

Statement of Basis for the Air Operating Permit—Final

Chemco, Inc.

Ferndale, Washington

April 19, 2011



Serving Island, Skagit & Whatcom Counties

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

Primary: SIC: 2491
Secondary: SIC: 2899
EPA AFS: 53-07300082

NAICS 321114
NAICS 325998
NWCAA ID: 376-EM01-W

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Air Operating Permit Number:	Issuance Date:
020	April 19, 2011
Permit Modifications	Modification Date:
N/A	
Supersedes Permit Number:	Expiration Date:
N/A	April 19, 2016
Application Date:	Renewal Application Due:
October 6, 2008	April 19, 2015

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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.

The facility was constructed beginning in the early 1980s and operations commenced in 1983.

The facility is a major source and is required to have an air operating permit (AOP) because the facility has a potential to emit greater than 10.0 tons per year (tpy) of methanol, a Hazardous Air Pollutant (HAP) and greater than 100 tons per year of volatile organic compounds (VOC). The primary pollutant, methanol, is defined as a regulated pollutant in Chapter 173-401 of the Washington Administrative Code (WAC).

The purpose of this Statement of Basis is to set forth the legal and factual bases for the conditions in the Chemco AOP 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).

This permit is the original AOP for Chemco. The AOP application was received on September 18, 2008.



Figure 1: Chemco Location

2. FACILITY DESCRIPTION

A table of the Emission Units at the Chemco facility is included in the AOP in Section 1 Table 1-1. A plot plan of the facility is shown in Figure 2.

