STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

February 6, 2023

Paula Stoppler, Technical Director
Cosmo Specialty Fibers, Inc.
PO Box 539
Cosmopolis, WA 98537

Re: Cosmo Specialty Fibers Air Quality Inspection on September 28, 2022

Dear Paula Stoppler:

Thank you and your staff for your assistance with the air quality inspection at Cosmo Specialty Fibers (Cosmo) on September 28, 2022. Ecology conducted the inspection to determine the facility's level of compliance with Air Operating Permit (AOP) No. 000080-9. The inspection included a site walk-through and off-site records review.

During this inspection, Ecology found the following violations:

- The monthly inspection records for the non-condensible gases (NCGs) lines were not properly maintained, per permit condition G.3a.
- Repair of identified leaks in the NCG lines were not properly documented, per G.3a.
- Repair of identified leaks in the NCG lines were not done within the 15 days after discovery, per G.2e.
- The sensor probe for the hogged fuel dryer was not properly operated and maintained, per permit Facility-Wide General Requirement condition #12.

Ecology does not plan to pursue formal enforcement actions related to these findings at this time, but we recommend the following to prevent future non-compliance:

- Ensure that staff properly maintain complete records for all NCG line inspection records by checking the boxes for all components inspected. Records of the repair and repair date must also be properly maintained.
- Replace the probe (ID #54E025) on the hogged fuel dryer leak detection system as soon as possible.
- Properly maintain the labeling and tags on the NCGs lines.
- Maintain good housekeeping in the process areas.

- Ensure that the CEMS cylinder gas pressure is 150 psig or above. This is good practice to ensure that cylinder gas concentrations are accurate to the concentration for which they are certified.

Please note that identification of similar non-compliance in future inspections may result in formal enforcement actions.

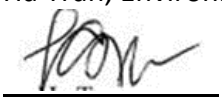
If you have any questions regarding this inspection report, please feel free to contact me at (360) 790-6276 or ha.tran@ecy.wa.gov.

Sincerely,

Ha Tran
Industrial Section
Washington Department of Ecology

Cc: Erik Hiles, Cosmo Specialty Fibers, Environmental Engineer
Robert Buchan, Cosmo Specialty Fibers, CEO

WASHINGTON STATE DEPARTMENT OF ECOLOGY
INDUSTRIAL SECTION
AIR QUALITY INSPECTION REPORT

Permittee Name and Address:	Cosmo Specialty Fibers, Inc. (Cosmo) 1701 First St Cosmopolis, WA 98534
Air Operation Permit:	0000809
Type of Inspection:	Air Quality Compliance Inspection
Date of Inspection:	Sept 28, 2022
Mill Contact:	Arne Peterson, Environmental Engineer Erik Hiles, Environmental Engineer
Inspection Report Date:	February 6, 2023
Ecology Inspector(s):	Ha Tran, Environmental Engineer
Signature:	

Ecology's air quality inspection on September 28, 2022 consisted of a walk-through evaluation of the emission sources, control equipment, and plant records at Cosmo Specialty Fibers, Inc (Cosmo) to determine the mill's compliance with applicable air quality regulations.

Ecology arrived onsite at 9:30AM. I met with Cosmo's staff including the Technical Director Paula Stoppler and environmental engineers Arne Peterson and Erik Hiles. Mr. Peterson and Mr. Hiles accompanied and assisted Ecology throughout this inspection and onsite record review. Ecology concluded the inspection, shared the preliminary findings, and exited the site around 1:50 PM.

Facility Description

Weyerhaeuser constructed the Cosmopolis mill as a magnesium-based paper-grade sulfite mill in 1957. Weyerhaeuser converted it into a dissolving-grade pulp mill in 1962.

The mill historically produced dissolving pulp (acetate grade and cellophane grade) and paper-grade sulfite pulp with an overall production level of 88.9 percent dissolving pulp. Weyerhaeuser began to shift production toward more dissolving pulp.

