SWCAA
Southwest Clean Air Agency

TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit SWCAA 17-3254
ADP Application CO-983

Portco Packaging
SWCAA ID No. 2425

Final Date: January 17, 2018

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Abbreviations

ADP	Air Discharge Permit
AP-42	Compilation of Emission Factors, AP-42, Fifth Edition, Volume 1, Stationary Point and Area Sources – published by the US Environmental Protection Agency
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
Btu	British thermal unit
cfm	Cubic feet per minute
CO	Carbon monoxide
EPA	U.S. Environmental Protection Agency
ft/min	Feet per minute
HAP	Hazardous air pollutant listed in Section 112 of 1990 Clean Air Act amendments
LAER	Lowest Achievable Emission Rate
lb/hr	Pounds per hour
$lb/MMft^3$	Pounds per million cubic feet
MMBtu/hr	Millions of British thermal units per hour
NOC	Notice of Construction Application
NO_X	Nitrogen oxides
PM	Total particulate matter (includes both filterable particulate matter measured by EPA Method 5 and condensable particulate matter measured by EPA Method 202)
PM_{10}	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (includes both filterable particulate matter measured by EPA Method 201 or 201A and condensable particulate matter measured by EPA Method 202)
ppm	Parts per million
PSD	Prevention of Significant Deterioration
RACT	Reasonably Available Control Technology
RCW	Revised Code of Washington
scf	Standard cubic feet
scfm	Standard cubic feet per minute (68 °F, 1 atmosphere)
SDS	Safety Data Sheet
SO_2	Sulfur dioxide
SWCAA	Southwest Clean Air Agency
RCW	Revised Code of Washington
TAP	Toxic air pollutant listed in WAC 173-460
tpy	Tons per year
VOC	Volatile organic compound
WAC	Washington Administrative Code

1. FACILITY IDENTIFICATION

Applicant Name:	Portco Packaging
Applicant Address:	211 5th Street, Woodland, WA 98674
Facility Name:	Portco Packaging
Facility Address:	211 5th Street, Woodland, WA 98674
SWCAA ID No.:	2425
Contact Person:	Staci Mocerino, Compliance Manager
Primary Process:	Flexographic Printing Operation
SIC/NAICS:	2759/323111
Classification:	Synthetic Minor

2. FACILITY DESCRIPTION

Portco Packaging (Portco) uses a flexographic printing process to print primarily onto roll stock, pinch bottom bags, laminations, multi-wall bags, and stand-up pouches. Primarily solvent-based inks will be used, but water-based inks can be employed as well.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit Application (ADP) number CO-983 dated October 5, 2017. ADP Application CO-983 requested approval to increase hours of operation on the previously permitted RTO. There is no proposed increase in ink or solvent usage.

Notice of Violation (NOV) #6311 was issued December 31, 2016 for exceeding the PM_{10} emission limits. Exceedance was due to usage beyond those established in ADP 16-3203. The facility wishes to increase the hours for Destruction Mode to 8,760, while keeping the existing hours for Start up/Idle Mode.

This permit supersedes ADP 16-3203 in its entirety.

4. PROCESS DESCRIPTION

Raw material (paper and film) is purchased from paper mills and brought in by truck. The paper or film is then printed on the presses using water or solvent-based inks that are mixed in the ink kitchen. The ink is applied using both rubber plates and photo-polymer plates. VOC emissions from the two enclosed flexographic printers and laminator are controlled by the facility's RTO.

The corona treater is used to change the surface characteristics of the plastic to allow either ink or adhesive to spread out and adhere to the plastic film. The corona treating process consists of a high voltage discharge between the corona bar and the treater roll, bombarding the surface of the film as it passes over the roll. The process emits ozone. The re-installed carbon bed unit and Enercon ozone destruct unit will control ozone emissions.

Some of the paper/film is laminated. The web is sent through a 'puddle' of approximately a half gallon of adhesive, and then two webs are combined. They can be film to film or film to paper. The webs are then housed in a curing room with controlled temperature and humidity for a set amount of time, up to three days. Curing of at least 16-hours must pass before slitting.

The printed paper is then sent to be slit into separate lanes, which are long strips wound onto a roll. The finished slit lanes are stored on pallets and shipped to the customer in trucks.

Some slit film is converted on the pouching line for food and retail packaging.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

Emission units identified at the facility include the following:

5.a Regenerative Thermal Oxidizer. Details of the regenerative thermal oxidizer are listed below:

Make/Model:	Ship & Shore Environmental, Inc. / SSE-25K-95X-RTO.
Design Flow:	25,000 dscfm using a variable frequency drive fan.
Design Destruction Eff.:	98% destruction or 20 ppmv as HC at outlet, whichever is greater.
Operation Temp.:	1500 °F minimum during VOC destruction with a minimum 0.50 second retention time.
Operating Design:	Operates with two ceramic media beds (brick type media) separated by a combustion chamber.
Destruction Capacity:	Maximum 304 lb VOC/hr. Expected feed is 58 lb VOC/hr.
Thermal Efficiency:	95%.
Burner Make / Model:	One Maxon Kinedizer® LE (30 ppm NO_X and 400 ppm CO at 3% O_2).
Burner Capacity:	4.6 MMBtu/hr, 0.2 MMBtu/hr pilot capacity. In Start-up/Idle mode (no VOCs or process air) gas use is 0.8 MMBtu/hr. In Destruct mode (fuel provided by an expected 58 lb VOC/hr with the ability to handle VOC spikes up to 304 lb/hr) supplementary gas use is 1.98 MMBtu/hr from the burner. (The burner operates during Destruct mode).
Burner Fan:	950 cfm.
Supplement Fuel Injection	None (no fuel injection directly into VOC stream, however burner is operating).
Stack Description:	35' above grade, 40" diameter, between of 170 °F to 250 °F depending on process.