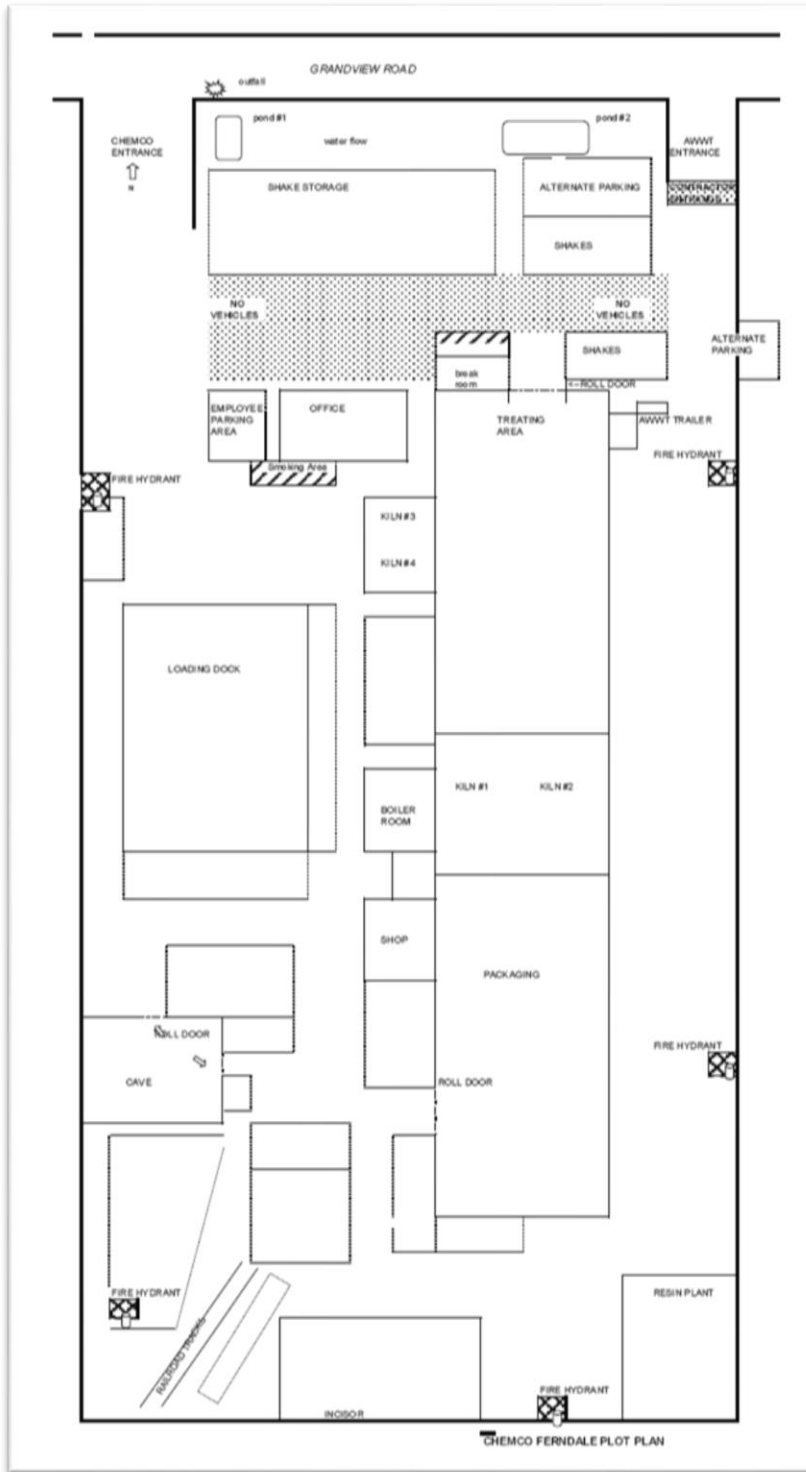


Figure 2: Chemco Plot Plan

2.1 History

The Chemco Ferndale facility began operating in 1983 for the primary purpose of treating wood with a proprietary fire retardant chemical. A facility expansion was approved by 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. In 2005, Chemco added a treating process that utilized existing equipment to produce a hardening resin. In 2010, the facility added a diesel fuel transfer operation.

2.2 Fire-retardant Wood Treating Process

Wood products, including shingles and siding (generally cedar), are delivered to the facility by truck and rail to the covered loading/unloading area.

Wood products are treated in a batch process to apply a fire-retardant resin. The wood products are loaded into autoclaves using wheeled railcars through an open end of the vessel. The autoclave vessels are cylindrical steel pressure vessels. The autoclave 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.

Treatment chemicals are managed in a series of fixed roof tanks that operate at atmospheric pressure inside the wood treating building: Concentrate R (12,000-gallons; maximum total vapor pressure 0.0025 psi), Concentrate S (7,000 gallons; maximum total vapor pressure 0.0025 psi), Dilution Tanks 1-3 (21,240 gallons each; storing aqueous solutions), and Dilution Tank 4 (12,000 gallons; aqueous solution).

After treatment, the solution-soaked wood products are removed from the autoclave and loaded into drying kilns. The wood treating building encloses 4 production dry kilns: Kilns 1 and 2 [each 250,000 board feet (bf) capacity] and kilns 3 and 4 (each 30,000-50,000 bf capacity depending on dimension of wood being treated). The kilns are heated by steam. All four kilns are equipped with ducting for air intake and exhaust. Drying cycle times vary depending on product.

Dried, treated wood products are packaged and shipped off-site by truck or rail.

The kiln steam is generated by a Cleaver Brooks 25.1 MMBtu/hr boiler located adjacent to the wood treating building. The boiler is operated as needed for kiln drying. Chemco operates the boiler using natural gas fuel, but the boiler was originally designed to fire diesel fuel as well. The diesel storage tank for the boiler was removed in 2010.

The wood treating process is owned and sometimes operated by Chemco. Chemco leased the wood treating building and process to independent operators, American Treating Company, beginning in 2010.

Adjacent to, but separate from, the wood treating building is a pilot-scale kiln (1,000 bf capacity) that the facility uses for production research.

2.3 Wood Hardening Process

The facility has a wood hardening operation in a separate area within the wood treatment building. Similar to the fire-retardant wood treatment operation, wood is loaded into the autoclave, a color-dyed hardening solution is introduced into the closed vessel, the vessel is pressurized, and then treated wood is moved to a kiln for drying to a finished product. The wood hardening operation has not been operated since in August 2009; however, the associated equipment, autoclave #3 (3 ft diameter x 24 ft length), remains in place.

2.4 Fire-retardant solution manufacturing

The facility operates a batch chemical manufacturing process that consists of 5 tanks, T-101 (12,000 gal; heated; maximum total vapor pressure 0.77 psig) and T-102 (12,000 gal; aqueous solution), T-105 (5,000 gal; maximum total vapor pressure 0.0025 psig) and T-103 and T-104 (unknown volume, storing aqueous solutions), an agitated reactor, and associated pumps and piping.

