TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit 24-3661
Air Discharge Permit Application CO-1100

Issued: September 5, 2024

ARCH WOOD PROTECTION

SWCAA ID – 1264

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ABBREVIATIONS

List of Acronyms

ADP ..... Air Discharge Permit
AP-42 ..... Compilation of Emission Factors, AP-42, 5th Edition, Volume 1, Stationary Point and Area Sources – published by EPA
ASIL..... Acceptable Source Impact Level
BACT..... Best available control technology
BART ..... Best Available Retrofit Technology
CAM ..... Compliance Assurance Monitoring
CAS#..... Chemical Abstracts Service registry number
CFR..... Code of Federal Regulations
EPA..... U.S. Environmental Protection Agency
EU ..... Emission Unit
LAER..... Lowest achievable emission rate
MACT..... Maximum Achievable Control Technologies
NESHAP..... National Emission Standards for Hazardous Air Pollutants
NOV..... Notice of Violation/
NSPS..... New Source Performance Standard
PSD..... Prevention of Significant Deterioration
RACT..... Reasonably Available Control Technology
RCW ..... Revised Code of Washington
SQER ..... Small Quantity Emission Rate listed in WAC 173-460
Standard..... Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)
SWCAA..... Southwest Clean Air Agency
T-BACT..... Best Available Control Technology for toxic air pollutants
WAC ..... Washington Administrative Code

List of Units and Measures

acfm ..... Actual cubic foot per minute
dscfm..... Dry Standard cubic foot per minute
gpm ..... Gallons per minute
lb/ ..... Pounds per
lb/hr..... Pounds per hour
lb/yr..... Pounds per year
MMscf .....Millions of standard cubic feet
MMBtu .....Million British thermal unit
ppm .....Parts per million
ppmv .....Parts per million by volume
ppmvd .....Parts per million by volume, dry
ppmw .....Parts per million by weight
tpy .....Tons per year

List of Chemical Symbols, Formulas, and Pollutants

CH_4..... Methane
CO ..... Carbon monoxide
CO_2..... Carbon dioxide
CO_2e..... Carbon dioxide equivalent
H_2S ..... Hydrogen sulfide
HAP ..... Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
N_2O ..... Nitrous oxide
NO_2 ..... Nitrogen dioxide
NO_X..... Nitrogen oxides
O_2 ..... Oxygen
O_3 .....Ozone
PM .....Particulate Matter with an aerodynamic diameter 100 µm or less
PM_{10}.....PM with an aerodynamic diameter 10 µm or less
$PM_{2.5}$ .....PM with an aerodynamic diameter 2.5 µm or less
SO_2.....Sulfur dioxide
SO_X .....Sulfur oxides
TAP.....Toxic air pollutant pursuant to Chapter 173-460 WAC
VOC.....Volatile organic compound

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name:	Lonza
Applicant Address:	1579 Koppers Road, Conley, GA 30288
Facility Name:	Lonza – Arch Wood Protection
Facility Address:	532 Hendrickson Drive, Kalama, WA 98625
SWCAA Identification:	1264
Contact Person:	Nikita Nesterov – Site Operations Manager
Primary Process:	Wood Preservative Manufacturing
SIC/NAICS Code:	2819: Industrial Inorganic Chemicals, 2869: Industrial Organic Chemicals, Not Elsewhere Classified 42469: Other Chemical and Allied Products Merchant Wholesalers
Facility Latitude and Longitude:	45°59′14.22″ N 122°49′59.99″ W
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

Arch Wood Protection, Inc. (Arch Wood) produces wood preservatives by blending raw materials in an agitated vessel, in mix tanks, or in tanker trucks. Wood preservatives are also stored and transloaded at the facility. Emissions from certain activities are controlled by a venturi scrubber/packed tower scrubber system.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit (ADP) application number CO-1100 received May 24, 2024. ADP application CO-1100 requests the following:

- Approval to produce Pack B.
- Approval to produce Pack HPT in place of Pack PT.
- Approval to produce Homogenous Pack A (HPA).
- Approval to produce Antiblu® M3.
- Connection of R-1, T-7, T-8, and T-9 to the existing scrubbing system.

ADP 24-3661 will supersede ADP 21-3476 in its entirety.