The RTO has two modes that affect emissions: Destruct mode and Start-up/Idle mode.

- Cold Start-up is considered the prelude to Destruct mode. It is expected to happen about three times a year. It takes the combustion temperature from ambient to approximately 1500 °F over a period of 4 hours. This is generally the only time the burner operates at its maximum of 4.6 MMBtu/hr. This mode happens rarely and is included in the Start-up/Idle mode for emissions determinations.
- In Start-up/Idle mode, the RTO variable frequency drive (VFD) fan is reduced to about 30% of maximum flow. The RTO fresh air and vent dampers will be open to isolate the process and let fresh air into the RTO. The combustion fan airflow is reduced accordingly, to about 30%. It is adjusted via a micro ratio valve to the proper fuel to air mixture based on temperature readings in the retention chamber. The burner is operating at an average of 0.8 MMBtu/hr, per Ship & Shore, during Start-up/Idle.
- In Destruct mode the burner operates at approximately 1.98 MMBtu/hr. There are not enough VOCs in the exhaust stream to operate the RTO without additional natural gas. VOCs are expected to be approximately 58 lb/hr. The burner cycles on and off, triggered by an RTO temperature of 1525 °F.

The burner is capable of being tuned.

The oxidizer is located outside at ground level on a pad adjacent to the existing building on the west side.

5.b Laminator. Nordmeccanica Group Laminator, Super Combi 3000 (s/n C-1092) with a width up to 59" and line speed up to 1,315 ft/minute. The unit has one natural gas dryer rated at 2.05 MMBtu/hr and is equipped with two corona treaters and one metered adhesive station. Exhaust from natural gas combustion and printing operations emit through separate sets of piping, but merge on the roof and vent to the RTO. The laminator exhausts to the RTO at 1,800 acfm.

VOC emissions are controlled by the RTO.

The laminator has two corona treaters. The Enercon Compak Series 2000 units are each equipped with a power supply rated at 7.5 kW totaling 15 kW. The units are organized in series. The ozone from the treaters is vented to the ozone adsorption unit (see below) through a stack at 20' above ground, with a diameter of 20" and an airflow of 2,800 acfm.

One Ship & Shore Environmental Ozone Adsorption Unit, 7.5' long by 7.5' wide by 12.5' high, used to control ozone emissions. The unit will consist of two beds that hold approximately 3,800 lbs of activated carbon each with a capacity of 1,340 lbs of ozone each. Fans at the corona treaters blow ozone laden air into the carbon adsorption unit. The fans are always on when the corona treater is on. The beds are intended to be switched monthly. The corona treaters can operate an estimated 787 hours before the carbon needs to be changed. A sprinkler system is installed in the unit that is set to be activated if the temperature of the carbon bed exceeds 500 °F. It can capture up to 90% of ozone emitted. (This unit controls ozone from the corona treaters on the laminator and the W&H press.) The beds are expected to regenerate in approximately one month.

Ozone half-life at 300 °C (572 °F) is 0.01 seconds.

5.c Printing Press. One Windmoeller & Hoelscher flexographic 10 color printing press, model MiraFlex 10 with a web width up to 57" and line speed of 1,600 ft/min. The press has a natural gas fired tunnel dryer with a burner rating of 0.40 MMBtu/hr and an in-between color dryer with a burner of 0.23 MMBtu/hr. Exhaust from natural gas combustion and printing operations emit through separate sets of piping, but merge on the roof and vent to the RTO. The press exhausts to the RTO at 9,562 acfm.

VOC emissions are controlled by the RTO.

The press has one corona treater. The Enercon, Inc. model FA 0544-380v corona treater is equipped with a power supply rated at 15 kW. The ozone from the treaters is vented to the ozone adsorption unit (see below) through a stack at 20' above ground, with a diameter of 20" and an airflow of 2,800 acfm.

One Ship & Shore Environmental Ozone Adsorption Unit, 7.5' long by 7.5' wide by 12.5' high, used to control ozone emissions. The unit will consist of two beds that hold approximately 3,800 lbs of activated carbon each with a capacity of 1,340 lbs of ozone each. Fans at the corona treaters blow ozone laden air into the carbon adsorption unit. The fans are always on when the corona treater is on. The beds are intended to be switched monthly. The corona treaters can operate an estimated 787 hours before the carbon needs to be changed. A sprinkler system is installed in the unit that is set to be activated if the temperature of the carbon bed exceeds 500 °F. It can capture up to 90% of ozone emitted. (This unit controls ozone from the corona treaters on the laminator and the W&H press.) The beds are expected to regenerate in approximately one month.

Ozone half-life at 300 °C (572 °F) is 0.01 seconds.

5.d Printing Press. One Uteco flexographic central impression drum 8 color printing press, model ONYX XS 080 with a web width up to 32.2" and line speed of 985 ft/min. The press has a natural gas fired between-color dryer with a burner rating of 0.34 MMBtu/hr. The press exhausts to the RTO at 7,476 acfm.

VOC emissions are controlled by the RTO.

The press has one corona treater. The Enercon, Inc. model FA 06544-380v corona treater is equipped with a power

supply rated at 15 kW. The ozone emissions from the treater are controlled by a new Enercon 03X-6 Ozon-Ex III ozone decomposer with an airflow of 600 cfm. It utilizes Carulite 200 catalyst, made up of manganese dioxide and copper oxide, and is guaranteed to eliminate 99% of the ozone exhausted from the corona treater by converting the ozone to oxygen. The ozone decomposer stack is 22' above ground, with a diameter of 8" and an airflow of 600 cfm.

Ozone half-life at 300 °C (572 °F) is 0.01 seconds.

5.e Natural Gas Heater. The facility has three natural gas space heaters on-site, however two have been rendered inoperable by having the vents blocked and the facility only intends to use one. The natural gas space heater is used to heat the manufacturing area. One Weather-Rite, model TOT-224-VTL space heater rated at 3.6 MMBtu/hr is used to maintain a minimum temperature of 60 °F.

