



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Air Quality Division

Compliance Assurance Monitoring (CAM) Fact Sheet

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CAM Applicability

Compliance Assurance Monitoring (CAM) is a monitoring program established under Title 40 Code of Federal Regulations Part 64 (40 CFR Part 64). The stationary sources that are required to obtain an ROP may also be required to submit a CAM Plan with either their initial or renewal ROP application. CAM applies to emission units located at major source of air pollutants that are required to obtain an ROP and have an emission unit for which all the following conditions are met:

- The emission unit is subject to an emission limitation or standard for an air pollutant (or surrogate thereof) in an applicable requirement;
- The emission unit uses a control device to achieve compliance with the emission limitation or standard for the applicable pollutant;
- The emission unit has potential pre-control emissions which are over 100 percent of the major source threshold amount (at a level considered to be major under the ROP Program) for the applicable pollutant; and
- The emission limitation or standard does not meet a CAM exemption.

Applicability for CAM must be determined on a pollutant-by-pollutant basis; therefore, all of the above criteria must be satisfied for a particular pollutant for an emission unit to be subject to CAM for that pollutant.

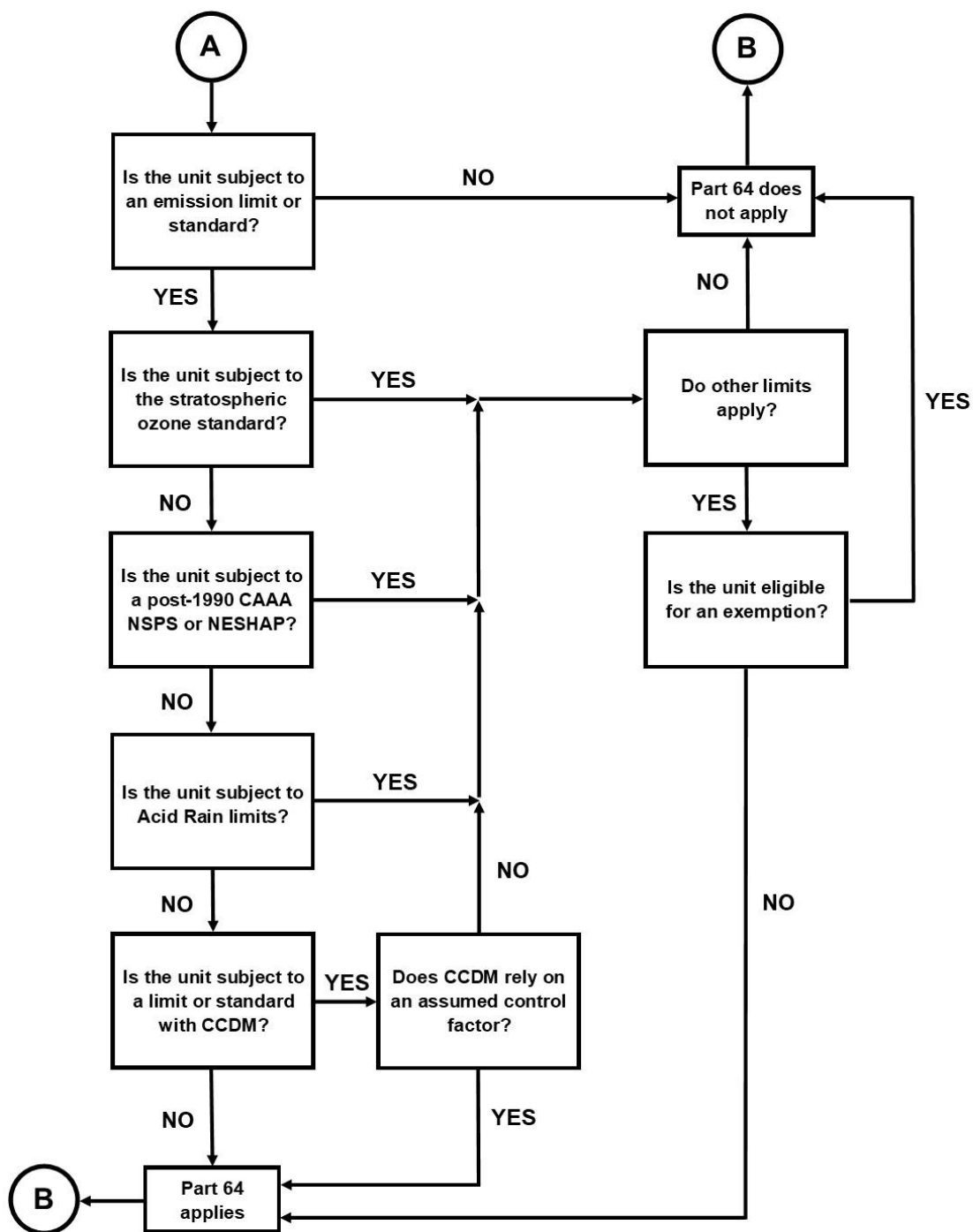
Under the CAM rule, the ***Emission Limitation or Standard*** is defined under 40 CFR 64.1:

