Notice of Construction (NOC) Worksheet

PUGET SOUND
Clean Air Agency

Applicant: Ash Grove Cement Company	**NOC Number**: 12003
Project Location: 3801 E Marginal Way S, Seattle, WA 98134-1113	**Registration Number**: 11339
Applicant Name and Phone: Marty Johnson, 206-694-6232	**NAICS:** 327310
Engineer: Carl Slimp	**Inspector**: Gerard Van Der Jagt

Draft Notice of Construction Order of Approval 12003 was open for public comment from December 10, 2024, through March 4, 2025. The Order of Approval conditions, beginning on Page 13 of this worksheet, have been updated in light of the comments received during the comment period. The Agency's response to comments begins on Page 15.

A. DESCRIPTION

For the Order of Approval:
Operation of One AGC-Seattle Whole Tire Feed System for injecting whole tires as replacement fuel at the Calciner level of the Preheater Tower above the Kiln, which is controlled by an existing Baghouse. This Order does not authorize any physical changes to the existing Whole Tire Feed System.

Permit History

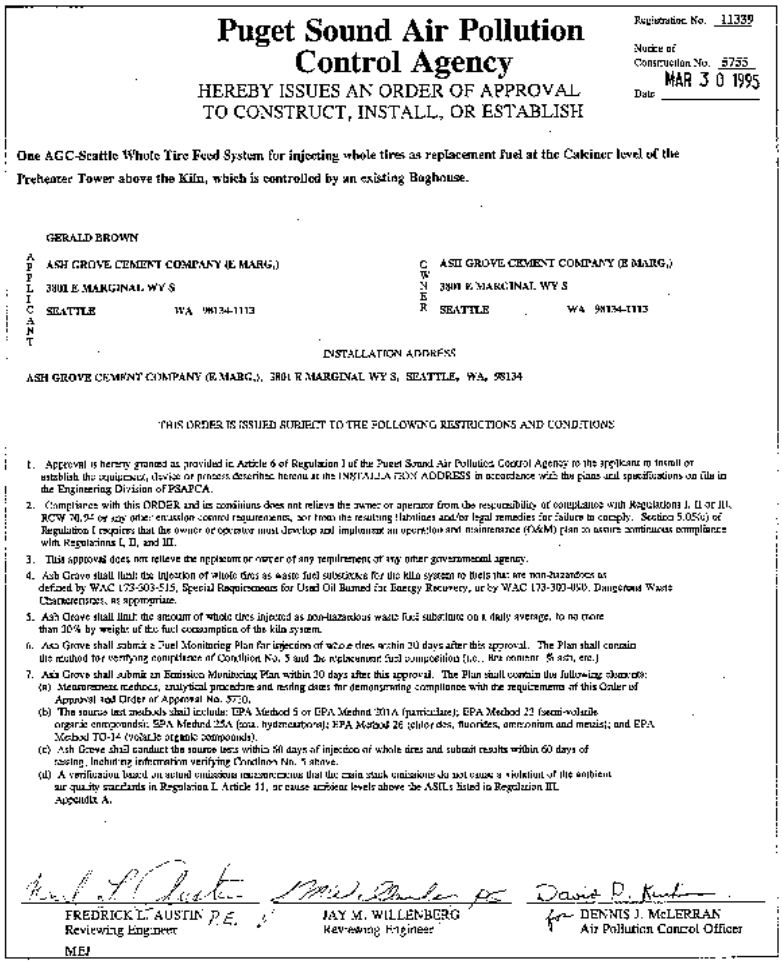
EU 1. 31 40 CFR 63.1349(e)(3)(i) 12/6/02 Provide Puget Sound Clean Air
Agency written notice at least 60 days prior to undertaking any operational change that may adversely affect compliance with the D/F emission standards in Conditions EU 1.26 and 1.27, or as soon as practicable where 60 days advance notice is not feasible. Notice shall include a description of the planned change, the emissions standards that may be affected by the change, and a schedule for completion of the performance test required by Condition EU 1.32, including when the planned operational change would begin.

EU 1. 32 40 CFR 63.1349(b)(3) and (e), 12/6/02
Conduct a dioxin/furan performance test whenever Ash Grove plans to undertake a change in operations that may adversely affect compliance with the D/F emission standards in Conditions EU 1.26 or 1.27. In preparation for and while conducting the performance test, the kiln and raw mill may operate under the planned operational change conditions for a period not to exceed 360 hours, provided that Ash Grove notifies Puget Sound Clean Air Agency as described in Condition EU 1.31, that the performance test results are documented in a test report containing the information listed in 40 CFR 63.1349(a), and that a test plan is made available for Puget Sound Clean Air Agency review prior to testing, if requested. The performance test must be completed within 360 hours after the planned operational change begins. Ash Grove shall submit to Puget Sound Clean Air Agency temperature and other monitoring data recorded during any period of pretest operations. II.C.8 Subpart LLL
Performance Test Reporting II.D.8 NESHAP Subpart LLL
Recordkeeping (3) 3-hour runs EPA Method 23 (40 CFR 60, Appendix A, July 1, 2002)

EU 1. 33 40 CFR 63.1349(e)(1) 12/6/02 Data collected during a performance test under Condition EU 1.32 shall be used to establish new temperature limits for the kiln, supplanting the limits established under 40 CFR63.1349(b).

6. Tire Derived Fuel Consumption
Ash Grove shall monitor the weight of whole tires injected into the kiln following the Fuel Monitoring Plan required by Order of Approval 5755, Condition 6. Report a deviation per Condition II.C.2 of AOP 11339 if the daily weight of whole tires injected during each calendar day (7 am to 7 am) exceeds 30 percent of the weight of all fuels

consumed in the kiln during that day. Report the daily weight of whole tires injected per Condition II.C.11 of AOP 11339. [Order of Approval 5755, Condition No. 6 (1/11/95); WAC 173-401-615(1) and WAC 173-401- 615(2) (10/17/02)]



Puget Sound Air Pollution Control Agency

HEREBY ISSUES AN ORDER OF APPROVAL TO CONSTRUCT, INSTALL, OR ESTABLISH

Registration No. 11339
Notice of Construction No. 5755
Date MAR 3 0 1995

One AGC-Seattle Whole Tire Feed System for injecting whole tires as replacement fuel at the Calciner level of the Preheater Tower above the Kiln, which is controlled by an existing Baghouse.

APPLICANT: GERALD BROWN
ASH GROVE CEMENT COMPANY (E MARG.)
3801 E MARGINAL WY S
SEATTLE WA 98134-1113

OWNER: ASH GROVE CEMENT COMPANY (E MARG.)
3801 E MARGINAL WY S
SEATTLE WA 98134-1113

INSTALLATION ADDRESS

ASH GROVE CEMENT COMPANY (E MARG.), 3801 E MARGINAL WY S, SEATTLE, WA, 98134

THIS ORDER IS ISSUED SUBJECT TO THE FOLLOWING RESTRICTIONS AND CONDITIONS

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Air Pollution Control Agency to the applicant to install or establish the equipment, device or process described herein at the INSTALLATION ADDRESS in accordance with the plans and specifications on file in the Engineering Division of PSAPCA.
2. Compliance with this ORDER and its conditions does not relieve the owner or operator from the responsibility of compliance with Regulations I, II or III, RCW 70.94 or any other emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply. Section 5.05(c) of Regulation I requires that the owner or operator must develop and implement an operation and maintenance (O&M) plan to assure continuous compliance with Regulations I, II, and III.
3. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.
4. Ash Grove shall limit the injection of whole tires as waste fuel substitute for the kiln system to fuels that are non-hazardous as defined by WAC 173-303-515, Special Requirements for Used Oil Burned for Energy Recovery, or by WAC 173-303-050, Dangerous Waste Characteristics, as appropriate.
5. Ash Grove shall limit the amount of whole tires injected as non-hazardous waste fuel substitute on a daily average, to no more than 20% by weight of the fuel consumption of the kiln system.
6. Ash Grove shall submit a Fuel Monitoring Plan for injection of whole tires within 30 days after this approval. The Plan shall contain the method for verifying compliance of Condition No. 5 and the replacement fuel composition (i.e., tire content % ash, etc.)
7. Ash Grove shall submit an Emission Monitoring Plan within 30 days after this approval. The Plan shall contain the following elements:
   (a) Measurement methods, analytical procedure and testing dates for demonstrating compliance with the requirements of this Order of Approval and Order of Approval No. 5720.
   (b) The source test methods shall include: EPA Method 5 or EPA Method 201A (particulate); EPA Method 23 (semi-volatile organic compounds); EPA Method 25A (tota. hydrocarbons); EPA Method 26 (chlorides, fluorides, ammonium and metals); and EPA Method TO-14 (volatile organic compounds).
   (c) Ash Grove shall conduct the source tests within 60 days of injection of whole tires and submit results within 60 days of testing, including information verifying Condition No. 5 above.
   (d) A verification based on actual emission measurements that the main stack emissions do not cause a violation of the ambient air quality standards in Regulation I, Article 11, or cause ambient levels above the ASILs listed in Regulation III, Appendix A.

FREDRICK L. AUSTIN P.E.
Reviewing Engineer

JAY M. WILLENBERG
Reviewing Engineer

for DENNIS J. McLERRAN
Air Pollution Control Officer

MEJ

Form 50-118. (1-93)

DATABASE INFORMATION

New NSPS due to this NOCOA?	**No**	**Applicable NSPS:**	**Delegated?**
New NESHAP due to this NOCOA?	**No**	**Applicable NESHAP:**	**Delegated?**
New Synthetic Minor due to this NOCOA?	**No**		

Existing NESHAP: 40 CFR 63 Subpart LLL
Existing NSPS: 40 CFR 60 Subpart F & Y

B. NOC FEES AND ANNUAL REGISTRATION FEES

NOC Fees:

Fees have been assessed in accordance with the fee schedule in Regulation I, Section 6.04. All fees must be paid prior to issuance of the final Order of Approval.

