DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N326248757

FACILITY: H B CARBIDE CO		**SRN / ID:** N3262
LOCATION: 101 DOYLE DR, LEWISTON		**DISTRICT:** Gaylord
CITY: LEWISTON		**COUNTY:** MONTMORENCY
CONTACT: Jerry Keyser , Supervisor Operations		**ACTIVITY DATE:** 05/02/2019
STAFF: Sharon LeBlanc	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Self-initiated Site Inspection of Active Carbide Facility in Lewiston Industrial Park. Permit void request for evaporator will be sent, evaluation of remaining equipment with respect to Rule 201 will be completed. sgl		
RESOLVED COMPLAINTS:		

INTRODUCTION

On May 2, 2019, AQD District Staff conducted a self-initiated site inspection of the HB Carbide Facility located at 101 Doyle, Lewiston, Michigan. The referenced facility had one permit of record for the Facility (No. 918-91) issued on January 3, 1992. The most recent site inspection was conducted on September 26, 2012 and reported the facility in compliance. It should be noted that the location is now identified as 4210 Doyle Drive, Lewiston, Michigan rather than the 101 Doyle address.

Mr. Jerry Keyser, Maintenance Supervisor, provided an abbreviated tour of the facility, as well as supplemental information used to prepare this document.

FACILITY

Located at 4210 Doyle Drive, Lewiston, Michigan. The Facility is located approximately 1 mile north of the intersection of County Road (CR) 612 and CR 491 (blinking light), and then 0.25 miles to the west (left) on Airport road. The Facility is located at the north end of Doyle Drive.

The Facility produces carbide blanks for Star Cutter, and is reported to operate three shifts a day, 6 days per week. Information from the company website indicates that H.B. Tool Company was outfitted by Star Cutter Company in 1983 to manufacture carbide blanks for their own cutting tools. In 1994, the company formed HB Carbide Company. (Note Star Cutter operates a carbide cutter manufacturing facility in East Tawas City, Iosco county, Michigan).

A review of aerials on Google Earth, indicates that the initial building was in place before 1992, with subsequent expansions visible in aerials dated 2013 and 2016, respectively. (See attached aerial)

No Fence or gate was noted at the time of the May 2, 2019, site inspection. Located in the Lewiston Industrial Park, properties located immediately adjacent to the Facility included either partially or fully wooded industrial sites. Properties in the immediate vicinity included a number of scattered residential properties as well as some oil and gas sites. The Lewiston Elementary School is located approximately 9/10 of a mile from the site to the S-SW.

Weather conditions at the time of the inspection were overcast with temperatures in the lower 50's. No signs of visible emissions were present.

PROCESS DESCRIPTION

The Facility produces tungsten/cobalt carbide products, their website indicates that the Facility provides sintered tungsten carbide blanks or preforms. Traditional ceramics utilize inorganic, non-metallic materials and heat to create new products. Carbides are classified as non-oxide technical ceramics or advanced ceramics. Cemented carbides are metal matrix composites composed of at least two constituent parts, one being a metal powder and another material such as a ceramic or an organic compound (graphite is an example). Powder metallurgy technology is used to fabricate carbides.

HB Carbide uses raw materials to create a number of grades of ready to press (RTP) carbide powders, with different formulations specific to various applications. Due to the high cost of raw materials, the company makes great efforts to capture and recycle all, but the tiniest portion of materials associated with their pre-sintered carbide materials. Production rates and product types are all demand driven. Non-recyclable materials are all properly disposed of through a licensed disposal service.

Raw materials are received in a powdered form and are weighed and blended to meet the clients order in batches. The batches are transferred to ball mills where acetone is added to the batch mix in the mills to create a slurry.

The slurry is then transferred to a vacuum dryer where the carbide powder is separated from the acetone under vacuum. The powders created after the acetone is removed are referred to as "ready to press" powders and are used in-house for production of both un-sintered (AKA "green") and sintered products.

Engineered molds are filled with RTP and pressed to create the green/un-sintered products. After unmolding, these "green" products (also referred to as blanks) can be machined into shape or sold as is depending on the order. The process is conducted in the general work environment, with torits acting as a particulate control device which vents back into the general work environment.

Sintering of green products is a multi-stage process. The initial stage consists of dewaxing or removal of the binder used in the green products. At this stage, the binder is removed using pressurized hydrogen or argon gas, after which the binder is burnt off in a hydrogen flame. Later stages of sintering remove excess carbon by vacuum. Carbide metals are melted to form the hard carbide final product using an internal electric heating element. Two types of sintering furnaces are present onsite and include vacuum sinter furnace and sinter Hot Isostatic Pressing (HIP) furnaces.

Potential sources of contaminants consist of volatiles associated with acetone used in the slurry during milling, as well as fugitive leaks that may be associated with valves and fitting for process gases (hydrogen, argon and nitrogen). Acetone is reported to be obtained and stored in 330-gallon totes, and represents a partially closed loop system.

