

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

M271170661

FACILITY: Hyperion Materials & Technologies USA, LLC		SRN / ID: M2711
LOCATION: 510 GRIFFIN RD, WEST BRANCH		DISTRICT: Bay City
CITY: WEST BRANCH		COUNTY: OGEMAW
CONTACT: Tom DeFouw , EHS Manager		ACTIVITY DATE: 01/24/2024
STAFF: Nathanael Gentle	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Compliance Inspection		
RESOLVED COMPLAINTS:		

On January 24, 2024, AQD staff conducted a scheduled onsite inspection at Hyperion Materials & Technologies, SRN M2711. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment Great Lakes and Energy, Air Quality Division (AQD) Administrative Rules; and to evaluate compliance with the facility's 23 active Permits to Install. EGLE staff were assisted onsite by Tom DeFouw, EHS Manager, and Troy Tuyls, Site Manager. At the time of inspection, the facility was found to be in compliance.

Facility Description and History

Hyperion Materials & Technologies is located within the West Branch industrial park at 510 Griffin Rd, West Branch, MI. The facility specializes in powdered metal manufacturing. The company manufactures over 100 different grades of metal powders. Onsite activities are conducted in two buildings, Plant 620 and Plant 645. Plant 620, also known as the powder plant, consists primarily of material storage and mixing. Plant 645 is used for activities associated with material shaping and sintering. The facility consists of a number of dust collection control systems. Particulates collected in the process are reused in the powder plant.

In Plant 620, the process begins in the powder mixing room. Here various components of powder metal mixtures such as nickel, chrome, carbide, and cobalt are poured into a metal tote. The tote is then transported to one of twelve attritor mills. At the attritor mill stage, acetone is added to the powder and the components are mixed. Once mixed, the tote is transferred to one of two spray dryer systems which separates the acetone from the powdered metal mixture. The contents of the totes are emptied into metal drums and the totes are cleaned for future use.

Powder mixtures are transported to Plant 645. Mixtures are first packed into molds and pressed in hydrostatic presses. The pressed component is referred to as the green shape because it is not yet hardened. Green shape components are then machined. Once machined, products are hardened in one of the facility's sinter furnaces. Following the sintering process, products are shot blasted to remove surface discoloration before being shipped to the customer.

Hyperion Materials & Technologies is minor source of all regulated air pollutants. A total of 23 active Permits to Install (PTIs) are associated with the facility. These active PTIs include: PTI 326-86, 790-87A, 168-89A, 247-89A, 705-89A, 972-90A, 973-90, 975-90, 984-90D, 1245-90A, 1246-90, 1248-90, 1252-90, 1254-90, 1254-90A, 1255-90, 484-92, 485-92, 126-94, 358-98, 128-99, 126-01A,

and 280-04. The facility was last inspected on June 4, 2014. At the time of the 2014 inspection, the facility was found to be in compliance.

One recent complaint is on file for the facility. On August 3, 2023, a tip/complaint was submitted to the US Environmental Protection Agency (EPA) that stated the following, “the collection system used to collect recycled cobalt is leaking into the atmosphere when the system is cleaned. There are large amounts of cobalt being lost both in the air and on the ground. The ground all around the collection cans is discolored and the grass is not healthy.” AQD and EGLE staff conducted a multimedia complaint investigation on August 22, 2023. AQD staff observed the collection systems and unloading. The cement at and around the collection systems was observed to be stained and discolored, indicating historic material spills. Significant material spillage was not observed. Additionally, AQD observed the collection systems in operation. Visible emissions were not observed to be occurring from the process. At the time of the complaint investigation, onsite staff who assisted EGLE personnel reported they had been employed at the facility for approximately one year and that the discoloration of the concrete was already in place prior to their employment at the facility. Onsite staff said a company would be hired to clean the cement. New staining occurring, following the cleanup of the concrete, would indicate improper material collection. At the time of the complaint investigation, AQD violations were not observed. Steps taken and operation of the dust collection system were reviewed as part of the January 2024 onsite inspection.