Weyerhaeuser shut down operations in 2006 and mothballed the facility. Cosmo, the current mill owner, purchased the mill from Weyerhaeuser in 2010. Cosmo restarted the mill in 2011 and resumed full operation in June 2012. The mill now produces dissolving pulp only. Production, which varies upon market demand, includes acetate grade as well as viscose and ether grades. Cosmo uses the same pulping process, bleaching sequence, and chemicals as Weyerhaeuser.

The mill receives its supply of chips via trucks. The chip handling area includes truck unloading areas, chip piles, and conveyor systems. Conveyors deliver chips to the pulp building, where operators manually load chips from overhead chutes into the digesters. About 35 percent of the mass of the wood chips is converted into pulp products.

Digesters

Cosmo processes the wood chips in nine batch digesters located in the pulp building. The cooking acid is bisulfite, with magnesium ions as the basic buffering agent. Pulp exits the bottom of the digesters into dump tanks.

Residual gases inside the digesters can escape during the chip loading. Cosmo collects these emissions from the digesters, as well as the dump tank vents and filtrate tank vents, as nuisance emissions. These emissions go to the nuisance tower (DB-26) equipped with a wet scrubber.

Brownstock Washers

Pulp from the digesters goes through a five-stage countercurrent system called the brown stock washers. Liquids left over from the pulp washing becomes a weak red liquor, which Cosmo sends to the filtrate tanks. Emissions from the filtrate tanks vent to the nuisance tower, which includes a wet scrubber to control the emissions. Cosmo does not control the emissions from the brownstock washers.

Red Liquor Concentrator and Evaporator System

Red liquor generated from the pulp washing contains spent cooking chemicals and organics. Cosmo concentrates the weak red liquor in a multi-effect and ACE evaporator series. The resulting liquor is about 56% solids. The evaporator system is equipped with barometric legs and seal pots to isolate it from ambient air. The process generates condensates and non-condensable gases (NCGs).

Cosmo pipes the condensates to a vented 1600-gallon tank and then to the mill's bioponds for treatment. Cosmo burns the NCGs and concentrated liquor in recovery boilers No. 1 and 2.

Recovery Boilers No. 1, 2, and 3 and Acid Plant

The mill burns red liquor in the recovery boilers to generate steam to power the mill and recapture magnesium and sulfur in the process. There are three recovery boilers at the site. Original boilers No. 1 and 2 were constructed in 1957. The newer boiler, No. 3, was constructed in 1966.

The mill uses oil to start the boilers. Red liquor is sprayed into each boiler to burn spent chemicals and wood constituents. Magnesium and sulfur in the red liquor are converted to magnesium oxide (MgO) and sulfur dioxide (SO_2) during combustion. Flue gas from the boilers flows through multiclones, which captures MgO particulates. The mill sends the MgO to the slaking tank to form a magnesium hydroxide slurry ($MgOH_2$). Cosmo uses the slurry in the absorption towers to remove SO_2 by forming magnesium bisulfite $Mg(HSO_3)_2$. Magnesium bisulfite is re-incorporated into the cooking acid in the pulping process.

Boilers No. 1 and 2 flue gases flow from the multiclones to separate cooling towers, three SO_2 absorption towers in series, and associated induced-draft (I.D.) fans. Boiler No. 3 flue gases flow from the multiclones through an I.D. fan to a dual-purpose cooler/cyclone evaporator, three venturi SO_2 absorbers in series, and an absorption tower. Flue gases from all three boilers combine through a common ducted venturi scrubber and a common stack (AP-10).

Boilers No. 1 and 2 also burn NCGs from the COEL project and red liquor evaporator gas, as well as waste sludge from the biological treatment system. The recovery boilers have the capacity to burn oil to supply additional power. Cosmo may burn oil during power swings or during periods when red liquor is not available. Steam generated by the recovery boilers enters a common header shared by the power boiler.

Hogged Fuel Dryer

Cosmo receives hogged fuel via trucks and stockpiles it in the east yard. A conveyer belt system transports the fuel to the dryer prior to burning. The mill installed the dryer in 1974 to dry wood fuels and improve the boiler efficiency. The dryer is a Stearns-Rogers rotary drum heated by a fluidized bed combustion (FBC) unit. The FBC unit burns either diesel or wood fuel. Cosmo uses the exhaust from the bed to heat the dryer and dry the hogged fuel. During startup, the FBC burns diesel to bring the bed to temperature. This temperature control step ensures the bed is at the operating level prior to introducing wood fuel to the bed or to the dryer. The dryer has a baghouse to control particulate.