Any applicable requirement that constitutes an emission limitation, emission standard, standard of performance, or means of emission limitation as defined under the Act [Clean Air Act]. An emission limitation or standard may be expressed in terms of the pollutant, expressed either as a specific quantity, rate, or concentration of emissions (e.g. pounds of SO₂ per hour, pounds of SO₂ per million British thermal units [MMBTU] of fuel input, kilograms of VOC per liter of applied coating solids, or parts per million by volume of SO₂) or as the relationship of uncontrolled to controlled emissions (e.g. percentage capture and destruction efficiency of VOC or percentage reduction of SO₂).

An emission limitation or standard may also be expressed either as a work practice, process or control device parameter, or other form of specific design, equipment, operational, or operation and maintenance requirement. For purposes of this part, an emission limitation or standard shall not include general operation requirements that an owner or operator may be required to meet, such as requirements to obtain a permit, to operate and maintain sources in accordance with good air pollution control practices, to develop and maintain a malfunction abatement plan, to keep records, submit reports, or conduct monitoring.

Under the CAM rule, ***Applicable requirement*** means all of the following as they apply to emissions units in a part 70 source (including requirements that have been promulgated or approved by the United States Environmental Protection Agency (USEPA) through rulemaking at the time of issuance but have future-effective compliance dates):

1. Any standard or other requirement provided for in the applicable implementation plan approved or promulgated by USEPA through rulemaking under Title I of the Act that implements the relevant requirements of the Act, including any revisions to that plan promulgated in part 52 of this chapter;
2. Any term or condition of any preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under Title I, including parts C or D, or the Act;
3. Any standard or other requirement under Section 112 of the Act, including any requirement concerning accident prevention under Section 111(d);
4. Any standard or other requirement under Section 112 of the Act, including any requirement concerning accident prevention under Section 112(r)(7) of the Act;
5. Any standard or other requirement of the acid rain program under Title IV of the Act or the regulations promulgated thereunder;
6. Any requirements established pursuant to Section 504(b) or Section 114(a)(3) of the Act;
7. Any standard or other requirement under section 126(a)(1) and (c) of the Act;
8. Any standard or other requirement governing solid waste incineration, under Section 129 of the Act;
9. Any standard or other requirement for consumer and commercial products, under Section 183(e) of the Act;
10. Any standard or other requirement for tank vessels under Section 183(f) of the Act;
11. Any standard or other requirement of the program to control air pollution from outer continental shelf sources, under Section 328 of the Act;
12. Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under Title VI of the Act, unless the Administrator has determined that such requirements need not be contained in a Title V permit; and
13. Any national ambient air quality standard or increment or visibility requirement under part C of Title I of the Act, but only as it would apply to temporary sources permitted pursuant to



Note: Process to be followed on a pollutant-by-pollutant basis.

CCDM = continuous compliance determination method

Unit = pollutant-specific emission unit

Figure 1. CAM applicability flow diagram.

CAM Rule Exemptions

The CAM Rule exempts certain emission limitations or standards or emission units pursuant to 40 CFR 64.2(b).

Exempted Emission Units

Backup utility power emission units

Backup utility power emission units may be exempt from CAM. These units are municipally-owned, and the owner or operator provides documentation in an ROP application that they:

- Are exempt from all Acid Rain monitoring requirements (Part 75);
- Are operated only during periods of peak electrical demand or emergency situations;
- Have actual emissions based on the average annual emissions over the last three calendar years of operation less than 50% of the amount in tons per year of major source thresholds and are expected to remain so.