A number of the active permits have visible emission restrictions. Time was not taken during the inspection to review each stack individually. During the inspection, stacks were periodically observed. No visible emissions were observed. Onsite staff report procedures are in place to observe stacks for VEs on a weekly basis to ensure proper operation.

Compliance Evaluation

Powder Process

PTI 1248-90

PTI 1248-90 was issued on 1/18/1991. The permit encompasses a Torit #4DF32 baghouse dust collector and ventilation duct work for the powder weighing area and much of the powder plant. In the powder weighing area various components of powder metal mixtures such as nickel, chrome, carbide, and cobalt are poured into a metal tote.

Special Condition (S.C.) 14 states the particulate emission from the tungsten carbide powder weighing and milling processes, hereinafter the “processes” shall not exceed 0.10 pound per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Testing to verify particulate emissions is required at the request of the AQD. At this time testing has not been requested. Special Condition 15 states there shall be no visible emissions from the process. During the onsite inspection, visible emissions were not observed. The baghouse was verified to be installed and operating, S.C.16. Materials collected in the baghouse are reused in facility processes, S.C.18.

The facility shall implement and maintain a preventative maintenance program for the baghouse collector, S.C.19. Documentation of the preventative maintenance program for the dust collector was requested and provided. Preventative maintenance is conducted on a quarterly basis.

Examples of some preventative maintenance tasks completed include inspecting equipment for damage and proper operation, greasing bearings, and checking air velocity.

PTI 972-90A

PTI 972-90A was issued on 10/30/1991. The permit is for a 10,000-gallon underground acetone storage tank with vent. The acetone is used as part of the powder metal mixing process. Used acetone is sent back to the storage tank to be reused. The acetone storage tank is equipped with a pressure vacuum vent, S.C.16. There shall be no visible emissions from the acetone storage tank, S.C.15. At the time of inspection, visible emissions were not observed.

At the time of permitting, acetone was considered a volatile organic compound (VOC). Special Condition 14 states the VOC emission rate from the acetone storage tank shall not exceed 0.75 tons per year. Since issuance of the PTI, acetone has been delisted as a VOC. While acetone is no longer a VOC, it is considered a toxic air contaminant (TAC) that requires a permit under Rule 201. If changes were to be made to the process that required a permit modification, acetone emission limits would need to be evaluated.

The facility shall not process more than 15,000 gallons (99,000 pounds) of acetone through the acetone storage tank per month. A written log of the amount of acetone used shall be kept on file for a period of at least two years and made available upon request, S.C.17. Records of monthly amounts of acetone processed through the acetone storage tank were requested and provided for the months of October 2023 and August 2023. Acetone usage records are tracked using delivery records and the volumes in the tank at the time of delivery. The total amount of acetone used in the entire powder plant is calculated monthly. Records of delivery receipts and calculations were provided. During the month of August 2023, a total of 4864 gallons of acetone was used. During the month of October 2023, a total of 3017 gallons of acetone was used. These monthly volumes are well below the 15,000 gallon per month limit established by PTI 972-90A.

PTI 326-86

PTI 326-86 was issued on 7/16/1986. The PTI encompasses the onsite waste solvent (acetone) still. Acetone that is pulled from the underground storage tank is passed through the waste still to increase the acetone purity prior to adding the acetone to the powder mixture.

The waste solvent still was verified to be equipped with a water-cooled condenser, S.C.12. Staff explained the waste solvent still would not work without the water-cooled condenser being operational. The PTI states there shall be no visible emissions from the waste solvent still, S.C.10. During the onsite inspection no visible emissions were observed.

PTI 973-90

PTI 973-90 was issued on 12/20/1990. The PTI encompasses twelve attritor mills. The attritor mills are used to add acetone into the powdered metal containing totes and mix all components together. Special condition 15 limits the facility from operating no more than four mills simultaneously. Staff report during operation 2 to 4 mills are operated simultaneously.