The reactor and formaldehyde storage tank (T-101) are vented through a water scrubber. Contaminated scrubber water is used in the reaction. Finished product may be loaded into trucks or totes for use onsite or shipment offsite.

2.5 Other Operations

In a covered area on the east side of the chemical batch plant, the facility has an emergency generator – John Deere Model#DES-110, Serial #28401644, 100 kW.

Some wood is stained with identifying dye prior to packaging and shipment. The water-based dyes are applied via a pass-through enclosed spray device located in the sorting and sizing building.

The facility operates a diesel transfer facility at the site. The operation transfers diesel fuel from trucks into railcars. There is no diesel storage on-site associated with the transfer operation.

3. EMISSIONS INVENTORY

The facility qualifies as a major source subject to the requirements of the Title V program because it has the potential to emit more than 100 tons per year (tpy) of volatile organic compounds (VOC) and more than 10.0 tpy of methanol, a pollutant designated as a hazardous air pollutant (HAP) in Section 112(b) of the Federal Clean Air Act (FCAA). Methanol is the primary VOC emitted from the facility.

The following tables contain actual reported emissions from the Chemco facility for 2007, 2008, and 2009. Emission unit (EU) designations as noted in the AOP are provided to coordinate with reported emissions.

3.1 Criteria Pollutant Emissions

Table 1: Facility Total Criteria Emissions

Year	NO _x	CO	SO ₂	VOC	PM ₁₀	GHG*
2007	2.3 tons	1.9 tons	0.01 ton	77.6 tons	0.2 ton	NR
2008	1 ton	1 ton	0.01 ton	65.6 tons	0.1 ton	NR
2009	1 ton	1 ton	0 ton	12 tons	0 ton	801 mt
PTE**	10.7 tpy	9.0 tpy	0.1 tpy	106 tpy	0.8 tpy	1,160 mt

*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 data provided to NWCAA to calculate tons per year (tpy).

Table 2: VOC Emissions Sources

Sources of VOC	2007	2008	2009
Storage tanks (EU-1)	0.10 ton	0.06 ton	0 ton
Boiler (EU-2)	0.13 ton	0.06 ton	0 ton
Kilns, Treated & Untreated wood (EU-3)	73 tons	63 tons	10 tons
Chemical Batch Plant, including fugitives (EU-4)	1.9 ton	1.3 tons	1 ton
Wood Hardening Process (EU-5)	2.8 tons	0.74 tons	0 tons
Total	77.6 tons	65.6 tons	11 tons

3.2 Toxic Pollutant Emissions

Table 3: Toxic Air Pollutant Emissions

Year	Methanol	Formaldehyde	Glycol ethers	Acetaldehyde
2007	145,721 lb	1,319 lb	7,073 lb	6 lb
2008	126,635 lb	465 lb	1,490 lb	92 lb
2009	20,223 lb	382 lb	467 lb	14 lb

4. FACILITY 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 following enforcement actions were taken by the NWCAA:

Case No. 3736, Violation date: 3/19/2008, NOV issue date: 10/15/2008

Chemco, Inc. and Chemco Acquisitions Corporation operate a wood treatment and chemical manufacturing facility that emits or has the potential to emit greater than 10 tons of a single hazardous air pollutant, 25 tons per year of any combination of hazardous air pollutants, and greater than 100 tons of volatile organic compounds. The facility failed to submit timely and complete emissions information as well as Title V air operating permit application information to the Northwest Clean Air Agency since at least 1993.

Case No. 3737, Violation date: 3/19/2007, NOV issue date: 10/15/2008

Chemco, Inc. was required to submit a Notice of Construction application prior to commencing construction for the wood hardening process. Construction commenced during 2005. NWCAA inspectors discovered the new process on 2/26/2007. The facility submitted an initial application for the process on 3/19/2007.

Case No. 3738, Violation date: 6/24/2008, NOV issue date: 10/15/2008

Chemco Acquisition Corporation failed to submit the required notifications for 40 CFR Part 63 Subpart FFFF - Miscellaneous Organic Chemical Manufacturing NESHAP in a timely fashion (Final rule date- 11/10/2003; Compliance date- 5/10/2008; Notification due date-: 3/9/2004). The notification was received at the NWCAA on 6/16/2008.