Power Boiler (aka Hogged Fuel Boiler)

While the recovery boilers provide some of the energy for the mill's operations, the power boiler provides the majority of the energy of the mill's energy.

In addition to hogged fuel, the boiler can also burn wood residuals such as reject knots and fiber, un-dried hogged fuel, pressed hogged fuel, and hogged fuel dust.

Cosmo can use oil for startup, supplemental energy, or to provide stand-alone energy if hogged fuel is unavailable. Cosmo currently burns RFO and has the capability to burn residual oil, distillate oil, on-spec used oil, and oil spill materials generated on or offsite. The boiler may use propane as an ignition or pilot fuel for the burners on startup, and can burn miscellaneous combustible non-hazardous general wastes. The boiler has an integral air pre-heater equipped with multiclone collectors, separating screens and fly ash re-injection functions. Flue gas from the boiler flows through a venturi scrubber with a mist elimination section.

The power boiler shares a common steam header with the recovery boilers. The steam feeds into two turbine-generator sets and two pressure-reduction stations. The generators provide supplemental power or emergency power to the mill. The pressure reduction stations and turbine steam extractions provide two different pressure sources of steam.

Bleach Plant

The mill converted to an elemental chlorine free (ECF) bleaching method in 1994. Bleaching chemicals include oxygen, caustic, peroxide, and chlorine dioxide. Pulp from the oxygen bleaching stage goes to the blow tank. The blow tank has a vent (BP-6) with no emission control equipment.

Cosmo makes chlorine dioxide, ClO_2, onsite using the "R8" process. The process uses methanol to reduce sodium chlorate in a sulfuric acid solution. The spent acid flows to the de-aeration (DA) tank and into the wastewater system.

Cosmo operates a caustic scrubber to control emissions from the ClO_2 tank vent. The scrubber liquid is subsequently used in the bleaching process. The pH of the scrubber has a set point of 10.5. The tank vent is BP-3 and is identified as an insignificant emission unit per WAC 173-401-532(87).

Concentrated Oxygen Extraction Liquor (COEL)

The mill implemented the COEL project in 1997 to reduce pollutant loading. The project included the addition of an Aqua-Chem system, which consists of VCE and CE evaporator sets. The evaporator system processes a portion of the bleach plant filtrate from the caustic (sodium hydroxide) wash. Emissions include VOC gases such as methanol, acetone, and acetaldehyde. Cosmo previously vented NCGs to the acid plant; the COEL project eliminated most of these emissions. Cosmo burns the remaining gases in recovery boilers No. 1 and 2. The evaporator's condensates goes to a central vented tank for storage prior to treatment at the mill's bioponds. The project generates a sodium-rich liquor, known as the COEL liquor. Cosmo ships the COEL liquor offsite for burning at Kraft mills.

Acid Plant

The acid plant has two burners for making SO_2 to supplement the cooking acid. Trucks deliver sulfur to the site. Cosmo stores the molten sulfur in a steam-heated tank. The mill also gets magnesium via truck delivery to supplement the magnesium lost during processing. The mill has a makeup storage tank for magnesium hydroxide.

The mill curtailed from May 2020 to January 2021. Cosmo initiated startup in mid-January 2021. The mill has resumed normal operations at the time of this inspection report.

Observation and Findings

Ecology reviewed the following areas during the site walk-through. The sections below detail the areas I viewed and my observations. Parts of the mill were down for unanticipated maintenance. I did not view the areas that were down.

Chip Pile

Ecology viewed the chip storage pile and noted no dust or fugitive emissions from the piles or from traffic around the area. To control dust, Cosmo has a "Cobra unit" equipped with a water nozzle to control dust from the chips. The wood chips go to the silo, then through screens before being fed into the digesters. Currently, Cosmo uses about 50% hemlock chip and 50% douglas fir. Mr. Hiles noted that the new shipment of wood chips from Wallula contains more sand and caused issues with the pulping.