Other Equipment

One rewinder/slitter (identified as 10). RG Engineering, 68" wide with a minimum slit of 2".
One rewinder/slitter (identified as 15). Comexi, 57" wide with a minimum slit of 2".
Three bag making machines (identified as 600, 610, 650). Two Totani CT-600 DLLSC, one Modern Pouch Line.
Two scrap paper bailers.
A FlexoWash anilox roll cleaner, model FW 2000, serial number 1551, that uses a soap in a 50/50 solution to clean the printing rolls.
Two Safety-Kleen ethyl acetate stills.

5.f Equipment/Activity Summary.

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
1	Nordmeccanica laminator with two corona treaters and a natural gas dryer	1	Ship & Shore Environmental, Inc. regenerative thermal oxidizer, low sulfur fuel (NG) Ozone adsorption unit (Carbon)	2
2	W & H Miraflex flexographic printing press with one corona treater and dryers	1	Ship & Shore Environmental, Inc. regenerative thermal oxidizer, low sulfur fuel (NG) Ozone adsorption unit (Carbon)	2
3	Uteco flexographic printing press with one corona treater and dryer	1	Ship & Shore Environmental, Inc. regenerative thermal oxidizer, low sulfur fuel (NG) Enercon ozone destruct unit	2
4	Natural gas heater	1	Low sulfur fuel (NG)	N/A

6. EMISSIONS DETERMINATION

Emissions to the ambient atmosphere from printing and laminating operations, as proposed in ADP Application CO-983, consist of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM, PM_{10}, $PM_{2.5}$), sulfur dioxide (SO_2), toxic air pollutants (TAPs), and hazardous air pollutants (HAPs).

6.a Regenerative Thermal Oxidizer. The regenerative thermal oxidizer will utilize natural gas as a supplemental fuel and will itself generate some combustion-related emissions. Portco estimates the average VOC feed to be controlled by the RTO to be 58 lb/hr. The RTO can handle VOC spikes of up to 304 lb/hr. Potential combustion related annual emissions from operation of the RTO were calculated with the assumption that the RTO will operate a maximum of 8,760 hours per year in VOC Destruct mode at 1.98 MMBtu/hr of burner combustion, and

2,520 hours per year in Start-up/Idle mode at 0.8 MMBtur/hr. The unit has an airflow of 25,000 dscfm; the burner has an airflow of 950 cfm. In Start-up/Idle mode, the airflow is approximately 30% of Destruction flow: 7,500 dscfm.

Maxon stated that CO emissions from the burner specifically are 400 ppm. However, when the RTO is in Destruct mode a maximum emission concentration of 50 ppm should be expected.

The *Air Pollution Engineering Manual* produced by the Air & Waste Management Association, published 1992, page 498, states that "thermal oxidization can reduce VOC and CO levels in the vent gases by 99%" at 875 °C (approximately 1600 °F).

NO_X emissions should be negligible during Destruct mode, but Ship & Shore submitted in the application that there could be up to 15 ppm at 20% O_2 in Destruct mode. Nitrogen oxides from the printing dryers will likely slip through the RTO. South Coast Air Quality Management District stated in the Hitco Composites Inc. Permit to Construct (application number 492308-9) that there could be 2 ppm NO_X emission concentration from the oxidation of the contaminated airflow alone.

Annual emissions from the RTO are calculated as follows:

(1) NO_x and CO emissions are calculated from the emission concentrations:
- Start-up/Idle Mode: Maxon guarantee - 30 ppm NO_x @ 3% O_2 from burner, 400 ppm CO @ 3% O_2 from burner.
- Destruct Mode (burner operating): Ship & Shore information - 15 ppm NO_x @ 20% O_2, 50 ppm CO @ 20% O_2 (32 ppm NO_x @ 19% O_2, 106 ppm CO @ 19% O_2)

(2) VOC/TAP/HAP emissions are calculated from:
- Start-up/Idle Mode: EPA AP-42 Section 1.4 (7/98) emission factors and actual natural gas consumption.
- Destruct Mode: expected average VOC stream (58 lb/hr), 8,760 hours per year, and oxidizer destruction efficiency of 98% and capture efficiency of 75%.

(3) SO_2, PM, benzene, and formaldehyde emissions are calculated from the applicable EPA AP-42 Section 1.4 (7/98) emission factors and actual natural gas consumption.

(4) CO_2e emissions are calculated from emission factors from 40 CFR 98 for natural gas and the RTO capacity of 4.6 MMBtu/hr and 8,760 hours of operation.

RTO Emissions

	Destruct Mode[2] (1.98 MMBtu/hr)		Start-up/Idle Mode (0.8 MMBtu/hr)			
Pollutant	**Emission Factor (lb/hr)**	**Emissions @ 8,760 hours**	**Emission Factor (lb/hr)**	**Emissions @ 2,520 hours**	**Total Emissions (lb/yr)**	**Total Emissions (tpy)**
Nitrogen oxides	2.69	23,564	1.61	4,057	27,622	13.81
Carbon monoxide	5.45	47,742	13.08	32,962	80,704	40.35
Volatile organic compounds	NA[3]	NA[3]	0.004	10.08	10.08	0.01
Sulfur oxides as SO_2	0.001	8.76	0.0005	1.26	10.02	0.01
$PM/PM_{10}/PM_{2.5}$[1]	0.015	131.40	0.006	15.12	146.52	0.07
Benzene	4.08E-06	0.036	1.65E-06	0.00	0.04	0.00
Formaldehyde	1.46E-04	1.28	5.88E-05	0.15	1.43	0.00
				Emission Fact.		
CO_2e				117 lb/MMBtu	2,459,808	1,229.90

[1] All particulate matter is assumed to have an aerodynamic diameter of 1 µm or less.
[2] In Destruct mode the burner operates at approximately 1.98 MMBtu/hr.
[3] VOC emissions with the RTO in Destruct mode are calculated using mass balance and percent control and destruction.