Exempted Emission Limitations or Standards

- Post November 15, 1990 NSPS (40 CFR Part 60), MACT (40 CFR Part 63), or 40 CFR Part 62 regulations promulgated under Section 111 of the Clean Air Act;
- Stratospheric ozone protection requirements (Title VI of Clean Air Act);
- Acid Rain Program requirements (40 CFR Parts 72-75);
- Requirements under an approved emission trading program;
- Emissions cap that meet the requirements of 40 CFR Part 70.4(b)(12);
- Emission limitations or standards for which an ROP requires a continuous compliance determination method that does not use an assumed control factor. In most cases this may be a regulation that requires the installation of a Continuous Emission Monitor System (CEMS).

The exemptions concerning emission limitations or standards are summarized below. For these exemptions it is important to note that only the specific emission limitation or standard is exempted. If other non-exempt emission limitations or standards still apply to the pollutant-specific emissions unit, then those emission limits or standards for that emission unit are not exempt from CAM. For questions concerning this document, please contact the AQD CAM Specialist.

Post-November 15, 1990 NSPS or MACT

This includes New Source Performance Standards (NSPS; 40 CFR Part 60), National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Part 63), and 40 CFR Part 62 regulations promulgated under Section 111 of the Clean Air Act that were proposed after November 15, 1990. Note that this does not include 40 CFR Part 61 NESHAPs which were proposed before November 15, 1990, except for Subpart L, which has been amended.

For NSPS, this includes Subparts Cc, Cb, Eb, Ec, Ce, DDD, RRR, UUU, WWW, XXX, YYY, AAAA, BBBB, CCCC, DDDD, EEEE, FFFF, HHHH, IIII, JJJJ, and KKKK. Regulations proposed after KKKK will meet the post November 15, 1990 criterion.

For NESHAP, (Part 63, also referred to as MACT Standards) this includes completed rules Subparts M, F, G, H, I, K, GG, N, L, O, T, R, X, Hazardous Waste Combustion (Parts 63, 261 and 270), Q, EE, EEEE, EEEEE, EEEEEEE, Y, DD, CC, U, W, JJJ, KK, KKKK, KKKKK, X, II, JJ, XXX, III, IIII, IIIII, YY, YYYY, YYYYY, YYYYYY, DDD, DDDD, DDDDD, DDDDDD, HH, MMM, MMMM, GGG, AA, BB, BBBB, BBBB, BBBB, PPP, PPPP, PPPPP, PPPPP, OOO, OOOO, OOOOOO, LLL, LL, LLLLL, LLLLLL, TTT, VVV, S, RRR, RRRR, RRRRR, RRRRRR, CCC, F, NNN, VVVV, MM, CCCC, HHH, GGGG, GGGGG, GGGGGG, LLLL, CCCCC, CCCCCC, MMMMM, MMMMMM, QQQQ, QQQQQ, QQQQQQ, YY (2nd part), NNNNN, NNNNNN, FFFF, FFFFF, FFFFFF, NNNN, TTTT, TTTTT, SSSS, SSSSS, SSSSSS, AAAA, AAAAA, JJJJ, U, UU, UUU, UUUU, UUUUU, J, JJJJ, QQQ, WWW, WWWWW, WWWWWW, XXXX, XXXXXX, ZZZZ, ZZZZZ, HHHH, HHHHH, and HHHHHH. Regulations proposed after the ones in this list will meet the post November 15, 1990 criterion.

The following example demonstrates how a MACT would apply to emission limitations and standards:

An ROP-subject wood furniture manufacturing facility is subject to Subpart JJ - National Emission Standards for Wood Furniture Manufacturing Operations. A surface coating line controlled by a carbon adsorption system at the facility is subject to CAM (due to annual pre-control potential emissions of VOC over 100 tons). This line is subject to the following emission limits:

- 0.8 lb VHAP/per pound of solids as applied from Subpart JJ;
- 30 lbs. of VOC/hr, 60 tons VOC/yr, and 0.5 lbs. VOC/lb coating solids as applied from a PTI.

The surface coating line is exempt from CAM for the Subpart JJ emission limit. However, CAM still applies to the VOC limits from the PTI.

