $SnCl_4$ then injects NH_3 to combine excess Sn to form solid PM that baghouse can collect.*

-C- *Mold Swab operations manually apply oil-graphite mixture onto heated molds.*

** *All PM/PM10 emissions from baseline are considered PM10. The PM-only emissions from EU9 are excluded from the baseline PM10 calculations.*

Corrugated board shredder that Owens operated in 1978 has been dismantled and removed from the site.

The shredder operated about 2500 hours in 1978. Estimated hourly rate from the shredder was 2.5 lbs PM/hr.

1978 Baseline SO_2 & NO_x Emissions

Emissions Unit	Baseline Production		Emission Factor		Ref.	SO_2 Emissions	
EU4: Furnace-A, pre-renovation	57630	tons Flint	2.1E+00	lbs/ton	ST Avg.[-E-]	6.05E+01	tons/yr
Furnace-B	23284	tons Flint	2.1E+00	lbs/ton	ST Avg.[-E-]	2.44E+01	tons/yr
Furnace-C	30115	tons Flint	2.1E+00	lbs/ton	ST Avg.[-E-]	3.48E+01	tons/yr
	3046	tons Amber					
Furnace-D, electric	41096	tons Amber and Green	2.0E-01	lbs/ton	1983 ST	4.11E+00	tons/yr
EU5 - Forming Ventilator[-D-]	41400	lbs SO_2	1.0E+00	lb/lb	OB	2.07E+01	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	AP42	1.34E-01	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	2.6E+00	lb/10^6 ft^3	DEQ	6.24E-03	tons/yr
						145	**tons/yr**

Emissions Unit	Baseline Production		Emission Factor		Ref.	NO_x Emissions	
**EU4: Furnace-A, pre-renovation	57630	tons glass	6.2E+00	lbs/ton	AP42	1.79E+02	tons/yr
Furnace-B	23284	tons glass	6.2E+00	lbs/ton	AP42	7.22E+01	tons/yr
Furnace-C	33161	tons glass	5.2E+00	lbs/ton	1984 ST	8.62E+01	tons/yr
Furnace-D, electric	41096	tons glass	*-ND-*	lbs/ton	1983 ST	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	1.0E+02	lb/10^6 ft^3	AP42	5.15E+00	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	1.4E+02	lb/10^6 ft^3	AP42	3.36E-01	tons/yr
						343	**tons/yr**

[-D-] *Sulfur dioxide emissions in 1978 from "Forming Ventilator" before "HEST-A" baghouse was installed.*
Owens Brockway used to manufacture small quantity of glass containers used in medical field that received the SO_2 gas treatment process.

[-E-] *Average of all SO_2 source tests performed on Furnaces A & D from 1983 to 2007; see page A12. [Note: AP42 SO_2 EF of 3.4 lbs/ton is too high.]*

[**] *Furnace-A modification completed on 4/07/1983 - enlarged the regenerative system/melt area from 566 to 786 ft^2 and increased the number of firing ports from 8 to 10; Furnace-B shutdown permanently in Dec.1978; Furnace-C shutdown permanently on April 2, 1990; and Electric Furnace-D converted to NG fired furnace in 1986.*
No NOx source test data exist for furnaces A & B before their conversion/shutdown.

1978 Baseline CO & VOC Emissions

Emissions Unit	Baseline Production		Emission Factor		Ref.	CO Emissions	
EU4: Furnace-A, pre-renovation	57630	tons glass	2.0E-01	lbs/ton	AP42	5.76E+00	tons/yr
Furnace-B	23284	tons glass	2.0E-01	lbs/ton	AP42	2.33E+00	tons/yr
Furnace-C	33161	tons glass	2.0E-01	lbs/ton	AP42	3.32E+00	tons/yr
Furnace-D, electric	41096	tons glass	--	$lb/10^6$ ft^3	--	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	8.4E+01	$lb/10^6$ ft^3	AP42	4.33E+00	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	3.5E+01	$lb/10^6$ ft^3	AP42	8.40E-02	tons/yr
Fuel Oil	0	10^3 gal oil	5.0E+00	$lb/10^3$ gal	AP42	0.00E+00	tons/yr
						16	**tons/yr**

Emissions Unit	Baseline Production		Emission Factor		Ref.	VOC Emissions	
EU4: Furnace-A, pre-renovation	57630	tons glass	2.0E-01	lbs/ton	AP42	5.76E+00	tons/yr
Furnace-B	23284	tons glass	2.0E-01	lbs/ton	AP42	2.33E+00	tons/yr
Furnace-C	33161	tons glass	2.0E-01	lbs/ton	AP42	3.32E+00	tons/yr
Furnace-D, electric	41096	tons glass	--	$lb/10^6$ ft^3	--	0.00E+00	tons/yr
EU6 - Misc. Fuel burning	103	10^6 ft^3 NG	5.8E+00	$lb/10^6$ ft^3	AP42	2.99E-01	tons/yr
EU7 (Boiler) Nat. Gas	4.8	10^6 ft^3 NG	5.8E+00	$lb/10^6$ ft^3	AP42	1.39E-02	tons/yr
Fuel Oil	0	10^3 gal oil	5.6E-01	$lb/10^3$ gal	AP42	0.00E+00	tons/yr
						12	**tons/yr**

Current PM/PM_{10} Emissions (before CCF)