The attritor mills were verified to be equipped with water jacketed lids, S.C.19 The water jacketed lids are part of a closed loop glycol chiller system. The water jacketed lids are equipped with instrumentation to monitor the water jacket temperature, S.C.20. At the time of an inspection an operating attritor mill was observed to have a water jacket temperature of 5°C. Staff report the system will alarm if the water jacket temperature goes above the maximum temperature setpoint.

VOC emission limits of 65.9 pounds per hour and 26.4 tons per year are in place for the attritor mills, S.C.14. Testing to verify the VOC emission rate is required at the request of the AQD, S.C.17. At the time of permitting, acetone was considered a volatile organic compound (VOC). Since issuance of the PTI, acetone has been delisted as a VOC. While acetone is no longer a VOC, it is considered a toxic air contaminant (TAC) that requires a permit under Rule201. If changes were to be made to the process that required a permit modification, acetone emission limits would need to be evaluated.

Special Condition 18 stipulates a monthly record of the acetone purchased and the acetone emissions from the mills shall be kept on file. Monthly records of the acetone emissions from the attritor mills were requested for the months of October 2023 and August 2023. Facility personnel are not able to track acetone usage for individual pieces of equipment in the powder plant. Instead, plant wide acetone usage is tracked monthly. The monthly acetone usage values are then divided by the number of days in the month to determine the average daily acetone usage. Utilizing acetone density of 6.59 lbs/gallon and using the daily volume of acetone used, the daily emissions of acetone from the powder plant are calculated. During the month of August 2023, daily emissions of acetone were 1,140 lbs/day. Acetone emissions for August 2023 were 32,053 lbs. During the month of October 2023, daily emissions of acetone were 988 lbs/day. Acetone emissions for October 2023 were 19,882 lbs.

PTI 975-90

PTI 975-90 was issued on 12/20/1990. The PTI encompasses two spray dryer systems used to separate acetone from the powdered metal mixture. After materials are mixed in one of the attritor mills, the slurry is pumped to one of the two spray dryer systems to separate the acetone from the powdered metal. The pressure of the slurry is increased and shot up through the spray dryer tank. Heat inside the tank evaporates the acetone. The acetone is then passed through a scrubber which cools the acetone back into a liquid state which is transferred to the underground storage tank for future use. The powder mixture is placed back into a metal tote.

Special Condition 15 stipulates there shall be no visible emissions from the spray dryers. No visible emissions were observed while onsite. The process has VOC emission limits of 4.1 pounds per hour and 8.2 tons per year, S.C.14. Verification of VOC emission rates is required at the request of the AQD, S.C.16 At the time of permitting, acetone was considered a volatile organic compound (VOC). Since issuance of the PTI, acetone has been delisted as a VOC. While acetone is no longer a VOC, it is considered a toxic air contaminant (TAC) that requires a permit under Rule201. If changes were to be made to the process that required a permit modification, acetone emission limits would need to be evaluated.

Records for each calendar month of the usage rate of acetone in the spray dryers shall be maintained, S.C. 17. Records of the spray dryer's monthly acetone usage rate were requested for

the months of October 2023 and August 2023. As previously discussed, facility personnel are not able to track acetone usage for individual pieces of equipment in the powder plant. Instead, plant wide acetone usage is tracked monthly. The monthly acetone usage values are then divided by the number of days in the month to determine the average daily acetone usage. Utilizing an acetone density of 6.59 lbs/gallon and using the daily volume of acetone used, the daily emissions of acetone from the powder plant are calculated. During the month of August 2023, daily emissions of acetone were 1,140 lbs/day. Acetone emissions for August 2023 were 32,053 lbs. During the month of October 2023, daily emissions of acetone were 988 lbs/day. Acetone emissions for October 2023 were 19,882 lbs.