Fee Description	Cost	Amount Received (Date)
Filing Fee	$ 1,150	
Modification of Existing Permit Conditions	$ 650	
Associated Public Notice Fees: DJC Extension 12/23/2024- $ 464.00 Seattle Times 12/23/2024 $ 1,740.00 Seattle Times 12/10/202 $ 1,680.00 DJC Notice 12/10/2024- $ 452.40	$ 4,336.40	
Public Hearing	$2,500	
Associated Public Hearing Fees Seattle Times 01/28/2025 $ 2019.60 DJC Hearing 01/28/2025 $ 509.35	$ 2,528.95	
Reg 1, Section 7.07(c)(3)	$16,250	
Filing received		$ 1,150 (6/4/2020)
Additional fee received		$ 26,265.35
Total		**$27,415.35**

Registration Fees:
Registration fees are assessed to the facility on an annual basis. Fees are assessed in accordance with Regulation I, Section 7.07. No new changes due to this application.

20230004 - 11339.pdf

C. STATE ENVIRONMENTAL POLICY ACT (SEPA) REVIEW

State Environmental Policy Act (SEPA) review was conducted in accordance with Regulation I, Article 2. The SEPA review is undertaken to identify and help government decision-makers, applicants, and the public to understand how a project will affect the environment. A review under SEPA is required for projects that are not categorically exempt in WAC 197-11-800 through WAC 197-11-890. A new source review action which requires a NOC application submittal to the Agency is not categorically exempt.

A new SEPA determination is not required because the potential impacts from this project were reviewed under SEPA by and a DNS was issued by PSCAA on 3/29/95 with NOC No. 5755. A copy of this DNS is included below and is being relied upon for this project.

NOC #5755
Reg. #13359

Puget Sound Air Pollution Control Agency

110 Union Street, Suite 500
Seattle, Washington 98101-2038

Telephone: (206) 343-8800
Facsimile: (206) 343-7522

DETERMINATION OF NONSIGNIFICANCE

Description of proposal

One AGC-Seattle Whole Tire Feed System for injecting whole tires as replacement fuel at the Coleiner level of the Preheater Tower above the Kiln, which is controlled by an existing Baghouse.

Proponent

ASH GROVE CEMENT COMPANY (E MARG.)
3801 E MARGINAL WY S, SEATTLE, WA, 98134-1113

Owner

ASH GROVE CEMENT COMPANY (E MARG.)
3801 E MARGINAL WY S, SEATTLE, WA, 98134-1113

Location of proposal, including street address, if any

ASH GROVE CEMENT COMPANY (E MARG.), 3801 E MARGINAL WY S, SEATTLE, WA, 98134

Lead Agency

PUGET SOUND AIR POLLUTION CONTROL AGENCY

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below. Comments must be submitted by

Responsible Official: **Dennis J. McLerran**

Position/Title: **Air Pollution Control Officer**

Address: **110 Union Street, Suite 500, Seattle, Washington 98101-2038**

Date: 3/29/95 Signature: David D. Kunz

Form 62-172, (1/89)

D. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) REVIEW

Best Available Control Technology (BACT)

New stationary sources of air pollution are required to use BACT to control all pollutants not previously emitted, or those for which emissions would increase as a result of the new source or modification. BACT is defined in WAC 173-400-030 as, "an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under Chapter 70.94 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant."

An emissions standard or emissions limitation means "a requirement established under the Federal Clean Air Act or Chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment, work practice, or operational standard adopted under the Federal Clean Air Act or Chapter 70.94 RCW."

Best Available Control Technology for Toxics (tBACT)

New or modified sources are required to use tBACT for emissions control for TAP. Best available control technology for toxics (tBACT) is defined in WAC 173-460-020 as, "the term defined in WAC 173-400-030, as applied to TAP."

The EPA has encouraged the use of tire derived fuel, as noted in the April 2005 document EPA530-F-05-006 as long as the facility: (1) have a tire storage and handling plan; (2)have secured a permit for all applicable and state and federal environmental programs; and (3) are in compliance with all the requirements of that permit. It does not state an upper limit. The EPA also released a Fact Sheet on Non-Hazardous Secondary Materials Determinations and Scrap Tires, found here: https://www.epa.gov/sites/default/files/2020-12/documents/scrap_tire_fact_sheet_dec_2020_v2.pdf. This Fact Sheet cites that for tires to remain non-waste, they must follow 40 CFR section 241.3(d)(1).

A Fact Sheet released by the Portland Cement Association, found here: https://archive.epa.gov/epawaste/conserve/materials/tires/web/pdf/brochure5-08.pdf, noted that notes that dioxin-furan emissions from kilns firing TDF were approximately a third of non TDF-firing kilns. PM emissions were also noted to go down by 35%. It also noted that there was no statistically significant difference between kilns firing TDF and non-TDF firing kilns in emissions of sulfur dioxide, nitrogen oxides, total hydrocarbons, carbon monoxide and metals.

Similar Permits

Ash Grove is the only cement kiln in the PSCAA jurisdiction. However, Ash Grove does have various locations around the country that do use tires as fuel.

Other Regulatory Agencies BACT for Ash Grove Cement Plants

01-0029-TV-01 Oregon DEQ
This facility is not allowed to burn any solid waste but is allowed to fire tires. There is no upper limit by weight, however, this permit has the following applicable conditions:

43. Applicable Requirement: The permittee shall not heat the kiln, in whole or in part, by combusting solid waste (as the term is defined in 40 CFR 241). Secondary materials used in the kiln shall not be deemed to be combusted unless they are introduced into the flame zone in the hot end of the kiln or mixed with the precalciner fuel. [40 CFR 60.2875 – definition of "waste-burning kiln"] Waste tires are not considered a solid waste.

44. Monitoring Requirement: The permittee must maintain records of any non-hazardous secondary materials that are combusted in order to heat the kiln and that have been determined not to be solid waste pursuant to 40 CFR 241.3(b)(1). These records must document how the secondary material meets each of the legitimacy criteria under 40 CFR 241.3(d)(1). If the permittee combusts a fuel that has been processed from a discarded non-hazardous secondary material pursuant to 40 CFR 241.3(b)(4), records must be maintained as to how the operations that produced the fuel satisfy the definition of processing in 40 CFR 241.2 and each of the legitimacy criteria in 40 CFR 241.3(d)(1). If the fuel received a non-waste determination pursuant to the petition process submitted under 40 CFR 241.3(c), records must be maintained that document how the fuel satisfies the requirements of the petition process. If the permittee combusts non-hazardous secondary material as fuel per 40 CFR 241.4, records must be maintained documenting that the material is a listed non-waste under 40 CFR 241.4(a). [40 CFR 63.2740(u)]

2300015004 Utah DEQ
This permit has the following conditions for tire derived fuel below:

Condition: Permittee shall meet the following requirements when used oil or tire derived fuel (TDF) is burned in the rotary kiln: i. Combustion gas temperature at the rotary kiln exit shall not drop below 1500 degrees Fahrenheit for more than five minutes in any 60-minute period. ii. Oxygen content at the kiln system ID fan shall not drop below 2% for more than five minutes in any 60-minute period. [Origin: DAQE-AN103030029-19]. [R307-401-8]

Monitoring: The permittee shall continuously monitor the temperature and oxygen content at all times used oil or TDF is burned in the kiln using equipment approved by the Director. Calibration procedure and frequency shall be according to manufacturer's specifications. Use of factory calibrated thermocouples for temperature measurement is approved. All monitoring equipment for both temperature and oxygen shall be located such that an inspector can safely read the output at any time. Additionally, the permittee shall monitor the quantities and times that used oil or TDF is burned in kiln.

Recordkeeping: Permittee shall record the temperature and oxygen content at no less than every 5 minutes during operations when used oil or TDF is burned in the kiln. The permittee shall record the quantities and times when used oil or TDF is burned in the kiln. Records shall be maintained in accordance with Provision I.S.1 of this permit.

Condition II.B.4.b also limits TDF to not exceed 15% of the combined energy input to the rotary kiln and pre-calciner.

Analysis

Ash Grove is currently allowed to burn TDF up to 30% of their total fuel by weight on a daily average. This permit action would remove that limit, which should not increase emissions at all. Ash Grove has several facilities, and they handle tire burning in a few different ways.

The first way is to register the facility for burning hazardous materials, which was the case in Arkansas and Kansas. The Seattle facility is avoiding this option, which is unnecessary as long as the TDF can be tracked as a non-hazardous secondary material and fuel source.

Out of all the locations, the Oregon facility offers the best parallel. The first applicable condition restricts the entire kiln from being heated with just tires. This is applicable in this situation because the kiln in Seattle is not designed to be entirely operated on tire derived fuel (TDF) and would require a modification. Tires are currently injected at the calciner level of the preheater tower above the kiln. Based on the location, it would be a mischaracterization to state the process could be entirely operated on TDF without a modification. This permit does not authorize modifications to the existing tire feed system, but rather allows the current tire feed system to be utilized up to its physical capabilities.

The second condition is keeping a fuel management plan. This is also currently required by the Seattle location.

A copy of all documents cited above are saved in the project folder.