Emissions Unit	SCC	Annual Production		Emission Factor		Ref.	PM_{10} Emissions	
EU1& EU3 (Batch Baghouse)	30510405/499	94098	tons mat.	1.8E-03	lbs/ton	AP42	0.08	tons/yr
Blending & mixing process	30510199/299							
EU2 - Inhouse Cullet Process	30501413	23276	tons cullet	8.6E-02	lbs/ton	AP42	1.00	tons/yr
Cullet Processor		0	tons cullet	1.8E-01	lbs/ton	AP42	0.00	tons/yr
EU4: Furnace-A	30501401	0	tons glass	7.0E-01	lbs/ton	ST Avg.-F-	0.00	tons/yr
Furnace-D	30501401	*82125*	tons glass	*8.0E-01*	lbs/ton	ST Avg.-G-	**32.85**	tons/yr
EU5 - HEST-A Baghouse	30501406	35	tons MBTT	2.2E+01	lbs/ton	OB	0.39	tons/yr
EU9 Mold Swab Operations **		*10000*	lbs swab	1.0E+00	lb/lb	OB	5.00	tons/yr
EU6 - Misc. Fuel burning	30590003	150	10^6 ft^3 NG-MAX-	2.5E+00	lb/10^6 ft^3	AP42	0.19	tons/yr
EU7 (Boiler) Nat. Gas	10100602	100	10^6 ft^3 NG-MAX-	2.5E+00	lb/10^6 ft^3	AP42	0.13	tons/yr
EU10 - Machine Repair		4380	hrs/yr	2.0E-01	lb/hr	OB/Mfg.	0.44	tons/yr
EU10 - Mold Bench		4380	hrs/yr	2.0E-01	lb/hr	OB/Mfg.	0.44	tons/yr
							41	**tons/yr**

PM/PM_{10} Emissions Estimate after CCF (will be verified via ST)

Furnace-D, CCF Controlled	30501401	*82125*	tons glass	*2.0E-01*	lbs/ton	CCF Mfr.	**8**	tons/yr
PM/PM_{10} Plant Site Emissions after CCF (Approximation)							**16**	tons/yr
PM Generic Level PSEL							**24**	tons/yr

-F- Average of all PM source tests performed on Furnace A from 1983 to 2020; see page A12.

-G- Average of recent PM source tests performed on Furnace D in 2019 and 2020; see page A12.

***The current use/estimate of Graphite oil in mold swabbing operation is much less due to waste reduction.*

All raw material usage is also much less than listed figure due to the shut-down of all furnaces other than GM4.

-MAX- Annual (maximum) production data provided in the March 15, 1995 Title V permit application.

Current $PM_{2.5}$ Emissions (before CCF)

Emissions Unit	PM_{10} PSEL effective 2011	$PM_{2.5}$ % in PM_{10}	Ref.	$PM_{2.5}$ PSEL	
EU1& EU3 (Batch Baghouse)	0.08	*100%*	estimate[-1-]	0.08	tons/yr
EU2: Cullet Processing	1.00	*6%*	estimate[-2-]	0.06	tons/yr
EU4: Furnace D	32.85	*96%*	AP42	31.54	tons/yr
EU9: Mold Swabbing (i.e., lubricant)	5.00	*100%*	estimate[-3-]	5.00	tons/yr
EU5 HEST-A Baghouse	0.39	*100%*	estimate[-1-]	0.39	
EU6 - Misc. Fuel burning	0.19	*100%*	AP42	0.19	tons/yr
EU7 (Boiler) Nat. Gas	0.13	*100%*	AP42	0.13	tons/yr
EU10 - Machine Repair	0.44	*100%*	estimate[-1-]	0.44	tons/yr
EU10 - Mold Bench	0.44	*100%*	estimate[-1-]	0.44	tons/yr
	40.5	**tons/yr**		**38.3**	

$PM_{2.5}/PM_{10}$ **R**atio:	0.92		
PM_{10} Netting Basis:	41		tons/yr
$PM_{2.5}$ Netting Basis:	38	[-4-]	tons/yr

[-1-] *All baghouse controlled PM/PM_{10} emissions are considered $PM_{2.5}$*

[-2-] *AP42's $PM_{2.5}$ fraction (Table 11.19.2-2) for crushed stone is used for cullet crushing/processing.*

[-3-] *Particle size distribution data published by www.engineeringtoolbox.com used for oil (i.e., swab lubricants) smoke; 0.3 - 1 micron.*

[-4-] *Pursuant to OAR 340-222-0046(2)(b), the initial PM2.5 netting basis was adjusted up by 4 tons (<5tons).*

Current SO_2 & NO_x Emissions (before CCF)

Emissions Unit		Annual Production		Emission Factor		Ref.	SO_2 Emissions	
EU4: Furnace-A		0	tons glass	3.1E+00	lbs/ton	ST Avg.	0.0	tons/yr
Furnace-D		82125	tons glass	2.9E+00	lbs/ton	ST Avg.[-H, I-]	119.1	tons/yr
EU6 - Misc. Fuel burning	*est. NG usage*	150	10^6 ft^3 NG	1.7E+00	lb/10^6 ft^3	AP42	0.1	tons/yr
EU7 (Boiler) Nat. Gas	*est. NG usage*	100	10^6 ft^3 NG	1.7E+00	lb/10^6 ft^3	AP42	0.1	tons/yr
							119	**tons/yr**

Emissions Unit	Annual Production		Emission Factor		Ref.	NO_x Emissions	
EU4: Furnace-A	0	tons glass	4.7E+00	lbs/ton	ST Avg.[-J-]	0.0	tons/yr
Furnace-D	82125	tons glass	3.7E+00	lbs/ton	ST Avg.[-K-]	151.9	tons/yr
EU6 - Misc. Fuel burning	150	10^6 ft^3 NG	1.0E+02	lb/10^6 ft^3	AP42	7.5	tons/yr
EU7 (Boiler) Nat. Gas	100	10^6 ft^3 NG	1.0E+02	lb/10^6 ft^3	AP42	5.0	tons/yr
						164	**tons/yr**