NSPS or MACT emission standards amended after November 15, 1990 would need to be evaluated to determine if they include monitoring requirements that satisfy CAM. Only one amended emission standard has been identified that meets the requirements of CAM. This is amended 40 CFR Part 61 Subpart L, published in the Federal Register on September 19, 1991. Emission limitations or standards subject to the amended part of this rule are exempt from CAM.

Stratospheric Ozone Protection Requirements

The types of requirements that apply under this program are covered under Title VI of the Clean Air Act and 40 CFR Part 82. These requirements are different than typical emission limitations or standards and monitoring is covered under the above regulations.

Acid Rain Program Requirements

This regulation has requirements for monitoring SO₂, NO_x, CO₂, and opacity. However, to be exempt from CAM, the emission limitation or standard must be in the units specified. For example, NO_x is required to be reported in units of ppm and lb/MMBTU in the Acid Rain regulations. If a CAM-subject emission unit also has other NO_x emission limits in units such as lb/hr, tons per year, or ppm corrected to 15% O₂, these emission limits would still be subject to CAM. In this example, to be subject to CAM, the emission unit would need to have a control device for NO_x, and pre-control NO_x emissions need to be over 100 tons per year.

Emissions Trading

The Rules established under the Cross-State Air Pollution Rule (CSAPR) pursuant to 40 CFR Part 97, Subparts AAAAA, EEEEE, and CCCCC establish an emissions trading program. Thus, an emission limitation or standard for NO_x citing these rules would be exempt from CAM. However, if there are NO_x emission limitations or standards that are non-exempt, CAM still applies.

Emissions Cap

The emissions cap must meet the requirements of 40 CFR 70.4(b)(12). The AQD has adopted this requirement in R 336.1213(9). Currently, there are no examples of an emissions cap. EGLE has not issued a permit with the intent of 40 CFR 70.4(b)(12).

Emission Limitations or Standards for Which an ROP Specifies a Continuous Compliance Determination Method That Does Not Use an Assumed Control Factor

This exemption would apply to a situation where a regulation requires that the ROP include monitoring as a continuous compliance determination method (CCDM). The appropriate emission limit in the ROP would then be exempt from CAM. In most cases there would be a CEMS, although recordkeeping required by a regulation that meets the definition of CCDM may also qualify.

Under the CAM rule, ***Continuous compliance determination method (CCDM)*** is defined under 40 CFR 64.1: CCDM means a method, specified by the applicable standard or an applicable permit condition, which:

1. Is used to determine compliance with an emission limitation or standard on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and
2. provides data either in units of the standard or correlated directly with the compliance limit.

For example, if the CEMS reports data in ppm, a ppm emission limit may be exempt. However, if there is also an emission limit for the pollutant in pounds per hour, that emission limit would not be exempt unless the emission limit can be directly correlated with the CEMS data.

In addition, if an assumed control device emission reduction factor is used in the calculation of emissions, this monitoring does not qualify as CCDM. This is the case, for instance, where it is assumed that a thermal oxidizer destroys 98% of VOC. If 100 pounds of VOC are used in coatings, then it is assumed that 2 pounds of VOC are emitted.

The USEPA's [Technical Guidance Document: Compliance Assurance Monitoring](#) identifies several examples where CCDM would be met. These include:

- NO_x and SO₂ CEMS specified in 40 CFR Part 60, Subparts Da and Db;
- SO₂ CEMS specified in 40 CFR Part 60, Subpart Dc;
- NO_x, SO₂, and CO CEMS specified in 40 CFR Part 60, Subpart Ea;
- SO₂ CEMS specified in 40 CFR Part 60, Subpart J.

See Additional CAM Resources at the end of this document.

An example where a CEMS is not part of the recordkeeping is found in 40 CFR Part 60, Subpart EE (metal furniture coating) for control devices in which the VOC is recovered and measured such as a carbon adsorption system. The following two examples attempt to illustrate this.