Recommendations

- Kiln cannot be 100% operated on TDF
- Implement fuel management and usage plan

E. EMISSION ESTIMATES

Proposed Project Emissions

Actual Emissions

This change in operation should not increase actual emissions. Ash Grove did a short study increasing their hourly average while maintaining their daily average below 30%. The data is saved in the file folder and the results are shown below:

	CO ppmc	CO lb/hr	NO_X ppmc	NO_X lb/hr	SO_2 ppmc	SO_2 lb/hr	TDF tn/hr	TDF weight %
Normal Average 9/20 & 9/22	763.4	397.5	434.5	369.0	30.7	36.8	2.1	26%
TDF Trial 9/21 Hr 10-13	758.0	395.5	389.8	334.0	30.5	36.4	3.1	37%

This matches the EPA and Portland Cement Association's study that TDF does not significantly change emissions.

Potential Emissions

This facility is subject to limits in 40 CFR 60 Part F, 40 CFR 60 Part Y and 40 CFR 63 Part LLL. Those limits are summarized below:

Pollutant	Limits
PM	• 20% Opacity • 46 tons per year • 0.30 lb/ton clinker • 0.07 lb/ton clinker
CO	• 1045 ppm @ 10%O_2 8-hr average • 538 lbs/hr – 8 hr average • 2353 tons per year
NOx	• 650 ppm @ 10% O_2 24-hr average • 1846 tons as a 12-month running total
SO_2	• 180 ppm @ 10% O_2,1-hr average • 176 tons per year
THC/OHAP	• 24 ppmvd or 12 ppmvd (MACT)
HCl	• 100 ppm @ 7% O_2 1-hour average
D/F	• 0.20 ng/dscm @ 7% O_2 (MACT) or 0.4 ng/dscm @ 7% O_2

The criteria pollutants are measured with CEMS or CPMS. Removing the tire derived fuel usage limit, Condition No. 5 of Order of Approval No. 5755, would not pose any new risk of exceeding these limits. Dioxin/furan emissions are measured by periodic stack test.

Facility-wide Emissions

Actual Emissions

Reg 11339 - Ash Grove Cement Company : 3801 E Marginal Way S,... Below Reporting Thresholds enter a year...

Source Details

Points

Point	Description	Stack Height (in ft)	Stack Diameter (in ft)	Exit Gas Temp °F	Exit Gas Flow Rate (in CFM)	Installed Year	Inactive Year	Emission Unit Type
1	Cement Kiln	200.00	10.00	370	170000	1990		790-Other bulk material equi...
2	Raw Material Handling & Storage	10.00	3.00	72	2100	1990		790-Other bulk material equi...
3	Kiln Feed Handling & Storage	10.00	3.00	72	2100	1990		210-Kiln
4	Clinker Handling And Storage	10.00	3.00	72	2100	1968		790-Other bulk material equi...
5	Cement Handling And Storage	10.00	3.00	72	2100	1968		790-Other bulk material equi...

Segments

Segment	Description	Source Classification Code	SCC Units	Process Units	EPA Primary Device	EPA Secondary Device	Fuel Type	Heat Content	Sulfur Content...	Ash Content (%)
1	Cement Kiln Dry Process With Baghouse Fa...	3-05-006-06	Tons of Cement Produced	Ton	127-Fabric Filter / Bagho...	206-Dry Sorbent Injectio...	tires	145065.0000	1.0000	
2	Coal Mills	3-05-006-06	Tons of Cement Produced	Ton	127-Fabric Filter / Bagho...					

Segment Emissions in Pounds for Point 1, Segment 1

Chemical Name	CAS	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	VOC	TAC	HAP
Acetaldehyde	75-07-0		8147	9244				3863	4155	2017		☑	☑	☑
Acetone	67-64-1										0	☐	☐	☐
Ammonia (NH3)	7664-41-7		7751	6916	9445	3487	25485	9816	9045		0	☐	☑	☐
Benzene	71-43-2				4729	5817	5349	2147		2592	7678	☑	☑	☑
Carbon Monoxide	CO		1476284	1854628	1813600	1917062	2152335	1902946	1867659	1803600	2101000	☐	☐	☐
Formaldehyde	50-00-0			3388				5590	5909	4533	10333	☑	☑	☑
Nitrogen Oxides	NO2		1611328	2136064	2241582	2132057	2317989	2685972	2636165	2728400	2091200	☐	☐	☐
Particulate Matter	PM10		1547	1756	1645	1859	1872	26824	28249	36092	48164	☐	☐	☐
Particulate Matter	PM2.5		1439	1633	1530	1729	1741	24947	26271	33565	44790	☐	☐	☐
Sulfur Oxides (including 7446-09-...	SO2		92378	153108	129584	155330	134942	136320	133792	144200	104200	☐	☑	☐
Toluene	108-88-3							927	970			☑	☑	☑
Total HAP Pollutant	THAP		12917	15734								☐	☐	☑

Potential Emissions

See limits above

F. OPERATING PERMIT OR PSD

The Title V Air Operating Permit (AOP) program applicability for the entire source has been reviewed.

The facility is a Title V "**air operating permit source**" and conditions of this Order will be incorporated into the AOP during the next AOP opening.
Emission increases associated with this project were reviewed for Prevention of Significant Deterioration (PSD) Program applicability. The facility is an existing PSD major source, this project is not expected to increase the tons per year of emissions of any pollutant; therefore, any change in emissions from this permitting action is below PSD thresholds.

G. AMBIENT TOXICS IMPACT ANALYSIS

Like criteria pollutants, removing the daily limit for tire derived fuel should not increase any known TAP.

H. APPLICABLE RULES & REGULATIONS
Puget Sound Clean Air Agency Regulations

SECTION 5.09 (b): The owner or operator of a registered source shall develop and implement an operation and maintenance plan to ensure continuous compliance with Regulations I, II, and III. A

copy of the plan shall be filed with the Control Officer upon request. The plan shall reflect good industrial practice and shall include, but not be limited to, the following:
(1) Periodic inspection of all equipment and control equipment;
(2) Monitoring and recording of equipment and control equipment performance;
(3) Prompt repair of any defective equipment or control equipment;
(4) Procedures for startup, shut down, and normal operation;
(5) The control measures to be employed to ensure compliance with Section 9.15 of this regulation; and
(6) A record of all actions required by the plan.
The plan shall be reviewed by the source owner or operator at least annually and updated to reflect any changes in good industrial practice.

SECTION 6.09: Within 30 days of completion of the installation or modification of a stationary source subject to the provisions of Article 6 of this regulation, the owner or operator or applicant shall file a Notice of Completion with the Agency. Each Notice of Completion shall be submitted on a form provided by the Agency, and shall specify the date upon which operation of the stationary source has commenced or will commence.

SECTION 9.03: (a) It shall be unlawful for any person to cause or allow the emission of any air contaminant for a period or periods aggregating more than 3 minutes in any 1 hour, which is:
(1) Darker in shade than that designated as No. 1 (20% density) on the Ringelmann Chart, as published by the United States Bureau of Mines; or
(2) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Section 9.03(a)(1).
(b) The density or opacity of an air contaminant shall be measured at the point of its emission, except when the point of emission cannot be readily observed, it may be measured at an observable point of the plume nearest the point of emission.
(c) This section shall not apply when the presence of uncombined water is the only reason for the failure of the emission to meet the requirements of this section.

SECTION 9.09: General Particulate Matter (PM) Standard. It shall be unlawful for any person to cause or allow the emission of particulate matter in excess of the following concentrations:
Equipment Used in a Manufacturing Process: 0.05 gr/dscf @7% O_2

SECTION 9.11: It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property.

SECTION 9.13: It shall be unlawful for any person to cause or allow the installation or use of any device or use of any means designed to mask the emission of an air contaminant which causes detriment to health, safety or welfare of any person.

SECTION 9.15: It shall be unlawful for any person to cause or allow visible emissions of fugitive dust unless reasonable precautions are employed to minimize the emissions. Reasonable precautions include, but are not limited to, the following:

(1) The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;
(2) Surfacing roadways and parking areas with asphalt, concrete, or gravel;
(3) Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and cleaning vehicle undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or
(4) Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

SECTION 9.16(c): General Requirements for Indoor Spray-Coating Operations. It shall be unlawful for any person subject to the provisions of this section to cause or allow spray-coating inside a structure, or spray-coating of any motor vehicles or motor vehicle components, unless all of the following requirements are met:
(1) Spray-coating is conducted inside an enclosed spray area;
(2) The enclosed spray area employs either properly seated paint arresters, or water-wash curtains with a continuous water curtain to control the overspray; and
(3) All emissions from the spray-coating operation are vented to the atmosphere through an unobstructed vertical exhaust vent.

REGULATION I, SECTION 9.20(a): It shall be unlawful for any person to cause or allow the operation of any features, machines or devices constituting parts of or called for by plans, specifications, or other information submitted pursuant to Article 6 of Regulation I unless such features, machines or devices are maintained in good working order.

Washington State Administrative Code

WAC 173-400-040(3): Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.

WAC 173-400-040(4): Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition or other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

WAC173-400-111(7): Construction limitations.

(a) Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The permitting authority may extend the eighteen-month period upon a satisfactory showing by the permittee that an extension is justified.

Federal

40 CFR 60.50a(c): Any unit combusting a single-item waste stream of tires is not subject to this subpart if the owner or operator of the unit:
(1) Notifies the Administrator of an exemption claim; and
(2) Provides data documenting that the unit qualifies for this exemption.

Part 40 CFR *241SOLID WASTES USED AS FUELS OR INGREDIENTS IN COMBUSTION UNITS*
40 CFR 241.4(a): The following non-hazardous secondary materials are not solid wastes when used as a fuel in a combustion unit:
(1)Scrap tires that are not discarded and are managed under the oversight of established tire collection programs, including tires removed from vehicles and off-specification tires.