SO2 & NOx Emissions Estimate after CCF (will be verified via ST)

SO2, Furnace-D	82125	tons glass	8.0E-01	lbs/ton	CCF Mfr.	32.9	tons/yr
SO2 Emissions after CCF (estimate)						33.1	tons/yr
SO2 Generic Level PSEL						**39**	tons/yr
NOx, Furnace-D	82125	tons glass	1.2E+00	lbs/ton	CCF Mfr.	49	tons/yr
NOx Plant Site Emissions after CCF (Approximation)						**62**	tons/yr

[-H-] Average of all SO_2 source tests performed on Furnace D from 2019 to 2020; see page A12.

[-I-] The SO_2 emissions partly depend on the decomposition of sulfates in the batch material and from the oxidation of sulfur in the fuel used. The Owens furnaces burn essentially sulfur-free NG, and the chemistry of batch materials remained fairly constant since baseline.

[-J-] Average of all NOx source tests performed on Furnace A from 1983 to 2020; see page A11.

[-K-] Average of all NOx source tests performed on Furnace D from 2019 to 2020; see page A11.

Current CO & VOC Emissions

Emissions Unit	Annual Production			Emission Factor		Ref.	CO Emissions	
EU4: Furnace-A	0	tons glass		1.90E-02	lbs/ton	2019 ST	0.00	tons/yr
Furnace-D	82125	tons glass		4.00E-03	lbs/ton	2019 ST	0.16	tons/yr
EU6 - Misc. Fuel burning	150	10^6 ft^3 NG		8.4E+01	lb/10^6 ft^3	AP42	6.30	tons/yr
EU7 (Boiler) Nat. Gas	100	10^6 ft^3 NG		8.4E+01	lb/10^6 ft^3	AP42	4.20	tons/yr
Fuel Oil	--	10^3 gal oil	-N-	5.0E+00	lb/10^3 gal	AP42	0.00	tons/yr
							10.7	**tons/yr**

Emissions Unit	Annual Production			Emission Factor		Ref.	VOC Emissions	
EU4: Furnace-A	0	tons glass		1.80E-01	lbs/ton	2019 ST	0.00	tons/yr
Furnace-D	82125	tons glass		9.00E-03	lbs/ton	2019 ST	0.37	tons/yr
EU5 - Hot end Surface Treat.	35	tons MBTT		9.0E+01	lbs/ton	OB	1.58	tons/yr
EU6 - Misc. Fuel burning	150	10^6 ft^3 NG		5.5E+00	lb/10^6 ft^3	AP42	0.41	tons/yr
EU7 (Boiler) Nat. Gas	100	10^6 ft^3 NG		5.5E+00	lb/10^6 ft^3	AP42	0.28	tons/yr
Fuel Oil	--	10^3 gal oil	-N-	5.6E-01	lb/10^3 gal	AP42	0.00	tons/yr
							2.6	**tons/yr**

CO & VOC Emissions Estimate from GM4 after CCF (will be verified via ST)

						CO Emissions	
Plant site CO Emissions before CCF						10.7	tons CO/yr
CCF Duct Burner	70	10^6 ft^3 NG		8.4E+01	lb/10^6 ft^3	Mfr.	2.9	tons CO/yr
Total						**13.6**	tons CO/yr

						VOC Emissions	
Plant site VOC Emissions before CCF						2.63	tons VOC /yr
CCF Duct Burner	70	10^6 ft^3 NG		5.5E+00	lb/10^6 ft^3	Mfr.	0.19	tons VOC /yr
Total						**2.8**	tons CO/yr

-N- *EU7 Boiler is capable of burning fuel oil but burns natural gas only. Zero fuel oil usage.*

2010 Baseline Green House Gas (GHG) Emissions

Emissions Unit	Annual Production		EPA's GHG Emission Factor			CO_2,e Emissions	
EU4 Furnaces A & D							
Limestone Addition:	11766	tons		**0.44**	**ton CO_2,e/ton**	**5177**	**tons/yr**
Soda Ash Addition:	12252	tons		**0.415**	**ton CO_2,e/ton**	**5085**	**tons/yr**
EU4: Furnace-A	308	10^6 ft^3 NG					
Furnace-D	207	10^6 ft^3 NG					
EU6 - Misc. Fuel burning	93	10^6 ft^3 NG	CO_2	5.302E+01	Kg/MMBtu		
EU7 (Boiler) Nat. Gas	0	10^6 ft^3 NG	CH_4 as CO_2,e	2.100E-02	Kg/MMBtu		
Total NG Usage:	608	10^6 ft^3 NG	N_2O as CO_2,e	3.100E-02	Kg/MMBtu		
NG conversion (1028 Btu/ft^3)	625466	MMBtu NG	**Total CO_2,e**	**53.0720**	**Kg/MMBtu**	33194734	Kg/yr
						36591	**tons/yr**
			Total 2010 Baseline GHG emissions:			**46852**	**tons/yr**

Limestone usage calculated as 8.49% of total glass pull from the A & D furnaces.

Soda Ash usage calculated as 8.84% of total glass pull from the A & D furnaces.