4. PROCESS DESCRIPTION

The following products have been, or will be, produced at the facility:

Product	Notes
Pack A	Raw material in wood preservative manufacturing - most Pack A production being replaced by HPA
HPA	Raw material in wood preservative manufacturing
Pack B	Raw material in wood preservative manufacturing
Wolman® E CA-B	Wood preservative
Wolman® E CA-C	Production being replaced by Wolman® E HCA-C - wood preservative
Wolman® E HCA-C	Wood preservative
Wolman® E CA-C+	Wood preservative
Wolman® E C9	Wood preservative
Pack PT	Production being replaced by Pack HPT – wood preservative
Pack HPT	Wood preservative – wood preservative
Antiblu® M3	Anti-sapstain
Diamulse C	No longer in production at Kalama facility – anti-sapstain
Diamulse T	No longer in production at Kalama facility – anti-sapstain
Ferrobrite B	Anti-sapstain
Ferrobrite AQ	Anti-sapstain
Mycostat P20	No longer in production at Kalama facility – anti-sapstain
Mycostat-MX	No longer in production at Kalama facility – anti-sapstain
Checkmate	No longer in production at Kalama facility – water repellant
Ferrobrite-MX	No longer in production at Kalama facility – anti-sapstain
Antiblu® M6	Anti-sapstain

Pack A and HPA is produced by first blending MEA, copper (Cu), carbon dioxide (CO_2), oxygen (O_2) and water (H_2O) in a pressure vessel (R-2). Monoethanolamine (MEA) is received as a liquid by railcar and copper metal is received as a solid in sacks. A chiller controls the temperature during this exothermic reaction. R-2 is cooled with water circulated through a cooling tower. Controlled venting occurs at the end of this cycle.

$$2Cu + 8MEA + CO_2 + O_2 + H_2O \rightarrow 2Cu(MEA)_4^{2+} + CO_3^{2-} + 2OH^-$$

After the copper has dissolved, the mixture is transferred to an agitated atmospheric vessel where CO_2 is sparged through the tank for pH control. This addition of CO_2 to the mixture results in the neutralization of the hydroxide ions and the formation of carbonate, as shown in the following equation:

$$2Cu(MEA)_4^{2+} + CO_3^{2-} + 2OH^- + CO_2 \rightarrow 2Cu(MEA)_4^{2+} + 2CO_3^{2-} + H_2O$$

One batch of 70,000 pounds of Pack A will be produced in approximately eight hours. Pack A is stored in agitated storage vessels until it is loaded into tanker trailers along with Pack B, which is already stored onsite.

Production of Pack B involves the mixing of Preventol A8 and Ethomeen C/17. Preventol A8 is received as a solid in totes and is stored in the process area at the facility. Pack B batch mixing will occur in T-8, which is vented to the scrubber. Pack B will be stored in totes until it is loaded into tanker trucks for producing CA-B.

Wolman® E products are produced through the combination of materials, including Pack A, HPA, and Pack B. The ingredients are loaded simultaneously into tanker trailers to produce the final product. The ratio of Pack A to Pack B is approximately 44:1.

Pack PT / HPT will be produced in Reactor R-1. The production of Pack PT / HPT involves mixing water, Maquat C-15, Ethox TAM-15, Tebuconzaole, and Wocosen 50 TK. Pack PT /HPT will be stored in totes until loaded into tankers during the production of HCA-C and HCA-C+.

Antiblu® M3 production will occur in T-9 which is vented to the scrubbing system. Antiblu® M3 production involves the mixing of Bardac 2280, Propylene Glycol, Amagiclown, Boric Acid, 2-Ethylhexanoic Acid, Lonzest CO-40, Preventol A 12-TK 50, and Polyphase P100.

Diamulse C, Diamulse T, Ferrobrite B, Ferrobrite AQ, Mycostat P20, Mycostat-MX, Checkmate, Ferrobrite-MX, and Antiblu® M6 will be produced in various mixing tanks from raw materials shipped to the facility. Once combined, material is transferred to totes, where it remains until shipped to customers. Only Ferrobrite B, Ferrobrite AQ, and Antiblu® M6 are currently produced at the facility. Ferrobrite B production involves the mixing of water, ethylene glycol, borax, caustic potash, and 2-ethylhexanoic acid. Ferrobrite AQ production involves the mixing of water, phosphoric acid and Dequest 2090/Mayo 1900. Antiblu® M6 production involves the mixing of adipic acid, 2-ethylhexanoic acid, Barlene 1214, and Propiconazole.

With the exception of Tanks T-10, T-11, and T-12, all vessels are exhausted to a Crol-Reynolds venturi scrubber/packed tower system. Emissions from tanker truck loading are uncontrolled with the exception of ACZA transloading.