I. PUBLIC NOTICE

This project does not meet the criteria for mandatory public notice under WAC 173-400-171(3). Criteria requiring public notice includes, but is not limited to, a project that exceeds emission threshold rates as defined in WAC 173-400-030 (e.g. 40 tpy NOx, VOC, or SO_2, 100 tpy CO, 15 tpy PM_{10}, 10 tpy $PM_{2.5}$, 0.6 tpy lead), includes a WAC 173-400-091 synthetic minor limit, has a toxic air pollutant emission increase above the acceptable source impact level in WAC 173-460-150, or has significant public interest. A notice of application was posted on the Agency's website for 15 days. No requests or responses were received. A copy of the website posting is below:

New Construction Projects

Company	Address	Project Description	Date Posted	Contact Engineer
Ash Grove Cement Company	3801 E Marginal Way S, Seattle, WA 98134	Increase percentage of fuel that can be whole tires..	6/4/24	Carl Slimp

A public comment period and hearing on the draft Order of Approval and concurrent draft Operating Permit revision were conducted. The comment period started on December 10, 2024, and ended on March 4, 2025. A public hearing was held via Zoom on March 3, 2025.

The comments received and the Agency's responses to those comments are included below, in Section K.

J. RECOMMENDED APPROVAL CONDITIONS

Standard Conditions:

1. Approval is hereby granted as provided in Article 6 of Regulation I of the Puget Sound Clean Air Agency to the applicant to install or establish the equipment, device or process described hereon at

the installation address in accordance with the plans and specifications on file in the Engineering Division of the Puget Sound Clean Air Agency.

2. This approval does not relieve the applicant or owner of any requirement of any other governmental agency.

Specific Conditions:

3. Ash Grove shall measure and record, each calendar day, the total weight of whole tires injected as non-hazardous secondary material fuel as defined by 40 CFR 241.4(a)(1).

4. Ash Grove shall submit a Fuel Monitoring Plan for injection of whole tires within 60 days after this approval. The plan shall contain the method for complying with condition 3, the replacement fuel composition (i.e., Btu content, percent ash, etc.), and the maximum rate of whole tires that will be used. The rate established in this submitted plan will become the new allowable maximum TDF firing percentage and will be the tire injection rate required during the testing for conditions 5, 7 and 9.

5. Within 60 days after the submittal of the updated fuel monitoring plan, Ash Grove shall complete a study to determine if this operational change results in an increase in the emission rate of metallic TAPs listed in WAC 173-460-150. The metals to be tested include arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium. Ash Grove shall submit a test plan that includes fuel rates for each condition. Tests will be in accordance with EPA Method 29, and the methodology for determining if there is an increase in emissions of a pollutant will be in accordance with Appendix C to 40 CFR Part 60. Based on the results of this test, one of the following two conditions shall take effect:

    a. If the study shows that modification does not lead to an increase in emissions of any tested TAP, the maximum rate of whole tires that will be used as defined in the Fuel Monitoring Plan required in condition 4 shall replace the previously established permitted tire consumption rate.
    b. If the study shows that this modification results in an increase in the emission rate to the atmosphere of any TAP, then the previous established rate 30% TDF by weight, daily average limit shall remain in place.

    A limit of 30% TDF by weight, daily average limit shall remain in effect until the results of this study are reported, except for the days needed to conduct this study. During the days of this study, the TDF limit shall be defined in the fuel monitoring plan required by condition 4.

6. Ash Grove shall submit an Emission Monitoring Plan within 60 days after this approval. The plan shall contain the following elements:
    a. Measurement methods, analytical procedure and testing dates for demonstrating compliance with the requirements of 40 CFR 63.1343(b)(1).
    b. The measurement methods shall include a combination of Continuous Emission Rate Monitoring Systems, Continuous Emission Monitoring Systems and source tests to show compliance with 40 CFR 60 subpart F and 40 CFR 63 Subpart LLL.

7. Within 60 days after the submittal of the updated fuel monitoring plan, Ash Grove shall conduct source tests to demonstrate compliance with the following previously established emission limits:
    a. Kiln exhaust shall not exceed 0.30 lb of particulate per ton of feed (dry basis) except during SSM periods.
    b. Kiln exhaust shall not exceed 0.07 lb of particulate per ton of clinker except during SSM periods, per 40 CFR 63.1343(b)(1)
    c. Ash Grove shall not cause to be discharged into the atmosphere from the kiln exhaust Dioxin/Furan (D/F) exceeding 0.20 ng/dscm (TEQ) @ 7% O2. If the average temperature at the inlet to the baghouse during the D/F performance test is 400°F or less, this limit is changed to 0.40 ng/dscm (TEQ).

   Ash Grove shall conduct the tests at the maximum rate of whole tire injection specified in condition 4. These source tests shall use EPA Method 5 or EPA method 201 A (particulate) and EPA method 23 (dioxins/ furans). Ash Grove shall submit a report of the test results within 60 days of testing.

8. Ash Grove shall report any deviation from the fuel monitoring plan that represent a potential threat to human health or safety as soon as possible but no later than 12 hours after such a deviation is discovered. Ash Grove shall report other deviations in writing to Puget Sound Clean Air Agency Operating Permit Certification no later than 30 days after the end of the month during which the deviation is discovered.

9. Within 60 days after the submittal of the updated fuel monitoring plan, Ash Grove shall conduct stack testing for hydrogen chloride per EPA Method 26 or 26A in accordance with PSCAA Regulation I 3.07. Ash Grove shall conduct the tests at the maximum rate of whole tire injection specified in condition 4 and shall use the tests to calculate a facility-specific emissions factor for HCl, in units of pounds of HCl per ton of clinker. The tests shall include three runs under raw-mill-up conditions, and three runs under raw-mill-down conditions.

10. This order of approval supersedes and cancels Order of Approval No. 5755, dated March 30, 1995.

K. CORRESPONDENCE AND SUPPORTING DOCUMENTS


5755.pdf

Several similar topics were raised in the public comments received. This section will respond to those topics collectively.

1. Unlimited tire burning

Many commenters raised concerns related to a perceived lack of limits on tire burning. In their view, this permit would allow for a large increase in tire consumption by Ash Grove, with no limit to the amount of tires burned.

Response:

As was noted on Page 7 of the worksheet, above, this permit does not authorize any modifications or upgrades to the tire feed system. It simply allows the tire feed system to be used up to its existing

physical capability. Additionally, while the main heat source for cement making is the main burner in the actual kiln, the tire feed system injects tires, via one conveyor belt, into the calciner section of the pyroprocessing system. The calciner is part of the large tower adjacent to the horizontal kiln. This configuration does not allow for tires to be the primary fuel, and this permit does not authorize any physical changes to this configuration. Due to these physical limitations, the maximum amount of fuel that can consist of tires is approximately 37%.

These comments did not result in any changes to permit conditions.

2. General opposition to the permit; Decision criteria and rationale for approving

Several commenters expressed general opposition to the project and urged the Agency not to approve the request. Similarly, several commenters asked why the Agency is entertaining Ash Grove's request and what criteria the Agency used to determine whether to approve the request.

Response:

A facility may always submit an application for a permit, and if it meets all the standards and regulations, then the Agency is obligated to approve the request. WAC 173-400-113 states that the permitting authority "shall issue an order of approval if it determines that the proposed project satisfies" the applicable requirements. If the Agency determines that a proposed project meets the applicable requirements of WAC 173-400 and WAC 173-460 (i.e., the project employs Best Available Control Technology and passes review of Toxic Air Pollutants), and the Agency determines through SEPA review that the project will not have a significant environmental impact, the Agency is obligated to approve the project.

The Agency rules and regulations outlining this process can be found at the following web address: https://pscleanair.gov/219/PSCAA-Regulations. More detail is also included in WAC 173-400 and WAC 173-460.

These comments did not result in any changes to permit conditions.

3. Renewable energy and other fuels

Several commenters stated that Ash Grove should be required to use renewable and/or non-polluting fuels.

Response:

The Agency is unaware of any sort of electric or non-polluting cement kiln in existence. Cement kilns require temperatures greater than 2000 degrees F, which cannot readily be achieved using electric heat. Given current technologies, cement kilns cannot use electricity as their main heat source, which therefore precludes the use of solar or wind power. In this case, tire-derived fuel offsets fossil fuels that would otherwise be used. Additionally, this permit action does not raise the permitted production rate of the plant.

This comment did not result in any changes to permit conditions.

4. Increase in emissions; toxicity of tire burning emissions

Multiple commenters requested that this permit not lead to an increase in air pollution emissions. Some of these comments focused on criteria pollutants such as particulate matter, sulfur dioxide, or nitrogen oxides, while others focused on toxics such as metals or organics. One commenter submitted supplemental information about emissions from tires burned in kilns. One commenter stated that the Agency's review of the project did not include actual New Source Review, as required under WAC 173-400 and WAC 173-460, for all increasing pollutants.

Response:

The Agency considered emissions from criteria pollutants separately from emissions of toxic air pollutants.

Criteria Pollutants

The Agency discussed its determination that there will be no increase in criteria pollutants associated with tire burning on Pages 5 and 7 of the worksheet. However, the Agency will address this in more detail, in light of the comments received.

