Statement of Basis for the Air Operating Permit—Draft

Chemco, Inc.

Ferndale, Washington

February 9, 2021

northwest Clean Air agency

Serving Island, Skagit & Whatcom Counties

PERMIT INFORMATION

Chemco, Inc.
4191 Grandview Rd., Ferndale, WA 98248

Primary: SIC: 2491 **NAICS: 321114**
Secondary: SIC: 2899 **NAICS: 325998**
EPA AFS: 53-07300082

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Air Operating Permit Number: 020R2

Issued: issued date

Expiration Date: +5 years after issue date

Renewal Application Due: +4 years after issue date

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1. INTRODUCTION

Chemco, Inc. (identified herein as the permittee, the facility, or Chemco) owns and operates a wood treating facility near Ferndale, Washington. The facility is located at 4191 Grandview Road in Whatcom County as shown in Figure 1.

Chemco is required to obtain an air operating permit (AOP) pursuant to Title V of the 1990 Federal Clean Air Act (FCAA) and Chapter 173-401 of the Washington Administrative Code (WAC) because the facility has a potential-to-emit greater than 10 tons per year (tpy) of methanol, a Hazardous Air Pollutant (HAP), and greater than 100 tons per year of volatile organic compounds (VOC). Facility-wide PTE information is provided in Table 2.3-1 of this document.

The purpose of this Statement of Basis is to set forth the legal and factual basis for the AOP conditions and to provide background information for permit review by interested parties. The Statement of Basis is not a legally enforceable document in accordance with WAC 173-401-700(8).

Figure 1: Chemco Location

1.1 Permit Changes in the Second Renewal

The NWCAA received the application for the second renewal of Chemco's AOP on April 17, 2020. The following changes were made to the AOP during this renewal.

- Regulatory citations in the permit were revised to reflect new or modified regulations and revision/promulgation dates were updated.
- Formatting throughout the permit was updated to current NWCAA standards.
- Contact names and information for the NWCAA were updated where appropriate and the permit information page reflects the updated permit number and dates for the

permit renewal. Note the renewal application is due a year in advance of the permit expiration date.
- Table 1-1 in the AOP was modified to include the 12.248 MMBtu/hr boiler reviewed in OAC 1271 and OAC 1271a and reorganized to better reflect the grouping and organization of emission points at the facility.
- The emission unit identification numbers were updated to correspond to permit terms in Table 5 of the AOP and reflected in Section 2.2 below.
- AOP Section 2 (Standard Terms and Conditions) and Section 3 (Standard Terms and Conditions for NSPS and NESHAP) have been replaced with current NWCAA standard versions, containing any new or modified regulations and updated reference dates.
- The conditions of OAC 1271, issued July 13, 2020, were added in Section 5 of the AOP.
- The Statement of Basis content and layout were revised to standardize the documents issued for Chemco. Factual information was revised to correct for current operation and some text has been revised to add clarification.

2. FACILITY DESCRIPTION

2.1 General Facility Description

Chemco is a wood treatment facility that operates a small chemical batch plant; refer to the facility plot plan in Figure 2 below. The facility was constructed beginning in the early 1980s and operations commenced in 1983. Chemco began operating for the primary purpose of treating wood with a proprietary fire retardant chemical. A facility expansion was approved by the NWCAA on September 19, 1988, that included an insect and decay treatment process. The insect and decay treatment process ceased prior to 2001. In 2001, Chemco installed a chemical batch plant to formulate fire-retardant resin on-site; and in 2005, Chemco added a treating process that utilized existing equipment to produce a wood hardening resin. This wood hardening process ceased operation prior to 2011. In 2010, the facility added a diesel fuel transfer operation.

Chemco leased the wood treating building and process to independent operator, American Treating Company, beginning in 2010. American Treating Company filed for bankruptcy in November 2012 and Chemco resumed the treating operation in December 2012.

Process units at the facility include tanks, drying kilns, a chemical batch plant, an emergency generator and a steam generating boiler with a maximum heat input of 12.248 MMBtu/hr. Treatment chemicals are managed in a series of cone roof tanks that operate at atmospheric pressure inside the wood treating building. One tank, T-101, is grouped with the chemical batch plant identified as EU-1 because it is controlled by the same control device and is subject to leak detection and repair requirements that apply to the chemical batch plant.

2.2 Emission Unit Description

2.2.1 Chemical Batch Plant

Fire retardant resin is manufactured on-site in a batch chemical reactor (agitator). The reactor and the associated 12,000 gal formaldehyde/methanol (0.77 psig) storage tank (T-101) are vented through a condenser and water scrubber, with associated piping and pumps. This equipment is subject to leak detection and repair requirements in 40 CFR 63 Subpart FFFF. Each batch of fire retardant resin takes ~ 5 hours to mix. Finished fire retardant resin is loaded into totes for on-site use, or shipment off-site. The emission units include the storage tank, the scrubber vent and batch plant fugitives identified as EU-1 in the AOP.

2.2.2 Boiler

A 12.25 MMBtu/hr Cleaver Brooks boiler produces steam for the facility's drying kilns. The boiler fires on natural gas and is equipped with flue gas recirculation and a low-NOx burner. The boiler was installed in 2017 under OAC 1271 (later superseded by 1271a) and is subject to requirements in 40 CFR 60 Subpart Dc and 40 CFR 63 Subpart DDDDD. The boiler is identified as EU-2 in the AOP and the emissions inventory.

2.2.3 Drying Kilns

Chemco operates four (4) drying kilns used in the fire retardant wood treatment process and one (1) pilot-scale kiln for production research, as noted below.

Table 2.1: Kilns

Kiln Identification	Size (bf capacity)	Process	Emission Control
Kilns 1 & 2	250,000	Fire Retardant	None
Kilns 3 & 4	30,000 – 50,000	Fire Retardant	None
Pilot-Scale Kiln	1,000	Production Research	None

In the fire retardant treatment process, wood products are loaded into autoclaves using wheeled railcars. The autoclave vessels are cylindrical steel pressure vessels with an open end for product loading, which is then closed and sealed. Fire retardant treatment solution is loaded into the autoclave to bathe the wood products. The vessel is then pressurized and held at pressure for several hours. Treatment occurs at ambient temperature in autoclave 1 (10-ft diameter) and autoclave 2 (6-ft diameter) in the wood treatment building.

After treatment, the solution-soaked wood products are removed from the autoclave and loaded into the drying kilns. The wood treating building houses four (4) production dry kilns that are heated by steam produced in the natural gas-fired boiler. All four (4) kilns are equipped with ducting for air intake and exhaust. Drying cycle times vary depending on product.

In the past, Chemco has loaded untreated wood into the kilns for drying. These emissions are included in the PTE calculations as this is a possible process at the facility. Emissions from kiln drying are identified as EU-3 in the AOP.

2.2.4 Emergency Generator

Chemo operates and maintains a small emergency diesel-fired generator (100 kW, 134 bhp) subject to the operation and maintenance requirements in 40 CFR 63 Subpart ZZZZ. There is a small emergency generator in a covered area on the east side of the chemical batch plant, which has been permanently decommissioned. The permitted unit is identified as EU-4 in the AOP.

2.2.5 Tanks with Aqueous Solution and Fire Retardant

Chemco owns and operates two storage tanks for which there are no specific applicable requirements (e.g., OAC, NSPS, or NESHAPs). However, these tanks don't quality as insignificant emission units, so they are identified in Table 1 of the Air Operating Permit:

- T-102 Aqueous Solution – 12,000 gal; vapor pressure 0.08 psia.
- T-105 Concentrated Fire Retardant Solution – 5,000 gal; vapor pressure 0.0025 psia.

2.2.6 Other Operations

Diesel transfer from trucks into railcars is a joint operation between Chemco and Coleman Oil. The operation qualifies as an IEU, see Section 6.

Some wood is stained with identifying water-based dye prior to packaging and shipment. The dye is applied via a pass-through enclosed spray device located in the sorting and sizing building. Because the dye contains less than 1 percent VOC, the operation qualifies as an IEU. See Section 6.