Requested Green House Gas (GHG) Emissions

Emissions Unit	Annual Production		EPA's GHG Emission Factor	CO_2,e Emissions	
EU4 Furnace D					
Limestone Addition:	7000	tons	**0.44 ton CO_2,e/ton**	**3080**	**tons/yr**
Soda Ash Addition:	7500	tons	**0.415 ton CO_2,e/ton**	**3113**	**tons/yr**

				MMBtu**	NG EF Kg/MMBtu	CO_2,e Emissions Kg/yr	tons/yr	
EU4: Furnace-A	0	10^6 ft^3 NG	-MAX-	0	5.3072E+01	0.00E+00	0	
Furnace-D	250	10^6 ft^3 NG	-MAX-	257000	5.3072E+01	1.36E+07	15035	
EU6 - Misc. Fuel burning	150	10^6 ft^3 NG	-MAX-	154200	5.3072E+01	8.18E+06	9021	
EU7 (Boiler) Nat. Gas	100	10^6 ft^3 NG	-MAX-	102800	5.3072E+01	5.46E+06	6014	
Total NG Usage:	500	10^6 ft^3 NG				2.73E+07	**30070**	**tons/yr**
NG conversion** (1028 Btu/ft^3)	514000	MMBtu NG						

Annual Estimate GHG emissions:	**36262**	**tons/yr**
After CCF Projected GHG emissions:	**39416**	**tons/yr**

GHG Emission Factor for Natural Gas Combustion

CO_2	5.30E+01	Kg/MMBtu
CH_4 as CO_2,e	2.10E-02	Kg/MMBtu
N_2O as CO_2,e	3.10E-02	Kg/MMBtu
Total CO_2,e	**5.31E+01**	**Kg/MMBtu** **

** Any one of the over-all EF listed below can also be used to calculate the CO_2e emissions from NG combustion.

5.3072E-02	Metric tons/MMBtu
5.8502E-02	tons/MMBtu
5.3072E-03	Metric tons/Therms
5.8502E-03	tons/Therms

-MAX- *Annual (maximum) natural gas usage data provided in the March 15, 1995 Title V permit application.*
It is highly unlikely the actual natural gas usage will ever reach the capacity of fuel burning equipment.

Furnace Source Test Results for NO_x (before CCF)

Furnace & Year Tested	NO_x (lb/hr)	lb/ton glass	lb/Mscf gas	cullet (%)	boost (kW-hr)	temp (F)	gas (Mscf/hr)	Ratio boost/gas
Furnace-D, 1986	29.5	5.6	1.18	24		2770	25.1	0.0
Furnace-D, 1993	18.9	2.5	0.68	61	820	2810	27.6	29.7
Furnace-D, 1998	24.0	3.0	0.95	56	1113	2771	25.2	44.2
Furnace-D, 2003	28.6	4.4	1.19	75	1249	2840	24.0	52.0
Furnace-D, 2007	20.0	2.9	0.85	46	942	2780	23.5	40.1
Furnace-D, 2019	26.9	3.6	1.13	75	697	2853	23.8	29.3
Furnace-D, June 2020	31.6	4.0	1.38	45	847	2807	22.9	37.0
Furnace-D, Aug 2020	26.3	3.6	1.19	45	830	2830	22.1	37.6
Furnace-D Average:		**3.7**						
NAAQS EF		4.82						
Furnace-A, 1983	45.2	5.3	1.51	32	1250	2813	29.9	41.8
Furnace-A, 1993	44.1	5.3	1.29	40	355	2810	34.1	10.4
Furnace-A, 1998	69.5	7.4	4.43	66	733	2861	15.7	46.7
Furnace-A, 2003	28.1	3.1	0.88	65	592	2848	32.1	18.4
Furnace-A, 2007	21.7	2.2	0.68	47	1048	2780	32.0	32.8
Furnace-A, 2019	33.7	4.0	0.22	81	885	2782	*150.5*	5.9
Furnace-A, 2020	34.0	3.7	0.23	73	700	2779	*148.0*	4.7
Furnace-A Average:		4.4						
Furnace-C, 1984	19.5	5.2	1.16	43	425	2800	16.8	25.3

Furnace Source Test Results for PM, CO, VOC, Pb & SO_2 (before CCF)

Furnace & Year Tested	PM lb/ton glass	Pb lb/ton glass	SO_2 lb/ton glass	CO lb/ton glass	VOC lb/ton glass	Cr lb/ton glass	Glass Color	$\%SO_3$ in Batch
Furnace-A, 05/16/1983	0.66		1.5				NA	NA
Furnace-A, 06/15/1993	0.82		1.3				Flint	0.242%
Furnace-A, 09/30/1998	0.76		1.9				Amber	0.240%
Furnace-A, 04/16/2003	--		2.0				Amber	0.301%
Furnace-A, 09/03/2003	0.56		--				--	--
Furnace-A, 11/16/2006	0.58		--				Amber	--
Furnace-A, 11/13/2007			3.1				Amber	0.260%
Furnace-A, 05/20/2019	0.96	4.15E-03	3.2	1.90E-02	1.80E-01	6.62E-04	Amber	--
Furnace-A, 08/18/2020	0.50	3.57E-03	3.6	--	--	--	Amber	--
Furnace-A Average:	0.7	3.86E-03	**3.3**					
Furnace-C, 1984 ST	0.68	--	0.7**				Amber/Green	--
Furnace-D_{elec}, 1983 ST	0.24	--	0.2				--	--
Furnace-D, 06/14/1993	0.7	--	2.1				Amber	0.261%
Furnace-D, 10/01/1998	0.5	--	1.7				Green	NA
Furnace-D, 04/15/2003	--	--	2.6				Amber	0.269%
Furnace-D, 09/04/2003	0.4	--	--				--	--
Furnace-D, 09/18/2006	0.7	--	--				Amber	--
Furnace-D, 11/12/2007	--	--	2.4				Amber	0.258%
Furnace-D, 05/15/2019	0.78	6.50E-03	3.1	4.00E-03	9.00E-03	3.33E-04	Green	--
Furnace-D, 06/11/2020	0.875	4.96E-03	2.8	--	--	--	Green	--
Furnace-D, 08/18/2020	0.71	5.20E-03	2.8	--	--	--	Amber	--
Furnace-D Average:	**0.79**	**5.6E-03**	**2.9**					
NAAQS EF used	0.81		3.74					