Most of the studies to date on the use of tires at cement kilns have focused on criteria pollutants. The studies and fact sheets mentioned on Page 5 of the worksheet, above, stated that criteria pollutant emissions do not increase when tires are used as fuel, though these largely used coal as the primary kiln fuel. The Agency also considered the analysis of tires performed by the EPA and published in "Air Emissions from Scrap Tire Combustion" in October 1997, in the document EPA-600/R-97-115. This article was submitted to the Agency by a commenter. Several types of industry were studied in this document. Only a couple are applicable to this permit. A cement kiln, (facility I) which did two tests of 0% TDF and 9-10% TDF showed a decrease in emissions. It is noted that both coal and natural gas were used, but did not specify the ratio. Those tables are shown below:

Table A-9a. Facility I - Cement Kiln

Source Description

Facility Name, Location:	Ash Grove Cement Durkee, OR
Facility Type:	Cement Plant
Source Type:	Cement Kiln
Test Dates:	October 18 - 20, 1989
Other fuel(s):	Natural gas and coal
Air pollution control device(s) used:	ESP
Test Conditions:	Unknown
Test Methods:	Unknown
Fuel Handling/Feeding:	Unknown
Testing Company:	Unknown
Environmental Agency:	Oregon DEQ
Reference:	Clark, et al (1991)

Source Test Data Evaluation

	Yes	No	Unknown
Data Expressed in Emission Factor Form	some		
Baseline Fuel Test Data Available	X		
Accurate Fuel Feed Rates		X	
Multiple Baseline Fuels	X		
Test Witnessed by or Prepared for Governmental Agency	X		

Table A-9b. Facility I - Cement Kiln

Pollutant		Baseline, 0% TDF	9-10% TDF	% Change
Particulate	g/MJ	0.417	0.382	-8
	lb/MMBtu	0.969	0.888	-8
SO_2	g/MJ	0.119	0.0950	-20
	lb/MMBtu	0.276	0.221	-20
CO	ppm	0.046	0.036	-27
Aliphatic compounds	g/MJ	0.00047	0.0004	-18
	lb/MMBtu	0.0011	0.0009	-18
Nickel	ug	30	ND	NA
Cadmium	ug	3.0	2.0	-33
Chromium	ug	30	ND	NA
Lead	ug	ND	ND	NA
Zinc	ug	35	35	0
Arsenic	ug	0.2	0.2	0
Chloride	kg/hr	0.122	0.0895	-26
	lb/hr	0.268	0.197	-26
Copper	ug	37	13	-65
Iron	ug	400	200	-50

ND = Not detected.
NA = Not applicable.

TABLE 17. PROXIMATE AND ULTIMATE ANALYSIS OF RKIS TEST TDF

Proximate Analysis	
Moisture	0.84%
Volatile Matter	65.52%%
Ash	7.20%
Fixed Carbon	26.44%
Ultimate Analysis	
Moisture	0.84%
Carbon	76.02%
Hydrogen	7.23%
Kjeldahl Nitrogen l Nitrogen Nitro	0.34%
Sulfur	1.75%
Total Halogens (calculated as chlorine)	0.31%
Ash	7.20%
Metals	
Cadmium	<5 ppm
Chromium	<5 ppm
Iron	295 ppm
Lead	51 ppm
Zinc	2.14%
Heating Value	37,177 kJ/kg

One commenter included a concern that emissions of SO_2 could increase, due to the sulfur content of tires. The ultimate fuel analysis provided did show that tires can contain 1.75% sulfur. It is worth noting that coal can be 0.2 to 5% sulfur (although natural gas contains less). At power plants that burn fuels that are high in sulfur, such as coal, flue gas desulfurization (FGD), commonly referred to as a "scrubber", is frequently used to capture SO_2 from stack gases. The main material used to capture sulfur in a FGD system is limestone, which reacts with SO_2 and effectively removes it from the gas phase, sequestering it into a gypsum-like reaction product. Limestone is the main ingredient in cement, and the high throughput of limestone through a cement kiln essentially makes the pyroprocessing system an effective scrubber for SO_2. The site-specific Ash Grove study on Page 7 showed results of SO_2 emissions going down. Additionally, Ash Grove continuously monitors SO_2 emissions.

The study performed at this Ash Grove facility, summarized on Page 7, above, showed that criteria pollutant emissions will not increase with increased permitted tire usage. The additional information provided by commenters, along with the air pollution controls and continuous emissions monitors already in place, further establish that criteria pollutant emissions will not increase with this project.

These comments did not result in any changes to permit conditions related to criteria air pollutants.

Toxic Air Pollutants

To analyze the changes in emissions of toxic air pollutants, the Agency used data from the same EPA study submitted by a commenter.

Hydrogen Chloride (HCl)
First the Agency reviewed HCl emissions.

Ash Grove currently uses about 255 MMBtu/hr of fuel. 180 MMBtu/hr is used at the Main Burner. 75 MMBtu/hr is used at the calciner, which is the only location designed to receive tires. Currently, Ash Grove can use up to 60 MMBTU/hr there, so the project entails a 15 MMBtu/hr increase of tires.

1 kJ = 9.4782E-7 MMBTU
1 kg =2.204 lb

To convert this heat input rate to the increase in weight of tires fed:
37,177 kJ/kg * (9.4782E-7 MMBTU/kJ) * (1 kg/2.204 lb/hr)/(0.0160 MMBTU/lb) = 938 lb/hr increase of tires used.

In a conservative estimate, we can ignore the presence of air pollution controls and assume all halogen atoms (from the proximate and ultimate analysis above, in Table 17, from the materials submitted by the commenter) in tires are chlorine, and that all chlorine in the tires will leave as HCl:

938 lb/hr * 0.0031 lb Cl/lb * (36.4 lb HCl / 35.4 lb Cl) = 2.99 lb HCl/hr

This is significantly above the SQER for HCl, which is 0.67 lb/day. The next step is to model the emissions using Aerscreen to conservatively model the ambient impact against the acceptable source impact level (ASIL), which is listed as 9.0 ug/m^3 for HCl. When modeled with Aerscreen, the ambient impact is 0.15 ug/m^3. The modeling files are saved with in this permit folder.

As was noted above, this calculation assumes no control equipment. In practice, however, the limestone used to make cement is a natural absorber of acid gases. Activated carbon is also injected into the system, primarily for mercury control, but this can also provide some degree of HCl capture. However, at an increase of 2.99 pounds per hour of chlorine fed to the calciner, this could lead to a theoretical increase of 13 tons of HCl annually, if there were no inherent or add-on pollution controls. While the inherent dry scrubbing due to the presence of limestone will likely prevent emissions of this additional HCl, the Agency will require an EPA method 26A test for HCl to determine a new facility-specific emissions factor for HCl, under both raw-mill-on and raw-mill-off conditions, and to ensure that Ash Grove remains an area source for HAP after this change.

The Agency conducted the ambient HCl modeling analysis discussed above under the assumption that none of the chlorine fed to the pyroprocessing system is captured by the limestone and raw materials fed to the kiln, which is an extremely conservative assumption.

Ash Grove provided data on the current chlorine content of the input streams. The summary is shown below, while the supporting information is saved with this worksheet. The context of the data is that the chlorine from the limestone and the slag input streams are currently 68 times higher than the

chlorine coming from the TDF input, which also works out to about 98.5% of the total chlorine going into the system

	Limestone	Slag	TDF
Average chlorine (%)	0.434%	0.100%	0.31%
Volume (t/h)	107.0	2.7	2.21
Chlorine (t/h)	0.465	0.003	0.007
Chlorine ratio	68.3		

SO_2 correlation to TDF input was also looked at. When outlet concentrations of SO_2 are graphed compared to varying rates of TDF, no correlation is apparent.