6.b Printing and Laminating Emissions. VOC, TAP and HAP emissions from printing and laminating operations will be captured and destroyed by the RTO (above) via exhaust ducting. The press has enclosures around the ink roller section to ensure increased VOC capture efficiency. The press employs corona treaters that exhaust ozone.

Emissions were calculated using SDS information for individual coating products, estimated material consumption, a material balance methodology, and the destruction and capture efficiencies of the RTO. Wherever SDS information indicated a range of potential pollutant concentrations for a material, the average concentration was used to calculate annual emissions. Species specific HAP and TAP potential emissions estimates are summarized below. The facility requested a VOC limit of 50.0 tpy.

Prepolymer and Polyol are mixed together and used as an adhesive in the laminator. Prepolymer contains methylene bisphenyl diisocyante (MDI) (CAS#101-68-8) which is a HAP and TAP. However, according to the manufacturer, the chemical is bound within the product and due to MDI's very low vapor pressure, does not emit to the atmosphere. Therefore, the adhesives as of permitting have no emissions.

Pollutant	Emissions
VOC	50.00 tons
TAP	11.79 tons
HAP	4.71 tons

Pollutant	CAS #	TAP Emissions (lb/yr)	HAP Emissions (lb/yr)	SQER (lb/period)	Avg. Period	ASIL ($\mu g/m^3$)
Acetone	67-64-1	2,000	---	43,748	Year	5,900
Aluminum powder	7429-90-5	100	---	5,250	Year	33
2-Aminoethanol	141-53-2	100	---	1,750	Year	25
Ammonia	7664-41-7	2,800	---	17,500	Year	100
n-Butyl acetate	123-86-4	500	---	43,748	Year	2,400
n-Butyl alcohol	71-36-3	500	---	43,748	Year	500
Carbon black	1333-86-4	350	---	1,750	Year	12
Cyclohexanol	108-93-0	100	---	43,748	Year	
Diethanolamine *	111-42-2	100	100	5,250	Year	43
Diethylene glycol monobutyl ether *	112-34-5	3,000	3,000	---	---	110
Diethylene glycol monoethyl ether *	111-90-0	500	500	---	---	---
Diporpylene glycol methyl ether *	34590-94-8	500	500	43,748	Year	2,000
Ethyl alcohol	64-17-5	100	---	43,748	Year	6,300
Ethylene glycol *	107-21-1	100	100	43,748	Year	420
Ethylene glycol monobutyl ether *	111-76-2	4,000	4,000	43,748	Year	400
Ethylene glycol monopropyl ether *	2807-30-9	100	100	---	---	---
Isobutyl alcohol	78-83-1	200	---	43,748	Year	510
Isopropyl alcohol	67-63-0	3,000		43,748	Year	3,300
Monoethanolamine	141-43-5	1,400	---	1,750	Year	25
n-Propyl alcohol	71-23-8	3,000	---	43,748	Year	1,600
Toluene	108-88-3	400	400	43,748	Year	400
Vinyl acetate	108-05-4	300	300	43,748	Year	200
Xylenes (m-,o-,p-isomers) *	1330-20-7	420	420	43,748	Year	1,500
Totals =		23,570	9,420			

* indicates a hazardous air pollutant

Emissions of TAPs and HAPs are at this point an estimate, because the facility can change inks as needed. The manufacturer of the ink constantly modifies the chemical composition of the inks. They send Portco a monthly list of the products they use and the percentage of chemical components, including TAPs and HAPs. Because of this, it is difficult to have an exact determination of the HAP and TAP emissions from the inks.

Actual annual emissions will be calculated using annual material purchases less any material disposed of and material composition data.

6.c Ozone Destruction and Adsorption Units.

Ozone is emitted from the corona treaters installed on the printers and laminator. For the Windmoeller & Hoelscher press and laminator, ozone is controlled by a Ship & Shore Environmental Ozone Adsorption Unit that is guaranteed to control ozone emissions by 90% for up to 787 hours of active control. For the Uteco press, ozone is controlled by an Enercon ozone destruction unit that is guaranteed to control ozone emissions by 99%.

Uncontrolled ozone emissions have been estimated by Pillar Technologies to be a maximum of 0.072 pounds per kilowatt hour (lb/kW-hr) from each machine while the corona treater is in use. Ozone emissions are estimated by multiplying 0.072 lb/kW-hr by the kW of the unit and the actual hours operated.

Line	kW	Hours run	kW-hr	Emission Factor (lb/kW-hr)	Emissions (lb/hr)	% Control	Emissions
Primary Laminator	7.5	8760	65,700	0.072	0.54	90	473.04
Secondary Laminator	7.5	8760	65,700	0.072	0.54	90	473.04
W&H Printing Press	15	8760	131,400	0.072	1.08	90	946.08
Uteco Printing Press	15	8760	131,400	0.072	1.08	99	94.608
Total	**lb/yr**						**1,986.77**
	tpy						**0.99**

6.d Natural Gas Emissions. Potential annual emissions from the combustion of natural gas in the space heater, laminator dryer, and the printer dryers (units other than the RTO) were calculated with the assumption that the equipment will operate at full rated capacity for 8,760 hours per year. Emissions of NO_X, CO, VOC, SO_2, $PM/PM_{10}/PM_{2.5}$, formaldehyde, and benzene were calculated using emission factors from AP-42 Section 1.4 (7/98). Greenhouse gas emissions were calculated using the procedures specified in 40 CFR 98. All PM is assumed to be $PM_{10}/PM_{2.5}$.

There is a total combustion rating of 0.63 MMBtu/hr for the Windmoeller & Hoelscher press printer dryers, 0.34 MMBtu/hr for the Uteco press printer dryer, 2.05 MMBtu/hr from the laminator dryer, and 3.6 MMBtu/hr from the natural gas space heater, totaling 6.62 MMBtu/hr.