Storage tanks located at the facility include the following:

Tank	Service	Material of Construction	Year Built or Installed	Height (feet)	Diameter (feet)	Volume (gallons)	Scrubbed?	Gas Introduced
T-1	Pack A Storage	Carbon Steel	1996	20	12	16,920	Yes	3 acfm air
T-2	MEA Storage	Stainless Steel	2003	20	12	16,920	Yes	
T-3	Process Water	FRP	1988	20	12	16,920	Yes	
T-4	CCA Storage	Titanium	2000	24	12	20,302	Yes	
T-5	Pack A Storage	Stainless Steel	1996	20	12	16,920	Yes	3 acfm air
T-6	MEA Storage	Stainless Steel	2003	20	12	16,920	Yes	
R-1	Mixing Tank 6 (formerly Pack PT Reactor and Storage)	Stainless Steel	1985	18	8	6260	Yes	

Tank	Service	Material of Construction	Year Built or Installed	Height (feet)	Diameter (feet)	Volume (gallons)	Scrubbed?	Gas Introduced
R-2	Pack A Reactor	Stainless Steel	2019	10	12	8,485	Yes	550 lb/hr O_2, 2,500 lb/hr CO_2
HT-1	Pack A – Mixing Tank	Stainless Steel	1981	20	10	11,750	Yes	3 acfm air, 2,500 lb/hr CO_2
T-7	Pack PT - Storage	Stainless Steel	1999	10	9.5	5,301	Yes	
T-8	Mixing Tank 1	Stainless Steel	2019	7	9.5	2,735	Yes	
T-9	Mixing Tank 2	Stainless Steel	2019	5.8	8.4	1,683	Yes	
T-10	Mixing Tank 3	Stainless Steel	2019	4.9	7.1	1,006	No	
T-11	Mixing Tank 4	Stainless Steel	2019	5.3	6.0	1,003	No	
T-12	Mixing Tank 5	Polyethylene	2019	2.4	4.8	110	No	

5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a. ACZA Transloading. Chemonite® Ammoniacal Copper Zinc Arsentate (ACZA) is transloaded directly from railcars to tanker trucks. The material is not stored in stationary tanks at the facility. The ACZA solution contains ammonium hydroxide and ammonium bicarbonate, both of which generate a significant partial pressure of ammonia above the solution. The railcars and tanker trucks are sealed pressure vessels to prevent the loss of ammonia from the solution. During transloading, the headspace of the tanker trucks are vented to the scrubber system.

5.b. Venturi Scrubber/Packed Tower Scrubber System. This system consists of a venturi scrubber with a separator tank followed by a packed tower scrubber and demister operating at approximately 2,000 acfm. The scrubber discharged vertically through and above the building roof. The system is manufactured by Crol-Reynolds with a serial number 66014. The venturi scrubber contains a 48-inch diameter separator tank. The scrubbing liquor (water) is recirculated in the venturi scrubber at a rate of approximately 250 gpm. The packed tower scrubber is identified as a model 30T-6H packed tower scrubber, serial #66014, plant #X-705. The packed tower contains 2-inch HI-FLOW polypropylene rings. The liquid flow rate to the packed tower scrubber is approximately 35 gpm. Scrubber liquor is changed every 12 batches and used as mix water in the process. Equipment controlled by the venturi/packed scrubber system includes T-1, T-2, T-3, T-4, T-5, T-6, R-1, R-2, HT-1, T-7, T-8, T-9, and the headspace vented from tank trucks during ACZA transloading.

Because the scrubber system uses water without any acid, and controls monoethanolamine (MEA) emissions from Pack A and Homogenous Pack A production and MEA transfers, the scrubber water pH is likely to be above 7.0. MEA has a pH of 11.8 and will raise the pH of the scrubber water. As the pH rises above 7, the ratio of NH_3 to NH_4^+ is the solution increases, reducing or eliminating the ability of the scrubber to control ammonia.

5.c. Wolman E® Production – Tanker Truck Loading. Wolman E® is a line of wood preservative products currently consisting of four different products (CA-B, HCA-C, HCA-C+, and C9) that are produced at this facility. These products are produced by mixing Pack A or Pack HPA (produced at this facility) with various other ingredients received in totes or by tanker truck. The various components are loaded directly into tanker trucks where they become mixed. Two of the components (Pack A and BARamine) have significant enough vapor pressure that some emissions of volatile components can be expected. Emissions from this activity are controlled by the scrubber.

5.d. Mixing Tank Production (T-5 through T-12). This is an activity that began at this site in 2019. This activity and some of the equipment used to support this activity (Tanks T-8, T-9, T-10, T-11, T-12 and associated pumping equipment) were relocated from 3800 SE Columbia Way, Vancouver, WA. Three of the mixing tanks are not vented the scrubber and all production in the mixing tanks is assumed (worst-case) to be uncontrolled. Currently, the following products could be produced in the mixing tanks:
Diamulse C
Diamulse T
Ferrobrite B
Ferrobrite AQ
Mycostat P20
Custom Blends (P50/K20/QM), (P50/K40/DD)
Mycostat MX
Ferrobrite MX
Checkmate

The facility will also produce raw materials onsite (Pack B and Pack HPT) which are used in the production of Wolman E products. The vapor pressures of the components in most of these products are too low to generate significant emissions. Some blends may contain components which have a high enough vapor pressure to generate measurable emissions. Emissions from these activities are not controlled.