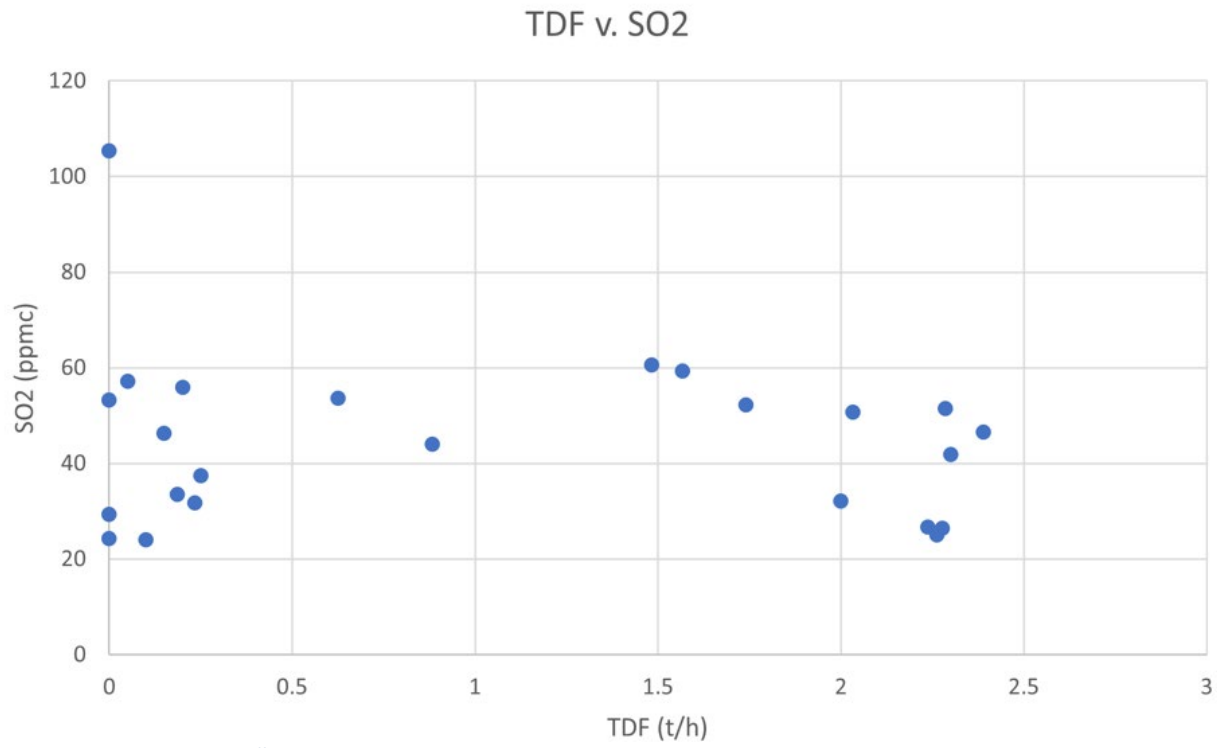


Figure 1 SO2 vs TDF Raw Mill Down

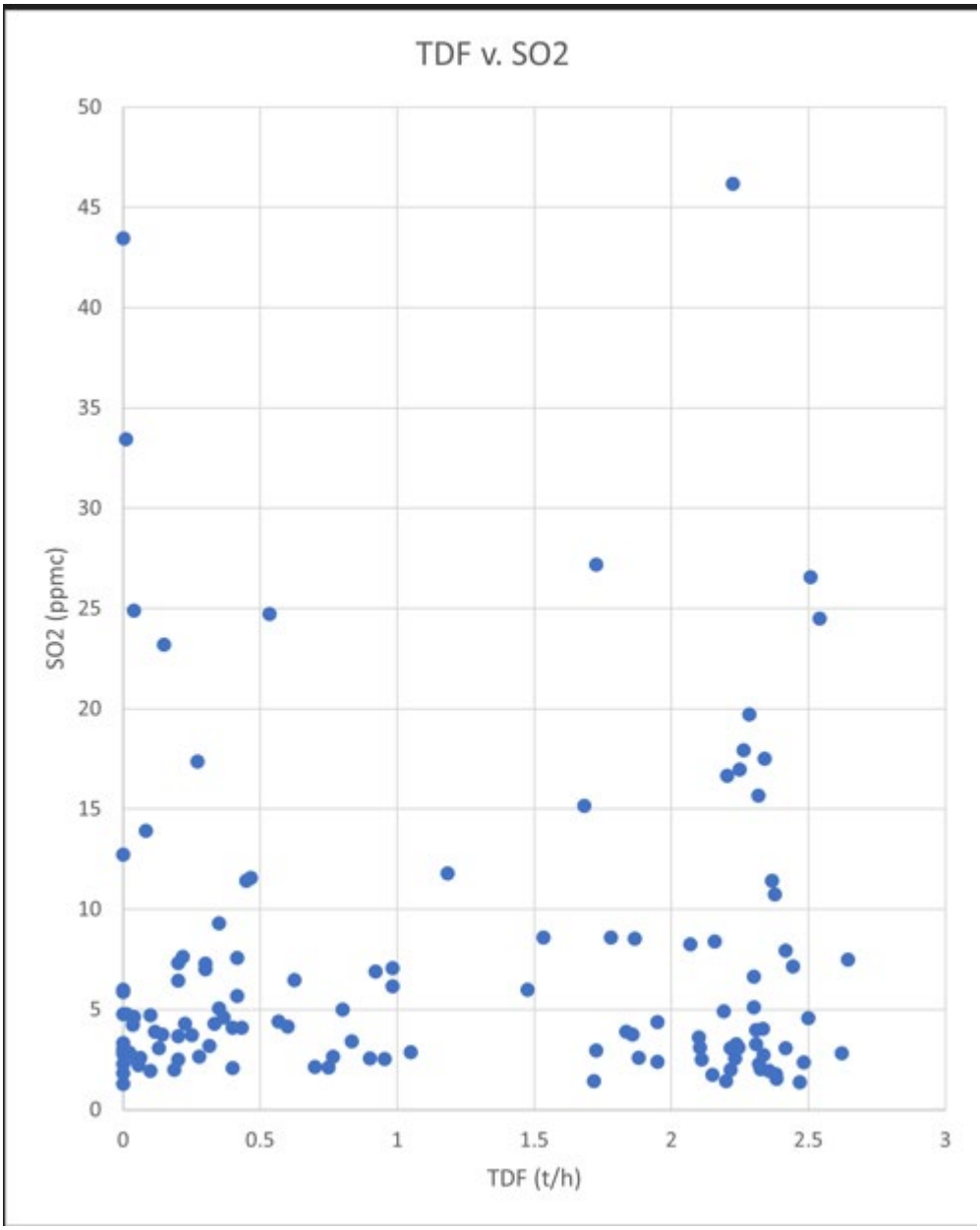


Figure 2 SO2 vs TDF Raw Mill Up

The Agency has determined that in practice this extra amount of chlorine will likely be captured within the pyroprocessing system and emissions control system and not emitted. Because of this lack of increase in HCl emissions, the Agency will not evaluate BACT for HCl for this project.

Table A-10b. Facility J - Cement Kiln

Pollutant	Baseline, 100% Coal, 0% TDF		11% TDF			14% TDF		
	10^{-6}g/MJ	10^{-6}lb /MMBtu	10^{-6}g/MJ	10^{-6}lb /MMBtu	% Change	10^{-6}g/MJ	10^{-6}lb /MMBtu	% Change
Acenaphthalene	1.19	2.76	0.864	2.01	-27	0.886	2.06	-26
Acenaphthylene	0.095	0.22	ND	ND	-100	ND	ND	-100
Anthracene	1.06	2.46	ND	ND	-100	ND	ND	-100
Benzo(b)anthracene	4.25	9.88	ND	ND	-100	ND	ND	-100
Benzoic Acid	4.498	10.46	ND	ND	-100	ND	ND	-100
Benzo(a)pyrene	0.877	2.04	ND	ND	-100	ND	ND	-100
Benzo(g,h,i)perylene	ND	ND	1.34	3.11	NA	4.442	10.33	NA
Bis(2-chloroethoxy)methane	95.641	222.42	74.583	173.45	-22	118.57	275.75	+24
Butyl Benzyl Phthalate	2.57	5.98	ND	ND	-100	ND	ND	-100
Dibenz(g,h)phthracene	45.877	106.69	20.50	47.67	-55	28.88	67.17	-37
Di-N-Butylphthalate	0.959	2.23	ND	ND	-100	ND	ND	-100
1,2-Dichlorobenzene	1.38	3.21	ND	ND	-100	ND	ND	-100
2,4-Dinitrotoluene	5.749	13.37	4.29	9.97	-25	3.87	9.00	-33
Fluorene	3.29	7.65	3.02	7.03	-8	3.06	7.12	-7

(Continued)

Table A-10b. Facility J - Cement Kiln (Cont.)

Pollutant	Baseline, 100% Coal, 0% TDF		11% TDF			14% TDF		
	10^{-6}g/MJ	10^{-6}lb /MMBtu	10^{-6}g/MJ	10^{-6}lb /MMBtu	% Change	10^{-6}g/MJ	10^{-6}lb /MMBtu	% Change
Hexachlorobenzene	31.60	73.49	17.38	40.42	-45	22.99	53.46	-27
Naphthalene	146.20	340.00	76.944	178.94	-47	68.456	159.20	-53
2-Nitroanaline	2.01	4.67	ND	ND	-100	2.16	5.02	+7
N-Nitrosodiphenyl-amine	39.05	90.81	20.47	47.60	-48	21.47	49.92	-45
Pyrene	2.14	4.97	1.02	2.38	-52	0.959	2.23	-55
1,2,4-Tricholrobenzene	7.504	17.45	1.11	2.57	-85	ND	ND	-100
4,6-Dinitro-2-methylphenol	2.38	5.53	ND	ND	-100	ND	ND	-100
4-Methyl Phenol	8.407	19.55	3.93	9.13	-53	6.570	15.28	-22
2-Nitrophenol	83.846	194.99	72.747	169.18	-13	74.012	172.12	-12
4-Nitrophenol	ND	ND	21.34	49.62	NA	12.80	29.77	NA
Pentachlorophenol	ND	ND	ND	ND	NA	ND	ND	NA
Phenol	140	32	69.247	161.04	-50	131.89	306.71	-4
2,4,5-Trichlorophenol	ND	ND	ND	ND	NA	ND	ND	NA

NA = Not applicable.
ND = Not detected.

TAP Metals

This EPA study, “Air Emissions from Scrap Tire Combustion” in October 1997, in the document EPA-600/R-97-115, looked at a pilot-scale 73 kW (250,000 BTU/hr) rotary kiln incinerator simulator (RKIS). In this case, the metals are predicted to go up linearly, but, importantly, the study does not take into account any control devices. The baghouse on the main kiln stack that controls particulate should also control an increase in metals. The results of this study are shown below.