W & H Press dryer

Heat Rate 0.63 MMBtu/hr
Natural Gas Heat Value = 1,020 Btu/scf for AP-42 emission factors
Natural Gas Heat Value = 1,028 Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.06	0.27	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.05	0.23	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.00	0.01	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.00	0.00	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.00	0.02	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.00	0.02	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.00	0.02	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	0.00	0.000006	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	0.00	0.000203	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	323	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	0	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	323	

Uteco Press dryer

Heat Rate	0.34	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.03	0.15	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.03	0.12	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.00	0.01	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.00	0.00	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.00	0.01	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.00	0.01	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.00	0.01	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	0.00	0.000003	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	0.00	0.000110	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	175	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	0	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	175	

Laminator dryer

Heat Rate	2.05	MMBtu/hr
Natural Gas Heat Value =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028	Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.20	0.88	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.17	0.74	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.01	0.05	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.00	0.01	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.02	0.07	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.02	0.07	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.02	0.07	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	0.00	0.000018	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	0.00	0.000660	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	1,050	40 CFR 98
CH_4	0.001	25	0.055	56.66	0	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	1,051	

Space heating

Heat Rate	3.60 MMBtu/hr
Natural Gas Heat Value =	1,020 Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,028 Btu/scf for 40 CFR 98 GHG emission factors

Pollutant	Emission Factor lb/MMscf	lb/hr	tpy	Emission Factor Source
NO_X	100.0	0.35	1.55	AP-42 Sec. 1.4 (7/98)
CO	84.0	0.30	1.30	AP-42 Sec. 1.4 (7/98)
VOC	5.5	0.02	0.09	AP-42 Sec. 1.4 (7/98)
SO_X as SO_2	0.6	0.00	0.01	AP-42 Sec. 1.4 (7/98)
PM	7.6	0.03	0.12	AP-42 Sec. 1.4 (7/98)
PM_{10}	7.6	0.03	0.12	AP-42 Sec. 1.4 (7/98)
$PM_{2.5}$	7.6	0.03	0.12	AP-42 Sec. 1.4 (7/98)
Benzene	0.0021	0.00	0.000032	AP-42 Sec. 1.4 (7/98)
Formaldehyde	0.075	0.00	0.001159	AP-42 Sec. 1.4 (7/98)

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	tpy, CO_2e	
CO_2	53.02	1	116.89	120,162	1,843	40 CFR 98
CH_4	0.001	25	0.055	56.66	1	40 CFR 98
N_2O	0.0001	298	0.066	67.54	1	40 CFR 98
Total GHG - CO_2e	53.0211		117.010	120,286	1,845	

6.e Facilitywide Potential Emissions (PTE) Summary.

The potential facilitywide annual emissions listed in the table below are the sum of the maximum anticipated emissions using the emission factors presented in this section, except where a permit limit is established.

Pollutant	**Potential Annual Emissions**
Nitrogen oxides	13.27 tons
Carbon monoxide	35.87 tons
Volatile organic compounds	50.17 tons
Sulfur oxides as sulfur dioxide	0.02 tons
Particulate matter	0.27 tons
PM_{10}	0.27 tons
$PM_{2.5}$	0.27 tons
Ozone	0.99 tons
Toxic Air Pollutants	11.79 tons
Hazardous Air Pollutants	4.71 tons

7. REGULATIONS AND EMISSION STANDARDS

Regulations 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 regulations, codes, or requirements listed below.

7.a Title 40 Code of Federal Regulations (CFR) Part 63, Subpart KK "National Emission Standards for the Printing and Publishing Industry" establishes requirements for each new and existing facility that is a major source of HAPs as defined in 40 CFR 63.2, at which publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses are operated. The definition of major sources in 40 CFR 63.2 excludes those sources that have federally enforceable limits on their potential to emit. This regulation does not apply to this facility because the facility is not a major source.

7.b Title 40 Code of Federal Regulations (CFR) 60.740 et seq. (Subpart VVV) "Standards of Performance for Polymeric Coating of Supporting Substrates Facilities" applies to each coating operation and any onsite coating mix preparation equipment used to prepare coatings for the polymeric coating of supporting substrates. Polymeric coating of supporting substrates is defined as a web coating process that applies elastomers, polymers, or prepolymers to a supporting web other than paper, plastic film, metallic foil, or metal coil. This facility applies a polymer to paper and plastic film; therefore this regulation is not applicable.

7.c Revised Code of Washington (RCW) 70.94.141 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 70.94] 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.

7.d RCW 70.94.152 provides for the inclusion of conditions of operation as are reasonable necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an Air Discharge Permit for installations and establishment of an air contaminant source.

7.e WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" (effective 2/14/1994) requires Best Available Control Technology for toxic air pollutants (T-BACT), quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety.

7.f WAC 173-470 "Ambient Air Quality Standards for Particulate Matter" established ambient air quality standards for total suspended particulate matter and for particulate mater smaller than 10 microns (PM_{10}), which may not be exceeded more than one day per year.

7.g WAC 173-474 "Ambient Air Quality Standards for Sulfur Oxides" establishes ambient air quality standards for sulfur oxides in the ambient air, measured as sulfur dioxide, which shall not exceed:

(1) Four-tenths parts per million (0.4 ppm) by volume average for one-hour period more than once per one-year period;
(2) Twenty-five one-hundredths parts per million (0.25 ppm) by volume average for one-hour period more than twice in a consecutive seven-day period;
(3) One-tenth parts per million (0.1 ppm) by volume average for a one-day period more than once per one-year period; and
(4) Two one-hundredths parts per million (0.02 ppm) by volume average for a one-year period.

7.h WAC 173-475 "Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen Dioxide" establishes ambient air quality standards for carbon monoxide, ozone, and nitrogen dioxide in the ambient air, which shall not be exceeded.