*** Furnace-C's 1984 SO_2 source test result of 0.74 lbs/ton is out of line with the rest of NG-combustion (forced air) furnaces; especially when compared to AP42 SO2 EF of 3.4 lbs/ton.*

LI Weston * DEQ

From: NWR AQ Permits * DEQ
Sent: Tuesday, March 19, 2024 5:12 PM
To: Marylou Andes; LI Weston * DEQ
Cc: NWR AQ Permits * DEQ; INAHARA Jill * DEQ
Subject: RE: Comments on Owens-Brockway Title V Permit #26-1876

Hello Gary,

Thaks for your comments on the Owens-Brockway Glass Container (OBGC) Inc.'s proposed permit with report and detail sheets.
I will keep records for the public and DEQ's/OBGC's draft documents and share them with the assigned permit writer, Weston Li, and our managers in the NWR AQ Permits division.

Best,
Julie

Julie Stowitschek
NWR-Air Quality
Permit Coordinator
700 NE Multnomah St., Ste. 600
Portland, OR 97232
Desk Tel: **503.229.5582**
Pronouns: She/Her/Hers
julie.stowitschek@deq.oregon.gov

From: Marylou Andes <mayasnanna@aol.com>
Sent: Friday, March 15, 2024 10:37 PM
To: NWR AQ Permits * DEQ <nwraqpermits@deq.oregon.gov>; Marylou Andes <mayasnanna@aol.com>; INAHARA Jill * DEQ <jill.inahara@deq.oregon.gov>
Subject: Comments on Owens-Brockway Title V Permit #26-1876

This is Gary Andes, a citizen of Oregon, residing in Nehalem, OR. I have reviewed the proposed permit, review report, and detail sheets associated with the above source and have the following comments on the revised draft.

First, let me thank DEQ staff for the excellent detailed explanations in response to the comments on this permit that I submitted in May 2023. Those responses helped clarify many of the concerns and questions I had with the initial draft permit. None the less, I still have some comments and questions concerning the current draft on public notice.

Review Report

The current Title V has an expiration date of 12/1/24. Was a Title V renewal application received by DEQ on or before 12/1/2023 as it should have been despite this current modification being processed? If so, that should be noted and included in Item 1 of the review report.

On 1/23/24, DEQ issued a Final Order and Stipulated Demand Notice to the company in the amount of $54,000 for violating the interim opacity limit in the MAO signed 10/21/21. This enforcement action should be noted and included in the review report. I suggest replacing Item 39 in the review report with this narrative and moving the existing Item 39 narrative concerning the City of Portland to Item 1 where other permit changes are described. As an alternative, both of these narratives could be put in Item 1.

The review report cover sheet does not show CAM (compliance assurance monitoring)(40 CFR Part 64 or OAR 340-212-0200 through 0280) as one of the applicable air programs and no discussion of CAM exists in the review report. Although CAM would not have applied to the main emission point, Furnace D, in the past because it had no controls, I believe CAM may apply when the CCF system is installed. However, since a NESHAP applies to the furnace and it appears that pre control PM emissions are less than 100 T/Y, it may not apply. In addition, other smaller emission units, although CAM will not likely be applicable, should be evaluated for CAM. In WR DEQ, we usually did this for all emission units at a facility in a table in the review report (see GP Toledo 21-0005 2023 review report pages 15-20 or Arauco 22-0143 2019 review report pages 14-15 as examples). A CAM discussion should be added to the review report, probably under Monitoring Requirements.

The PSEL Table in Item 17 of the review report doesn't show a PM PSEL. The PM10 row should be relabeled to PM/PM10. Why not round the baseline GHG value to 46,900 T/Y as I thought all GHG values were being rounded to the nearest 100 tons?

Item 23 says the 2021 TRI report was submitted to EPA. I suspect 2022 and 2023 were also submitted.

Detail Sheets

The 2nd footnote to the first table should be placed at the bottom of the first page rather than on the second page. This 275 ton/yr limit comes from the SAFO. However, does it have any relevance since the after CCF PSELs will add to only 125 T/Y, half that limit, according to page 1?

On page 6, the Furnace D PM/PM10 EF is shown as 0.80 lbs/ton, whereas the ST avg shown on page 14 is 0.79 lbs/ton.

There seems to be a conflict regarding the after CCF PM/PM10 PSEL. On page 1, it shows 24 T/Y, while on page 6 it shows 16 T/Y, which I believe is the correct value. Page 6 also references the old 24 T/Y PM Generic PSEL which no longer exists.

Page 7 shows the current PM2.5 PSEL but no calculation is shown for the after CCF PM2.5 PSEL. Page 1 shows the PM2.5 PSEL at 24 T/Y, which I believe is incorrect. I believe the PM2.5 PSEL should be 16 T/Y since all future emissions after CCF I believe are PM=PM10=PM2.5.