Special Condition 18 stipulates that the spray dryers shall not be operated unless the scrubber/condensers are installed and operating properly. Both spray dryers were visually verified to be equipped with a scrubber/ condenser. Staff report the spray dryers will not function without the scrubber/condenser as there would be no way to condense the separated acetone.

PTI 1246-90

PTI 1246-90 was issued on 12/20/1990. The PTI encompasses an acetone sedimentation tank drying system. Equipment listed in the permit includes sedimentation tanks, a jacketed dryer, primary and secondary condensers, receiver, vacuum pump, and tertiary condenser. The sedimentation tanks are still utilized at the facility, however, the tank drying system is no longer in place.

Four sedimentation tanks are in place at the facility. Staff explained some of the acetone powder mixture is sent to one of the sedimentation tanks. Here the powder settles out by means of gravity. Acetone is pumped off and sent back to the acetone storage tank. The powder still entrained with acetone is pumped back to the attritor mills. The process was observed to have no external emissions.

PTI 790-87A

PTI 790-87A was issued on 1/4/1991. The PTI encompasses powder processing equipment located within the powder plant. This equipment includes, 1 Rotex #422 vibratory screening machine, 1 Eriez #62B vibratory feeder/ screening machine, 2 Fitzmill #DAS06 (D6) hammermills, 1 Fitzmill #DKAS012 (D12) hammermill, 1 Tote blending machine, 1 Tote cleaning station, and 1 Tote Dumping station. Also included in the original permit was a down-draft table (parts cleaning booth). Staff stated the down draft table is no longer at the facility. AQD staff were shown the empty space where the equipment was once located. Onsite staff report they are moving the hammermill equipment to a different part of the powder building. The equipment will still be controlled by a Torit dust collector. AQD staff reminded facility personnel to ensure the stack still meets the requirements of PTI 790-87A which includes a maximum diameter of 17 inches at an exit point not less than 45 feet above ground level, S.C.18.

All equipment permitted under PTI 790-87A is controlled by a baghouse dust collector, S.C.16. Particulate emission from the equipment shall not exceed 0.01 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis, S.C.14. Testing to verify the PM emission rate is required at the request of the AQD. There shall be no visible emissions from the equipment,

S.C.15. At the time of inspection, the dust collection system was observed to be installed and operating properly. No visible emissions were observed.

PTI 484-92

PTI 484-92 was issued on 9/16/1992. The permit encompasses a Cermet spray dry powder plant including ball mill and spray dryer. Onsite staff report this equipment was installed, used for a short period of time and was decommissioned prior to 1996.

PTI 168-89A

PTI 168-89A was issued on 1/4/1991. The permit encompasses the hydrogen furnace room with 3 GERO PFS hydrogen dewax muffle furnaces. The furnaces are used to remove Paraffin wax and polyethylene glycol (PEG) from powder recovered from green shape milling. Remnants from the green shape milling phase are recovered to be returned to the powder phase. Staff explained Paraffin wax and polyethylene glycol (PEG) are added to the powder mixtures as part of the attritor mill portion of the process. In order to remove these components from the green shape remnants, the green shape remnants are first run through the hammer mill in the powder plant, to break up the material. The hammermill is permitted under PTI 790-87A. After the hammermill, the material is brought to Plant 645 where it is passed through one of the three hydrogen dewax muffle furnaces which removes the Paraffin wax and polyethylene glycol (PEG) from the powder.

The hydrogen reduction furnaces are equipped with a baghouse dust control ventilation system, S.C.19. Special Condition 15 stipulates the particulate emission from the hydrogen reduction furnace dust control ventilation system shall not exceed 0.01 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Testing is required at the request of the AQD. There shall be no visible emissions from the hydrogen reduction furnace dust control ventilation system, S.C.17. Visible emissions were not observed at the time of inspection. Material collected in the dust collection system is reused as part of onsite activities, S.C.20.