TABLE 19. ESTIMATED EMISSIONS OF METALS - RKIS TEST RESULTS (BASE FUEL - NATURAL GAS)

Metal	0% TDF (Natural Gas Only)		17% TDF (steady-state)		TDF Only (estimated)	
	ng/J	lb/MMBTU	ng/J	lb/MMBTU	ng/J	lb/MMBTU
Antimony	7.72E-05	1.80E-07	9.05E-04	2.10E-06	5.32E-03	1.24E-05
Arsenic	4.80E-04	1.12E-06	1.59E-02	3.70E-05	9.35E-02	2.17E-04
Beryllium	nd	nd	2.14E-05	4.98E-08	1.26E-04	2.93E-07
Cadmium	1.76E-04	4.09E-07	4.54E-04	1.06E-06	2.67E-03	6.21E-06
Chromium	2.78E-04	6.46E-07	1.66E-03	3.86E-06	9.76E-03	2.27E-05
Lead	3.45E-03	8.02E-06	2.83E-02	6.58E-05	1.66E-01	3.86E-4
Manganese	1.21E-03	2.81E-06	2.48E-03	5.77E-06	1.46E-02	3.40E-05
Nickel	3.00E-04	6.98E-07	1.50E-03	3.29E-06	8.82E-03	2.05E-05
Selenium	3.56E-04	8.28E-07	1.93E-03	4.49E-06	1.14E-02	2.65E-05
Zinc	1.23E-01	2.86E-04	15.21	3.54E-02	89.47	2.08E-01

From this data, we can roughly estimate the emission increase of each metal for an increase from 30% to 37% in the proportion of fuel consisting of tires. As was noted above, the study that derived these emissions factors did not use any control devices. In AP-42, Table 11.6-3, EPA states that a 99.9% decrease in particulate emissions can be expected from a baghouse. The Agency assumed a significantly lower 99% control efficiency in this analysis. Aerscreen was run with a factor of 1 g/s, and scaled to the emission factors calculated above. All pollutants have modeled concentrations below the ASIL. These results are shown below.

TDF Amount	Arsenic	Beryllium	Cadmium	Chromium	Lead	Manganese	Nickel	Selenium
0	0.00000112	0	4.09E-07	0.000000646	0.00000802	0.00000281	0.000000698	0.000000828
0.17	0.000037	4.98E-08	1.06E-06	0.00000386	0.0000658	0.00000577	0.00000329	0.00000449
1	0.000217	2.93E-07	6.21E-06	0.0000227	0.000386	0.000034	0.0000205	0.0000265
Equation	0.0002x + 7E-07	3E-07x - 5E-1	6E-06x + 2E	2E-05x + 4E-07	0.0004x + 5E-06	3E-05x + 2E-06	2E-05x + 3E-07	3E-05x + 5E-07
30%	0.0000607	8.9995E-08	0.000002	0.0000064	0.000125	0.000011	0.0000063	0.0000095
37%	0.0000747	1.11E-07	2.42E-06	0.0000078	0.000153	0.0000131	0.0000077	0.0000116
Per an email 3/27, Ash Grove uses about 255 MMBTU/hr								
Increase/hr	0.00357	5.355E-06	0.000107	0.000357	0.00714	0.0005355	0.000357	0.0005355
increase/year	31.2732	0.0469098	0.938196	3.12732	62.5464	4.69098	3.12732	4.69098
Increase After 99% control/year	0.312732	0.0004691	0.009382	0.0312732	0.625464	0.0469098	0.0312732	0.0469098
SQER	4.90E-02	6.80E-02	3.90E-02	5.00E+00	1.40E+01	2.20E-02	6.20E-01	1.50E+00
Time frame	year	year	year	24-hr	year	24-hr	year	24-hr
Increase 24-hr				0.008568		0.012852		0.012852
Increase After 99% control/y24-hr				0.00848232		0.01272348		0.01272348

After assuming 99% control efficiency, only arsenic exceeded the SQER. This was then modeled in Aerscreen, with the results shown below. The modeling file was saved with the worksheet.

	Input (lb/hr)	Input (g/s)	Result (ug/m3)	ASIL
Model	N/A	1.00E+00	1.15E-01	
Arsenic	3.57E-05	2.83E-04	3.26E-05	3.00E-04

This mass balance-based approach shows that using the emissions factors provided by the commenter, there will be no exceedance of an ASIL for metallic TAPs.

The modeling analysis above relied on emissions factors from one pilot-scale study. In reality, the change in emissions of metal TAPs could differ from what was included in this analysis. In order to establish whether or not there is an increase in emissions of metal TAPs due to the increase in permitted tire consumption rate, the Agency will require Ash Grove to conduct tests of emissions of metal TAPs before and after implementing the higher tire feed rate. Metals to be tested include arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium, which are all TAPs listed in WAC 173-460-150. Tests will be in accordance with EPA Method 29, and the methodology for determining if there is an increase in emissions of a pollutant will be in accordance with Appendix C to 40 CFR Part 60.

If it is determined that no significant increase in these TAPs occurs, Ash Grove shall be able to increase the rate of TDF used to match the new Fuel Monitoring Plan required by this permit. If this testing methodology determines that there is an increase in any tested TAP metal, the 30% TDF by weight per day limit shall remain in effect. Until the results of this study is reported, Ash Grove shall limit TDF use to 30% of total fuel by weight per day, except to perform this study.

Organic TAPs

One other class of toxic air pollutant emitted from cement production is organic TAPs. Emissions of VOC or hydrocarbons can be used as a proxy for organic TAPs. The table on Page 17, above, showed that "aliphatic compounds," a type of VOC, decreased when tires were substituted for fossil fuel. Additionally, the extremely high combustion temperatures (over 2000 degrees F) are very effective at destroying organic molecules. For these reasons, the Agency has determined that there will be no increase in emissions of organic TAPs. These comments did not result in any changes to permit conditions related to organic TAPs.

5. Open burning of tires

One commenter submitted supplemental information regarding emissions from open burning of tires, along with information about emissions from tires burned in kilns.

Response:
The burning of tires in a well-controlled cement kiln or calciner is very different from open burning. The strongly odorous black smoke associated with open burning of tires is not associated with burning of tires in the cement-making process. The optimal combustion conditions and air pollution controls prevent the smoke emissions that are associated with open burning.

This comment did not result in any changes to permit conditions.

6. 6PPD-quinone and salmon

One commenter noted that 6PPD-quinone is highly detrimental to salmon. 6PPD-quinone forms from 6PPD, which is an additive to tires that helps them from degrading in the presence of atmospheric

ozone. After reviewing the articles presented, there is a concern of 6PPD-quinone getting into water streams. However, the method of transfer in the articles provided was determined to be roadway run-off as rain washed away the built-up tire particles from the mechanical wear of driving.

Response:
While the Agency could not locate data on the fate of 6PPD-quinone from tires burned at cement plants, it stands to reason that combustion in the extremely high temperatures in the pyroprocessing system would effectively destroy molecules of 6PPD-quinone. This is consistent with the use of incineration as a common mitigation method for organic pollutants. Additionally, the baghouse is a very effective emissions control for pollutants that may be in an aerosol form.

This comment did not result in any changes to permit conditions.

7. Concerns about the time of the hearing, public outreach, lack of transparency and process concerns
Several commenters raised concerns about a perceived lack of transparency regarding the permitting process, a perceived lack of public engagement, and an inconvenient hearing time.

Response:
The comment period started December 10, 2024. On this date, the public notice was published in the *Seattle Times* and the *Daily Journal of Commerce* and on the Agency website. Notice was also emailed to the Agency's Permit Actions email list, which has approximately 1400 subscribers. Because this action includes an Operating Permit modification, notice was also published in the Washington state Permit Register on December 10, 2024.

On December 18, 2024, the Duwamish River Community Coalition requested an extension of the comment period; the next day, the Agency extended the comment period to February 14, 2025. Notice of this extension was published on the Agency website on December 19, 2024, and notice was emailed to the Permit Actions email list on the same date. Notice of the extension ran in the *Seattle Times* and the *Daily Journal of Commerce* on December 23, 2024.

The Agency then received multiple requests for a hearing on the draft permits. On January 28, 2025, the Agency scheduled the public hearing for March 3, 2025, and extended the comment period through March 4, 2025. Notice of this extension was published on the Agency website on January 28, 2025, and notice was emailed to the Permit Actions email list on the same date. Notice of the extension ran in the *Seattle Times* and the *Daily Journal of Commerce* on the same date.

The draft permit, application materials, and supporting documents used in evaluating the proposed project were posted on the Agency website for the duration of the comment period.

The Agency held the hearing online from 4 PM to 6 PM, and the hearing was not concluded early, even when no further attendees indicated an interest in commenting. The Agency intentionally chose a time specifically to be available to people who are attending either as part of the traditional work day, or on their own time.

This process met all applicable requirements from Agency Regulation I, Article 6, and the provisions of WAC 173-400-171 that are adopted by reference, related to public notice for minor new source review

under the Notice of Construction program. The process also met all applicable requirements in WAC 173-401-800 related to public involvement for Air Operating Permit issuance.

The Agency encourages anyone interested in learning about public comment periods for permits to sign up for the Permit Actions email list on the Agency website. All Agency email lists can be joined at this same web address. The Agency also notes that, while it attempts to schedule hearings at times that maximize attendance, comments on permits may also be submitted in writing. Comments delivered at a hearing are not given more weight than written comments.

These comments did not result in any changes to permit conditions.

8. Violations should be reported to the community
Several commenters requested that all violations by Ash Grove be reported to the community.

Response:
Ash Grove measures several pollutants in real time and provides monthly reports about the measurement systems compliance with emissions limits to the Agency. Ash Grove also submits annual reports of emissions and semi-annual and annual compliance certifications. Each of these reports is reviewed by the Agency to determine if the facility is in compliance with the applicable requirements. These reports are all available to the public through records requests. The Agency's records request process is summarized on its website: Records Request | Puget Sound Clean Air Agency, WA.

Compliance history is also available through US EPA's ECHO database: Enforcement and Compliance History Online | US EPA

These comments did not result in any changes to permit conditions.