There also seems to be a conflict regarding the after CCF SO2 PSEL. On page 1, it shows 39 T/Y, while on page 8 it shows 33 T/Y, which I believe is the correct value. Page 8 also references the old 39 T/Y Generic SO2 PSEL which no longer exists.

Footnote K on page 9 indicates the NOx EF is the average of Furnace D Is from 1986 to 2020 but should state 2016-2020 according to the response given to my previous May 2023 comments on page 44 of the review report. This footnote should also be placed on the previous page to save space.

The VOC PSEL after CCF on page 1 should be rounded to 3.

The after CCF GHG PSEL on page 1 should be 39,400 T/Y when it is rounded on page 12.

If my above after CCF values are correct, then the PSEL table in the review report in Item 17 will need to be also revised.

Item 19 lists aggregate insignificant activities at the facility for PM and VOCs. However, I do not see that they were added to the PSEL details sheets for these pollutants either before or after CCF. AI of 1 T/Y should be added to the PM/PM10, PM2.5, and VOC PSEL calculations if not already somehow included in the PSEL values.

Permit

Condition 5 contains the word Department twice. I thought all reference to the Department were being changed to DEQ and it appears to have been done everywhere else.

Is Condition 5 only Federally enforceable?

Condition 39.a. I believe the GHG PSEL should be 36,300 (see detail sheet page 1).

Condition 39.d. I believe the PM/PM10 and PM2.5 PSELs should be 16, the SO2 PSEL 33, the NOx PSEL 62, and the GHG PSEL 39,400 (see comments above).

Condition 40.b.ii. Should the EF for PM10 be 0.79 rather than 0.8 (see comment above)?

Condition 40.b.iii. Emission factors for CO and VOC should be added to this table for the duct burner (EFs shown on page 10 of the detail sheets).

It is interesting to note that after the CCF is operational, that the facility will no longer be a major source subject to Title V permitting as all PSELs will be less than 100 T/Y. However, since a NSPS and NESHAPS apply to the facility it will still be required to maintain the Title V permit.

I am submitting these comments now as I will be unable to attend the April 4 virtual public hearing on this permit modification.

If you have any questions regarding my above comments, please feel free to call me at 503/930-5540.

I would request a copy of the final permit, review report, detail sheets, and Presiding Officer report (required by OAR 340-209-0070(2)(c)) with response to comments. I would like these documents in hard copy, rather than electronically.

Gary Andes
35740 Clipper Court
Nehalem, OR 97131

April 10, 2024

Attn: Weston Li
Oregon Department of Environmental Quality (DEQ)
Air Quality Program, Northwest Region
700 NW Multnomah St., Ste. 600
Portland, OR 97232

BY EMAIL TO: nwraqpermits@deq.oregon.gov

Re: Comments on Title V Operating Permit for Owens-Brockway Glass Container Inc., Permit No. 26-1876-TV-01

Dear Mr. Li and Department of Environment Quality staff:

The undersigned environmental and community-based organizations appreciate the opportunity to submit comments on the draft renewal of the Title V operating permit for Owens-Brockway Container, Inc., located at 9710 NE Glass Plant Road, Portland, Oregon 97220. After years of advocating for pollution reductions and more regulatory oversight at Owens-Brockway, we welcome the efforts by the Oregon Department of Environmental Quality ("DEQ") to markedly strengthen the facility's Title V permit and ensure that the air quality requirements put in place to protect public health and the environment are satisfied.

Overall, this revised draft of Owens-Brockway's Title V permit contains much stronger monitoring, recordkeeping, and reporting requirements than the version DEQ approved in 2018, which many of the undersigned organizations commented on and successfully appealed to EPA. On May 10, 2021, EPA issued an order requiring DEQ to revise Owens-Brockway's Title V air quality permit.

The revised draft of Owens-Brockway's Title V permit includes protections for public health that were a long time in the making. For many years, residents of the Cully neighborhood where the facility sits have raised concerns about toxic and

harmful emissions. This draft permit incorporates conditions that stem from Owens-Brockway's long history of violations of the federal Clean Air Act and Oregon's air pollution regulations,[1] and from Owens-Brockway's involvement in regulatory programs that underscored the need for tighter emissions limits and controls to reduce pollution from the facility and revealed the feasibility of control technology.[2]

While we applaud the progress reflected in the current draft of Owen's Brockway's Title V permit, there are several provisions that DEQ should strengthen satisfy its Clean Air Act obligations. A Title V operating permit must contain enforceable conditions that assure a facility's compliance with all applicable air quality requirements.[3] In particular, the permit must include monitoring, recordkeeping, and reporting requirements sufficient to demonstrate the facility's ongoing compliance with each air quality requirement.[4] Below, we explain why DEQ must revise Conditions 15.a, 15.f, 18.b, and 20.b in Owens-Brockway's Title V permit to meet these requirements that are integral to protecting public health and the environment.[5]

I. NAAQS Verification Modeling

DEQ should amend Condition 15a in the permit to ensure that Owens-Brockway uses the most representative data to demonstrate through modeling that the facility's emissions will not cause or contribute to a violation of National Ambient Air Quality Standards ("NAAQS"), the federal air quality standards set to protect public health and the environment.

Condition 15.a allows Owens-Brockway to perform air dispersion modeling to demonstrate compliance with NAAQS after the pollution controls are installed but

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[1] As of 2023, the facility has been fined 10 times, including a $1million fine from DEQ in 2023. *E.g.*, Oregon's largest glass-bottle recycler fined 10th time for emissions violations (Aug. 28, 2023). https://www.oregonlive.com/environment/2023/08/oregons-largest-glass-bottle-recycler-fined-10th-time-for-emissions-violations.html.