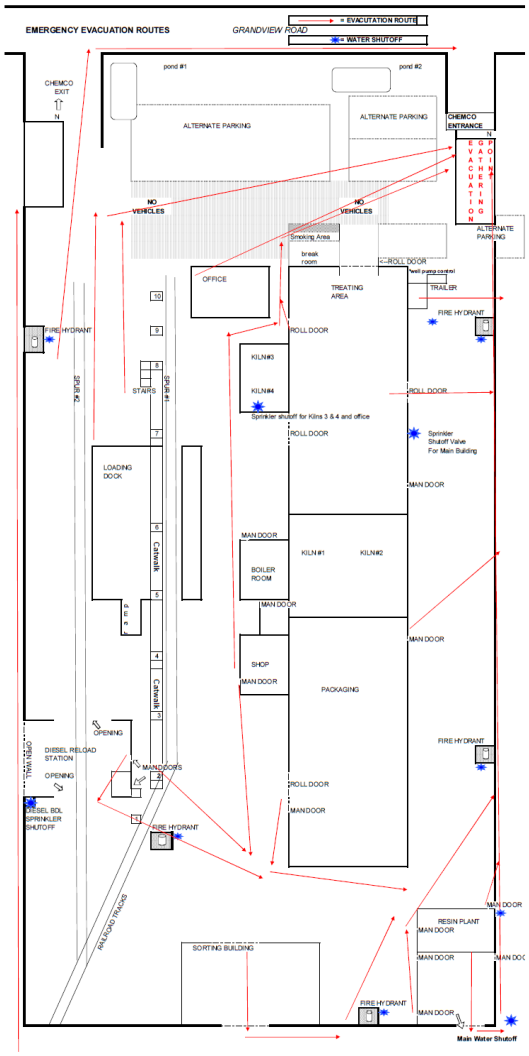

Figure 2: Chemco Plot Plan

2.3 Emission Inventory

The facility is a major source subject to the requirements of the Title V program because it has the potential to emit more than 100 tpy of VOC and more than 10 tpy of methanol a pollutant designated as a HAPs in Section 112(b) of the FCAA. Methanol is the primary VOC emitted from the facility.

The following tables contain actual reported emissions from the Chemco facility for 2015 through 2019.

Table 2.3-1: Facility Total Reported Criteria Emissions

Year	NO_X (tons)	CO (ton)	SO_2 (tons)	VOC (tons)	PM_{10} (tons)	GHG (MT)*
2015	0	1	0	13	0	
2016	1	0	0	13	0	
2017	0	0	0	13	0	
2018	0	0	0	17	0	
2019	0	0	0	18	0	
PTE**	5.47	4.46	0.05	227	0.45	4,692

**Greenhouse gas (GHG) emissions are calculated in metric tons (MT) and are only from the boiler.*
*** Potential to Emit (PTE) is estimated based on actual emissions and process data provided to NWCAA to calculate tons per year (tpy). PTE for GHG is based on size of boiler and operation 8760 hours.*

Table 2.3-2: Toxic Air Pollutant Emissions

Year	Methanol (lbs)	Formaldehyde (lbs)	Acetaldehyde (lbs)
2015	22,656	406	2
2016	24,860	402	0
2017	23,802	438	10
2018	31,645	380	8
2019	34,370	455	0
PTE	446,128	732	103

2.4 Permitting History

2.4.1 Approval letter issued September 15, 1981

NWCAA received the Notice of Construction (NOC) application to install a wood pressure treating facility on August 14, 1981. The equipment included in the application were two 24-foot by 80-foot lumber drying kilns, an autoclave, six tanks, pumps, and handling facilities. This Approval contained only the following condition: the ground level concentration of formaldehyde shall not exceed 0.05 parts per million at the property line.

As part of the original facility, a 25.1 MMBtu/hr boiler was installed (Cleaver Brooks serial L-55929 manufactured on 1/26/1973). The boiler was able to fire both natural gas and fuel oil. The 25.1 MMBtu/hr boiler was destroyed in 2017 and replaced with the boiler listed in NOC 1271a, see Section 2.4.5.

2.4.2 Approval letter issued September 19, 1988

On July 6, 1988, Chemco submitted a "Notice of Construction and Application for Approval" to construct and operate an additional process to treat dimensional lumber against decay and insects as well as fireproofing at the facility. The equipment referenced in the application was pressure treating equipment, drying kilns, and shipping facilities. The resulting OAC contained requirements that visible emissions from any source (within the facility) shall not exceed zero percent, limits on ambient concentrations of arsenic, chromium, and copper at the property line, and a requirement that odors shall not be detected offsite by Agency personnel in amounts considered to be a nuisance.

2.4.3 Order of Approval to Construct (OAC) 758 issued April 9, 2001

On February 13, 2001, Chemco submitted a "Notice of Construction and Order for Approval" to install a chemical plant to synthesize chemical fire retardant to be used at the facility. The proposed project consisted of a 2,500-gallon capacity reactor vessel and four 12,000-gallon raw material/product tanks. Vapors emitted from breathing and filling losses from a heated (~77 °F) formaldehyde/methanol/water storage tank (T-101) were to be routed through a packed tower water scrubber before venting to atmosphere. The reactor vessel (R-301) was to be sealed, heated, and agitated during the reaction phase. Vapors emitted from filling and emptying the reactor vessel were to be passively vented through a shell and tube condenser and then routed through a packed water tower scrubber before venting to the atmosphere. Tank T-101 and reactor R-301 were expected to emit "small quantities" of formaldehyde and methanol. The OAC contains requirements that the scrubber be installed and operated as per the application, no visible emissions shall be evident from the fire retardant manufacturing building, emissions shall not cause any exceedance of the acceptable source impact levels in Chapter 173-460 WAC, and formaldehyde emissions be determined and reported.

Condition 5 of the OAC required Chemco to analyze and report to the NWCAA (formerly NWAPA) the free formaldehyde concentration in the fire retardant product (Chemco 1000R) and propose to the Agency a plan to measure formaldehyde and methanol emissions from the entire facility. Based on a review of the plan the Agency may require emissions testing. Chemco submitted scrubber operation testing and operating plans to the NWCAA in February 2002 demonstrating treatment for formaldehyde and methanol emissions from the fire retardant system. Emissions of methanol and formaldehyde from the kilns were determined from mass balances. A corrected mass balance showing methanol emissions was re-submitted to the NWCAA in 2007.

2.4.4 OAC 1000 issued January 20, 2009

Chemco modified part of their existing fire retardant wood treating facility to produce a hardened wood product called Alowood. Alowood is produced using a proprietary, starch-based hardening solution in a vacuum/pressure treating process utilizing an existing 3-foot by 34-foot autoclave. All wood is kiln-dried after treatment in Kilns 3 and 4 on the west side of the treatment area. The starch-based hardener contains a dye to color the wood. Nearly every color of dye contains glycol ethers, which are listed federal hazardous air pollutants (HAPs). This process ceased prior to the issuance of the AOP in 2011.

2.4.5 OAC 1271 issued May 16, 2017

In 2017, Chemco replaced the 25.1 MMBtu/hr natural gas-fired boiler that was destroyed in a mechanical failure with a 10.043 MMBtu/hr boiler. The new boiler is more efficient and is equipped with flue gas recirculation and a low-NOx burner.

2.4.6 OAC 1295 issued July 25, 2018

In 2018, Chemco installed equipment to pressure treat pre-dried lumber with waterborne resin to produce hardened wood products. The treatment would take place in the existing autoclave and cure in an existing kiln. The equipment was installed within the 18 months required by the permit but hasn't operated as of the date of this AOP renewal.

2.4.7 OAC 1271a issued June 17, 2020

In 2020, Chemco requested a correction to the heat input of the boiler. The correct heat input is 12.248 MMBtu/hr and was revised in this OAC.

2.4.8 Other Operations

In 2010, Chemco requested a determination from the NWCAA for the diesel transfer facility. The NWCAA provided a written determination of no New Source Review required on April 5, 2010.