7.i WAC 173-490-204 "Graphic arts systems" requires printing operations that use more than 100 tpy of VOC in the printing process to meet specified control provisions. This facility is not subject to this standard because they do not use more than 100 tons of VOCs per year and they are not in an area designated as "nonattainment."

7.j 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, sulfur dioxide, concealment and masking, and fugitive dust.

7.k SWCAA 400-040(1) "Visible Emissions" requires that no emission of an air contaminant from any emissions unit shall 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.

7.l SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions shall be taken to prevent the release of air contaminants to the atmosphere.

7.m SWCAA 400-040(4) "Odors" requires any source which generates odors which 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.

7.n SWCAA 400-040(6) "Sulfur Dioxide" requires that no person shall emit a gas containing in excess of one thousand ppm of sulfur dioxide on a dry basis, corrected to 7% O_2 or 12% CO_2 as required by the applicable emission standard for combustion sources.

7.o SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate material from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

7.p SWCAA 400-060 "Emission Standards for General Process Units" requires that all new and existing sources not emit particulate matter in excess of 0.1 grains per dry standard cubic foot of exhaust gas.

7.q SWCAA 400-091 "Voluntary Limits on Emissions" allows sources to request voluntary limits on emissions and potential to emit by submittal of an ADP Application as provided in SWCAA 400-109. Upon completion of review of the application, SWCAA shall issue a regulatory order that reduces the source's potential to emit to an amount agreed upon between SWCAA and the Permittee. This facility has requested voluntary limits on emissions to remain exempt from the Title V Air Operating Permit Program (WAC 173-401).

7.r SWCAA 400-110 "New Source Review" requires that an ADP Application be filed with SWCAA prior to the establishment of any new source or emission unit or modification and that an Air Discharge Permit be issued prior to establishment of the new source or emission unit or modification.

7.s SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source shall 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 (effective 2/14/1994), the proposed equipment and control measures will meet all the requirements of that Chapter.

7.t SWCAA 490-040(6) "Surface Coaters" requires specified surface coating sources of VOCs located within designated ozone nonattainment areas comply with emission standards of that Chapter if potential VOC emissions are greater than 10 tons per year. The flexographic printing equipment are not surface coaters, therefore this rule does not apply

7.u SWCAA 490-204 "Graphic Arts Systems" requires specified printing operations that use more than 100 tpy of VOC in the printing process and located in designated nonattainment or maintenance plan areas to meet specified control

provisions. This facility is not subject to this standard because they do not use more than 100 tons of VOCs per year and are located in an area of attainment.

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

The proposed equipment and control systems incorporate Best Available Control Technology (BACT) for the types and amounts of air contaminants emitted by the processes as described below:

8.a BACT Determination – Regenerative Thermal Oxidizer. The applicant proposed a regenerative thermal oxidizer capable of a volatile organic compound destruction efficiency of 98% or an outlet VOC concentration of 20 ppmv as hydrocarbons. Based on a review of recent BACT determinations and manufacturer literature, this level of control represents BACT for destruction of VOC emissions.

A review of the EPA RACT/BACT/LAER Clearinghouse revealed the following limits established for RTOs controlling emissions from printing operations:

Facility/ Date	VOC Limits	CO Limits	RTO Control
Mercury Plastics / 2014	80 tpy	17.07	98%
American Packaging / 2010	119 tpy	N/A	98%
Fort James Operating CO. / 2006	48.5 tpy	N/A	N/A
American Packaging / 2004	373 tpy 0.041 lb VOC/lb materials	N/A	95%

NO_X emissions were guaranteed by Maxon to meet 30 ppm at 3% O_2.

CO emissions were guaranteed by Maxon to meet 400 ppm at 3% O_2. Further discussion with the RTO manufacturer (Ship & Shore) suggested the unit could meet a CO emission rate of 50 pppmvd or less at the RTO outlet in Destruct mode. SWCAA has permitted RTOs at CO emission limits than range from approximately 16.5 ppmvd to 50 ppmvd. The following RTO or Regenerative Catalytic Oxidizer (RCO) emission limits have been imposed by SWCAA for VOC destruction (note that Emerald Kalama has been excluded because one of the primary feeds to those RTOs is CO):

Facility	CO Emission Limits	Notes
Mercury Plastics	2.58 lb/hr (50 ppm)	24,000 dscfm RTO, 14-3084 (3/19/14)
Steelscape	2.5 lb/hr (~16.5 ppmvd)	35,000 dscfm RTO, 96-1907R6 (3/8/06)
Hardel Mutual Plywood – Oxidizer #1	2.66 lb/hr (~29 ppmvd)	21,323 dscfm RCO, 98-2093R8 (4/18/06)
Hardel Mutual Plywood – Oxidizer #2	1.19 lb/hr (~30 ppmvd)	912 dscfm RCO, 98-2093R8 (4/18/06)

Based on the above data, SWCAA has determined that a CO emission limit of 50 ppmvd meets the requirements of BACT for operation of the new RTO at this facility in Destruct mode.

8.b BACT Determination – Nordmeccanica Laminator. The Nordmeccanica Laminator uses two adhesives: Prepolymer and Polyol. The potential TAPs are bound within the product and due to MDI's very low vapor pressure does not emit to the atmosphere. The use of these adhesives meets BACT and T-BACT for this facility.

8.c BACT Determination – Corona Treaters. Ozone is created during corona treatment. Ozone can be controlled with the use of an "ozone decomposer" or similar device. SWCAA considers the installation of an ozone decomposer to be BACT for corona treaters.

The ozone adsorption unit was previously permitted under ADP 14-3102 at this facility and taken offline once the RTO was operational. Due to the addition of the new press, the RTO cannot take the additional airflow required to control the ozone emissions, so the facility is reinstalling the ozone adsorption unit. Monthly carbon bed testing during previous operations showed the unit was meeting at least 95% ozone destruction, though the unit was only guaranteed to meet 90% destruction. SWCAA considers 95% destruction to be BACT for ozone from corona treaters.

