

**HERAEUS PRECIOUS METALS NORTH  
AMERICA, LLC  
1975 Knoxville Highway  
Wartburg, Tennessee**

**Compliance Assurance Monitoring  
(CAM) Plan**

**Emission Source No. 65-0049-01 & -12**

**Revised September 12, 2022**

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**HERAEUS PRECIOUS METALS NORTH AMERICA, LLC**  
**Wartburg, Tennessee**

**Emission Source 65-0049**

**Responsible Official Certification**

I have reviewed this Compliance Assurance Monitoring (CAM) Plan in its entirety and based on information and belief formed after reasonable inquiry, the statements and information contained in this plan are true, accurate, and complete.

Norbert Ritschel,  
Sr. Vice President and Plant Manager Wartburg Facility

\_\_\_\_\_  
Responsible Official / Title

\_\_\_\_\_  
Signature

9/12/2022

\_\_\_\_\_  
Date

**HERAEUS PRECIOUS METALS NORTH AMERICA, LLC**  
**Compliance Assurance Monitoring (CAM) Plan**  
**Wartburg, Tennessee**

**1.0 Background**

Compliance Assurance Monitoring (CAM) is required for affected sources subject to 40 CFR 64. A CAM plan detailing the applicability and proposed monitoring approach of affected sources is required to be included as part of the 40 CFR 70 (Title V) operating permit process. The Heraeus facility located in Wartburg, Tennessee, is submitting this CAM Plan in conjunction with its previously submitted Title V Operating Permit Application.

The following bullet items identify the applicability requirements for CAM as applied to individual emission units at a facility.

- Emission unit is located at a major source that is required to obtain a Title V permit;
- Emission unit is subject to emission limitation or standard for an applicable pollutant;
- Emission unit uses a control device to achieve compliance with the emission limitation;
- Potential pre-control emissions of applicable pollutants (with limits) from the emission unit are at least 100 percent of major source amount (100 tons per year); and,
- Emission unit is not otherwise exempt and does not use a Continuous Emission Monitor (CEM) for the applicable pollutant.

**2.0 Applicability**

Permitted emission units at the Heraeus facility were evaluated to determine which emission units have specific emission limitations and are equipped with control devices to maintain compliance with the emission limitations. Pre-control potential emissions were estimated for those emission units that were determined to have both an emission limitation and associated control equipment in order to determine if the uncontrolled emissions were greater than 100 percent of the major source amount. Source 01 uses oxidizers to control VOC emissions. VOC pre-control potential emissions were calculated for Source 01 greater than 100 tons per year (tpy) and, therefore, the oxidizers are included in the CAM plan. Source 01 uses a scrubber to control PM emissions, however, the calculated pre-control potential emissions for PM are less than 100 tpy based on a back calculation using the control efficiency and stack test emission rate.

Uncontrolled PM Calculation for the Scrubber

$1.04 \text{ lb/hr (stack test data)} / 0.1 \text{ (control efficiency 90\%)} \times 8,760 \text{ hr/yr} / 2,000 \text{ lb/ton} = 45.6 \text{ tpy PM}$

The material collectors for Sources 04, 06, 09, and 13 were previously included in this plan; however, the collectors are used to collect valuable material that is returned to process. Furthermore, the material collected is valued at approximately 4.5 times the cost of the material collectors. Since the collectors return the material to the process, they are inherent process equipment, are not considered control equipment, and are not included in this CAM plan. A complete listing of the emission sources and CAM applicability calculations has been included with this plan.

Based on the CAM applicability calculations, it was determined that the following emission sources and associated control equipment types must be included in the CAM plan.