[2] Owens-Brockway was one of the first facilities called into the Cleaner Air Oregon program, which resulted in source testing, an inventory of the facility's emissions, and a health risk assessment, which led to some of the conditions in the current draft permit. Other permit conditions reflect a settlement agreement that DEQ entered into with Owens-Brockway through the Regional Haze program to reduce its emission limits and an agreement to install pollution controls reached through the settlement of an enforcement action against Owens-Brockway.

[3] 42 U.S.C. § 7661c(a), (c); 40 C.F.R. §§ 70.6(a)(1), (c)(1).

[4] *Id.*

[5] *See* 42 U.S.C. §§ 7661c(a), (c); 40 C.F.R. §§ 70.6(a)(1), (c)(1).

does not require the facility to use source testing to model emissions. Source testing is essential for determining a facility's impact on ambient air because it provides precise data on the release of pollutants from a facility. DEQ should change Condition 15(a) to require Owens-Brockway to model emissions to demonstrate how the facility's emissions will affect Oregon's compliance with NAAQS based on source testing performed after the pollution control, the Catalytic Ceramic Filter (CCF), is installed and operating. By requiring Owens-Brockway to use source testing in NAAQS modeling, DEQ can ensure that the facility's modeling reflects how the pollution control operates in the real world rather than reflecting the CCF manufacturer's representations about how the pollution control should operate. It is particularly important that the data used for modeling reflects the facility's true emissions because Owens-Brockway has, in years past, been able to escape regulatory oversight as a result of lax testing requirements that left DEQ relying on inaccurate, outdated information to determine the facility's compliance with its regulatory obligations.

DEQ should also clarify that this modeling is intended to demonstrate "that the facility will not cause or contribute to a projected exceedance of any National Ambient Air Quality Standard (NAAQS)" rather than the vaguer language used in the current draft permit about demonstrating "compliance with" NAAQS.

II. Lifting Production Limits

DEQ must revise Condition 15.f in the permit to ensure that Owens-Brockway can only lift its current production limits after modeling demonstrates that operating at maximum capacity will not threaten ambient air quality or increase public health risks from the facility's emissions.

Condition 15.f allows DEQ to lift the production limits and associated monitoring requirements on Owens-Brockway if modeling "determines the production restrictions are no longer needed to meet the NAAQS."[6] Under the permit, Owens-Brockway can only produce up to 70,000 tons of glass per year, 190.8 tons per year, and 7.95 tons per hour.[7]

These production limits grew in part out of concerns about the impact of the facility's emissions of air pollutants on ambient air and public health. In 2021, NAAQS modeling conducted on behalf of Earthjustice raised concerns about the facility's potential to cause or contribute to exceedances of the 1-hour SO2 NAAQS, 1-hour NO2 NAAQS, and 24-hour PM2.5 NAAQS when operating at capacity.[8]

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[6] *See* DEQ, Owens-Brockway Draft Title V Permit, June 23, 2023 ("Revised Draft Permit") at Condition 15.a (describing modeling requirements).
[7] *See id.* at Condition 13.a–13.c.
[8] DEQ, Title V Operating Permit Review Report at ¶ 1(e).

In addition, the facility's 2022 Cleaner Air Oregon risk assessment showed significant health risks (cancer and noncancer) from arsenic and lead, triggering a requirement for the facility to manage the risk its emissions posed to public health.[9] As a result, Owens-Brockway was subject to arsenic and lead emission limits as well as production limits.[10] The facility was also subject to additional monitoring, recordkeeping, and reporting requirements.[11]

Given the risk Owens-Brockway's emissions pose to public health and ambient air quality, we urge DEQ to make two changes to strengthen Condition 15.f. First, DEQ should clarify that it will only consider lifting production limits based on NAAQS modeling if the modeling reflects the impact of Owens-Brockway's emissions on air quality when the facility is operating at full capacity—that is, producing 82,125 tons per year without any production or operational constraints. This modeling must use data inputs that reflect the maximum emissions of each pollutant that the facility can generate, which should be based on emission factors from source testing conducted after the installation and operation of the CCF control.

Second, because the production limits are partly determined by the health risks identified in Owens-Brockway's Cleaner Air Oregon risk assessment, Condition 15.f needs to clarify that any air dispersion modeling aimed at justifying the lifting of production limits must also examine arsenic and lead emissions—not just NAAQs criteria pollutants—associated with unrestricted production. Owens-Brockway should also be required to provide any other necessary information to allow DEQ to thoroughly analyze the health risks linked with operating the glass production facility at full capacity.

III. Particulate Matter Source Testing

DEQ should revise the permit to require Owens-Brockway to source test every 24 months to ensure compliance with all applicable particulate matter emissions limits, even after the facility's CCF control is installed and operational.[12]

Conditions 17 and 18 set a limit on total PM emissions from Furnace D (Owens-Brockway's one remaining operational glass melting furnace) and require source testing after CCF controls are in place to be conducted once within 90 days of beginning operation of the controls and once every five years thereafter. Conditions 19 and 20 set a limit on filterable PM emissions from the furnace and require source

[9] *Id.* at ¶ 16 (citing OAR 340-245-8010).
[10] *Id.*
[11] *Id.*
[12] *See* Revised Draft Permit at Conditions 17, 18, 19, and 20.

testing after CCF controls are in place to be conducted once within 90 days of beginning operation of the controls and once every 24 months thereafter, unless the removal efficiency from two consecutive source tests is 98% or better, in which case source testing for filterable PM need only be conducted once every five years.