5.e. Cooling Tower. The cooling tower is used to cool water that circulates around the outside of Tank/Reactor R-2. The following equipment details were provided:

Location:	North of the west side of the building. ~ 45°59'14.62"N, 122°50'0.49"W
Make / Model:	Reymsa / RTU-810115A single fan cooling tower
Recirculation Rate:	450 gallons per minute
Drift Rate:	0.0005%

The cooling tower is too small to be a significant source of particulate matter emissions. Cool water from the cooling tower is circulated through piping welded directly to the outside of Tank R-2. Therefore, it is not impossible for a leak from R-2 to contaminate the cooling water. For this reason, the cooling tower water will be monitored to detect leaks of Pack A

or Homogenous Pack A into the system. Because Pack A and Homogenous Pack A are a copper complex, monitoring the cooling water copper content can serve this purpose.

5.f. Other Equipment. Fifteen 75,000 Btu/hr, and two 45,000 Btu/hr natural gas fired space heaters serve the two buildings for freeze protection.

5.g. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Production of Pack A/HPA, Pack B, Pack HPT, Antiblu® M3 Transfer and storage of MEA, Pack A/HPA, Pack HPT, Antiblu® M3, CCA Transloading	Scrubber system (venturi scrubber/inductor followed by packed bed)
2	ACZA Transloading	
3	Mixing Tank Production	None
4	Cooling Tower	Copper monitoring

6. EMISSIONS DETERMINATION

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:
(a) Continuous emissions monitoring system (CEMS) data;
(b) Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD.

Nothing precludes the use, including the exclusive use of any credible evidence or information relevant to identifying or quantifying emissions if methods identified above, in the ADP, or elsewhere in this TSD have not provided adequate quantification of actual emissions.

6.a. Monoethanolamine Sources and Pack A/HPA Reactor (Controlled by Scrubbers). Potential annual emissions from handling of monoethanolamine and solutions containing monoethanolamine were calculated with the assumption that the equipment will operate full time (8,760 hours per year). Note that because each of these sources are vented to the same scrubbing system and were measured at the single discharge point, the potential emissions for each source are also the maximum combined emissions for all sources.

MEA Sources	hours/yr	Emissions lb/hr	Emissions lb/yr
T-1 (Pack A/HPA Storage - Sparged with Air)	8,760	0.0017	14.9
T-2, T-6 (MEA Loading, Storage)	8,760	0.0017	14.9
T-5 (Pack A/HPA Storage - Spraged with Air)	8,760	0.0017	14.9
HT-1 (Pack A/HPA - Mixing Tank - Sparged with CO_2)	8,760	0.0017	14.9

R-2 (Pack A/HPA Reactor)		
Batches per year =	1,095	
Pollutant	Emissions lb/batch	Emissions lb/yr
Monoethanolamine (MEA)	0.006625	7.3

The above emission factors (lb/hr and lb/batch) are from source emissions testing conducted February 24, 2004. A dusty basic copper carbonate was used during the February 24, 2004, source test, resulting in copper and PM emissions from the process. Now only copper metal is being used and PM and copper emissions are expected to be negligible.

6.b. ACZA Transloading. Chemonite® Ammoniacal Copper Zinc Arsentate (ACZA) is transloaded directly from railcars to tanker trucks. The material is not stored in stationary tanks at the facility. The ACZA solution contains ammonium hydroxide and ammonium bicarbonate, both of which generate a significant partial pressure of ammonia above the solution. The railcars and tanker trucks are sealed pressure vessels to prevent the loss of ammonia from the solution. During transloading, the headspace of the tanker truck is vented to the scrubber system. Because the scrubbing liquor (water) will likely be basic, it may not control ammonia emissions to any great extent. As the pH increases above 7.0, the ratio of NH_3 to NH_4^+ increases in water. The NH_3 can be stripped from the water and emitted.

ACZA Tranloading (railcar to tanker truck)		
Annual Amount ACZA Transferred =	92,694	gallons per year
Transfer Rate =	3,762	gallons per hour
Transfer Rate =	8.38	cubic feet per minute
Saturation Factor =	1.47	AP-42 Table 5.2-5 (6/08) for Splash Loading
Vapor Pressure (assumes vapor is NH_3, 70°F)	1.73	psi
NH_3 Molecular Weight =	17	
Ammonia Exhaust Concentration =	173,047	ppm
Emission Rate =	3.84	lb/hr
Emissions =	94.6	lb/yr

6.c. Pack A/HPA Loading (Tanks T-1, T-5 to Trucks). These loading activities are not controlled. Monoethanolamine (MEA) is the only component with any significant vapor pressure and therefore the only component with potentially significant emissions. Emissions were calculated using the procedure from AP-42 Section 5.2 (7/08) using the saturation factor for splash loading, which is the most conservative.