2.5 Compliance History

The Chemco facility has been inspected on a regular basis by the NWCAA. The facility had a record of no enforcement actions prior to 2007. Based on 2007 and 2008 inspections and other information from the facility, the NWCAA issued 4 violations on October 15, 2008 for failure to obtain an operating permit, submit notice of construction application, submit required notifications for NESHAPs (40 CFR 63 Subparts DDDD, EEEE, and FFFF). At the time of renewal issuance, the violations are closed and all associated penalties paid.

Chemco has received no enforcement actions since those issued in 2008.

3. BASIS OF REGUALTION APPLICABILITY

3.1 New Source Performance Standards (NSPS).

3.1.1 40 CFR 60 Subpart Dc

40 CFR Part 60 Subpart Dc is an air quality standard that limits air emissions from new, modified, or reconstructed boilers starting operation after June 9, 1989 and having a maximum design heat input capacity of 100 MMBtu/hr or less, but great than or equal to 10 MMBtu/hr.

Chemco operates one 12.248 MMBtu/hr natural gas-fired boiler equipped with a flue gas recirculation unit and low-NOx burner. The unit was permitted for operation May 16, 2017. As such, the boiler is subject to the associated recordkeeping and reporting required for units greater than 10 MMBtu/hr. The regulation does not impose any numerical operating limitations, installation and operation of monitors, or performance tests for this unit. The applicable requirements have been incorporated into AOP Section 5-2.

3.1.2 40 CFR 60 Subpart Kb

The various storage tanks on site are not subject to NSPS Subpart Kb because they do not meet the applicability criteria, specifically the vapor pressure of liquids stored in each tank are less than 3.5 kP (~ 0.51 psi) or the capacity of the tanks do not exceed 75 m3 (~ 19,813 gal).

3.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Chemco facility is a major source because it has the potential to emit more than 10 tons per year (tpy) of methanol, a pollutants designated as a hazardous air pollutant (HAP) in Section 112(b) of the FCAA. Methanol is emitted primarily from the kiln drying of treated wood products.

3.2.1 40 CFR 63 Subpart DDDD—Plywood and Composite Wood Products

The facility is an affected source under 40 CFR 63 Subpart DDDD—National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products. The drying kilns are the only subject equipment under Subpart DDDD.

The only requirement that applies to the facility, applies to the existing wood drying kilns. The requirement is submission of an initial notification in accordance with 40 CFR 63.9(b). This requirement has been met: Chemco submitted the initial notification with their Title V application in June 2008. No requirements of Subpart DDDD are included in the AOP.

3.2.2 40 CFR 63 Subpart EEEE—Organic Liquids Distribution (Non-Gasoline)

The Organic Liquids Distribution MACT (40 CFR Part 63 Subpart EEEE) applies to emissions from storage tanks, transfer racks, transport vehicles, and equipment leaks at major HAP sources that are not regulated by another NESHAP [§ 63.2338(c)(1)][1]. The chemical batch plant is covered by Subpart FFFF (see below). Therefore, Subpart EEEE does not apply.

3.2.3 40 CFR 63 Subpart FFFF—Miscellaneous Organic Chemical Manufacturing

The Miscellaneous Organic Chemical Manufacturing ("Miscellaneous Organic NESHAP", or "MON" - 40 CFR Part 63 Subpart FFFF) applies to miscellaneous organic chemical processing units ("MCPUs") at major HAP sources. Subpart FFFF applicability extends to the

[1] *§ 63.2338 (c) The equipment listed in paragraphs (c)(1) through (4) of this section and used in the identified operations is excluded from the affected source.*
(1) Storage tanks, transfer racks, transport vehicles, containers, and equipment leak components that are part of an affected source under another 40 CFR part 63 national emission standards for hazardous air pollutants (NESHAP).

formaldehyde storage tank, all of the piping components in organic HAP service within the batch reactor area, the concentrate storage tanks and the transfer rack that used with the trailer-mounted liquid cargo tank to transfer the treatment chemical concentrate from the reactor to the concentrate storage tanks.

MCPU affected emission points at Chemco include:

- Equipment component leaks (fugitive leak components) - leak detection and repair (LDAR) monitoring is conducted on a monthly basis as per 40 CFR Part 63 Subpart UU (40 CFR 63.2480).
- Batch reactor vent – no requirements because the vent is classified as a Group 2 vent (organic HAP emissions < 10,000 lb/yr); potential vent emissions are approximately 1,400 lb HAP/yr. No ongoing records are required for Group 2 batch process vents controlled using a control device and properly evaluated for initial compliance determination [40 CFR §63.2525(e)(1)(iii)]. Startup, shutdown, and malfunction events for the batch reactor and control device are not covered by the regulation [§63.2525(j)].
- Storage tanks - no applicable requirements under FFFF because they are classified as Group 2; >10,000 gal storing materials with at maximum TVP of <6.9 kPa (1 psi) or <10,000 gal.
- Transfer rack/transport vehicle loading - no applicable requirements because the transfer rack is classified as Group 2 (loading is less than 171,712 gallons per year of liquids that contain organic HAP with a partial pressure ≥ 1.5 psia).

The only active requirements of the regulation applicable to Chemco are LDAR provisions.

40 CFR 63 Subpart FFFF, §63.2515(b) (11/10/03) requires initial notification as specified in § 63.9(b)(2). Chemco provided initial notification to the NWCAA on June 16, 2008. Since this one-time requirement is complete, it's not included in the Air Operating Permit.

40 CFR 63 Subpart FFFF, §63.2520(d) (7/14/06) requires a submittal of a notification of compliance status report no later than 150 days after the applicable compliance date specified in §63.2445. Chemco provided a notice of compliance status as part of the application for the air operating permit. Chemco stated that the facility was in compliance with applicable provisions of the rule, including the LDAR provisions. Since this one-time requirement is complete, it's not included in the Air Operating Permit.

Equipment subject to the monitoring requirements at Chemco includes valves, connectors, pumps, and one agitator. Chemco does not operate any subject compressors, sampling connection systems, or pressure relief devices – the process operates at atmospheric pressure. The equipment is not designed to be pressure-tested as an alternative leak test. The applicable requirements for Subpart FFFF/UU are included in Section 5-1 of the AOP.

3.2.4 40 CFR Part 63 Subpart ZZZZ - National Emission Standards for Reciprocating Internal Combustion Engines

40 CFR Part 63 Subpart ZZZZ is a technology-based air toxics standard that limits toxic air emissions from new, reconstructed, and existing stationary reciprocating internal combustion engines (RICE) . Chemco operates one emergency compression ignition (CI) engine generator with a rating of 100 kW (134 hp) at the diesel transfer station.

The emergency generator is exempt from initial notification requirements under Subpart ZZZZ [63.6645(a)(5)]. The regulation does not impose any numerical operating limitations, fuel requirements, performance tests, initial compliance or notification requirements. The remaining emission requirements, monitoring installation, operation and maintenance, and reporting requirements are included in the AOP Section 5-4.

3.2.5 40 CFR Part 63 Subpart DDDDD—Industrial, Commercial, and Institutional

Boilers and Process Heaters

40 CFR Part 63 Subpart DDDDD ("Boiler MACT") is a technology-based air toxics standard that limits air toxic emissions from new, reconstructed and existing industrial, commercial, or institutional boilers or process heaters that are located at a major source of hazardous air pollutants. EPA finalized revisions to the boiler MACT November 20, 2015.

Chemco operates one 12.248 MMBtu/hr gas-fired boiler designed to burn natural gas. In accordance with 40 CFR 62.7490(b), the unit is a new unit (constructed after June 4, 2010) designed to burn natural gas at a major source of HAPs. As such, the boiler is subject to the work practice standards, annual tune-ups, and associated recordkeeping and reporting required for units greater than 10 MMBtu/hr. As per 40 CFR 63.7545(c), the initial notification of startup was received on August 22,2018. The regulation does not impose any numerical operating limitations, fuel requirements, installation and operation of monitors, or performance tests for this unit. The applicable requirements have been incorporated into AOP Section 5-2.