The hydrogen furnace room is equipped with passive ceiling vents. Staff explained the vent is primarily in place to remove heat from hydrogen furnace room. Special Condition 14 stipulates the particulate emissions from each hydrogen reduction furnace natural draft vent shall not exceed 0.01 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Testing is required at the request of the AQD. There shall be no visible emissions from any of the three hydrogen reduction furnace natural draft vents, S.C.16. No visible emissions were observed at the time of inspection.

PTI 1255-90

PTI 1255-90 was issued on 4/16/1991. The permit was for a Grieve-Hendry bake out oven for curing of epoxy assemblies and polyurethane molds. A written notice was provided to the AQD on August 20, 2009. The notice stated the originally permitted Grieve-Hendry bake out oven was replaced with Blue M oven, a more efficient, electric source. The notice stated the process remained the same. Staff report the process is used to create isostatic polyurethane bags for tooling at nozzle press operation. Isostatic bag resins are poured into a mold. The mold is then placed into the Blue M oven to cure. The emission unit is no longer used to cure epoxy assemblies.

Special Conditions 15 establishes stack requirements for the originally permitted Grieve-Hendry oven. Additionally Special Condition 14 stipulates there shall be no visible emissions from that stack. The Blue M oven is vented to the in-plant environment only.

The applicant shall not substitute any raw material for those described in the permit application which would result in an appreciable change in the quality or any appreciable increase in the quantity of the emission of air contaminant without prior notification to and approval by the Air Quality Division, S.C.16. Special Condition 17 stipulates records of the monthly usage rate of molding resins and/or adhesives shall be kept on file for a period of at least two years and made available to the Air Quality Division upon request. Records were requested and provided of monthly usage rate of molding resins and/or adhesives for the months of October 2023 and August 2023. The material used to make the isostatic bag is ERAPOL 1K701A polymer resin. A copy of the SDS was provided. Staff report the facility purchases the material in 5-gallon pails. On average 6 pails are purchased each year (30 gallons total). The average monthly usage is 2.5 gallons. In August 2023 the plant used 1.5 gallons. In October 2023 the plant used 2.0 gallons.

PTI 1252-90

PTI 1252-90 was issued on 3/22/1991. The permit was issued for a Torit model PIC-770-1-55 cloth bag filter dust collection system. The permitted dust collection system serves powder pressing and misc. processing operations. Examples of equipment controlled by the dust collector include jolters, presses and powder handling areas. Powder is added to molds or bags. The molds are then placed on a jolter which vibrates causing the powder material to flatten and fill the space. The molds are then placed into one of the sites presses which compress the powder together forming what onsite staff refer to as the green shape.

Special Condition 14 stipulates the particulate emission from the carbide powder pressing and misc. processing operations shall not exceed 0.10 pound per 1,000 pounds of exhaust gases calculated on a dry gas basis. Testing is required at the request of the AQD. Visible emissions from the process shall not exceed a 6-minute average of 20% opacity, except as specified in Rule 301(1)(a), S.C.15. Visible emissions were not observed at the time of inspection.

Staff report routine maintenance is conducted on the cartridge filter collector. Special Condition 19 stipulates a preventative maintenance program shall be implemented and maintained. A copy of the preventative maintenance program was requested and provided. Preventative maintenance is conducted on a quarterly basis. Examples of some preventative maintenance tasks completed include inspecting equipment for damage and proper operation, greasing bearings, and checking air velocity.

PTI 485-92

PTI 485-92 was issued on 6/30/1992. The permit was issued Torit #2DF16 dust collector and ventilation system. The ventilation system serves equipment in the isostatic pressing area. Equipment included in the isostatic pressing area includes, the polyurethane bag loading area, and large and small jolter, and a large and small hydrostatic press.