9. Cumulative impact in overburdened community
Several commenters noted that levels of some air, water, and soil pollutants are already elevated in the Duwamish Valley compared to other nearby areas. They requested that the Agency review the cumulative impacts of this increase in tire consumption in light of the existing pollution burden in the area. Commenters also cited the prevalence of childhood asthma in the Duwamish Valley. Some stated this project would make the cumulative burden worse.

Response:
The scope of this project review is the incremental increase in permitted tire feed to the pyroprocessing system from the current limit of 30% of fuel up to the maximum the existing tire feed system can process, which is approximately 37%.

The Agency, above, determined the impacts of the project on emissions and ambient air. The Agency determined that the project will not increase emissions of criteria pollutants (See item 4, above). If there is no increase in emissions, then there can be no concomitant change in asthma or in other health impacts (cumulative or otherwise) from those emissions.

The Agency also calculated the increase in toxic air pollutant emissions (See item 4, above). For all TAPs modeled, the increase in ambient concentrations was an order of magnitude below the level the Department of Ecology has deemed acceptable in WAC 173-460. Given how far below the ASIL thresholds these modeled concentrations are, there should be no appreciable impacts on health or on the cumulative burden of pollution from the emissions associated with this project.

These comments did not result in any changes to permit conditions.

10. Ash Grove should continuously monitor emissions and make emissions data public

Several commenters stated that Ash Grove should continuously monitor pollutant emissions and make those emissions public.

Response:
Ash Grove is equipped with continuous monitors for emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, mercury, total hydrocarbons, and opacity, and a continuous parameter monitoring system for particulate matter. Ash Grove is also required to conduct periodic stack tests for particulate matter and dioxin/furan. Continuous monitors must meet the requirements of the applicable federal regulations and of Agency Regulation I, Article 12. Ash Grove submits a monthly summary report to the Agency of monitor downtime and emissions limit exceedances. The Agency reviews these reports and, if warranted, follows its compliance and enforcement procedures. All of these reports are available from the Agency via a public records request.

Ash Grove also submits annual reports of emissions to the Agency, in accordance with Regulation I, Article 7. These reports include the annual emissions of any pollutants that are emitted over the various reporting thresholds. This information is also available through a public records request to the Agency, and it is reported to the US EPA for inclusion in the National Emissions Inventory.

These comments did not result in any changes to permit conditions.

11. Adequacy of previous testing

Several commenters stated that the information supplied by Ash Grove was not sufficient for this permitting action. Several stated that the short-duration study at Ash Grove was not sufficient to establish that emissions would not increase with increased tire burning. Some said that Ash Grove should have been required to conduct additional testing to establish these emissions factors before the Agency would consider issuing the requested permit.

Response:
The test data from Ash Grove was not received in isolation. The studies noted on Pages 5 and 7 of the worksheet, and the documents provided by a commenter, showed that criteria pollutant emissions do not increase when tires are used as fuel in cement making. Together, this information established that there will not be an increase in criteria pollutant emissions for this project. The EPA also has done its own testing and research and determined the TDF is an acceptable fuel alternative in Portland Cement Kilns. A link to that determination is included in the tBACT determination in section D.

Additionally, until this operating permit revision is issued as a final permit, Ash Grove is limited to the 30% daily limit on tire consumption. Until a revised Air Operating Permit is issued, Ash Grove may not exceed the 30% daily limit, which means that the facility is prohibited from operating in a way that would enable the type of testing the commenters are seeking.

Finally, as was stated earlier, no emission limits are being raised by this permit, and Ash Grove continuously monitors emissions of many pollutants.

The information submitted by one commenter did cause the Agency to add requirements for testing of emissions of HCl and metal TAPs, as was noted in the response to Comment 4, above.

12. Sufficiency of civil penalties to deter noncompliance

One commenter stated that fines are not sufficient to deter violations, and that each violation should result in a mandatory one-week pause in facility operations.

Response:
Violations are subject to the Agency's civil penalty policies. Under Agency Regulation I, Section 3.11, the Agency may impose civil penalties up to approximately $25,000 per day of noncompliance. However, neither the state's Clean Air Act nor the Agency's regulations explicitly contemplate the idea of a forced temporary pause in facility operations as a direct consequence of noncompliance.

This comment did not result in any changes to permit conditions.

13. Impacts on breathing when odors from plant are present

One commenter with asthma stated that it is easily possible to "tell a difference in my breathing on days when I can smell more chemical scents from the plant".

Response:
The Agency's review (Comments 4 and 8, and worksheet Page 7) show that there is not expected to be an increase in emissions of the criteria pollutants (ozone precursors, nitrogen oxides, particulate matter) most associated with asthma as a result of this project. Additionally, as was discussed in the response to Comment 3, the very high temperatures of the kiln and pyroprocessing system effectively destroy the organic molecules that would potentially cause odors from this process.

If the commenter continues to detect odors from Ash Grove, the Agency has a mechanism for reporting odors. The rules for odors can be found here: Reg I, Article 9. The website to help file a complaint can be found here: File a Complaint | Puget Sound Clean Air Agency, WA.

This comment did not result in any changes to permit conditions.

14. Content of Air Operating Permit

One commenter noted that the draft Air Operating Permit revision did not include the current requirements of the Cement NESHAP in 40 CFR 63, Subpart LLL, the current requirements regarding

affirmative defense, or content from other recent Notice of Construction Orders of Approval. The commenter stated that the Air Operating Permit revision may not be issued without these.

Response:
Regarding the Air Operating Permit, this permitting action is not a renewal. A renewal would require that all applicable requirements, such as those mentioned by the commenter, be included in the permit. The Agency is currently drafting an Air Operating Permit renewal that will include all of these requirements. The Agency expects to issue a draft renewal permit, including all currently applicable requirements, for public comment in the coming weeks. However, the Agency also notes that Ash Grove is performing the testing, monitoring, recordkeeping, and reporting that are required by Subpart LLL and various Orders of Approval, even if they have not yet been incorporated into the operating permit document.

In contrast to a renewal, this permitting action is only a modification of the existing Air Operating Permit, in accordance with WAC 173-401-725. A modification is intended to make only a specific change, while leaving the rest of the permit intact. This modification is intended only to incorporate NOC OA 12003, related to the permitted tire feed rate. Incorporating the updated requirements of the NESHAP and the other items noted by the commenter will be part of the pending permit renewal, even though they were not part of this permit modification.

These comments did not result in any changes to permit conditions.

15. SEPA review
One commenter asserted that the Agency's SEPA review of environmental impacts was inadequate and that the Agency should have posted the applicant's environmental checklist for public review. The commenter states that if the Agency is going to rely on previous SEPA review and determinations, the Agency should explain how an increase in tire burning up "to 100% of the facility's power needs" was covered under the previous analysis.

Response:
The Agency is relying on the SEPA review and Determination of Non-Significance issued with NOC OA 5755, for the original installation of the tire feed system. This DNS was included among the materials available for review during the comment period.

The Agency has reviewed the SEPA checklist submitted by Ash Grove for NOC 5755 in November 1994. The checklist adequately covers the environmental impacts of the tire feed system, whether tires comprise 30% of the pyroprocessing system's fuel or 37%. The Agency has determined that there will be no increase in emissions of criteria pollutants, hydrogen chloride, or organic TAPs. The incremental increase in permitted tire feed to the kiln system does not change the adequacy of the checklist or the DNS. This is because of the minimal impact on emissions and air quality, as noted in this worksheet and in the responses to Comments 4 and 9, above. If the required testing shows that there is an increase in emissions of any tested metallic TAP, the permitted tire feed rate would revert to the previously permitted rate of 30% on a daily basis.

The commenter's assertion that this permit allows for Ash Grove to use tires for up to 100% of the kiln's heat input needs is mistaken. As was noted on Page 7 of the worksheet, this permit does not authorize

any modification to the existing tire feed system, and the system is only capable of providing approximately 37% of the heat input needs for the pyroprocessing system. Furthermore, because the tire feed system introduces tires to the calciner section of the pyroprocessing system (not the kiln itself), there is no physical manner in which cement could be made relying only, or even primarily, on tires as fuel.

The very small changes in emissions, noted in the worksheet above and in the response to Comment 4, together with the fact that the increase in permitted tire consumption is only from 30% of fuel to 37% of fuel, demonstrate that there will be no differences in environmental impacts compared to what was reviewed under the DNS for NOC OA 5755. The Agency's previous review of environmental impacts is adequate for this project, and the Agency will continue to rely on the previous review and DNS for the tire feed system under NOC OA 5755.

16. Exacerbates environmental racism and is contrary to environmental justice
Concern was raised that this permitting action would further impact the local area.

Response:
The scope of this project review is the incremental increase in permitted tire feed to the pyroprocessing system from the current limit of 30% of fuel up to the maximum the existing tire feed system can process, which is approximately 37%.

The Agency, above, determined the impacts of the project on emissions and ambient air. The Agency determined that the project will not increase emissions of criteria pollutants (See item 4, above). If there is no increase in emissions, then there can be no concomitant change in asthma or in other health impacts (cumulative or otherwise) from those emissions.

The Agency also calculated the increase in toxic air pollutant emissions (See item 4, above). For all TAPs modeled, the increase in ambient concentrations was an order of magnitude below the level the Department of Ecology has deemed acceptable in WAC 173-460. Given how far below the ASIL thresholds these modeled concentrations are, there should be no appreciable impacts on health or on the cumulative burden of pollution from the emissions associated with this project.

These comments did not result in any changes to permit conditions.

L. REVIEWS

Reviews	Name	Date
Engineer:	Carl Slimp	4/16/2024
Inspector:	Gerard Van der Jagt	4/16/2024
Second Review:	John Dawson	6/21/2024
Applicant Name:	Jeff Briggs	11/8/2024