Example 1:

The Nexus 6 Company is ROP-subject and manufactures metal furniture. One of the coating lines at the facility has annual potential pre-control emissions of VOC over 100 tons. VOC emissions are controlled by a carbon adsorption system (CA); thus, this emission unit may be subject to CAM. The coating line is subject to the NSPS 40 CFR Part 60, Subpart EE (this is a pre-1990 NSPS and would not qualify for a CAM exemption as mentioned above), which has an emission limit of 0.90 kilogram of VOC per liter of coating solids applied. The company keeps coating records according to the NSPS and uses the equation in the NSPS to calculate the monthly overall reduction efficiency of the CA. This equation is based on mass of VOC recovered each month from the CA. These recordkeeping calculations satisfy the definition of CCDM, thus, the emission limit is exempt from CAM. However, if the emission unit is subject to other VOC emission limits such as pounds per hour not addressed by the recordkeeping in the NSPS, then the emission unit may still be subject to CAM unless they can be directly calculated from the data.

Example 2:

The situation is the same as in Example One, only a thermal oxidizer is used as the control device. In this case, the NSPS allows an initial performance test to determine the reduction efficiency of the incinerator. Once the test is completed the company can use these results each month to determine compliance with the NSPS. The company determined that the destruction efficiency of VOC is 98%. Each month, the 98% destruction efficiency is used as an **assumed control device emission reduction factor**, and thus this method does not meet the exemption.

The difference in the two methods is that in Example 1, the company is determining each month the VOC reduction efficiency by measuring recovered VOC, while in Example 2, the company is using previous data.

An example for this exemption in which a CEMS is used is given below:

A facility has a 120 MMBTU/hr oil-fired boiler with water injection to control nitrogen oxides. The boiler is subject to CAM and is an “other pollutant-specific emission unit” (post-control emissions of nitrogen oxides are less than 100 tons/yr). The facility had submitted a complete initial ROP application in by April 22, 1998. The boiler is subject to 40 CFR Part 60, Subpart Db. In the initial ROP, a CEMS to monitor nitrogen oxides (to express emissions in units of lb NO₂/MMBTU) was specified to meet the requirements of Db. In the renewal ROP, this emission limit is exempt from CAM. However, if the ROP has other nitrogen oxide emission limits in which the monitoring does not meet the CCDM definition, then these are not exempt from CAM.

Additional information on CAM exemptions is available in Chapter 1.2.1.2 and Table 1-2 of the USEPA’s [Technical Guidance Document: Compliance Assurance Monitoring](#). See Additional CAM Resources at the end of this document.

Requirements For CAM Plan Submittals

A CAM Plan is due with an initial ROP application for “large pollutant-specific emission units” (emission units with post-control emissions over 100 percent of the major source thresholds for the specified pollutant). For “other pollutant-specific emission units,” (post-control emissions under 100 percent of the major source thresholds) the CAM Plan is due with the renewal application. However, a source may submit a CAM Plan with the initial application for “other pollutant-specific emission units.” If a significant modification (Rule 216(3)) request is submitted for an ROP, a CAM plan may be required with the modification request (see Table 1).

Table 1: When Are CAM Plans Due?

Type of ROP Application

Pollutant-Specific Emission Unit Size	CAM Plan due as part of initial ROP application?	ROP not issued, CAM Plan due if application modified such as addition of emission unit (EU)?	ROP issued, CAM Plan due if modification request is submitted such as addition of EU?
Large ¹	YES	Yes, if modification equivalent to a significant modification [Rule 216(3)] applies to pollutant-specific emission unit	Yes, if a significant modification [Rule 216(3)] applies to pollutant-specific emission unit
Other ²	No, but due with ROP renewal application	NO	NO

¹ A “large pollutant-specific emission unit” has post-control emissions over 100 percent of the major source thresholds for the specified pollutant.

² An “other pollutant-specific emission unit” has post-control emissions under 100 percent of the major source thresholds

Currently, ROP initial and renewal applications are submitted via MiEnviro Portal. A CAM Plan needs to be submitted with each renewal application submittal. Separate CAM Plans should be submitted for each pollutant-specific emissions unit that is subject to the Rule. A “pollutant specific emission unit” means an emission unit considered separately with respect to each regulated air pollutant. Only one plan is needed if multiple emission units share the same control device or if multiple control devices of similar design and operation share the same emission unit.