Recovery Boilers (RBs) No. 1, No. 2, and No. 3 and associated CEMS

Emissions from each boiler goes through absorption towers for SO_2 recovery. Each recovery boiler's associated absorption tower has three circulation pumps, for a total of 9 circulation pumps. The emissions combine into one common stack designated as AP-10. I viewed the stack and saw no damage, cracks, or leaks in the structure. At the time of the inspection, all three boilers were idling and were not burning any red liquor. The operators had the burners on using fuel oil, to keep the boilers heated and ready for restart. I noted the following parameters at the boilers.

RB No. 1:

Fuel being burned: NCGs
Steam temperature and pressure: 692^{o}F, 84 psi
Steam generation: 4.1 lb/hr

RB No. 2:

Fuel being burned: Fuel oil
Steam temperature and pressure: 715^{o}F, 815 psi
Steam generation: 11.6 lb/hr

RB No. 3:

Fuel being burned: Fuel oil
Steam temperature and pressure: 610^{o}F, 833 psi
Steam generation: 19.9 lb/hr

There was some flooding in the circulation pump room. This appeared to be due to gland water as I did not see anything leaking from the lines. I viewed each circulation pump and spot-checked two of the pumps by touch to verify that there was flow through the lines, indicating that the pumps were operating. I also viewed the pump operations at the control room screen, which showed that most of the pumps were in operation, except for 1 pump at RB No. 3.

This was not considered to be a violation of the AOP because RB No. 3 was idling and not burning any red liquor. The control room operators noted that there was no audible alarm for circulation pump failure.

The recovery stack also has a flue-gas desulfurization (FGD) scrubber for further reduction of SO_2 emissions. The AOP does not have any conditions specifically for the operations of this scrubber. However, Ecology considers proper operation of the scrubber necessary to meet the "Good Air Pollution Control Practices" required under condition #12 of the Facility-Wide requirements of the AOP.

The mill has a continuous emissions monitoring system (CEMS) for measuring SO_2 and hydrogen sulfide (H_2S) at AP-10. I viewed the CEMS shack, which houses the CEMS, its associated instrumentation, audit equipment, and spare parts. The probe filter is scheduled to be replaced monthly. The CEMS air dryer is scheduled to be maintained semi-annually. The lines, other probes, and alarms are to be checked annually.

I recorded an instantaneous CEMS reading of 0.281 parts per million (ppm) for H_2S and 0.06 ppm for SO_2. These readings were close to zero, consistent with all three of the recovery boilers idling and burning only fuel oil.

I checked the cylinder gases used for the daily calibration drift checks. The lines connecting to the cylinders appeared to be intact. Norlab is the supplier for the cylinders. All cylinders were certified to NIST standards. The pressure gauge on the SO_2 dropped below 100 psig and should be, as good practice, above 150 psig. Some, but not all, of the cylinders have attached records as noted below. Mr. Peterson noted that cylinder records were kept in the office. Cosmo submits these to Ecology as part of their monthly air reports.

Table 1. Cylinder Gas Information

Gas type	Cylinder ID	Concentration	Error	Expiration date
SO_2 in N_2*	EB0048565	456.8 ppm	±1%	11/2/24
H_2S in N_2	G092-NIHSPS30A11	27	±1%	11/12/23
O_2 in N_2	Record in office	19%	Record in office	Record in office

*Note: Section 6.1.2 of Performance Specification 2 (PS-2) allows for a one-point calibration, as approved by Ecology. It appeared that Ecology previously provided this approval to the facility.

Power Boiler (PH-42)

The power boiler was operating at the time inspection. At the time, I recorded a steam temperature of 799 ^oF, pressure of 837 psig, and rate of 92,400 lbs/hr. I viewed the stack and saw no damage, cracks, or leaks in the structure. The surface of the venturi scrubber was warm to the touch, indicating that the scrubber was operating. Because there was no field gauge showing the scrubber recirculating flow rate, I pulled the data from the control room. The flow rate was 1178 gpm and the scrubber pressure drop was 14.2 in H_2O. Both were in compliance with the permit limits.

