



Industrial User Facility Inspection Report U.S. EPA, Region 8

Name of industry and location:	Control Authority / NPDES Permit No.
Ball Aerospace and Technologies Corp. 9675 West 108 th Circle Westminster, CO 80021	City of Westminster NPDES Permit No. CO-0024171
IU – NPDES ID	COP900120
Date of visit:	Approximate Time of visit:
March 15, 2023	1055 - 1300
Name(s) / Affiliation / email of inspector(s):	
<u>U.S. EPA:</u> Al Garcia, Region 8, garcia.al@epa.gov Julie Kinsey, Region 8, kinsey.julie@epa.gov <u>City of Westminster:</u> Tara Wilson, twilson@cityofwestminster.us	
General Facility Information:	
<u>Representatives at Inspection:</u> - Shawn Sullivan – Environmental Manager, shawn.sullivan@ballaerospace.com - Adam Johnston – Environmental Technician, agjohnst@ball.com - Nicholas Matook – Area Manager - Steven Villanyi – Circuit Board Finishing Lab Tech 2 - Scott Miller – Metal Finishing Lead <u>Type of Business Operations:</u> - Remote sensing and communications. Research, development, manufacture, assembly and testing of aerospace components/antennas. <u>Facility Information:</u> - About 800 employees - one 8-hour shift, 8am to 5 pm - occasional support-function operations may extend into 2nd shift - Days of Operation: five days per week, Monday through Friday	
Inspection Description:	
Al Garcia and Julie Kinsey from the U.S. Environmental Protection Agency (EPA) and Tara Wilson from the City of Westminster conducted an oversight significant industrial user (SIU) inspection of the Ball Aerospace and Technologies Corporation (the facility) in Westminster, CO. The SIU inspection was conducted as part of the EPA Pretreatment audit of the City of Westminster's Publicly Owned Treatment Works (POTW) Pretreatment Program and is intended to provide a general overview of the facility to ensure the Pretreatment	

records reviewed by EPA adequately address current conditions at the facility. The EPA oversight SIU inspection consisted of an evaluation of the wastestreams generated from the unit operations and processes at the facility, including potential for spills and slug discharges. The facility discharges to the sewer collection system leading to the City of Westminster's POTW.

Upon arriving at the facility on March 15, 2022 at approximately 11:00 a.m., Al Garcia of the EPA presented credentials to the facility representatives and explained the purpose of the inspection. During the opening interview, the facility representatives provided an overview of the operations and processes at the facility, as well as information regarding wastestreams generated from these unit operations and management of these wastestreams. The opening interview was followed by a facility tour to visually inspect the unit operations. The EPA conducted a closing conference to discuss potential findings and recommendations identified during the inspection.

Process Description:

The Ball Aerospace and Technologies Corporation is a government contractor and designs, develops, and manufactures antennae technology for a variety of military platforms, including aircraft, missiles, ships, land vehicles, and space applications. The facility operates under the Ball Corporation and may share manufacturing processes, testing or research and development with other Ball facilities located in Westminster, Boulder, and Broomfield. The Westminster facility organizes its unit operations or manufacturing processes in enclosed areas or labs.

The machine shop lab contains 12 CNC machines that perform various machining/fabrication operations on aluminum and titanium parts. Each CNC machine has a coolant sump of various sizes for cooling during the machining operations. The coolant is tested to maintain its effective cycle and when spent, is removed from the sump and replaced with fresh supply coolant. The spent coolant is transported offsite. The scrap metal from the machining operations are collected and transported offsite to Evraz for recycling.

The circuit board manufacturing process is contained in two enclosed labs, the printed circuit board (PCB) lab and the tetra etch lab. The design of the PCBs and blueprint films of the design are generated in these labs. The facility uses a copper clad on a teflon base substrate to manufacture the PCBs. The film and its accompanying solder mask are applied to each circuit board to establish the copper circuit pathways and the non-conductive areas. The film is applied onto the boards and are scrubbed/cleaned in two vertical conveyorized machines (VCM). Each VCM has a 15-gallon sump of developer solution that is filtered to maintain its shelf life and recirculated. The waste solution is collected and shipped as hazardous waste. The deionized water waste is plumbed to the wastewater treatment system. The solder mask is also applied onto the boards.