The general outline of a CAM Plan is:

- I. Background
- II. Monitoring Approach
 - A. Indicators
 - B. Indicator Range
- III. Performance Criteria
- IV. Justification

The CAM Rule is cited below where appropriate, e.g. 40 CFR 64.4(a). Please note that this is a summary of the CAM Rule requirements and does not necessarily include all CAM Rule requirements. If a source plans to use presumptively acceptable monitoring (PAM) in the CAM Plan, then the CAM Plan will need to specify the monitoring as it appears in the NSPS or MACT (see the PAM section in this document).

The CAM Plan should include the following information in the format as follows:

I. Background

- A. Describe the emission unit (metal office furniture coating line with carbon adsorber, particle board cutting, sanding and routing operation with bag house, etc.)
- B. List permits, applicable regulations, emission limits, and existing monitoring requirements.
- C. Describe the control device (include efficiency, type, flow rate, uncontrolled emission rate, controlled emission rate).
- D. Briefly describe why the emission unit is subject to the CAM Rule. Include pre-control emissions and post-control emissions for the CAM-subject pollutant.

II. Monitoring Approach

- A. Include the control device parameters to be monitored that are indicators of performance for the control system, including the capture system (e.g. pressure drop, opacity, voltage, VOC removal efficiency, scrubber liquid pH, etc.) **(40 CFR 64.3(a)(1))**
- B. Include the appropriate ranges or conditions that have been chosen for the above parameters that reflect the proper operation and maintenance of the control system, including the capture system (e.g. no visible emissions, 1-3 inches H₂O, exhaust temp. above 150 degrees for 6 minutes, voltage less than 30 kV for more than 5 min., etc.) **(40 CFR 64.3(a)(2), (3), 40 CFR 64.4(a)(2))**
- C. Unless directed otherwise by an applicable requirement, include a means to detect any bypass of the control system or capture system to the atmosphere if such bypass can occur. **(40 CFR 64.3(a)(2))**

III. Performance Criteria

- A. If a continuous emission monitor system (CEMS) is required for monitoring, describe the monitor and associated applicable requirements (if the CEMS was installed because of a State Implementation Plan or federal regulation e.g. new source performance standard, MACT standard, acid rain requirements, or 40 CFR Part 266-hazardous waste facility, then compliance with the regulation satisfies this Performance Criteria section. However, indicator ranges may need to be set for a continuous opacity monitor system (COMS)). **(40 CFR 64.3(d), 40 CFR 64.4(a)(4))**

1. For CEMS that satisfy this section, list the method used to determine exceedances, or excursions for a COMS used to assure compliance with a particulate matter standard. **(40 CFR 64.3(d)(3)(i))**
 2. Provide the indicator range for a COMS used to assure compliance with a particulate matter standard. **(40 CFR 64.3(d)(3)(ii))**
- B. For other monitoring systems or CEMS that do not satisfy Performance Criteria in (A.) above, describe the specifications of the monitoring system that ensure that the data obtained are representative of the emissions or parameters being monitored (detector or measurement location, installation specifications, etc.) **(40 CFR 64.3(b)(1))**
- C. If the monitoring equipment is new or modified, provide verification procedures to confirm the operational status of the equipment (consider the manufacturer's recommendations or requirements for installation, calibration, and start-up operation). **(40 CFR 64.3(b)(2))**
- D. Provide quality assurance and control practices for the monitoring equipment. **(40 CFR 64.3(b)(3))**
- E. Provide specifications for the frequency of conducting the monitoring as well as the data collection procedures that will be used. **(40 CFR 64.3(b)(4))**
1. Provide data averaging procedures. **(40 CFR 64.3(b)(4)(i))**
 2. Provide the means by which exceedances or excursions are determined, if applicable. **(40 CFR 64.3(b)(4))**
 3. For large pollutant-specific emission units, four or more data values equally spaced over each hour shall be collected. **(40 CFR 64.3(b)(4)(ii))**
 4. For other pollutant-specific emission units data collection shall be at least once per 24-hour period. **(40 CFR 64.3(b)(4)(iii))**
- F. Quality Improvement Plan (QIP) threshold. As an option, a threshold may be proposed for requiring the submittal of a QIP (for example, 5 visible emission exceedances per quarter, 5 exhaust gas temperature exceedances per month, etc.)

