

COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Southwest Regional Office

MEMO

TO Air Quality Permit File OP-03-00185

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DATE November 11, 2016

RE **Renewal of SOOP Renewal Application**
Vista Metals, Inc.
Kittanning Plant
East Franklin Township, Armstrong County
AUTH # 1134927; APS # 914006; PF # 512621

BACKGROUND:

Vista Metals, Inc. ("Vista") operates a carbide metal manufacturing process at the Kittanning Powder Plant ("Kittanning") located in West Hills Industrial Park on Nolte Drive in East Franklin Township, Armstrong County. The facility custom mixes tungsten carbide with nickel and/or cobalt using a heptane solution. Tungsten carbide and nickel powders are flammable and can cause irritation to skin/eyes. Nickel binder is a dark gray fine powder with no odor. The mixture of metal carbide powders are produced through batch operations and generally comprised of 88% tungsten carbide and approximately 12% cobalt or 12% nickel as a binding material. Powder materials are routed to the mill room where heptane is added to form slurry. Materials are reduced to the desired size, and then filtered through a screen in the dryer room. Heptane is volatilized by steam heat in the dryer units where more than 90% is recovered for reuse. The finished carbide powder is then sealed and transported to their McKeesport facility for final processing and manufacturing of cutting tools and dies.

The primary sources at this facility are four (4) attritors for wet grinding, six (6) ball mills, two (2) Ross dryers, and one (1) underground heptane storage tank. Attritors are stirred ball mills, are very fast, powerful, and are an efficient method for all operations of grinding, blending and milling, either wet or dry. The advantage of an attrition mill is that it ensures that all the grinding media are in action all the time. Control units at this facility are two condensers to recover heptane and a "Torit Dust Collector" to control particulate emissions from the dryers. Vista uses a package boiler system made up of five (5) modules each rated at 0.3 MMBtu/hr.

The Kittanning facility generates two air pollutants; heptane (VOC) and particulate matter (PM₁₀) which includes metallic HAP. These pollutants are generated due to mixing and drying processes of metals. As a standard practice, Vista gauges and records the volume of heptane used on daily basis through the difference between a meter on the discharge of the pump which feeds the process and detection equipment at the storage tank. Detection equipment is an electronic tank level monitoring device that monitors the level of heptane and is located in the underground storage tank. The applicant monitors the heptane on daily basis. Vista uses this procedure to determine monthly VOC emissions to the atmosphere. The total particulate emissions (PM₁₀) from the dryers are controlled by a Torit 2DF16 fabric dust collector rated at 7,100 ACFM @ 70°F.

There are two (2) existing condensers at the facility manufactured by ITT Standard to capture the heptane from the dryers. Vaporized heptane generated at the dryer and enters the condenser at 150°F maximum. Chilled water (45°F) enters the condenser and condenses the vaporized heptane. The liquid heptane is returned to the storage vessel. Condensed water and Ross pot cooling water are recycled in separate cooling loops. The condensers condense the majority of VOCs released by the facility. VOC vapors are discharged through a condenser, with greater than 90% vapor recovery efficiency, returning heptane back to the primary storage tank for re-use. The facility reports the emission data in tons of pollutants on yearly basis according to the permit condition.

On July 15, 2013, a stack test was conducted for particulate matter by “Air Compliance Consultants, Inc.” and the test results were found in compliance with the permit conditions. The average result was 0.000768 gr/dscf and accepted by the Department. The performance test is required to be performed at every five year interval. As noted, the applicant conducts daily visual inspection of filter cartridge for signs of wear, tear, clogging, obstruction, or any other damage that may indicate a potential for filter failure per manufacturer’s recommendation.

The initial State Only Operating Permit was issued on December 8, 2004, which expired on December 8, 2009. A renewal SOOP was issued on November 18, 2011, which will expire on November 18, 2016. Plan Approval PA-03-00185A was issued on February 1, 2013, and modified on October 23, 2013. PA-03-00185A authorized Vista Metals to emit up to 49.9 tons of Heptane.

On October 18, 2013, the Department received Vista Metals request to administratively amend SOOP-03-00185 to incorporate the conditions of PA-03-00185A. The applicant has demonstrated compliance with PA-03-00185A. All the conditions from the previous Operating Permit # OP-03-00185, and the special conditions from latest Plan Approval # PA -03-00185A have been incorporated in the current Operating Permit.