The board panels are then sent to the electroless and electrolytic copper lines to apply copper layers. The board panel is then etched to remove unwanted copper and reveal the blueprint circuits design. The panel is covered by a photoresist which is then exposed to establish the copper circuitry pathways. The photo resist is then stripped. The panels are built up in layers or stacked, per specifications to establish the PCB.

The board panels are then sent to the Metal Finishing lab to be etched in the Tetra Etch process lines to prepare for the painting and autoclave unit operations. The etching process uses naphthalene as an etchant and the panels are rinsed off with iso-propyl alcohol and acetone contained in pressurized 5-gallon containers. According to Mr. Scott Miller, Metal Finishing Lead, the tetra etch lab operates 8 hours per day on the 1st shift. The rinse waters from the metal finishing and etching lines in the PCB and Etch labs are plumbed to waste treatment. The chemical solution baths are tested to maintain their functional shelf life and when spent, are collected and transported offsite as hazardous waste.

The facility operates a vapor degreaser using a Vetrel-based solvent cleaner to clean and remove contaminants from manufactured parts. The facility has seven paint booths to apply mil-spec topcoat paint

onto manufactured parts. Paint waste, including acetone and methyl-ethyl ketones are collected and transported as hazardous waste.

Waste Treatment:

The wastewater from the facility's processes is collected in 4 collection tanks:

- 500 gallon general wastewater collection tank
- 300-gallon collecting wastewater from the plate-through hole process
- Two 1,000-gallon tanks -tetracth and metal finishing lines

Each collection tank has a float switch that automatically pumps the wastewater when the collection tank reaches a certain level to the four primary holding tanks, each 2,000-gallons. The wastewater is then sent to two 2,000-gallon mix tanks for pH adjustment using sodium hydroxide and sulfuric acid. The acid and caustic chemicals are contained in 15-gallon containers. The pH adjusted wastewater is sent to the electrocoagulation unit (ECU) for treatment. The ECU treated wastewater is defoamed and sent to two cone-bottomed settling tanks and allowed to settle for about 12 hours. The solids are removed, and filter pressed. The filter pressed solids are collected and transported as hazardous waste. The effluent from the settling tanks are sent to the 1,800-gallon discharge tank and are either discharged to the City's sewer system via a pump or allowed to gravity flow. If the wastewater is pumped, then the discharge occurs over approximately 2 hours.

EPA Classification of the Industrial User

The facility performs unit operations defined as core processes (circuit board manufacturing) subject to the Metal Finishing Categorical Pretreatment Standards found in 40 C.F.R. Part 433. In addition, the facility performs ancillary operations (machining, testing, etching, vapor degreasing, cleaning, and painting) subject to the Metal Finishing Categorical Pretreatment Standards because of the presence of the core operations. The facility is a new source, and the applicable Pretreatment Standards for New Sources are found in 40 C.F.R. § 433.17.

Summary of Findings

Ball Aerospace
NPDES ID# COP900120
March 15, 2023

Pretreatment Inspection Findings	Follow up Action Items
It appears that the facility can discharge regulated wastewater from the final discharge tank through either a pump or by gravity flow. The discharge via the pump takes about 2 hours and if discharged through gravity, discharges over a longer period of time. In addition, it appears that the environmental technician performs sampling as required by the permit but does not have the sampling procedures and techniques documented. 40 CFR 403.12(g)(3) of the Pretreatment Regulations require that the required reports must	<u>Pretreatment Requirement</u> 40 CFR 403.12(g)(3) <u>Corrective Actions</u> EPA recommends the facility develop a sampling plan to document its discharge practices and sampling methods of the discharge to ensure these are consistent and meet the monitoring requirements of the Pretreatment permit.

be based upon data obtained through appropriate sampling and analysis performed during the period covered by the report, and that data are representative of conditions occurring during the reporting period.

Report Review and Signature		
Drafter Name	Address/Phone Number	Date
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Reviewer Name	Address/Phone Number	Date
Julie Kinsey	U.S. EPA Region 8 1595 Wynkoop Street 8WD-CWW Denver, Colorado 80202 303-312-7065	3/27/2023
Supervisor Signature/Name	Address/Phone Number	Date
	U.S. EPA Region 8 1595 Wynkoop Street 8WD-CWW Denver, Colorado 80202	3/29/2023
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