3.3 40 CFR 64 – Compliance Assurance Monitoring (CAM)

Chemco is not subject to the Compliance Assurance Monitoring (CAM) rule. The CAM rule under 40 CFR 64 requires owners or operators of subject sources to conduct monitoring that satisfies specific criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements. Monitoring focuses on pollutant specific emission units (PSEU) that rely on pollution control equipment to achieve compliance with emission standards or limits. The CAM rule coordinates existing monitoring requirements with additional monitoring if current requirements fail to specify adequate detail. CAM applies to units that meet all three of the following criteria: (1) are subject to an emission limit, other than an emission limit from a NSPS or NESHAP that was proposed after November 15, 1990, (2) use an add-on control device to meet the emission limit, and (3) have potential pre-control device emissions that would classify the unit as a major source.

Table 6 provides a summary of CAM applicability to the emission units at Chemco for pollutants that have an emission standard and an add-on control device. There are no significant sources of particulate matter nor sulfur dioxide at the facility. Most emission units at the facility have no add-on controls, so they are not subject to CAM based on Criteria 2. In addition, the NESHAPs to which Chemco is subject were after November 15, 1990. So, none of the emission limits that come from the NESHAPs are CAM eligible based on Criteria 1. That leaves us with a few emission limits that come from the Washington State and NWCAA rules that apply at emission units with controls. See Table 3.4-1 for further discussion.

Table 3.4-1: CAM Applicability

PSEU	Emission Limitation	Control Device	CAM Applicability
EU – 1 Chemical Batch Plant	VOC – limit from 40 CFR 63 Subpart FFFF	Condenser and Scrubber	VOC – DOES NOT APPLY (subject to 40 CFR 63 Subpart FFFF, November 10, 2003)

PSEU	Emission Limitation	Control Device	CAM Applicability
EU-2 Natural Gas-fired Boiler with Low NOx burner	SO_2 – 1000 ppm Visible Emission (VE) – 20% opacity Particulate Matter (PM) – 0.10 gr/dscf NOx – 9 ppmvd at 3% O2 CO – 50 ppmvd at 3% O2	FGR	SO_2 – DOES NOT APPLY FGR doesn't control SO_2 and use of a fuel that's inherently low in sulfur is not a control subject to CAM) VE/PM/CO – DOES NOT APPLY (Flue gas recirculation is not an active control device) NOx – DOES NOT APPLY (Low NOx burner is a passive control device)

3.4 40 CFR 68 Chemical Accident Prevention Provisions (RMP)

Chemco is exempt from the provisions of this program at the time of permit renewal. The goal of 40 CFR 68 and the Risk Management Plan (RMP) it requires is to prevent accidental release of substances that can cause serious harm to the public and the environment, and to mitigate the severity of releases if they do occur. If a tank, drum, container, pipe, or other process at a facility contains any of the regulated toxic and flammable substances listed in 40 CFR 68.130 in an amount above the "threshold quantity" specified for that substance, the facility operator is required to develop and implement a risk management program. Chemco triggers this program for storage of formaldehyde solution; however, they have demonstrated that the vapor pressure of this solution meets the exemption from the planning requirements associated with this provision.

3.5 40 CFR 72 - Acid Rain Program

Chemco is not subject to the acid rain program. Title IV of the federal Clean Air Act regulates SO2 and NOX emissions from fossil fuel-fired electrical generation facilities. 40 CFR 72.6 identifies criteria used to determine whether a facility is subject to the Acid Rain Program. Chemco is not an electrical generation facility and is therefore not subject to the provisions of the acid rain program.

3.6 New Source Review

3.6.1 Basic Information

New Source Review (NSR) requires stationary sources of air pollution to acquire permits before they begin construction. NSR is also referred to as construction permitting or preconstruction permitting.

There are three types of NSR permits. A source may have to acquire one or more of these permits:

- Prevention of Significant Deterioration (PSD) permits, which are required for new major sources or a major source making a major modification in an attainment area;
- Nonattainment NSR permits, which are required for new major sources or major sources making a major modification in a nonattainment area; and
- Minor source permits, which are required for sources that emit pollutants below the major source threshold but above the minor source threshold. It is

generally the case that a major new or modified source will also require minor NSR permitting that covers a different subset of pollutants.

Permits are legal documents that the source must follow. Permits specify what emission limits must not be exceeded and how the source is to demonstrate compliance with the set limits. Permits may contain conditions to ensure that the source is built according to the permit application upon which the permitting agency relies for air impact analysis. For example, the permit may specify a stack height that was used by the permitting agency to determine compliance with air pollutant limits. Some limits in the permit may be specified at the request of the source to keep them from being subject to other requirements. For example, the source may take limits in a minor NSR permit to keep the source out of PSD permitting. To assure that sources follow permit requirements, permits also contain monitoring, recordkeeping, and reporting (MR&R) requirements.

The region under the NWCAA's jurisdiction is currently designated as being in attainment for all pollutants except for a small area to the west of the Chemco facility. That area, which surrounds the Intalco Aluminum Smelter, is in the process of being designated as out of attainment with the sulfur dioxide NAAQS. However, the Chemco facility is located outside of this area. Therefore, nonattainment NSR permits are not required for any projects at Chemco.

3.6.2 Permitting Authorities

In Washington State NSR permits are issued by local air pollution control agencies or the Washington State Department of Ecology (Ecology). The EPA issues permits in special cases. Ecology and local air pollution control agencies have their own permit programs that are approved by EPA in the State Implementation Plan (SIP). In general, in the NWCAA jurisdiction, which encompasses Island, Skagit, and Whatcom Counties, Ecology issues major NSR permits (PSD permits) and the NWCAA issues minor NSR permits (Orders of Approval to Construct, or OACs).

3.6.3 Prevention of Significant Deterioration (PSD)

EPA established the Prevention of Significant Deterioration program to ensure that new or expanded sources do not cause a significant deterioration in the air quality of areas that currently meet applicable air quality standards. Before a major source can be constructed or modified in an area that meets all the health-based ambient air requirements (i.e. in an attainment area), the owner or operator must demonstrate that the project will not cause or contribute to violations of any ambient air quality standard or air quality increment through the PSD permitting program. Also, the owner or operator must demonstrate that the project will not cause significant deterioration in nearby Class I Areas (parks and wilderness areas).

Up to the issuance date of this AOP renewal, Chemco has not qualified as a major source under the PSD program (40 CFR 52.21) for any new projects undertaken since the establishment of the PSD program.

3.6.4 Minor New Source Review

New or modified sources of air pollution are required to obtain a permit from the NWCAA before beginning construction. Permits are referred to as Orders of Approval to Construct (OACs) and contain requirements to minimize air pollution impacts on the environment. The type of activity, the size of the operation, and the kinds of pollutants emitted determine permit conditions.

Table 3-1 lists the minor NSR permits issued to the Chemco facility and the current status of each.

Table 3.6.4-1: Chemco Minor NSR Permits

Permit ID.	Date Issued	Equipment/Sources	Status
Identified by date	9/15/81	Installation of Wood Pressure Treating Facility	Currently Applicable
Identified by date	9/19/88	Construct Wood Treatment Process for Fireproofing and Against Decay and Insects	Currently Applicable
758	4/9/01	Manufacture Chemical Fire Retardant Solution	Currently Applicable
1000	01/20/09	Installation of Wood Hardening Process	Permanently Shutdown
1271	5/16/2017	Installation of 12.25 MMBtu/hr boiler	Currently Applicable
1271a	6/17/2020	Correction of boiler heat input	No requirements
1295	7/25/2018	Pressure treat pre-dried lumber with waterborne resin	Constructed but not started operation

3.6.5 Other Federal New Source Review Programs

The entire jurisdiction of the NWCAA is designated as in attainment for all criteria pollutants. For this reason no other federal new source review programs for new or modified sources of air pollution are applicable.

3.7 Greenhouse Gas (GHG) Regulation

Greenhouse gases are chemicals that contribute to climate change by trapping heat in the atmosphere. The greenhouse gases (GHG) recognized by EPA and Ecology are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). "Hydrofluorocarbons" or "HFCs" means a class of GHGs primarily used as refrigerants, consisting of hydrogen, fluorine, and carbon.

The following discussion is included for completeness. This regulation does not apply to Chemco at the time of this permit renewal because GHG emissions from stationary sources at the site do not exceed 25,000 metric tons CO_2 equivalents (CO_2e). Should the emissions of GHG from the facility exceed 25,000 metric tons CO_2e, Chemco will be subject to the reporting provisions of this regulation.