Pack A Loading (Tanks T-1, T-5 to Trucks)		
L_L = 12.46*SPM/T (Equation 1 from AP-42 Sect 5.2-4)		
Amount Loaded =	7,236,730.3	gallons per year
Saturation Factor =	1.45	AP-42 Table 5.2-5 (6/08) for Splash Loading
Vapor Pressure (assuming 100% MEA) =	0.075412761	psia
Molecular Weight (assuming 100% MEA) =	61.084	
Liquid Temperature =	649.67	°R
L_L =	0.1281	lb/1,000 gallons
Loading Emissions =	927	lb/yr

6.d. Pack B. The components of Pack B are not volatile enough to generate significant emission when Pack B is produced or handled.

6.e. BARamine Loading (Totes to Trucks). These loading activities are not controlled. Methanol is the only component with any significant vapor pressure and therefore the only component with potential significant emissions. Potential annual emissions were calculated using the maximum throughput identified by the permittee, the procedure from AP-42 Section 5.2 (6/08), and the saturation factor for splash loading, which is the most conservative.

BARamine Loading (Totes to Trucks)		
L_L = 12.46*SPM/T (Equation 1 from AP-42 Sect 5.2-4)		
Amount Loaded =	205,952	gallons per year
Saturation Factor =	1.45	AP-42 Table 5.2-5 (6/08) for Splash Loading
Methanol Vapor Pressure (3% solution) =	0.101	psia
Molecular Weight (methanol) =	32	
Liquid Temperature =	537	°R
L_L =	0.1087	lb/1,000 gallons
Loading Emissions =	22.4	lb/yr

6.f. Antiblu® M3 Production. This activity will occur in T-9 which is controlled by the scrubbing system. To be conservative, no control efficiency is assumed. Ethanol is the only component with any significant vapor pressure and therefore the only component with potential significant emissions. Potential annual emissions were calculated using the maximum throughput identified by the permittee, the procedure from AP-42 Section 5.2 (6/08), and the saturation factor for splash loading, which is the most conservative.

Antiblu® M3 Production		
L_L = 12.46*SPM/T (Equation 1 from AP-42 Sect 5.2-4)		
Amount Loaded =	3,320,770	gallons per year
Saturation Factor =	1.45	AP-42 Table 5.2-5 (6/08) for Splash Loading
Bulk vapor pressure =	0.1671	psia (ethanol)
Molecular Weight =	46.07	
Liquid Temperature =	528	°R
L_L =	2.6E-01	lb/1,000 gallons
Loading Emissions =	875	lb/yr

6.g. Mixing Tank Production. The vapor pressures of the components in most of these products are too low to generate significant emissions. Some blends may contain components which have a high enough vapor pressure to generate measurable emissions. Emissions from these activities are assumed to be uncontrolled (some mixing tanks are controlled, some are not). Potential annual emissions were calculated using the maximum throughput identified by the permittee, the procedure from AP-42 Section 5.2 (6/08), and the saturation factor for splash loading, which is the most conservative. Some mixing tanks are controlled by the scrubbing system, but because any material could be produced in any tank, it was assumed that all production is uncontrolled.

6.h. Space Heating. These units are fired solely on natural gas. Potential annual emissions were calculated using the assumption that all units are fired at full capacity for 8,760 hours per year.

Comfort Heating

Heat Input Rating =	1.215 MMBtu/hr
Natural Gas Heat Content =	1,020 Btu/scf
Process Gas Firing Rate =	1,191 scfh
Process Gas Consumption =	10.43 MMscf/yr

Pollutant	Emissions lb/MMscf	Emissions lb/MMBtu	Emissions lb/hr	Emissions tpy	Emission Factor Source
NO_X	100	0.098	0.12	0.52	AP-42 Section 1.4 (07/98)
CO	84	0.082	0.10	0.44	AP-42 Section 1.4 (07/98)
VOC	5.5	0.0054	0.0066	0.029	AP-42 Section 1.4 (07/98)
SO_X as SO_2	0.6	0.00059	0.00071	0.0031	AP-42 Section 1.4 (07/98)
PM	7.6	0.0075	0.0091	0.040	AP-42 Section 1.4 (07/98)
PM_{10}	7.6	0.0075	0.0091	0.040	AP-42 Section 1.4 (07/98)
$PM_{2.5}$	7.6	0.0075	0.0091	0.040	AP-42 Section 1.4 (07/98)
Benzene	0.0021	2.1E-06	2.5E-06	1.1E-05	AP-42 Section 1.4 (07/98)
Formaldehyde	0.075	7.4E-05	8.9E-05	3.9E-04	AP-42 Section 1.4 (07/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	CO_2e tpy	Emission Factor Source
CO_2	53.06	1	116.98	119,317	623	40 CFR 98
CH_4	0.001	25	0.055	56	0.3	40 CFR 98
N_2O	0.0001	298	0.066	67	0.3	40 CFR 98
Total GHG - CO_2e	53.0611		117.098	119,440	623	

6.i. Confidential Information. Two of the ingredients used in the production of Checkmate contain confidential information. Those ingredients are two Dow Products, ACULYN 2051 Rheology Modifier and AFE-1410 Antifoam Emulsion. A confidential ingredients list was obtained from Dow and total emission of all Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs) from the products were calculated and compared to the Small Quantity Emission Rate (SQER). Calculated emissions of each TAP were found to be below their respective SQER.