Due to the fine nature of the ATP and RTP, Particulate Matter (PM) is generated during production activities. Facility staff report that the PM is captured using Torit dust collectors, which vent back into the general work environment, not out into the outside atmosphere. Contaminants associated with PM including metals (cobalt and tungsten) which are components of the carbide formulation.

Acetone though a volatile organic compound is not one of the contaminants identified as a volatile organic compound (VOC) nor is it a Hazardous Air Pollutant (HAP). EPA has identified it as one of 29 exempt organic solvents that result in negligible photo chemical reactivity that generates ozone. Acetone has also

PERMITTING

At the time of the May 2, 2019, site visit the Facility was of record as having only one permit. Permit to Install 918-91 was issued January 3, 1992. The referenced permit was for a Samsco Series 500 wastewater evaporator and was reported to have been removed prior to 2012. The 2009 site inspection report indicated that the permitted evaporator had been removed, and that the permit would be voided. However, the permit did not get voided as requested until following the 2009 site inspection. A void request was submitted electronically following the May 2, 2019, site inspection.

EXEMPT EQUIPMENT

Much of the process equipment identified onsite appear to be exempt from Rule 201 permitting based on venting of any emissions into the general in-plant environment. Internal plant emissions are regulated under the occupational health & safety provisions of MIOSHA. The facility reports that indoor air quality monitoring is conducted for/by MIOSHA, and that the appropriate standards are met. It is important to note that if exhaust fans are installed for industrial hygiene related chemical emissions, then permitting may be required.

Process Equipment venting into the general in-plant environment includes the following:

Equipment Description	Pollution Control Device
Isopresses (2)	Torits
Extruders (2)	Torits

Pre-Sinter-Vacuum Furnaces (6)	
Vacuum Sinter HIPs (3)	
Vacuum Sinter Furnace (1)	
Pushers (2)	
Totally Enclosed Shaping Equipment (10)	NA
Un-Enclosed Shaping Equipment (10)	Torits

* It should be noted that Rule 285 (2)(l)(vi) specifies a number of mechanical processes involving solid materials (carbide not being one of them). The guidance for the referenced indicate emissions would be internally controlled, or intermittent, and nontoxic in nature. Cobalt compounds are listed by EPA as Hazardous Air Pollutants (HAPs). Neither cobalt or tungsten (and their compounds) were identified on OSHA's list of toxic metals.

Process equipment reported to vent to the outside atmosphere, have been evaluated for use of exemptions to Rule 201 permitting under Rules 280-291. Use of exemptions may not be excluded by Rule 278. The referenced Rule excludes:

- any activities subject to the Potential to Significant Deterioration (PSD);
- any activity that results in an increase in emissions above significance levels defined in Rule 119;
- activities resulting in major sources of emissions subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) adopted under Rule 902.

Based on information obtained during the May 2, 2019 site visit, and subsequent information provided by the Facility, it appears that the Facility is a true minor not a major source (≥ 100 tons of criteria pollutants/year, ≥ 10 tons of a single HAP or ≥25 tons of combined HAPs/ year), is not subject to PSD and emissions are below significance levels. Of note is that acetone is not considered a criteria pollutant, a VOC or a HAP, and is not listed in Rule 119. Acetone is identified as a noncarcinogenic volatile organic that does not contribute appreciably to the formation of ozone. Rule 278 does not exclude the Facility from use of exemptions listed in Rule 280-291.

Rule 278a, requires that the owner or operator of an exempt process or process equipment be able to provide:

- a description of the exempt process or process equipment including the date of installation,
- the specific exemption being used by the process or process equipment,
- an analysis demonstrating that the Rule 278 does not apply to any process or process equipment.

The information required under Rule 278a has been provided and is documented within this document in the following section.

Commonly identified Rule 201 exempt equipment identified during the course of a site visit include:

- Heating and cooling vents

Rule 282(2)(b), Comfort air conditioning or comfort ventilating systems not designed or used to remove air contaminants generated by, or released from, specific units of equipment.

No stacks were identified during the May 2, 2019, site visit. A number of vents were noted in aerials of the Facility. Information provided by the Facility indicated that the existing vent system was for employee comfort. Process "emissions" with the exception of certain stages of milling activities were such that they met MIOSHA exposure limits.

- Space Heaters
- Boilers

Rule 282 (2)(b) Fuel burning equipment which is used for space heating, service water heating, ... or indirect heating and which burns only the following fuels: (i)sweet natural gas, synthetic natural gas, liquefied petroleum gas or a combination thereof and the equipment has a rated heat input capacity of not more than 50 million BTU/hour.

Information provided by the Facility indicated that the facility makes use of space heaters and two NG fired boilers all having rated heat input capacities of less than 50 million BTU/hour.

- **Emergency Generators**

Emergency generators onsite are believed to meet the requirements for exemption under *Rule 285 (2)(g) for Internal combustion engines that have less than 10 million BTU/Hr maximum heat input.*

- **Inert gas storage**

Rule 284(2)(j), which allows pressurized storage of acetylene, hydrogen, oxygen, nitrogen, helium and other substances, excluding chlorine and anhydrous ammonia in a quantity of more than 500 gallons, that have a boiling point of 0 degrees Celsius or lower.