3.7.1 40 CFR 98 – Federal Mandatory Greenhouse Gas Emission Inventory Regulation

The requirements for the mandatory greenhouse gas reporting are contained in 40 CFR 98. This regulation is implemented in its entirety by the EPA. This regulation is excluded from

appearing in a Title V air operating permit because it does not contain applicable requirements under the Title V program (WAC 173-401-200(4)).

3.7.2 Chapter 173-441 WAC – Reporting of Emissions of Greenhouse Gases

This regulation requires GHG reporting for owners or operators of a source that emits at least 10,000 metric tons per year CO_2e. This regulation is implemented in its entirety by Ecology and is considered an applicable requirement under the Title V program. As such it is included in Term 2.9 of the AOP for the facility.

3.7.3 Chapter 173-442 WAC –Greenhouse Gas Mitigation

WAC 173-442 (10/16/2016), the Clean Air Rule, establishes greenhouse gas emission (GHG) reduction pathways for covered parties in Washington. CAR applicability is based on GHG emissions for a three calendar year rolling average, beginning with calendar year 2012. Although Chemco is subject to the rule, no reporting requirements are required of Chemco; therefore, the language of the rule was removed from the Generally Applicable Requirements section of the AOP.

4. GENERAL ASSUMPTIONS OF THE PERMIT

4.1 Permit content

Terms of the permit applicable to the wood treating process remain applicable regardless of the operator under the current leasing situation at the facility. The owner, Chemco, retains responsibility for compliance at all times. The applicability of the AOP to the owner in a lease situation is consistent with EPA guidance[2].

The permit contains standard terms, generally applicable conditions for the type of facility permitted, and specifically applicable conditions originating from approvals to construct and any regulatory orders referencing the facility. Applicable requirements that were satisfied by a single past action on the part of the source are not included in the permit but are discussed in this Statement of Basis. An example would include performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

4.2 One-time or Obsolete Requirements

The following actions were noted as having been completed as required by Notice of Construction Approvals or Federal New Source Performance Standards:

- Chemco complied with the one-time requirement to submit initial notification of applicability of 40 CFR 63 Subpart DDDD to the drying kilns, as required in §63.2252 on July 18, 2008.
- Chemco complied with the one-time requirement to submit an initial notification of applicability of 40 CFR 63 Subpart FFFF to the chemical batch plant as required in §63.2515(b) on July 18, 2008.
- OAC (issued September 19, 1988), Condition 5: "All tanks with capacity of 6,000 gallons or greater containing liquids with a true vapor pressure of 1.5 psig or greater shall be constructed with either a floating roof, a vapor recovery system or other equipment of equal efficiency provided prior approval is obtained from the control officer." Chemco does not store any liquids with vapor pressures > 1.5 psig.
- OAC 758 (issued April 9, 2001), Condition 5 required Chemco to analyze and report the free formaldehyde concentration in the fire retardant product (Chemco 1000R) and propose a plan to measure formaldehyde and methanol emissions from the entire facility. Chemco submitted scrubber operation testing and operating plans to the NWCAA in February 2002 demonstrating treatment for formaldehyde and methanol emissions from the fire retardant manufacturing system. Emissions of methanol and formaldehyde from the kilns were determined from mass balances. A corrected mass balance showing methanol emissions was re-submitted to the NWCAA in 2007.
- OAC 1000 (issued January 20, 2009) issued to Chemco for a wood hardening process. This process ceased prior to the issuance of the initial AOP in 2011. Therefore all conditions in the AOP specific to this OAC have been removed.
- Chemco compiled with one-time requirement to submit initial notification of applicability (Part 1 & 2) of 40 CFR 63 Subpart DDDDD to the 25.1 MMBtu/hr natural gas-fired boiler, required pursuant to 40 CFR 63 Subpart B, 63.53(a) & (b), January 29, 2009. The boiler has since been removed so it is not listed in the AOP.

[2] *EPA Memo Number 98-1002. Common Control Determinations for Title V Permit Applicability; March 5, 1998 (amended January 25, 2010)*

- Chemco complied with the Boiler MACT one-time energy assessment and initial tune-up, required per 40 CFR 63.7510(e), Table 3, row 4 to Subpart DDDDD of Part 63, and 40 CFR 63.7510(e) and 63.7540(1)(10), November, 20, 2015, respectively. The initial 25.1 MMBtu/hr boiler tune up was performed by Cascade Boiler on January 12, 2016. The one-time energy assessment (up to 8 technical hours) was completed January 29, 2016. The boiler has since been removed so it is not listed in the AOP.
- OAC 1271 (issued May 16, 2017) Chemco complied with the one-time requirement to submit initial notification of applicability (Part 1 & 2) of 40 CFR 63 Subpart DDDDD for the 10.043 MMBtu/hr natural gas-fired boiler, required pursuant to 40 CFR 63 Subpart B, 63.53(a) & (b); and, the one-time requirement notification for date of construction and actual startup pursuant to 40 CFR 60 Subpart Dc, 60.48(c) on August 18, 2017.
- OAC 1271 (issued May 16, 2017) Chemco complied with the initial tune-up, required per 40 CFR 63.7510(e), Table 3, row 4 to Subpart DDDDD of Part 63, and 40 CFR 63.7510(e) and 63.7540(1)(10), November 11, 2017.

4.3 Federal Enforceability

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act (FCAA) or under any implementing regulation. Local and state regulations may become federally enforceable by formal approval and incorporation into the State Implementation Plan (SIP) or through other delegation mechanisms. Federally enforceable requirements are enforceable by the EPA and citizens. All applicable requirements in the permit including standard terms and conditions, generally applicable requirements, and specifically applicable requirements are federally enforceable unless identified in the permit as enforceable only by the state (i.e., labeled as "State only").

Most rules and requirements are followed by a date in parentheses. Two different versions (identified by the date) of the same regulatory citation may apply to the source if federal approval/delegation lags behind changes made to the Washington Administrative Code (WAC) or the NWCAA Regulation. For WAC regulations, the date listed in parentheses in the AOP represents the State Effective date. For SIP-approved WAC regulations, the date represents the "State Effective Date" of the regulation version that was SIP-approved. For the NWCAA regulations, the date represents the most recent Board of Directors adoption date, which is identified as the "Passed" or "Amended" date in the NWCAA Regulation. For SIP-approved the NWCAA regulations, the parenthetical date represents the "Passed" or "Amended" date of the regulation version that was SIP-approved. The date associated with an OAC or PSD permit represents the latest revision date of that order. For a federal rule, the date is the rule's most recent promulgation date.

Chapter 173-401 WAC is not federally enforceable although the requirements of this regulation are based on federal requirements for the air operating permit program. Upon issuance of the permit, the terms based on Chapter 173-401 WAC will become federally enforceable for the source.

4.4 Gap Filling

Title V of the Federal Clean Air Act is the basis for the EPA's 40 CFR 70 regulation, which is the basis for the State of Washington air operating permit regulation, Chapter 173-401 WAC. Title V requires that all air pollution regulations applicable to the source be called out in the AOP for that source. Title V also requires that each applicable regulation be accompanied by a federally enforceable means of "reasonably assuring continuous compliance."

Some of the older general regulations and federal NSPS do not have monitoring, recordkeeping and reporting requirements that are sufficient to reasonably assure

continuous compliance with emission limitations. Title V, 40 CFR 70, and WAC 173-401-615 all contain a "gap-filling" provision for that situation[3].

The permitting agency is required to create monitoring, recordkeeping and reporting requirements that fill the gap and to put those requirements in the air operating permit. In any term where gap-filling has taken place, the regulatory citation for that term is noted as "directly enforceable" and the citation of the gap-filling requirement in WAC 173-401-615(b) & (c), 10/17/02 is included in the table heading information.

4.5 Future Requirements

Applicable requirements promulgated with future effective compliance dates may be included as applicable requirements in the permit. Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within the standard terms and conditions section of the permit.

There are presently no pending applications to construct or modify Chemco in such a way as to trigger New Source Review. Chemco has certified in the permit application that the facility will meet any future applicable requirements on a timely basis.