6.j. Emissions Summary

Air Pollutant	Facilitywide Potential to Emit (tpy)	Project Impact (tpy)
NO_X	0.52	0
CO	0.44	0
VOC	1.60	0.80
SO_2	0.003	0
PM	0.04	0
PM_{10}	0.04	0
$PM_{2.5}$	0.04	0
TAP	1.68	1.37
HAP	0.027	0.012
CO_2/CO_2e	623	0

Toxic/Hazardous Air Pollutant [CAS#]	Potential to Emit (lb/yr)	Project Impact (lb/yr)	SQER 1998 Version WAC 173-460	SQER 2019 Version WAC 173-460
Ammonia [7664-41-7]	95	0	2.0 lb/hr 17,500 lb/yr	37 lb/24-hrs
Dipropylene glycol methyl ether [34590-94-8]	33	0	5 lb/hr 43,748 lb/yr	N/A
Ethanol [65-17-5]	2,029	1,750	5 lb/hr 43,748 lb/yr	N/A
Hydrogen chloride [7647-01-0]	12	12	0.02 lb/hr 175 lb/yr	0.67 lb/24-hrs
Methanol [76-56-1]	22	0	5 lb/hr 43,748 lb/yr	1,500 lb/24-hrs
Monethanolamine [141-43-5]	949	555	0.2 lb/hr 1,750 lb/yr	N/A
Phosphoric acid [7664-38-2]	77	0	0.02 lb/hr 175 lb/yr	0.52 lb/24-hrs
Propionic acid [79-09-4]	133	0	2.0 lb/hr 17,500 lb/yr	N/A

7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities. More stringent limits are established in this Permit consistent with implementation of Best Available Control Technology (BACT):

7.a. Title 40 Code of Federal Regulations (40 CFR) 60 Subpart Kb "Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984" applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (19,813 gallons) that is used to store volatile organic liquids. Only Tank T-4, which is used to store chromated copper arsenate (CCA), has a capacity equal or greater to 75 cubic meters. CCA does not contain a volatile organic liquid, therefore this regulation does not apply to this facility.

7.b. 40 CFR 68 "Chemical Accident Prevention Provisions" requires affected stationary sources to compile and submit a risk management plan, as provided in Sections 68.150 to 68.185. Applicability is determined by the type and quantity of material at the facility. This facility is subject to this regulation because more than 20,000 pounds of aqueous ammonia will be present at any one time at the facility. The only chemical SWCAA identified as potentially subject is aqueous ammonia found in the Chemonite® Ammoniacal Copper Zinc Arsentate (ACZA) solution. The applicant has submitted information that ammonia comprises less than 20% of the ACZA solution. Ammonia solutions containing less than 20% by weight ammonia are not subject to this regulation; therefore, this regulation does not apply to this facility.

7.c. Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act (RCW 70A.15) and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess. This law applies to the facility.

7.d. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an ADP for installation and establishment of an air contaminant source. This law applies to the facility.

7.e. WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires BACT for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants, and demonstration of protection of human health and safety.

The facility emits TAPs; therefore, this regulation applies to the facility.

7.f. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, SO_2, NO_x, ozone, and CO in the ambient air, which must not be exceeded. The facility emits PM_{10}, $PM_{2.5}$, SO_x, NO_x, and CO; therefore, certain sections of this regulation apply. The facility does not emit lead; therefore, the lead regulation section does not apply.

7.g. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, SO_2, concealment and masking, and fugitive dust. This regulation applies to the facility.

7.h. SWCAA 400-040(1) "Visible Emissions" requires that emissions of an air contaminant from any emissions unit must not exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point. This regulation applies to the facility.

7.i. SWCAA 400-040(2) "Fallout" requires that emissions of PM from any source must not be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited. This regulation applies to the facility.

7.j. SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum. This source must be managed properly to maintain compliance with this regulation. This regulation applies to the facility.

7.k. SWCAA 400-040(8) "Fugitive Dust Sources" requires that reasonable precautions be taken to prevent fugitive dust from becoming airborne and to minimize emissions. This regulation applies to the facility.

7.l. SWCAA 400-109 "Air Discharge Permit Applications" requires that an ADP application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an ADP application to request such changes. An ADP must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits. This regulation applies to the facility.