Though not identified specifically in the exemption, a review of exemption guidance indicated that "other substances" referred to other gases, include gases at room temperature that are neither criteria pollutants nor are regulated air pollutants. Gases stored onsite include those required for sintering and are reported to meet the above requirements.

- **330-gallon totes of Acetone**

Rule 284 (2)(i) , which allows storage, mixing, blending, or transfer capacity of volatile organic compounds or noncarcinogenic liquids in a vessel that has a capacity of not more than 40,000 gallons where the contents have a true vapor pressure of not more than 1.5 psia at the actual storage conditions.

Readily available information indicates that the true vapor pressure of acetone is 4.35 psi at 68 – 77 degrees Fahrenheit. Based on the reported true vapor pressure, it would appear that Rule 284 (2)(i) would not be appropriate. Further evaluations will need to be made regarding potentially exemptions for the containers.

Potentially the containers may be exempt under *Rule 284 (2)(l), which allows for filling of noncarcinogenic liquids in shipping or storage containers that are released only into the general in-plant environment.*

- **Milling Equipment**

Carbide milling activities using ball mills is conducted in the NW portion of the Facility. Ball mills are cylindrical device used in grinding (or mixing) materials like ores, chemicals, ceramic raw materials and paints. They rotate around a horizontal axis, partially filled with the material to be ground plus the grinding medium. Different materials are used as media, including ceramic balls, flint pebbles and stainless-steel balls.

Acetone odors were noted in the milling room and appeared to be fugitive emissions generated during the milling activities, as well as during slurry handling activities. As acetone from the slurry is captured and re-used by the Facility in their milling process, fugitive emissions are believed to be best represented by material usage over time. The Facility reports reviewing acetone data for the past three years and determined an average use of 34 gallons (222 lbs of acetone emissions) per day.

Rule 290, exempts emission units with limited emissions and is based on actual emissions. To be able to use *Rule 290,(2)(a)(i) non-carcinogenic VOCs or noncarcinogenic materials that are listed in Rule 122 (f) as not contributing appreciably to the formation of ozone, if the total uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 lbs/month, respectively.* Discussions with Facility Staff indicates that further evaluation of acetone use needs to be done, ultimately to determine whether permitting of the milling process will be required by the facility, as well as obtaining the process data that would be required should permitting be determined to be required.

With reference to Toxic Air Contaminants (TACs), a review of Rules 224-225 indicate that the rules are only applicable should permitting of emission units be required.

REGULATORY

Based on the nature of the activities conducted onsite, AQD District Staff anticipate the facility to be a true minor source (<100 tons/year) of particulate matter (PM) and a minor source of HAPs (<25 tons/year combined HAPs). This determination is based on the careful capture and recycling practices the Facility applies to raw materials and carbide powders, and acetone not being listed as a HAP.

No applicable Federal Requirements for carbide production have been identified for the Facility at the time of report preparation.

During discussions with Facility staff on May 2, 2019, it was indicated that the facility made use of two boilers. Under 40 CFR Part 63, Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial Commercial and Institutional Boilers at area sources). EPA Guidance documents dated October 2016, indicated that gas-fired boilers, hot water heaters and electric boilers at area sources are not subject to the referenced Federal regulations.

Note: that the emergency generator was exempt from Rule 201 permitting however, as a Reciprocating Internal Combustion Engine (RICE), the 40 CFR Part 63, Subpart ZZZZ, and 40 CFR Part 60 Subparts IIII and JJJJ. AQD at the time of report preparation does not have delegation for the referenced subparts for area sources. Information regarding the Federal requirements was provided electronically to Facility Staff.

COMPLIANCE

No complaints, violation notices or consent orders are associated with the Facility. The Facility is also not required to submit annual emissions reports under the MAERs system.

In general it appears that the facility is in compliance with Rule 201 permitting requirements. However, further evaluation of acetone use in milling activities, as well as further determination of acetone storage appears to be necessary. Discussions with onsite staff, has resulted in an agreement to allow for time for the Facility to make a more accurate determination of acetone use, with respect to individual mills, and processing activities. As previously indicated, the activities will result in either determination that Rule 290 exemption activities, or a Rule 201 permit will be required for the Facility.

SUMMARY

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As a result of onsite discussions, the Facility is in the process of determining actual acetone use for milling operations onsite to determine if Rule 290 exemptions or Rule 201 permitting will be the most appropriate action with respect to acetone and the milling operations. AQD District Staff will monitor activities over the next few months to determine what activities the Facility will be conducting, once realistic data is obtained by the Facility staff. The Facility has been very upfront regarding activities being conducted and usage. They have expressed a degree of concern regarding reporting of facility activity information that may be used by a competitor to determine marketing strengths. There for certain information has not been incorporated into the inspection report at this time.

NAME Shawn LeBlanc DATE 6/10/2019 SUPERVISOR BN