4.6 Compliance Options

Chemco did not request emissions trading provisions or specify more than one operating scenario in the air operating permit application; therefore, the permit does not address these options as allowed under WAC 173-401-650. This permit does not condense overlapping applicable requirements (streamlining) nor does it provide any alternative emission limitations.

[3] WAC 173-401-615(1) Monitoring. Each permit shall contain the following requirements with respect to monitoring:
(a) All emissions monitoring and analysis procedures or test methods required under the applicable requirements, including any procedures and methods promulgated pursuant to sections 504(b) or 114 (a)(3) of the FCAA;
(b) Where the applicable requirement does not require periodic testing or instrumental or non-instrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), periodic monitoring sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit, as reported pursuant to subsection (3) of this section. Such monitoring requirements shall assure use of terms, test methods, units, averaging periods, and other statistical conventions consistent with the applicable requirement. Recordkeeping provisions may be sufficient to meet the requirements of this paragraph; and
(c) As necessary, requirements concerning the use, maintenance, and, where appropriate, installation of monitoring equipment or methods.

5. PERMIT ELEMENTS, BASIS FOR TERMS AND CONDITIONS, AND CHANGES MADE DURING PERMIT RENEWAL

5.1 Permit Organization

The permit is organized in the following sequence:

Permit Information

Attest

Table of Contents

Section 1 Emission Unit Identification

Section 2 Standard Terms and Conditions

Section 3 Standard Terms and Conditions for NESHAP

Section 4 Generally Applicable Requirements

Section 5 Requirements for Emissions Units

Section 6 Inapplicable Requirements

5.2 Permit Information

The Permit Information section identifies the source and provides general information relevant to the permit such as the facility address, the responsible corporate official, the permit issuance date and expiration date, and the NWCAA personnel responsible for permit preparation, review, and issuance.

5.3 Attest

The Attest section provides authorization by the NWCAA for the source to operate under the terms and conditions contained in the permit.

5.4 Section 1 - Emissions Unit Identification

The Emissions Unit Identification section lists the significant emissions units, associated control equipment, fuel type, and installation dates. This section is a general overview of the facility. Detailed information about the plant can be found in the permit application and supporting files.

5.5 Section 2 – Standard Terms and Conditions

The Standard Terms and Conditions section of the permit contains administrative requirements or prohibitions that do not have ongoing compliance monitoring requirements. Regulations that give legal authority to the Standard Terms and Conditions are cited for each topic. At times, requirements are paraphrased; the language of the cited regulation takes precedence over the paraphrased summary. For understanding and readability, the terms and conditions have been grouped by function. Similar requirements from the State and the NWCAA are grouped together where possible. Requirements that are not applicable until triggered are also included. An example of these would be the requirement to file a "Notice of Construction and Application for Approval."

Several permit conditions in Section 2 are labeled "Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02". These conditions are a clarification of the regulatory requirements, as the NWCAA interprets those requirements. "Directly enforceable" conditions are legal requirements with which the permittee must comply and are directly enforceable through the permit per the NWCAA's gap-filling authority.

5.6 Section 3 – Standard Terms and Conditions for NSPS and NESHAPs

This section contains the generally applicable requirements from 40 CFR 60 Subpart A and Subpart A of 40 CFR 63. These requirements, which consist mainly of recordkeeping, reporting, and general testing and operation and maintenance standards, apply generally to emission units that are subject to the federal requirements under NSPS and NESHAP.

The standard terms and conditions in this section are administrative and/or other requirements that typically have no ongoing compliance monitoring requirements. The permittee must comply with the requirements for specific "affected sources" defined in the National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR 63.2.

Chemco has limited affected sources for the requirements in Section 3. The applicability of Subpart A requirements is found in each applicable NSPS and NESHAP regulation on a line-by-line basis, generally as part of a table at the end of each Subpart. Chemco has four (4) regulations that provide the basis for the terms included in Section 3 of the permit; 40 CFR 60 Subpart Dc and 40 CFR 63 Subparts FFFF, ZZZZ and DDDDD.

- Chemco does not have any continuous emissions monitoring systems (CEMS) or continuous monitoring systems (CMS) that are required at the facility. Therefore, all requirements from Subpart A regarding these systems have been excluded.
- Chemco has only group 2 emission points and fugitive emissions sources under Subpart FFFF. Therefore, the startup, shutdown, malfunction plan provisions do not apply to the facility and have been left out of Section 3.
- The general duty clause in 63.6(e)(1)(i) applies only to the chemical manufacturing facility, the generator is exempt from this section. On October 16, 2009, the United States Court of Appeals for the District of Columbia Circuit (DC Circuit) issued the mandate vacating this provision from Subpart A. However, the provision has no effect at Chemco, since there are no direct emission limit applicable to the source. This citation has been left out of the AOP.
- Chemco is not required to conduct any performance tests. Therefore, the Subpart A performance testing provisions have been excluded from Section 3.

5.7 Section 4 – Generally Applicable Requirements

The Generally Applicable Requirements section of the permit identifies requirements that limit emissions or operations and apply broadly to the facility. With some exceptions, each of these requirements applies non-specifically to sources. For example, the NWCAA Regulation Section 455.1 broadly prohibits particulate emissions that exceed 0.1 gr/dscf from any emissions unit, with certain exceptions. Other requirements apply to only certain types of emissions units. For example, WAC 173-400-060 applies only to general process units to limit particulate emissions. Despite these differences in applicability, these requirements have been listed together in the Generally Applicable Requirement section of the permit.

The "Permit Term" column of Table 4–1 provides permit term numbers used to identify listed elements. The requirements specified in the "Citation" column apply to all emission units at the source, including insignificant emission units. The "Description" column is a brief description of the applicable requirements for informational purposes only, and is not enforceable. Periodic or continuous monitoring requirements (including testing) are specified in the "Monitoring/Recordkeeping/Reporting" column, which identifies monitoring, recordkeeping and reporting (MR&R) obligations the source must perform as required by WAC 173-401-605(1) and 615(1) and (2), or the underlying requirement. The NWCAA has determined that the MR&R requirements in Section 4 are not necessary for insignificant emissions units.

Many of the applicable requirements in Section 4 do not have underlying requirements for periodic testing or monitoring that yield sufficiently reliable data for the time increment in which the standard is set. Such monitoring (which may consist of recordkeeping designed to serve as monitoring) is required to be in the permit by Washington Administrative Code (WAC) 173-401-615. In these cases, site-specific MR&R was developed based on the characteristics of the permitted facility, the nature of the underlying requirement, the requirements of WAC 173-401-615, and EPA guidance. The process of developing these MR&R requirements and adding them to the permit is called "gap-filling". The MR&R requirements that contain gap-filling language are identified with the words *"Directly enforceable"* in the MR&R column of the table. The regulatory citation (WAC 173-401-615(1)(b) & (c), 10/17/02) is provided at the beginning of Section 4, just prior to Table 4-1.

Monitoring Recordkeeping and Reporting for generally-applicable Operation and Maintenance (O&M) requirements in Section 4 consists of operating and maintaining equipment in accordance with all of the other terms of the permit. If there are O&M requirements that are specific to an emission unit, they are addressed in Section 5 of the permit.

5.7.1 Operation and Maintenance (Section 4)

These terms require the source to maintain equipment in good condition in order to minimize air emissions.

5.7.2 Visible Emissions (Section 4)

The generally applicable opacity requirement limits any source at the facility to 20% opacity according to Ecology Method 9A; however, these limits are not accompanied by specific MR&R. Consequently, the MR&R for this term is gap-filled. Emission units throughout the facility generally operate without any visible emissions, so seeing any visible emissions is indicative of a problem. In order to standardize the facility-wide response to visible emissions, the MR&R for the opacity standard is written such that any visible emissions require immediate action with increasing stages of monitoring, depending on the situation. Any observed visible emissions (VE) require that one of three steps be taken within 24 hours: correct the problem, shut the unit down, or a certified reader shall determine the opacity according to EPA Method 9, which is a six-minute standard. If any three minutes during the six-minute observation or if the EPA Method 9 test itself shows emissions in excess of any standard, an Ecology Method 9A reading must be taken, if applicable. If a certified VE reader is unavailable to read the emissions, the NWCAA will assume that all opacity standards have been exceeded. Observations and actions taken must be recorded and made available at the facility for inspection. The MR&R requirement for opacity and particulate matter standards is written to allow reduced opacity observation length when the opacity levels are clearly below the standard.