7.m. SWCAA 400-110 "New Source Review" requires that SWCAA issue an ADP in response to an ADP application prior to establishment of the new source, emission unit, or modification.

7.n. SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source be granted unless it is evidenced that:

(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
(3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate BACT for the types and amounts of air contaminants emitted by the processes as described below:

New BACT Determination(s)

8.a. BACT Determination (Pack B, Pack HPT, Pack HPA, Antiblu® M3 Production). The production of Pack B, Pack HPT, Homogenous Pack A, and Antiblu® M3 is expected to result in emissions of ethanol and monoethanolamine. Emissions of both compounds will be well below their respective small quantity emission rate (SQER) and the vessels in which they are produced will be vented to the scrubbing system. At the emission levels proposed, no additional controls would be cost-effective or necessary to meet the requirements of BACT and T-BACT.

Previous BACT Determination(s)

8.b. BACT Determination (ADP 21-3476). The use of the existing scrubber system to control emissions from Pack A production, MEA loading and storage, ACZA transloading, and CCA loading and storage in accordance with the requirements and emission limits in the Air Discharge Permit meets the requirements of BACT and T-BACT for the control of VOCs and toxic air pollutants. Potential emissions from the mixing activities being moved from Vancouver, WA are too small to warrant additional control measures.

8.c. BACT Determination (ADP 19-3375). The use of the existing scrubber system to control emissions from Pack A production, MEA loading and storage, ACZA transloading, and CCA loading and storage in accordance with the requirements and emission limits in the Air Discharge Permit meets the requirements of BACT and T-BACT for the control of VOCs and toxic air pollutants. Potential emissions from the mixing activities being moved from Vancouver, WA and the cooling tower are too small to warrant additional control measures.

8.d. Wolman® E Production (ADP 03-2483). The use of a scrubber with the scrubbing liquid replaced once every 15 batches meets the requirements of BACT and T-BACT.

Other Determinations

8.e. Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.f. Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 (Title V) permit.

9. AMBIENT IMPACT ANALYSIS

9.a. Criteria Air Pollutant Review. Emissions of NO_X, CO, PM_{10}, $PM_{2.5}$, VOC (as a precursor to O_3), and SO_2 are emitted at levels where no adverse ambient air quality impact is anticipated.

9.b. Toxic Air Pollutant Review.
Incremental increases in toxic air pollutant emissions will not exceed the applicable Small Quantity Emission Rates (SQER) listed in WAC 173-460; therefore, toxic impacts are presumed to be below regulatory significance.

Conclusions

9.c. Production of new chemical products, as proposed in ADP application CO-1100, will not cause the ambient air quality requirements of 40 CFR 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.d. Production of new chemical products, as proposed in ADP application CO-1100, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.e. Operation of the chemical production and transloading facility as proposed in ADP application CO-1100, will not violate emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 24-3661 in response to ADP application CO-1100. ADP 24-3661 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 24-3661 supersedes ADP 21-3476 in its entirety. Compliance will be determined under this ADP, not superseded approvals. Existing

approval conditions for units not affected by this project have been carried forward unchanged.

10.b. Emission Limits. A facility-wide VOC emission limit of 1.46 tons per year was established to account for the Pack A/HPA production, Antiblu® M3 production, and a small amount of VOCs from mixing activities and natural gas combustion. A 949 pound per year and 0.0066 lb/batch limit for VOC and monoethanolamine was established for Pack A and Homogenous Pack A to establish an upper bound and ensure additional controls are not necessary for T-BACT. The lb/batch limit applies to the activities taking place in R-2, which is controlled by the scrubbing system. The limit was scaled from 0.005 lb/batch to 0.0066 lb/batch to account for the difference in batch size from the original source test (56,000 lb/batch to 70,000 lb/batch).

Emissions from ACZA transloading were limited to 2.0 pounds per hour, 800 ppmvd (1-hour average), and 95 pounds per year. The 2.0 pounds per hour limit is the short-term Small Quantity Emission Rate from WAC 173-460. At the transloading rate proposed by the applicant, this emission rate could be exceeded if the scrubber does not provide some control of ammonia. The 800 ppmvd (1-hour average) limit is the concentration that is expected to provide a margin of compliance with the 2.0 lb/hr limit using a stack flow of 824 dscfm from past testing. The concentration limit was established for comparison with periodic sampling required by the permit. The permittee could reduce the transfer rate or acidify the scrubbing liquor if needed to comply with the hourly emission limits. The annual limit is based on the uncontrolled transfer of six railcars of product.

10.c. Operating Limits and Requirements. The scrubber has demonstrated the ability to control emissions when the scrubbing water is changed every (15) 56,000 pound batches. The batch size was increased to 70,000 pounds per batch in ADP 19-3375, so the replacement frequency was increased proportionally to once every 12 batches.