Special Condition 14 stipulates the particulate emission from the isostatic pressing area shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis. Testing to

verify particulate emission rates is required at the request of the AQD, S.C.16. Visible emissions from the process shall not exceed a 6-minute average of 20% opacity, except as specified in Rule 301(1)(a), S.C.15. Visible emissions were not observed during the onsite inspection. The dust collection system was verified to be installed, S.C.17. Material collected in the dust collection system is utilized in facility processes, S.C.18.

PTI 126-94

PTI 126-94 was issued on 4/20/1994. The permit was issued for a Hoffman dust collection system used to collect carbide powder from milling and shaping activities of green shape material. A variety of equipment is used to shape the material such as lathes and mills. The Hoffman collection system consists of 12 cyclones and 13 baghouses. The system is color coded based on the grade of powder that is being shaped. Staff will hook up the shaping equipment to the appropriate color on the collection system based on the grade of material that is being collected. This process ensures grades of powder are collected in individual bins to be reused in onsite processes.

Visible emissions from the process shall not exceed 0% opacity, S.C.15. No visible emissions were observed during the onsite inspection. The particulate emission from the process shall not exceed 0.10 pounds per 1,00 pounds of exhaust gases, calculated on a dry gas basis, S.C.16. Testing is required at the request of the AQD. The Hoffman dust collection system was verified to be installed and operational, S.C.17. Materials collected are utilized in onsite processes, S.C.19. Uncollected material was not observed during the onsite inspection.

As previously discussed, The Hoffman collection system was inspected as part of a complaint investigation conducted by EGLE staff in August 2023. As part of the January inspection steps taken by the facility following complaint investigation were reviewed. Staff explained all bags in the collection system were changed following the complaint investigation. The facility preventative maintenance plan in place instructs staff to change filters on a quarterly basis. The facility completed material training for all staff operating and emptying the collection bins. Onsite staff report if material were to spill during the unloading process. Staff are to immediately clean up the material using a vacuum system in place on the collection system. Staining of the pavement in the area around the collection system was noted during the complaint investigation. Staff report a company was hired to power wash the cement and properly dispose of the water, however, the power washing did not remove the stains. The facility is exploring additional options to remove the staining, including grinding away a layer of the cement.

PTI 358-98

PTI 358-98 was issued on 1/20/1999. The permit was issued for an Attendant dust collector. The dust collector serves equipment including bandsaws and grinders. The original permit lists 3 bandsaws and 2 grinders associated with the process. Additional shaping equipment appears to have been installed since issuance of the PTI. All additional shaping equipment is controlled by a fabric filter collection system and appears to meet the exemption requirements of Rule 285(I)(vi).

Material shaping equipment was verified to be controlled by a dust collection system, S.C.3. The particulate emission rate shall not exceed 0.01 pounds per hour nor 0.05 tons per year, S.C.2. Testing to verify the emission rate is required at the request of the district. Visible emissions shall

not exceed a 6-minute average of 5% opacity, except as specified in Rule 301(1)(a), S.C.4. Visible emissions were not observed during the onsite inspection.

PTI 280-04

PTI 280-04 was issued on 1/24/2005. The permit includes two emission units, EUCENTERGRIND and EUSURFACEGRIND. EUCENTERGRIND is a centerless grind process that is used in properly sizing hard cemented carbide rods. EUSURFACEGRIND is a surface grinder used to sharpen tooling. The two emission units are still at the facility. However, onsite staff report the equipment is rarely used as part of onsite activities. Both emission units are equipped with a mist eliminator to control/collect the effluent generated by coolant/lubricant application during grinding, S.C. 2.1.

PTI 1245-90A

PTI 1245-90A was issued on 4/28/1993. The permit was issued for nine hot-wall box furnaces as part of dewax and presinter processes. The nine hot-wall box furnaces associated with the PTI are no longer at facility. It is recommended the facility void PTI 1245-90A.