Case No. 3739, Violation date: 6/16/2008, NOV issue date: 10/15/2008

Chemco, Inc. failed to submit the following NESHAP notifications in a timely fashion: 40 CFR Part 63 Subpart DDDD—Plywood and Composite Wood Products NESHAP (Effective date-10/29/2007; Compliance date-10/1/2007; Notification due date-1/26/2005) and 40 CFR Part 63 Subpart EEEE—Organic Liquids Distribution NESHAP (Effective date-2/3/2004; Compliance date-2/3/2007; Notification due date-6/2/2004). Appropriate notifications for DDDD and EEEE were received at NWCAA on 6/16/2008.

Notice of Violations 3736, 3737, 3738, and 3739 were resolved in a settlement agreement on May 20, 2009 with an accompanying penalty of \$247,000.

5. APPLICABLE REQUIREMENTS AT THE FACILITY

5.1 NWCAA Pre-Construction Approvals/Orders of Approval to Construct

5.1.1 Approval letter issued September 15, 1981

The Notice of Construction (NOC) application to install a wood pressure treating facility was received by NWCAA on August 14, 1981. The equipment included in the application were two 24-foot by 80-foot lumber drying kilns, an autoclave, associated 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 boiler was not addressed in the original permit action for the facility.

5.1.2 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 4191 Grandview Road facility. The equipment referenced in the application was pressure treating equipment, dry kilns, and shipping facilities. The resulting Approval 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.

5.1.3 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 ambient air. 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 shall be passively vented through a shell and tube condenser and routed through a packed water tower scrubber before venting to the ambient air. 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 NWAPA the free formaldehyde concentration in the fire retardant product (Chemco 1000R) and propose to the NWAPA a plan to measure formaldehyde and methanol emissions from the entire facility. Based on a review of the plan the NWAPA may require emissions testing. Chemco submitted scrubber operation testing and operating plans to 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.

5.1.4 OAC 1000 issued January 20, 2009

Chemco modified part of their existing fire retardant wood treating facility (a 3-foot diameter retort and associated tanks) to produce a hardened wood product called Alowood. The product is made from kiln-dried Radiata Pine from New Zealand and Southern Yellow Pine from the southeast United States. The process is housed entirely within an existing 80-foot by 540-foot building. 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, which is also called a retort. All wood is kiln-dried after treatment in Kilns 3 and 4 on the west side of the treatment area.

The starch-based hardener also contains a dye to color the wood. Nearly every color of dye contains glycol ethers, which are listed federal hazardous air pollutants (HAPs).

Kiln-dried lumber is placed inside the retort, the hardener/dye solution is injected and the vessel is sealed and pressurized at ambient temperature. The dye and hardener permeate the wood, hardening and coloring the wood. At the end of the cycle, the hardener/dye solution is drained from the retort, which is then opened. The opening allows some of the glycol ether vapors to escape to atmosphere. The wet, treated wood is then moved to a drying kiln, where the wood is heated to drive off moisture and residual unreacted volatile chemicals. Any remaining glycol ethers are emitted during kiln drying. All glycol ethers that enter the process are assumed to volatilize.

5.2 Other Operations

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

5.3 New Source Performance Standards (NSPS)

No New Source Performance Standards apply to Chemco.

The 25.1 MMBtu/hr natural gas-fired boiler is *not subject* to NSPS Subpart Dc because the boiler was installed prior to June 9, 1989 (Subpart Dc applicability date) as part of the original plant.

5.4 National Emissions Standards for Hazardous Air Pollutants (NESHAP)

The Chemco facility is a major source because it has the potential to emit more than 10.0 tons per year (tpy) of methanol, a pollutant 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.

5.4.1 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 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.

5.4.2 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.

5.4.3 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 formaldehyde storage tank, all of the piping components in organic HAP service within the batch reactor area, the concentrate storage tanks and to the transfer rack that is used with a trailer-mounted liquid cargo tank used 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)].
- The storage tanks at Chemco have 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 has 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 NWCAA on June 16, 2008

40 CFR 63 Subpart FFFF, §63.2520(d) (7/14/06) requires notification of compliance status report. Submit 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.