If opacity is greater than an applicable emission standard, immediate corrective action is required and an upset condition must be reported to the NWCAA. All Method 9 or 9A opacity readings must be taken by an individual holding a valid Certification of Completion for Plume Evaluation Training from Ecology or other authorized training facility.

This MR&R is meant to capture all possible exceedances of any applicable opacity standard while providing a consistent set of steps to be taken when any opacity is observed at the facility.

Permit terms 4.14-4.15 list particulate matter limits in grains/dscf. Visible emission monitoring has been chosen as a surrogate to performing Method 5 tests, with the facility taking corrective action if visible emissions are noted. Based on historical inspections and permitting actions, the NWCAA has determined that Chemco is unlikely to exceed the particulate matter limits if there are no visible emissions. Chemco does not operate any equipment that requires grate cleaning or soot blowing.

5.7.3 Sulfur Dioxide and Fuel bound Sulfur (Section 4)

Below is a discussion of the generally applicable terms related to sulfur dioxide (SO_2).

5.7.3.1 Fuel Sulfur Content:

NWCAA 520 limits sulfur content of gaseous fuels to a maximum of 412 ppm sulfur, which is about 26 grains of sulfur per 100 standard cubic feet. Natural gas is supplied via pipeline by Cascade Natural Gas and contains an average of 1.5 grain of sulfur per 100 standard cubic feet, which is equivalent to about 25.4 ppm sulfur:

Note:

$$\frac{1.5\ gr.\ Sulfur}{100\ ft^3\ gas}\times\frac{1\ lb}{7000\ gr}\times\frac{1\ lb-mole}{32lb}\times\frac{379.5\ ft^3\ Sulfur}{1\ lb-mole}=\ 2.54\times10^{-5}\ \frac{ft^3\ Sulfur}{ft^3\ gas}\ =25.4\,ppm$$

A lb-mole of a pure gas weighs the molecular weight of that gas in pounds and occupies 379.5 ft^3 at 60° F and 1 atmosphere pressure (14.696 pounds per square inch absolute [psia]). A lb-mole of sulfur (S) weighs 32 lb and reacts with a lb-mole of oxygen (O_2) which also weighs 32 lb to form a lb-mole of sulfur dioxide, which weighs 64 lb. Therefore, 2 lb of SO_2 are emitted for every lb of sulfur in the fuel. Because one lb-mole of sulfur reacts to form one lb-mole of sulfur dioxide, each cubic foot of sulfur in the fuel results in one cubic foot of sulfur dioxide out the stack.

Chemco demonstrates compliance with this requirement by burning only natural gas as required in term 4.20.

When natural gas is burned, the boiler will emit about 0.0041 lb/MMBtu SO_2 as shown in the following calculation:

$$\frac{1.5\ gr.\ Sulfur}{100\ ft^3}\times\frac{1lb\ Sulfur}{7000\ gr\ Sulfur}\times\ \frac{1000\,ft^3}{1.05\,MMBtu}\times\frac{2lbSO_2}{1lbSulfur}=0.0041\frac{lbSO_2}{MMBtu}$$

5.7.3.2 Sulfur Dioxide, Stack Emissions (Section 4):

NWCAA Regulations 462 and WAC 173-400-040(6) have been grouped together under Permit Terms 4.7 and 4.8 since they are equivalent requirements (SO_2 emissions not to exceed 1,000 parts per million on a dry, volumetric basis (ppmdv)[4]) and have the same monitoring requirements.

The second paragraph of WAC 173-400-040(6), which is not in the Northwest Clean Air Agency regulations and is not adopted into the SIP, allows for exceptions to this requirement if the source can demonstrate that there is no feasible method of reducing the SO_2 concentrations to 1,000 ppmdv. This requirement is not federally enforceable and is not an applicable requirement for sources regulated by the Northwest Clean Air Agency.

Fuel consuming sources at Chemco burn only natural gas or diesel fuel and are incapable of violating the SO_2 limit while complying with the other requirements in the permit. The

[4] "ppmdv" means "parts per million on a dry, volumetric basis." Stack gas is usually sampled through a probe placed somewhere in the middle of the stack cross-section. The moisture is removed from the gas stream as part of the sampling process. The stack gas sample is analyzed for the pollutant in question, with the lab results being calculated as cubic feet (or meters) of pollutant per million cubic feet (or meters) of dry stack gas. If you had a stack with 50% moisture that was running right at the 1,000 ppmdv SO_2 standard, you would have 1,000 cubic feet of SO_2 for every million cubic feet of dry stack gas. You would also have 1,000 cubic foot of SO_2 for every *two* million cubic feet of "wet" (as is) stack gas, which is 500 ppmv. This is why it's important to know how stack sampling is done and why stack sampling and continuous emission monitoring methods are so specific.

following calculations show that it is mathematically impossible for a unit to emit 1,000 ppm sulfur dioxide while burning natural gas.

Natural gas means a mixture of gaseous hydrocarbons, with at least 80 percent methane by volume, such as the gas sold or distributed by any utility company regulated by the Washington Utilities and Transportation Commission. Chemco receives the same natural gas as all of the other natural gas consumers, private and industrial, in the Northwest, and this natural gas contains approximately 1.5 grains of sulfur per 100 standard cubic feet.

According to *Perry's Chemical Engineer's Handbook*, each cubic foot of natural gas requires approximately 10 cubic feet of air for combustion, yielding approximately 11 cubic feet of combustion exhaust gases, consisting mostly of nitrogen, water vapor, and carbon dioxide. The sulfur in the natural gas will almost all be converted to sulfur dioxide, with each cubic foot of sulfur producing the same volume of sulfur dioxide. Since each cubic foot of natural gas contains 2.54×10^{-5} cubic foot of sulfur (from above), each cubic foot of stack exhaust will contain approximately:

$$2.54\times10^{-5}\ \frac{ft^3\ S}{ft^3\ nat.gas}\times\frac{1\ ft^3\ SO_2}{1\ ft^3\ S}\times\frac{1\ ft^3\ nat.gas}{11\ ft^3\ stack\ exhaust}=2.3\times10^{-6}\ \frac{ft^3\ SO_2}{ft^3\ stack\ exhaust}$$

This is equivalent to 2.3 ppmdv SO_2. Note that this estimated value is about two-tenths of one percent of the 1,000 ppm SO_2 standard. Therefore, it is reasonable to assume that combustion units that are fired on natural gas cannot exceed the 1,000 ppm SO_2 limits in Northwest Clean Air Agency Regulations 462 and WAC 173-400-040(6).

5.7.4 Nuisance (odor) and Fugitive Emissions (Section 4):

NWCAA Regulations and the WAC contain requirements regarding odors and other emissions deemed to be a "general nuisance". Emissions of air contaminants that damage human health, plant or animal life, or otherwise interfere with the "enjoyment of life and property" are prohibited. These rules, however, do not include specific monitoring, recordkeeping, or reporting requirements. Therefore, per the requirements of WAC 173-401-615, the MR&R for AOP terms 4.10-4.19 were "gap-filled" with MR&R requirements.

The gap-filled MR&R requires Chemco to inspect potential sources of nuisance emissions upon receipt of a complaint, repair problems found, document the inspection and subsequent work, and notify the NWCAA within 12 hours if repairs cannot be made within 4 hours. Chemco is required to maintain a written complaint response plan to actively respond to citizen complaints. Records must be kept of inspections, any complaints, problems found, and corrective actions taken.

The gap-filled MR&R requires Chemco to inspect potential sources of fugitive emissions and particulate track-out on a quarterly basis. Corrective actions must be initiated for any problems identified as soon as possible, but no later than 24 hours of identification of a problem or the unit or activity must be shut down until the problem can be corrected. Records of quarterly inspections, results, and any corrective action taken must be retained.