PTI 247-89A

PTI 247-89A was issued on 4/28/1993. The permit encompasses three tandem vacuum sintering furnaces. The furnaces are used sinter the green shape material. Each tandem vacuum sintering furnace system consists of a vacuum pumping system, process gas control panel, and an electrical source which powers the graphite resistance heating rods in each of the two chambers. The batch furnace chambers are alternatively used with one heating while the other is cooling. Automatic process controllers with thermocouple sensors are used to control the furnace operating cycles.

There shall be no visible emissions from the three sintering furnaces, S.C.15. No visible emissions were observed during the onsite inspection. Each tandem furnace vacuum pump is equipped with a mist separator, S.C. 16. The mist separator is a cannister filter which pulls out mist generated by the process.

PTI 128-99

PTI 128-99 was issued on 4/22/1999 The permit was issued for Carbide Sinter HIP furnace identified in the application as Sinter HIP #5. The emission unit is used to sinter metal compounds under high pressure and high temperature. One special condition is listed in the PTI. Special Condition 1 stipulates there shall be no visible emissions from the Carbide Sinter HIP Furnace #5. No visible emissions were observed during the onsite inspection.

PTI 126-01A

PTI 126-01A was issued on 2/17/2009. The PTI encompasses a Carbide Sinter HIP furnace identified in the application as Sinter HIP #6. No special conditions are included in the permit. The permit consists only of the general conditions included in all AQD Permits to Install.

PTI 1254-90

PTI 1254-90 was issued 3/15/1991 The permit encompasses a series of furnace vents including those associated with a tandem GCA dewax-sintering furnace, a Trent presinter furnace, and an ultra temp Sinter-HIP furnace. Staff stated the originally permitted Trent presinter furnace is no longer at the facility.

There shall be no visible emissions from the two hydrogen burn-off flame vents, five vacuum pump exhaust vents, three argon vents and one hot air vent, S.C.14. No visible emissions were observed during the inspection. Special Condition 15 stipulates the facility shall not substitute any materials for those described in the permit application which would result in an appreciable change in the quality or appreciable increase in the quantity of the emission of an air contaminant without notification to and approval by the AQD. A Rule 285(b)(i) notice of material change was provided to the AQD on October 5, 2011. The notice detailed paraffin wax was replaced with polyethylene glycol (PEG). Copies of SDS were included with the notice. Emissions from new products were reported to be carbon monoxide and carbon dioxide. The originally permitted paraffin wax was reported to emit ketones and aldehydes.

PTI 1254-90A

PTI 1254-90A was issued on 3/5/1992. The PTI was issued for new a 11.6 cubic foot capacity Ultra Temp Sinter HIP furnace installed at the facility.

There shall be no visible emissions from the hydrogen burn-off flame vent, vacuum pump exhaust vent, and the argon vent, S.C.14. No visible emissions were observed during the inspection. Special Condition 15 stipulates the facility shall not substitute any materials for those described in the permit application which would result in an appreciable change in the quality or appreciable increase in the quantity of the emission of an air contaminant without notification to and approval by the AQD. A Rule 285(b)(i) notice of material change was provided to the AQD on October 5, 2011. The notice detailed paraffin wax was replaced with polyethylene glycol (PEG). Copies of SDS were included with the notice. Emissions from new products were reported to be carbon monoxide and carbon dioxide. The originally permitted paraffin wax was reported to emit ketones and aldehydes.

PTI 984-90D

PTI 984-90D was issued on 1/21/2005. The PTI encompasses Two 6.5 cubic foot Ultra-Temp Sinter HIP furnace labeled in the PTI as EUFURNACE1 and EUFRUNACE2. Each furnace is a model UT-300 equipped with a Stokes vacuum pump model 212-h11 for evacuation. Special Condition 1.1 states there shall be no visible emissions from FGFURNACES from SVARGON, SVBURNOFF1, or SVBRUNOFF2. No visible emissions were observed during the inspection.