EMISSIONS and CONTROL EQUIPMENT:

The major pollutant from this facility is VOC from heptane usage. The Ross dryers are equipped with two (2) condensers that are able to recover greater than 90% of the heptane. Heptane emissions from the storage tank were calculated using working and breathing loss equations

from AP-42 Compilation of Air Pollution Emission Factors, USEPA, Fourth Edition, Stationary, Point and Area Sources. The company monitors and records dryer jacket temperature and vacuum pressure to ensure proper operation. The jacket temperature is used to ensure the steam is present and keeps the slurry at the appropriate temperature. The water jacket in the attritors is cleaned on regular basis to keep the slurry temperature low so that the evaporation rate is reduced while the slurry is in the attritors. Vacuum pressure is used to ensure the heptane vapors are being pulled into the condensers properly. Heptane consumption is monitored through a meter on the discharge side, which delivers heptane to the ball mills and attritors in combination with daily readings from the Wheaton leak detection monitoring system gauging the recovery of heptane in the storage tank.

The facility has identified that the recapturing percentage of heptane, i.e. recovery efficiency, has decreased with the time and is implementing the following process improvement to lower the VOC emissions:

- Lowering the milling time which reduces the time heptane is exposed to atmosphere.
- Lowering the slurry temperature would reduce the evaporation rate while the slurry is in the attritors, and is achieved by the regular cleaning of the attritor water jacket.
- Installed new condensers to enhance the capture rate for heptane vapors.
- Installed de-misters to capture any mist pushed through the system and return it to the capture tanks.

Vista has proposed to continue the current practice to demonstrate compliance. The records shall be retained at the site for five years, and will be made available to the Department upon request.

Particulate emissions from mixing room, dryer room, indoor equipment and the processing equipment are controlled by a central Torit 2DF16 fabric collector unit, Model No. 2DF16, rated at 7,100 acfm at ambient temperature. The particulate capture efficiency of the dust collector is greater than 99% per manufacturer. The baghouse has one (1) compartment having sixteen (16) cartridges. Each cartridge is 26-inch long, 12.75-inch in outer diameter, rated @ 1,000 lbs/hr. The non-woven fiber material has cellulose substrate with nylon, thickness 0.022 inch, and weighs 3.4 oz/sq.yd. Fabric permeability (clean) @ ½-inch water- ΔP is 18 cfm/sq.ft. The flushing pressure is 90-100 psig @ 9 SCFM. There are two (2) bags in each lid opening. Cleaning is initiated by the water pressure drop on Photohelic gauge 2" to 4" and is cleaned by a reverse pulse. As stated, the facility removes the captured dust from the Tort filter quarterly. The filters are pulled and brushed down to remove trapped solids, collected in metal cans, and emptied into reclaim pails for recycle. The applicant has elected to conduct stack testing at a frequency of once in every five (5) years.

Emission calculations were carried out by the applicant for fugitive emissions from dryer/mixer and VOC emissions from the heptane use. The emissions are calculated using AP-42 factors Chapter 1.4-1 and 1.4-2 emission factors. The NOx emission from the package boiler is not in consideration since the total emission is less than a ton per year. The VOC emission from

combustion of natural gas in the package boilers is 0.006 tpy as calculated by the applicant. The facility remains a minor source of VOC which includes the VOC emission from boilers. The facility wide potential to emit has been shown below:

VOC = 49.92 tpy
NO_x = 0.11 tpy
CO = 0.09 tpy
PM₁₀ = 0.07 tpy
HAP = 0.000005 tpy

REGULATORY ANALYSIS:

The facility is subject to all standard requirements of a carbide facility. All the applicable requirements of 25 PA Code as well as the appropriate testing, monitoring, recordkeeping and reporting requirements have been included in the operating permit. The facility is not subject to any NESHAP or NSPS requirements. The facility is not a major source of VOC or NO_x and not subject to 25 PA Code Sections 129.91-129.95. The facility still remains a synthetic minor and is not subject to RACT. However, the facility is subject to the fugitive emission regulations of 25 PA Code section 123.1 and 123.2, as well as the malodor regulations of 25 PA Code Section 123.3. The facility is limited to 0.04 gr/dscf of PM emission from the Torit dust collector per 25 Pa Code Section 123.13. All these requirements have already been included in the State Only Operating Permit.

The following changes are made in the proposed operating permit # OP-03-00185:

- Prohibition of air pollution under the provision of 25 Pa Code Section 121.7 has been added to the proposed permit.
- The previously established malfunction conditions are being replaced with the revised malfunction conditions.

RECOMMENDATIONS:

On October 13, 2016, the facility was inspected by the Department's inspector, Scott Wineman, and found that the facility was in full compliance with the operating permit conditions. On November 19, 2016, the "Intent to issue Notice" will be published in the Pennsylvania Bulletin, for 30-day public comments on the proposed permit. A copy of the review memo and the proposed permit shall be sent to the consultant and the Department's District Supervisor for comments. It is recommended that the renewal of State Only Operating Permit (OP-03-00185) for this facility may be issued for five years from the date of issuance.