10.d. Monitoring and Recordkeeping. Sufficient monitoring and recordkeeping was established to document compliance with the annual emission limits and provide for general requirements (e.g. excess emission reporting, annual emission inventory submission). In addition, recording of maintenance activities that may impact emissions must be logged for each occurrence. This record allows the facility and SWCAA inspectors to ensure the equipment is being properly maintained and investigate any complaints or excess emissions incidents.

The scrubbing system has demonstrated the ability to effectively capture monoethanolamine. Monoethanolamine is very soluble in water and as long as the scrubber is maintained in good repair and properly operated, the scrubber should continue to provide a high level of control for this compound. The permit requires annual inspections of the scrubber system to assure the scrubber is in good repair. This inspection is in the place of much more expensive source emissions testing and can identify maintenance issues before they result in excess emissions.

Cooling water from the cooling tower circulates around Tank/Reactor R-2 in pipes welded directly to the tank. In the unlikely event of a leak from the tank into the cooling water, Pack

A solution could be emitted as cooling tower drift. To guard against this possibility, the permit requires that the level of copper be measured weekly to assure that levels remain below 20 ppm. The copper in the make-up water is expected to be less than 1 ppm, so levels in the cooling tower greater than 20 ppm would not be expected even after accounting for up to 20 cycles of concentration.

10.e. Reporting. The permit requires reporting of the annual air emissions inventory, and reporting of the data necessary to develop the inventory. Excess emissions must be reported immediately in order to qualify for relief from monetary penalty in accordance with SWCAA 400-107. In addition, prompt reporting was required because it allows for accurate investigation into the cause of the event and prevention of similar future incidents.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations must take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA will include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

This source is capable of achieving continuous compliance with all applicable requirements; therefore, no startup or shutdown provisions were included in the Air Discharge Permit.

11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the approval conditions.

11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

The concentration of ammonia from the scrubber exhaust was measured on January 9, 2020, according to the requirements in ADP 19-3375. The average concentration of ammonia was measured at 195 ppm over three test runs. Since this was below the permit limit of 400 ppm, further monitoring is no longer required. Additional monitoring may be required if process conditions are changed.

13. FACILITY HISTORY

The facility began operations in 1988 as Koppers Company, Inc. In 1989 the facility was purchased by Hickson, International, PLC and the facility name changed to Hickson Corporation. In 2002 the facility name was changed to Arch Wood Protection, Inc.

The Vancouver facility (Koppers, Inc.) was purchased by Lonza from Diacon Technologies, Ltd. in 2015. In November 2015, the applicant began producing five named products and two custom blends (Diamulse C, Diamulse T, Ferrobrite B, Ferrobrite AQ, Mycostat P20, Custom Blend (P50/K20/QM), and Custom Blend (P50/K2040/DD) at this facility. The 2019 permitting action approved product mixing at the Kalama facility that has previously been conducted at the Vancouver facility. As part of the 2021 permitting action the facility began producing three additional products (Mycostat-MX, Checkmate, and Ferrobrite-MX) previously produced by Diacon, which has been purchased by Lonza.

13.a. Previous Permitting Actions. The following past permitting actions have been taken by SWCAA for this facility:

Permit	Application	Date Issued	Description
21-3476	CL-3158	08/03/2021	Approval to produce Mycostat MX, Ferrobrite MX, Checkmate, Pack PT and Pack B at the Kalama facility. Approval of tote filling for CCA, and small volume packaging of antifoam products.
19-3375	CO-1022	12/5/2019	Replacement of reactor, increased production of Pack A, installation of cooling tower, new loading activities, and new mixing activities that were previously performed at the company's Koppers, Inc. facility in Vancouver, WA.
13-2483	CO-734	4/21/2004	Production of a new product (Pack A) from monoethanolamine and copper.
88-972	CO-335	3/10/1989	Installation and construction of a wood treating chemical blending operation with control equipment (packed scrubber).

Approvals in bold have been superseded or are no longer active with issuance of ADP 24-3661.

13.c. Compliance History. A search of source records on file at SWCAA did not identify any outstanding compliance issues at this facility.

14. PUBLIC INVOLVEMENT OPPORTUNITY

14.a. Public Notice for ADP Application CO-1100. Public notice for ADP application CO-1100 was published on the SWCAA website for a minimum of fifteen (15) days beginning on May 31, 2024.

14.b. Public/Applicant Comment for ADP Application CO-1100. SWCAA did not receive specific comments, a comment period request, or any other inquiry from the public or the applicant regarding ADP application CO-1100. Therefore, no public comment period was provided for this permitting action.

14.c. State Environmental Policy Act. After review of the SEPA Checklist for this project, SWCAA has determined that the project does not have a probable significant impact on the environment and has issued Determination of Nonsignificance 24-033. An Environmental Impact Statement is not required under RCW 43.21C.030(2)(c).