Since the MR&R requirements were generated as part of the Air Operating Permit the MR&R is denoted as "Directly Enforceable", which establishes the language as enforceable conditions.

5.8 Section 5 – Specific Requirements for Emissions Units

This section contains tables that list applicable requirements that specifically apply to the main emission units. AOP Section 5 is separated into four sections: Section 5-1 covers the chemical batch plant (EU-1); section 5-2 covers the boiler (EU-2); section 5-3 covers the drying kilns (EU-3); and section 5-4 covers the emergency generator (EU-4). These

requirements specifically apply to significant emission units in addition to the Sections 2, 3, and 4 requirements.

The format of this section is the same as the table for the generally applicable requirements. Section 5 is organized to reflect operations at the facility and existing permits.

5.8.1 Section 5-1 Chemical Batch Plant (EU-1)

This section contains the requirements specific to the Chemical Batch Plant and Formaldehyde/Methanol storage tank from OAC 758 issued April 9, 2001, and the applicable requirements from 40 CFR 63 Subpart FFFF specific to leak detection and repair. Equipment subject to the monitoring requirements at Chemco includes valves, connectors, pumps, and one agitator. Chemco does not operate any subject compressors, sampling connection systems, or pressure relief devices – the process operates at atmospheric pressure.

5.8.2 Section 5-2 Boiler (EU-2)

This section contains the applicable requirements specific to the 10.043 MMBtu/hr natural gas-fired boiler from OAC 1271a and the applicable NESHAP and NSPS regulations. The boiler is subject to the work practice standards, annual tune-ups, and associated recordkeeping and reporting required for new units designed to burn natural gas greater than 10 MMBtu/hr at a major source (40 CFR 63 Subpart DDDDD). The regulation does not impose any numerical operating limitations, fuel requirements, installation and operation of monitors, or performance tests for this unit. The boiler is also subject to 40 CFR 60 Subpart Dc which requires records of the amount of natural gas burned each month.

5.8.3 Section 5-3 Drying Kilns (EU-3)

This section contains the requirements specific to the wood treatment process from OAC 758 issued April 9, 2001 and approval letter dated September 19, 1988.

The gap-filled MR&R for conditions 5.1.2 and 5.1.3 defines what threshold shall be used to identify when throughput or material formulations change significantly. "Significant change" shall be when:

1. Formulation of fire retardant chemical changes,
2. Shingles or shakes are treated with fire retardant chemical, or
3. New products are treated with fire retardant chemical.

5.8.4 Section 5-4 Emergency Generator (EU-4)

This section contains the applicable requirements specific to the 134 bhp emergency generator from 40 CFR 63 Subpart ZZZZ. This unit is subject to the requirements for an existing emergency generator <500 bhp at a major source. The emission requirements, monitoring installation, operation and maintenance, and reporting requirements have been included in the conditions in this section. The regulation does not impose any numerical operating limitations, fuel requirements, performance tests, initial compliance or notification requirements.

5.9 Section 6 – Inapplicable Requirments

WAC 173-401-640 requires the permitting authority to issue a determination regarding the applicability of requirements with which the source must comply. Table 6-1 of the AOP lists requirements that are deemed inapplicable to the facility. These inapplicable requirements must be listed in the AOP in order for the permit shield to apply. The basis for each determination of inapplicability is included in the table.

6. INSIGNIFICANT EMISSIONS UNITS

WAC 173-401-530 contains criteria for identifying insignificant emission units or activities for purposes of the operating permit program. Designation of an emission unit or activity as insignificant for purposes of this chapter does not exempt the unit or activity from any applicable requirement. A list of insignificant emission units is included in Table 6-1.

Monitoring requirements for insignificant emission units are detailed in Section 2.4.1.4 of the AOP. Chemco is required to use good industrial practices to maintain insignificant emission units, and to promptly repair defective equipment or shut down the unit until defective equipment can be repaired.

Table 6-1: Insignificant Emission units

Unit	WAC Citation	Comment
T103 – 12,000 gal tank	WAC 173-401-533(2s)	Aqueous acid storage
T104 – 12,000 gal tank	WAC 173-401-533(2s)	Aqueous acid storage
T107	WAC 173-401-532(94)	Water storage tank
Dilution Tank 1 (21,240 gal)	WAC 173-401-532(4)	Aqueous solution storage
Dilution Tank 2 (21,240 gal)	WAC 173-401-532(4)	Aqueous solution storage
Dilution Tank 3 (21,240 gal)	WAC 173-401-532(4)	Aqueous solution storage
Dilution Tank 4 (21,240 gal)	WAC 173-401-532(4)	Aqueous solution storage
Wood treating building vents	WAC 173-401-532(9)	Room air vents
Resin manufacturing building vents	WAC 173-401-532(9)	Room air vents
Diesel transfer operation	WAC 173-401-533(2t) & WAC 173-401-532(2)	Transfer from truck to rail
Diesel transfer operation building vents	WAC 173-401-532(9)	Room air vents
Chemical storage totes – non HAP	WAC 173-401-533(2b)	
Enclosed spray device	WAC 173-401-533(y)	Application of water based dye for identification
Administration HVAC	WAC 173-401-532(46)	Comfort air conditioning/heating
Lawns and Landscaping	WAC 173-401-532(43)	

7. PUBLIC DOCKET

Copies of Chemco's air operating permit and permit application and any technical support documents are available at www.nwcleanair.org and the following location:

Northwest Clean Air Agency
1600 South Second Street
Mount Vernon, WA 98273-5202

8. PUBLIC COMMENT PERIOD AND EPA REVIEW

Renewal 1:

A 30-day public comment period ran from February 10, 2016 to March 11, 2016. Notice was posted in the Bellingham Herald, the Washington Department of Ecology's Permit Register, as well as on the NWCAA's website. Copies of the draft permit and statement of basis were available on the NWCAA's website and at the NWCAA's office throughout the public comment period. No public comments were received.

9. DEFINITIONS AND ACRONYMS

Definitions are assumed to be those found in the underlying regulation. A short list of definitions has been included to cover those not previously defined.

An "applicable requirement" is a provision, standard, condition or requirement in any of the listed regulations or statutes as it applies to an emission unit or facility at a stationary source.

"Ecology" means the Washington State Department of Ecology.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant.

"Chemco" means Chemco, Inc.

"Oil" means low-sulfur No. 2 diesel fuel, containing no more than 0.05 percent sulfur by weight.

A "permit" means for the purposes of the air operating permit program an air operating permit issued pursuant to Title V of the 1990 Federal Clean Air Act Amendments.

"State" means, for the purposes of the air operating permit program, the NWCAA or the Washington State Department of Ecology.

The following is a list of Acronyms used in the Air Operating Permit and/or Statement of Basis:

AFS AIRS Facility System

AIRS Aerometric Information Retrieval System

AOP Air Operating Permit

ASIL Acceptable Source Impact Level

ASTM American Society for Testing and Materials

bf board feet

Btu British thermal unit

CEM Continuous Emissions Monitor

CEMS Continuous Emissions Monitoring System

CFR Code of Federal Regulations

EPA The United States Environmental Protection Agency

FCAA Federal Clean Air Act

MMBtu/hr million BTU per hour

MR&R Monitoring, Recordkeeping and Reporting Requirements

NAICS National Industrial Classification System

NESHAP National Emission Standards for Hazardous Air Pollutants

NOC Notice of Construction

NO_X Oxides of Nitrogen

NSPS New Source Performance Standard

NSR New Source Review

NWCAA Northwest Clean Air Agency

O_2 Oxygen

OAC Order of Approval to Construct

PM Particulate Matter

PM_{10} Particulate Matter less than 10 microns in diameter

ppmdv (same as ppmvd) parts of pollutant per million parts of dry stack gas on a volumetric basis

PSD Prevention of Significant Deterioration (federally required program for pre-construction review of major sources)

QA/QC quality assurance/quality control

RCW Revised Code of Washington

scf standard cubic foot (cubic foot of gas at Standard Conditions – usually 1 atmosphere of pressure and 60°F)

SIC Standard Industrial Classification

SIP State Implementation Plan

SO_2 sulfur dioxide

tpy tons per year

VOC Volatile Organic Compounds

WAC Washington Administration Code