8.d BACT Determination – Printing Operations. For VOCs and TAPs from printing operations, the use of water-based inks containing less than 1.0 pound per gallon VOCs; or the use of low-VOC solvent-based inks containing less than 25% VOCs in the volatile fraction of the ink, less water or a minimum of 60% solids content in the ink, less water meets the requirements of BACT and Best Available Control Technology for Toxics (T-BACT).

In the case that acceptable print quality cannot be obtained using inks meeting the requirements of the preceding paragraph, the use of a higher VOC content ink with capture and regenerative thermal oxidation system providing a minimum of 75% capture and 95% reduction of captured VOCs and TAPs meets the requirements of BACT for VOCs and Best Available Control Technology for Toxics (T-BACT) for TAPs at this source.

The use of natural gas in the solvent dryers in conjunction with a regenerative thermal oxidizer meets the requirements of BACT for the combustion emissions from the press dryers.

8.e BACT Determination – Natural Gas Combustion. The use of combustion equipment that fires natural gas and limits visible emissions to 0% opacity or less has been determined to meet the requirements of BACT for the types and quantities of air contaminants emitted by natural gas combustion units at this facility.

8.f 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, requirements of the PSD program are not applicable to this action.

8.g Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because this facility is not a major source required to obtain a Part 70 or 71 permit.

9. AMBIENT IMPACT ANALYSIS

9.a The printing facility as proposed in ADP Application CO-983, if properly maintained, will not cause the ambient air quality requirements of Title 40 Code of Federal Regulations (CFR) Part 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.b The printing facility as proposed in ADP Application CO-983 will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants", WAC 173-470 "Ambient Air Quality Standards for Particulate Matter," WAC 173-474 "Ambient Air Quality Standards for Sulfur Oxides", and WAC 173-475 "Ambient Air Quality Standards for Carbon Monoxide, Ozone, and Nitrogen Dioxide" to be violated.

9.c The printing facility as proposed in ADP Application CO-983 if properly maintained, will not cause a violation of emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions," 400-050 "Emission Standards for Combustion and Incineration Units," and 400-060 "Emission Standards for General Process Units."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue Air Discharge Permit SWCAA 17-3254 in response to ADP Application CO-983. Air Discharge Permit SWCAA 17-3254 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a General Basis. Approval conditions for equipment affected by this permitting action incorporate the operating schemes proposed by the permittee in the ADP Application.

10.b Emission Limits. Volatile organic compound emissions from printing and laminating are limited to 50.0 tons per year. The emissions calculated in Section 6 are based on the materials currently in use at the facility and maximum estimated usage. The materials used can be either water-based or solvent-based inks. In addition, emissions of toxic air pollutants are limited at or below the SQER listed in WAC 173-460 to assure compliance with the provisions of WAC 173-460 (effective 2/14/1994). If emissions of a toxic air pollutant are to exceed the applicable SQER emissions modeling must be performed to assure that the incremental increase in ambient concentrations does not exceed the applicable ASIL.

Nitrogen oxides and carbon monoxide are the primary pollutants from the combustion of natural gas. Emissions of these pollutants from the press dryers, oxidizer and space heating were limited to the amounts corresponding to the maximum rated fuel consumption.

Ozone emissions are based on operating the corona treaters 8,760 hours per day, which is a conservative estimation of actual operation.

When properly operated, none of the equipment at this facility will generate visible emissions, therefore visual emissions from all equipment at this facility was limited to 0% opacity (not to exceed for more than 3 minutes in any 1-hour period).

10.c Operating Limits and Requirements. Maximum and minimum operating temperature limits were provided for the regenerative thermal oxidizer to assure that adequate destruction of the volatile organic compounds and toxic air pollutants is achieved (low temperature limit) while assuring that the unit is not heated to the point where NO_X emissions become excessive (high temperature limit).

The Permit requires that each pollution control device be operated whenever the equipment served by that device is in operation. To operate otherwise would be a general violation of the permit (the equipment was not proposed for operation without the control device), and would presumably result in an exceedance of the applicable emission limits, so these requirements mostly serve as a reminder to the Permittee. An exception is made so that when only low-VOC water-based inks are being used and VOC and TAP emissions will be relatively low, the regenerative thermal oxidizer need not be operated. Record of the types of inks and hours the unit is not operated are required. Operation of the regenerative thermal oxidizer when using these inks exclusively is not justified because of the relatively high cost of control (a large amount of supplemental fuel will be necessary), and the fact that the regenerative thermal oxidizer will itself be an additional source of emissions.

The Permittee is required to maintain system settings effecting capture rate (e.g. fan speed, inlet pressure) at the minimum levels during which compliance was demonstrated during the most recent source emissions test. For example, if compliance was demonstrated when treating 8,000 scfm per printing press, the Permittee is not allowed to reduce flow to 5,000 scfm per printing press to save on fuel or electricity costs. To reduce flow would likely result in a lower capture efficiency and higher VOC emissions from the facility.

Because this type of operation has the potential to produce nuisance odors, the requirement to minimize odor impacts on neighboring property owners from SWCAA 400-040 was incorporated directly into the permit. The requirement to store materials containing volatile organic compounds in enclosed containers to minimize evaporation was included as implementation of good air pollution control practice (presumptive BACT).

10.d Monitoring and Recordkeeping Requirements. Sufficient monitoring and recordkeeping was established to document compliance with the established emission limits, provide for general requirements (upset reporting, annual emission inventory submission), and assist in the compliance assessment during on-site inspections. Records of maintenance activities and the results of periodic inspections conducted by facility personnel are

required because they are valuable tools for regulatory inspectors and plant personnel. In addition, these records can be used to determine appropriate operating and maintenance requirements in a future permitting action.