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 5-2 of the AOP.

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).

5.4.4 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 and reconstructed stationary reciprocating internal combustion engines (RICE) that have a site rating of less than or equal to 500 horsepower and are located at major sources of hazardous air pollutant (HAP) emissions. Chemco operates one emergency compression ignition (CI) engine generator with a rating of 100 kW (134 hp).

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. Compliance is required by May 3, 2013.

5.4.5 40 CFR Part 63 Subpart DDDDD—Industrial, Commercial, and Institutional Boilers and Process Heaters

40 CFR Part 63 Subpart DDDDD, often referred to as the “Boiler MACT,” was intended to regulate industrial, commercial, or institutional boilers or process heaters that are located at a major source of hazardous air pollutants. Chemco operates one 25 MMBtu/hr oil and gas-fired boiler that may have been subject to the Boiler MACT. However, as a result of the DC Circuit Court ruling on June 8, 2007, EPA vacated the Boiler MACT. EPA has stated that the 112(j) provisions, called the “MACT Hammer,” are triggered with the vacatur of the Boiler MACT. EPA has proposed a new regulation on 6/4/2010 with an extended comment period. The final regulation has not yet been promulgated at the writing of the AOP.

5.5 40 CFR Part 51.21 – Prevention of Significant Deterioration

The NWCAA jurisdiction is designated as “in attainment” for criteria pollutants, therefore the provisions of PSD apply for modifications to major facilities. Chemco is not a major source under the PSD [40 CFR 52.21(b)(1)(i)] because it does not have the potential to emit regulated criteria air pollutants in excess of 250 tons per year.

5.6 40 CFR Part 64 – Compliance Assurance Monitoring

Chemco is not subject to the Compliance Assurance Monitoring (CAM) rule because the only emission unit equipped with add-on control equipment is the batch reactor, which is subject to 40 CFR Part 63 Subpart FFFF. Subpart FFFF was promulgated after November 10, 2003, after the November 15, 1990 date of proposed limitations or standards cutoff for CAM applicability.

6. GENERAL PERMIT ADMINISTRATION AND ASSUMPTIONS

6.1 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 guidance².

Applicable requirements that were satisfied by a single past action on the part of the source are not included in the AOP. An example of this would be performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Also, regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

6.2 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 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.

6.3 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.

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

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. The date associated with a WAC regulation denotes the "State Effective Date" of the regulation. For SIP-approved WAC regulations, the date represents the "State Effective Date" of the regulation version that was SIP-approved. For 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 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.

6.4 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.

6.5 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.

6.6 Gap-Filling

On August 19, 2008, the U.S. Court of Appeals vacated EPA's 2006 interpretive rule that prohibited states from enhancing monitoring in Title V permits. As a result, permitting authorities again must ensure that monitoring in each permit is sufficient to assure compliance with the terms and conditions of the permit. 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 situation³. The permitting agency is required to create monitoring, recordkeeping

³ WAC 173-401-615(1) Monitoring. Each permit shall contain the following requirements with respect to monitoring:

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 Chapter 173-401 WAC: WAC 173-401-615(b) & (c), 10/17/02 is included in the table heading information.

-
- (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 noninstrumental 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.

7. PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS

7.1 Permit Organization

The permit is organized in the following sequence:

- Permit Information
- Attest
- Table of Contents
- Emission Unit Identification
- Standard Terms and Conditions
- Standard Terms and Conditions for NESHP
- Generally Applicable Requirements
- Requirements for Emissions Units
- Inapplicable Requirements

7.2 Section 1 – Permit Information, Attest, and Emissions Unit Description Sections

The Permit Information section identifies the source, the responsible corporate official, and the NWCAA personnel responsible for permit preparation, review, and issuance. The Attest section provides authorization by NWCAA for the source to operate under the terms and conditions contained in the AOP. 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.