**Table 1. Emission Units Subject to CAM Requirements.**

Emission Point Number	TAPCD Source Number	Emission Unit Description	Control Equipment	Applicable Pollutant	Potential Pre-Control Emissions (tpy)	Potential Post Control Emissions (tpy)
S1-1	65-0049-01	(8) Roasting Ovens	Oxidizer 1	VOC	>100	7.17
S1-1	65-0049-01	Chamber Furnace	Oxidizer 2	VOC		
S1-1	65-0049-01	Burning Chamber	Oxidizer 2	VOC		
S12-1	65-0049-12	(2) Tray Furnaces	Afterburner	VOC	>100	12.78

### 3.0 Oxidizers/Afterburner

Heraeus uses two Oxidizers in parallel on Source 01 to control VOCs from the eight (8) tray furnaces, chamber furnace, and Burning Chamber. Oxidizer No. 1 and Oxidizer No. 2 operates at a minimum of 1,400°F as determined by an Emissions Performance Test for Particulates and VOC that was conducted on May 19-20, 2005. At these temperatures, it was determined that the oxidizers were capable of destroying the VOC sufficient to limit the amount of VOC emissions below the 6.5 lb/hr limit.

Source 12 utilizes one afterburner to control VOCs from two (2) tray furnaces. Stack testing was performed on April 17, 2018 to set the minimum temperature for VOC control. Based on the results, TDEC agrees with a minimum operating temperature of 1,400°F.

### 3.1 Monitoring Approach for Oxidizers/Afterburner

The following tables summarize the monitoring approach for the oxidizer control devices associated with the emission units in source 65-0049-01 that are subject to CAM.

<b>I. Indicators</b>	<b>Indicator No. 1</b>	<b>Indicator No. 2</b>
	Combustion Chamber Temperature of the Thermal Oxidizer/Afterburner as a surrogate for VOC destruction.	Regular Inspections of the Oxidizers/Afterburners
Measurement Approach	Continuous monitoring of the combustion chamber temperature of the thermal oxidizer/afterburner	Operators shall conduct a visible inspection of the equipment at least once per eight-hour shift to ensure proper operation of the equipment. Maintenance shall conduct an annual inspection of the burner assembly, blowers, fans, dampers, refractory, fuel lines, and duct work to ensure that all associated equipment is operating properly.
<b>II. Indicator Range</b>	A deviation shall be defined as any three-hour period of operation during which the average value of the measured parameter is less than 1,400°F (-50°F) for the Source 01 Oxidizers and 1,400°F (-50°F) for the Source 12 Afterburner	Equipment shall be maintained in accordance with manufacturer's recommendations
<b>III. Performance Criteria</b>		
A. Data Representativeness	Temperature Transmitter shall be installed in the Oxidizer/Afterburner combustion chamber.	N/A
B. Verification of Operational Status	An audible alarm will sound if the temperature drops below 1400° F for the Oxidizers, and a separate alarm will sound if the temperature falls below 1400° F for the Afterburner or if the system shuts off.	N/A
C. QA/QC Practices and Criteria	Monitoring Equipment shall be installed, calibrated, maintained, and operated in compliance with the manufacturer's written specifications or recommendations. The temperature monitoring equipment shall be equipped with a continuous recorder and have	Operator shall log the visible inspection once per eight-hour shift, indicating any potential problems and corrective actions taken. The log shall be documented in suitable permanent form and kept available for inspection by the TNAPC.

	accuracy within one percent (1%) of the combustion temperature expressed in degrees Fahrenheit (°F) or within 0.5°F, whichever is greater. Thermocouples will be replaced with calibrated units every 6 months.	
D. Monitoring Frequency	Continuous	Manually once per eight-hour shift.
E. Data Availability	Data availability from the continuous monitoring equipment must be maintained at a minimum of 95% for all operating hours to ensure compliance. For example, if the oxidizers/afterburner operated for 4,000 hours in a given reporting period, the minimum number of hourly averages must equal at least 3,800 averages.	Data availability from the visual inspections log entries must be maintained at a minimum of 95% for all shifts where the afterburner was in operation. For example, if the afterburner operated for 4,000 hours or 500 eight hour shifts in a reporting period, the minimum number of inspections should be at least 475 log entries.