The permittee is required to log maintenance activities that may affect emissions. Maintenance activities that may affect emissions include, but are not limited to activities such as: flow balancing of ductwork leading to the regenerative thermal oxidizer that could affect VOC capture rates, maintenance to regenerative thermal oxidizer flop valves, changes to regenerative thermal oxidizer cycle times, etc.

10.f Reporting. Specific reporting deadlines were established for each reporting requirement. The submittal date refers to the earlier of the date the report is delivered to SWCAA or the postmarked date if sent through the US Post Office.

Because this facility is a synthetic minor source for volatile organic compounds and hazardous air pollutants with a permit limit of 50.0 tons per year of volatile organic compounds, emissions of volatile organic compounds and toxic air pollutants (and the data needed to calculate these emissions) were required to be reported to SWCAA quarterly.

The permitee is required to report the annual air emission inventory and the data necessary to develop the emission inventory. Upset conditions with the potential to cause excess emissions must be reported immediately in order to qualify for relief from penalty in accordance with SWCAA 400-107 for unavoidable exceedances. In addition, prompt reporting allows for prompt and accurate investigation into the cause of the event and the prevention of similar future incidents.

11. START-UP AND SHUTDOWN PROVISIONS/ALTERNATIVE OPERATING SCENARIO/ 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 shall 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 shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

To SWCAA's knowledge, this facility can comply with all applicable standards and emission limits during startup and shutdown. Separate limits have been established for the RTO for Start-up versus Destruct Modes consistent with operating expectations.

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

The nature of the pollutants emitted from the facility may change when new inks or solvents are used. To accommodate this, the Permit contains a requirement that requires the permittee to notify SWCAA before using any new material or implementing a change in the method of operation. If the change will result in an increase in emissions of VOCs or TAPs in excess of an SQER or a permit limit, then New Source Review is required prior to making the change. SWCAA believes this provides the greatest flexibility while assuring compliance with all relevant requirements.

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, no additional items were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

Emission testing requirements have been established for emission units with significant emissions. The frequency and method of testing is specified for each unit individually.

12.a Regenerative Thermal Oxidizer Testing.

Source emissions testing of the regenerative thermal oxidizer control system is required initially and at least once every 5 years. The frequency of subsequent testing was chosen because the destruction efficiency and nitrogen oxides emissions from this unit may degrade over time. Catastrophic failures of the regenerative thermal oxidizer will likely be apparent from operational data including fuel consumption, operational temperatures and cycle times. The source emissions testing is designed to measure the total capture efficiency of the system (this is the most important aspect of measuring total emissions from this facility), the destruction efficiency of the regenerative thermal oxidizer, and combustion emissions from operation of the regenerative thermal oxidizer.

The regenerative thermal oxidizer's burner is required to be monitored annually in years when a source test is not performed.

12.b Ozone Adsorption Unit Testing.

The Ship & Shore ozone adsorption unit is required to be tested for the purpose of formally demonstrating compliance with applicable emission limits. The initial testing shall be conducted at the reinstalled ozone adsorption unit outlet within 60 days of the initial operation.

Ozone emissions should not exceed 3 ppm from the outlet of the ozone adsorption unit. This is not a limit but a concentration in which to aid in determining compliance.

Measurement of volumetric flowrate, gas velocity and temperature is only required on the initial test and subsequent tests every five years.

Ozone emissions shall be measured at the ozone adsorption unit inlet and outlet quarterly no later than the end of each calendar quarter by Draeger tube, chemiluminescent or similar method.

12.c Ozone Destruct Unit Testing.

The Enercon ozone destruct unit is required to be tested for the purpose of formally demonstrating compliance with applicable emission limits. The initial testing shall be conducted at the new ozone destruct unit outlet within 60 days of the initial operation.

Ozone emissions should not exceed 3 ppm from the outlet of the ozone destruct unit. This is not a limit but a concentration in which to aid in determining compliance.

Measurement of volumetric flowrate, gas velocity and temperature is only required on the initial test and subsequent tests every five years.

Ozone emissions shall be measured at the ozone adsorption unit inlet and outlet quarterly no later than the end of each calendar quarter by Draeger tube, chemiluminescent or similar method.

13. FACILITY HISTORY

The facility was located at 3601 SE Columbia Way, Suite 260, Vancouver, WA 98661, but relocated to 211 5th Street, Woodland, WA 98674 in 2013.

13.a Previous Permitting Actions. SWCAA has previously issued the following Permits for Portco Packaging:

Permit Number	Application Number	Date	Purpose
14-3102	CO-925	July 7, 2014	Relocation of their paper and film converting facility. Approval to install a new press and the carbon canister to control ozone emissions. This permit was superseded by ADP 15-3126.
15-3126	CO-943	April 21, 2015	Installation of an RTO and establishment of a synthetic minor permit. This permit was superseded by ADP 16-3189.
16-3189	CO-967	July 12, 2016	Installation of a replacement laminator with attached natural gas drier. This permit was superseded by ADP 16-3203.
16-3203	CO-970	December 22, 2016	Approval to install a new Uteco printing press with corona treater and attached Enercon ozone destruction unit, as well as the re-installation of the previously permitted carbon bed unit to control ozone emissions from the corona treaters on the existing press and laminator. This permit was superseded by ADP 17-3254.

14. PUBLIC INVOLMENT OPPORTUNITY

14.a Public Notice for ADP Application CO-983. Public notice for ADP Application CO-983 was published on the SWCAA internet website for a minimum of 15 days beginning on October 10, 2017.

14.b Public/Applicant Comment for ADP Application CO-983. A (30) day public comment period was provided for this permitting action pursuant to SWCAA 400-171(3). No comments were received during the public comment period.

14.c State Environmental Policy Act. Determination of Non Significance (DNS) 17-040 was made by SWCAA and was included with this permitting action.