PTI 705-89A

PTI 705-89A was issued on 4/28/1993. The PTI encompasses the onsite shot blasting process. The PTI lists four sandblast cabinets controlled by a Wheelabrator model #32MPF modular pulse jet dust collector. At the time of inspection, 3 sandblast cabinets remained in the process. The sandblast cabinets are used to remove surficial scale and discolorations from the carbide parts after they have been hardened by the sintering furnace process.

The particulate rate from the shotblasting process shall not exceed 0.10 pounds per 1,000 pounds of exhaust gases, calculated on a dry gas basis, S.C.15, nor shall the particulate emission rate exceed 0.4 pounds per hour nor 1.8 tons per year, S.C.16. Verification of the particulate emission rate is required at the request of the AQD, S.C.18. Visible emissions from the process shall not exceed a 6-minute average of 20%, except as specified in Rule 301(1)(a). No visible emissions were observed during the onsite inspection. The process was verified to be equipped with fabric filter control, S.C.19. Staff report the collection system is monitored for visible emissions as part of weekly pollution inspections completed by EHS staff. Bins capturing material collected by the fabric filter system are reported to be emptied on an as needed basis.

Additional Sintering Furnaces

As part of onsite operations, 3 sintering furnaces are operated without a permit to install. The total number of sintering furnaces utilized for production is 15 sintering furnaces. Active permits to install encompass only 14 sintering furnaces. Upon review, it was determined a universal sinter HIP furnace referred to by facility personnel as furnace number 19 is the furnace operating without a PTI. Furnace 19 was previously permitted under PTI No. 1251-90A. The permit was voided on 7/29/2009 following the removal of furnace 19 from the facility. Staff stated at some point since permit voidance, furnace 19 was reinstalled at the West Branch facility and a new PTI was never obtained.

As part of the onsite inspection, AQD staff completed a cursory review of the potential applicability of PTI exemptions for furnace 19. Exemption rules reviewed included Rule 285(2)(l)(v) and 285(2)(l)(i). Exemption Rule 285(2)(l)(v) states the requirement to obtain a permit does not apply to "Equipment used exclusively for sintering of glass or metals, but not exempting equipment used for sintering metalbearing ores, metal scale, clay, flyash, or metal compounds." Upon discussion with AQD staff, it was determined carbide is a metal compound and therefore the process does not meet the requirements of this exemption. Exemption Rule 285(2)(l)(i) states the requirement to obtain a permit does not apply to "Equipment used exclusively for bending, forming, expanding, rolling, forging, pressing, drawing, stamping, spinning, or extruding either hot or cold metals." The sintering process completed with furnace 19 appears to meet the requirements of exemption Rule 285(2)(l)(i). If the facility would like furnace 19 to be permitted by a PTI, as all other production sintering furnaces onsite are, a Permit to Install application would need to be submitted to the AQD's permit section.

In addition to the 15 production sintering furnaces, 2 smaller sinter furnaces are utilized in the product research laboratory as part of product research and development. The two research furnaces appear to meet the exemption requirements of either Rule 283(2)(b) or Rule 285(2)(l)(i).

Summary

On January 24, 2024, AQD staff conducted a scheduled onsite inspection at Hyperion Materials & Technologies, SRN M2711. Hyperion Materials & Technologies is located within the West Branch industrial park at 510 Griffin Rd, West Branch, MI. The facility specializes in powdered metal manufacturing. Hyperion Materials & Technologies is minor source of all regulated air pollutants. A total of 23 active Permits to Install (PTIs) are associated with the facility. These active PTIs include: PTI 326-86, 790-87A, 168-89A, 247-89A, 705-89A, 972-90A, 973-90, 975-90, 984-90D, 1245-90A, 1246-90, 1248-90, 1252-90, 1254-

90, 1254-90A, 1255-90, 484-92, 485-92, 126-94, 358-98, 128-99, 126-01A, and 280-04. At the time of inspection, the facility was found to be in compliance.

NAME *Mathewes, Scott*

DATE 3/18/2024

SUPERVISOR *Chris Kane*