7.3 Section 2 – Standard Terms and Conditions

The Standard Terms and Conditions section of the permit specifies administrative requirements or prohibitions with no ongoing compliance monitoring requirements. The legal authority for the Standard Terms and Conditions are provided in the citations in Section 2 of the permit. The description of the regulation in each of these conditions (with the exception of those labeled “Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02”) is sometimes a paraphrase of the actual regulatory requirement. Where there is a difference between the actual requirement and the paraphrased description, the cited regulatory requirement takes precedence. In an effort to make the section more readable, the terms and conditions have been grouped by function. In some cases, similar requirements at the state and local authority level have been grouped together.

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 NWCAA’s gap-filling authority.

A number of requirements that would not be applicable until triggered have also been included in this section. An example of one such requirement is the requirement for a source to submit an application for new source review.

7.4 Section 3 – Standard Terms and Conditions for NESHAPs

The standard terms and conditions in this section are administrative and/or other requirements that typically have no ongoing compliance monitoring requirements and are located in 40 CFR Part 63 Subpart A. 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. The affected facilities, affected sources, and stationary sources subject to these requirements are identified in Section 5 of this AOP. The conditions in this section do not apply generally to all emission units at the facility. 40 CFR 63 Subpart A has been adopted through NWCAA Regulations Section 104.2, which is cited in each term of this section.

Chemco has limited affected sources for the requirements in Section 3. The applicability of Subpart A requirements is found in each applicable NESHAP regulation on a line-by-line basis, generally as part of a table at the end of each Subpart. Chemco has two regulations that provide the basis for the terms included in Section 3 of the permit; Subparts FFFF and ZZZZ.

- 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.

7.5 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, 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 generally applicable requirements are organized in tabular form in Section 4 of the permit as shown below.

Table 4-1 Generally Applicable Requirements

Permit Term	Citation	Description	Monitoring/Recordkeeping/Reporting
4.1 General	NWCAA 342.1 (7/14/05) State Only	<u>Operation and Maintenance</u> Sources are required to keep any process and/or air pollution control equipment in good operating condition and repair.	Operate in accordance with the terms of the permit. <i>Directly enforceable</i>
4.2 General	NWCAA 342.2 (7/14/05)	<u>Operating Instructions/Maintenance Schedules</u> Make operating instructions and maintenance schedules available to operators.	

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 under WAC 173-401-615(1)(b) & (c), 10/17/02”.

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.

7.5.1 Operation and Maintenance (Permit Terms 4.1 and 4.2)

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

7.5.2 Visible Emissions (Permit Term 4.3)

Visible emissions from the Chemco facility are covered as specifically applicable requirements in Section 5. For the purpose of ongoing compliance, Chemco is required to perform quarterly inspections of the facility in general, and to investigate any observations of visual emissions and document the incident and corrective action taken. Chemco does not operate any equipment that requires grate cleaning or soot blowing.

7.5.3 Particulate Matter (Permit Terms 4.2 through 4.4)

Chemco is required to periodically inspect for any visible emissions that may be due to emissions of particulate matter in term 4.3. Chemco is further required to investigate any

observations of visual emissions and to document the incident and any corrective actions taken.

7.5.4 Sulfur Dioxide and Fuel bound Sulfur (Permit Terms 4.5 through 4.9)

Below is a discussion of the generally applicable terms related to sulfur dioxide (SO₂).

7.5.4.1 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:

$$\frac{1.5 \text{ gr. Sulfur}}{100 \text{ ft}^3 \text{ gas}} \times \frac{1 \text{ lb}}{7000 \text{ gr}} \times \frac{1 \text{ lb-mole}}{32 \text{ lb}} \times \frac{379.5 \text{ ft}^3 \text{ Sulfur}}{1 \text{ lb-mole}} = 2.54 \times 10^{-5} \frac{\text{ft}^3 \text{ Sulfur}}{\text{ft}^3 \text{ gas}} = 25.4 \text{ ppm}$$

Note:

A "lb-mole" of a pure gas weighs the molecular weight of that gas in pounds and occupies 379.5 ft³ 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 (O₂) which also weighs 32 lb to form a lb-mole of sulfur dioxide, which weighs 64 lb. Therefore, 2 lb of SO₂ 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 or diesel fuel, as required in term 4.7. Although the facility has the ability to burn diesel fuel in the boiler, it is not economical (due to the inefficiency of the boiler) and the diesel storage tank has been removed; therefore the boiler operates on natural gas only.