Requiring Owens-Brockway to test once every five years is insufficient to ensure that the facility complies with all applicable particulate emissions limits because conditions at the Owens-Brockway can change and increase emissions, including the CCF control failing to reduce emissions as efficiently as expected. Accordingly, DEQ and Owens-Brockway should recheck emissions more frequently (at least every 24 months) to ensure that public health and the environment are protected from this harmful air pollutant.

More frequent testing is especially necessary in light of Owens-Brockway's troubling history of air violations related to PM emissions, as DEQ acknowledged in its 2021 enforcement action against Owens-Brockway and in the permit.

IV. Conclusion

We strongly urge DEQ to adopt our proposed changes to better align Owens-Brockway's Title V permit with applicable statutes and regulations and to protect the Cully community and Oregon's airsheds from the facility's harmful emissions.

It has not gone unnoticed that the proposed Title V permit for Owens-Brockway is set to expire on December 31, 2024, less than eight months away. Nor has it gone unnoticed that the emissions limits DEQ expects to apply to Owens-Brockway once the CCF technology is operational will likely bring the facility below the emissions threshold for federal major sources. *See* OAR 340-200-0020(66).

But crucially, as DEQ acknowledged during the 2022 Air Quality Permitting Updates Rulemaking, even minor sources with emissions below the Significant Emission Rate could cause or contribute to violations of NAAQS, including violations of short-term NAAQS that were set after 1980, when Oregon established its Significant Emission Rates.

Therefore, maintaining stringent emissions limits and implementing robust monitoring, testing, and reporting requirements will continue to be vital to ensure that Owens-Brockway does not threaten ambient air quality or the health of its neighbors. Rest assured that the undersigned will monitor future permitting actions to ensure that any Air Containment Discharge Permit DEQ proposes to issue for Owens-Brockway does not backslide on any of the hard-fought safeguards established in this permit.

Thank you in advance for considering our comments. We look forward to continuing to work with you to protect Oregon's air and all who breathe it.

Sincerely,

[*listed in alphabetical order by organization*]

Gregory Sotir, *Coordinator*
Cully Air Action Team (CAAT)

Molly Tack-Hooper, *Supervising Senior Attorney*
Ashley Bennett, *Senior Attorney*
Earthjustice

Colin Deverell, *Northwest Senior Program Manager*
Caitlin Miller, *Associate General Counsel, Clean Air and Climate*
National Parks Conservation Association

Mary Peveto, *Executive Director*
Neighbors for Clean Air

Jonah Sandford, *Executive Director*
Northwest Environmental Defense Center (NEDC)

Jamie Pang South, *Sr. Environmental Health Program Director*
Oregon Environmental Council

Cheyenne Holliday, *Advocacy Manager*
Xitlali Torres, *Air Quality and Climate Program Coordinator*
Verde

Josh Alexander: Okay. We will now start the formal public hearing. My name is Josh Alexander. I'm the hearing's officer tonight. Today is April 4th, 2024. It is now 6:43 PM. I am starting the public hearing through [inaudible 00:00:21] comments on the draft air quality reopened and modified permit for Owens-Brockway. As a reminder, written and verbal comments carry the same weight.

If you have additional written comments, please send them via email or mail. You can find that information on the public notice that Michael will put in the chat. And let's see here. Looks like we have one hand raised. I now invite Gregory Sotir to make a formal comment. Please state and spell your first and last name for the record.

Gregory Sotir: Hi. Can you hear me okay?

Josh Alexander: Yes.

Gregory Sotir: Hello. Can you hear me? Okay. All right. I have a new microphone setup, so I was just checking. My name is Gregory Sotir, S-O-T-I-R, and I'm a resident of the Cully Neighborhood. My public comment is... I'll try to keep it short, but I just wanted to use this as a little bit of a coda to [inaudible 00:01:45] activism of our community, addressing this facility and potential health impacts of the solution that they've been releasing over the past few decades.

I want to commend the DEQ for your diligence and your scientific approach and the rationales that you use to implement Cleaner Air Oregon statutes, and getting Brockway to clean up their act. I speak for the community in saying that I really appreciate your help with this matter.

In terms of the final agreement that we're talking about today, I would just like to encourage DEQ to try to modify the testing time for [inaudible 00:02:44] testing to once ever 12 or 18 months. Given the history of this facility, their duplicity, their dishonesty, their lack of willing to work with the community to address these issues, their constant delay tactics, I think that the State should look at them as kind of an untrustworthy actor to a certain extent.

I understand that the CCF mechanism is very, very technically complex, and also that the filtration that's being promised will detect it, because of the nature of the CCF. But I still have a certain sense of skepticism towards this company in general and the pollution that they release and the pollution that they state they release. So I would encourage increased [inaudible 00:03:52].

And that's all that I have to say, but again thank you very, very much for your diligence on this. It's been a long, long struggle for us here in the Cully Neighborhood. And I think we're very, very happy that the air is becoming cleaner here. So, thank you from my heart for that. And that's all I've got.

Josh Alexander: Thank you for your comment. If there's anybody else that would like to provide comment please raise your hand. I'm not seeing any other hands, give it another minute or two just to let people finish formulating their thoughts, give everybody a chance to raise their hand.

Okay, not seeing any other hands raised. So, I'm going to go ahead and close the meeting. It is now 6:49 PM. I am closing this public hearing.