MACT II: Hogged Fuel Dryer (HD-14) and Hogged Fuel Storage

I viewed the hogged fuel pile and noted no dust or fugitive emissions in this area. I did not see any non-wood materials or garbage in the hogged fuel pile. Operators keep a log of the dryer's down time and operating parameters, including the tail gas temperature, the inlet temperature, the cyclones temperature, and fuel moisture. The fuel moisture content at the time was 33.1%.

The dryer was down at the time, but there was enough dried hogged fuel stored in the bunker for the mill to continue to burn dried hogged fuel.

NCG Lines

Despite the red liquor process being down, there still was some NCGs generated and being burned in RB No. 1. I walked along the active part of the NCGs line, the ACE evaporator system. I did not detect any odor or see any signs of leaks.

Records Review

I reviewed the following the records during the inspection:

- Hogged fuel dryer leak detection system maintenance records from January 2022 to present. The particulate sensor is part of the bag leak detection system used for compliance with AOP permit condition B.4d. Condition B.4e requires proper maintenance of the bag leak detection system. Cosmo's procedures require weekly cleaning of the sensor. Cosmo tracks each cleaning by a work order number. These records appeared to be completed except one missing on Feb 14, 2022. The records also showed a damaged probe (part #54E025) found on Aug 18, 2022. Cosmo noted that a new probe had been ordered and pending arrival.
- Fuel analysis logs for fuel oil and recycled fuel oil (RFO) shipments from January 2022 to present. I reviewed the records from January 2022 to the present. The fuel oil suppliers were either Emerald or EcoLube (Puyallup). The analyses used ASTM D-4294. The maximum sulfur content in the records did not exceed 1% and were well within the permit limit of less than 2%, as required by permit conditions B.2 and C.4.
- NCG lines inspection logs from January 2022 to present. The logs include visual inspections of evaporator systems ACE, VCE, CEE, and MEE. The logs noted that parts of the VCE are no longer in service, consistent with my review during previous inspections. I noted the following deficiencies:
    - Monthly inspection log for March 2022 was missing.
    - Monthly inspection log for July 2022 showed that some of the points at the VCE evaporators were not checked off (points VC12-VC23).
    - The leak detected on Jan 13, 2022 at the point AM-13A and B did not have a repair record or date of the repair.
    - The leak detected on June 9, 2022 at the Hogging Jet, M-17, did not have a repair record or the date of repair. The leak appeared to be addressed by the time of the July 19, 2022 inspection.
    - The leak found on the CEE evaporator vent (E-17) was found on August 15, 2022 but was not fixed within 15 days.

Conclusion and Recommendations

During this inspection and associate off-site records review, Ecology found a number of violations. These were as follow:

- NCGs lines monthly inspection records were not properly maintained, per condition G.3b.
    - There was no inspection log for March 2022.
    - The monthly inspection for July 2022 did not include all of the required inspection points.
- Repair of identified leaks in the NCG lines were not properly documented, per G.3b.
- Repair of identified leaks in the NCG lines were not done within the 15 days after discovery, per G.2e.
- The sensor probe for the hogged fuel dryer leak detection system was not properly operated and maintained, per permit Facility-Wide General Requirement condition #12.

Ecology does not plan to pursue formal enforcement action related to these violations at this time, but we recommend the following to prevent future non-compliance:

- Ensure that staff properly maintain complete records for NCG lines inspection records by checking the boxes for all components inspected. Records of the repair and repair date must also be properly maintained.
- Replace the probe (ID #54E025) on the hogged fuel dryer as soon as possible.
- Properly maintain the labeling and tags on the NCGs lines.
- Maintain good housekeeping in the process areas, to prevent labeling and tags from rusting and wearing out.
- Ensure that the CEMS cylinder gas pressure is 150 psi or above. This is good practice to ensure that cylinder gas concentrations are accurate to the concentration for which they are certified.

A copy of this inspection report will be forwarded to Cosmo for their records.