When natural gas is burned, the boiler will emit about 0.0041 lb/MMBtu SO₂ as shown in the following calculation:

$$\frac{1.5 \text{ gr. Sulfur}}{100 \text{ ft}^3} \times \frac{1 \text{ lb Sulfur}}{7000 \text{ gr Sulfur}} \times \frac{1000 \text{ ft}^3}{1.05 \text{ MMBtu}} \times \frac{2 \text{ lb SO}_2}{1 \text{ lb Sulfur}} = 0.0041 \frac{\text{lb SO}_2}{\text{MMBtu}}$$

7.5.4.2 Sulfur Dioxide, Stack Emissions (Permit Terms 4.7 through 4.9):

NWCAA Regulations 462 and 410 and WAC 173-400-040(6) have been grouped together under Permit Terms 4.8 through 4.11 since they are equivalent requirements (SO₂ emissions not to exceed 1,000 parts per million on a dry, volumetric basis (ppmdv)⁴) and have the same monitoring requirements.

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 SO₂ standard, you would have 1,000 cubic feet of SO₂ for every million cubic feet of dry stack gas. You would also have 1,000 cubic foot of SO₂ 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.

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 SO₂ 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 SO₂ limit while complying with the other requirements in the permit. The 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:

$$2.54 \times 10^{-5} \frac{ft^3 S}{ft^3 nat. gas} \times \frac{1 ft^3 SO_2}{1 ft^3 S} \times \frac{1 ft^3 nat. gas}{11 ft^3 stack exhaust} = 2.3 \times 10^{-6} \frac{ft^3 SO_2}{ft^3 stack exhaust}$$

This is equivalent to 2.3 ppmdv SO₂. Note that this estimated value is about two-tenths of one percent of the 1,000 ppm SO₂ standard. Therefore, it is reasonable to assume that combustion units that are fired on natural gas cannot exceed the 1,000 ppm SO₂ limits in Northwest Clean Air Agency Regulations 462 and 410 and WAC 173-400-040(6).

7.5.5 Nuisance (odor) and Fugitive Emissions (Permit Terms 4.10 through 4.17):

NWCAA Regulation 535 is a state only requirement that requires appropriate practices and control equipment to reduce emission of odor bearing gases or particulate matter. WAC 173-400-040(5) prohibits emissions detrimental to health and property. WAC 173-400-040(4) is a similar state requirement that requires "recognized good practice" to reduce odors to a reasonable minimum.

NWCAA Regulation 550 is a federally enforceable requirement requiring installation of control for all fugitive dust emissions. WAC 173-400-040(3) addresses fugitive dust emissions for some activities and WAC 173-400-040(8) requires reasonable precautions or reasonably available control technology (RACT) to control fugitive emissions. Both of the Ecology regulations are federally enforceable. Recording of fugitive dust emissions is not necessarily a violation of the requirement, since the requirement does not prohibit fugitive dust emissions, but prohibits fugitive dust unless RACT is employed. RACT is employed for all sources of dust at this plant. Equipment controlled or vented directly through a stack is incapable of violating this standard while complying with the other requirements in the permit. WAC 173-400-040(2) is a state only regulation that prohibits emissions of particulate matter which becomes deposited upon the property of others 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.

The monitoring method specifies inspection and taking corrective action within 24 hours if any nuisance or fugitive dust emissions are reported to the facility. 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.

7.6 Section 5 – Specific Requirements for Emissions Units

This section lists requirements that specifically apply to significant emission units in addition to the Sections 2, 3, and 4 requirements. The format and organization 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.

8. 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 4.

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 4 – 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)	
Diesel transfer operation building vents	WAC 173-401-532(9)	Room air vents
Chemical storage totes – non HAP	WAC 173-401-533(2b)	
Administration HVAC	WAC 173-401-532(46)	Comfort air conditioning/heating
Lawns and Landscaping	WAC 173-401-532(43)	

9. INAPPLICABLE REQUIREMENTS

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.

10. 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, 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

O₂ Oxygen

OAC Order of Approval to Construct

PM Particulate Matter

PM₁₀ 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

SO₂ sulfur dioxide

tpy tons per year

VOC Volatile Organic Compounds

WAC Washington Administration Code

11. PUBLIC DOCKET

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

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