IV. Justification

- A. Provide justification for the proposed monitoring (why indicators and indicator ranges were chosen). This may include data or the appropriateness of existing applicable requirements that establish the monitoring. **(40 CFR 64.4(b))**

- B. If the monitoring differs from the manufacturer's recommendations, provide reasons for the differences. **(40 CFR 64.4(b))**
- C. If presumptively acceptable monitoring is proposed in the CAM Plan that satisfies 40 CFR 64.4(b), identify whether it is from a (1) State Implementation Plan requirement; (2) a required CEMS; (3) acid rain monitoring; (4) monitoring included for standards exempt from CAM such as a post November 15, 1990 NSPS or NESHAP; (5) or monitoring identified in Section 3.4 of the CAM Guidance Section of the ROP Manual. No other justification is needed. **(40 CFR 64.4(b)(1), (2), (3), (4), (5))**
- D. Provide performance test data if available. In addition, if changes to the system have occurred since the last test, provide information that these changes have not affected control system performance. **(40 CFR 64.4(c)(1), (2))**
- E. If performance test data is not available, provide a test plan and schedule. Alternatively, provide data that demonstrates that performance testing is not necessary. **(40 CFR 64.4(d)(1), (2))**
- F. If the proposed monitoring requires testing, installation, or other activities prior to CAM Plan implementation, provide an implementation plan for installation and/or testing. **(40 CFR 64.4(e), 40 CFR 64.6(d))**

Additional information on CAM plan preparation may be obtained from the USEPA's [Technical Guidance Document: Compliance Assurance Monitoring](#). Also see Additional CAM Resources at the end of this document.

Questions concerning the CAM Rule may be directed to the attention of the AQD CAM Specialist.

Example CAM Plan

Fabric Filter (dust collector) for Particulate Matter Control - Camco Industries, Cameron, Michigan. This is an office furniture manufacturer major for VOCs and has included this CAM Plan with the renewal ROP application. The VOCs are uncontrolled. This is an example that all controlled emission units at ROP sources need to be evaluated for CAM, even those that do not emit the pollutant for which the source is classified as a major source. In this case, EU-WOOD is subject to CAM because pre-control emissions of particulate matter are over the major source threshold.

I. BACKGROUND

A. Emission Unit

Description: Particleboard sanders, routers and saws on Line 1 with dust collector.

Identification: EU-WOOD

Facility: Camco Industries
1215 Goodcam Road
Cameron, Michigan 49111

B. Applicable Regulation, Emission Limit, Monitoring Requirements

Permit Number: 160-25 v2.0

Emission Limits:

Particulate Matter: 0.01 lbs. per 1,000 lbs. of exhaust gases, Rule 331(1)(a)

7 tons per year, Rule 331(1)(c)

Opacity: 20%, Rule 301

Monitoring Requirements: Visible emissions, baghouse pressure drop

Potential Pre-Control Emissions: 175 tons of particulate per year

C. Control Technology

Pulse-jet Western Pneumatic baghouse operated under negative pressure which filters approximately 35,000 cubic feet/min of air. Potential pre-control emissions of PM more than 100 tons annually. Efficiency rated at 99.95%. Uncontrolled emissions 40 pounds per hour.

II. MONITORING APPROACH

Monitor	Visible Emissions	Pressure Drop
A. Indicator	Visible emissions (VE) from the baghouse exhaust will be monitored daily during routine maximum operating conditions using a 15-minute VE.	Pressure drop across the baghouse is measured with a differential pressure gauge. It is continuously monitored and manually recorded daily.
B. Indicator Range	An excursion is defined as the presence of visible emissions. Excursions trigger an inspection, corrective action, and a reporting requirement.	An excursion is defined as a pressure drop greater than 5-inch water column (WC) or less than 1-inch WC. Excursions trigger an inspection. Corrective action and a reporting requirement. Readings less than 1-inch WC require a system inspection.
C. QIP Threshold	Five excursions in a 6-month reporting period.	None selected

III. PERFORMANCE CRITERIA

Criteria	Visible Emissions	Pressure Drop
A. Data Representativeness	Measurements are made at the baghouse exhaust.	Pressure taps are located at the baghouse inlet and outlet. The gauge has a minimum accuracy of 0.25-inch WC.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices and Criteria	The observer will be familiar with baghouse operations and visible emission observations.	The pressure gauge is calibrated quarterly. Pressure taps are checked for plugging daily.
D. Monitoring Frequency	A 15-minute VE observation is performed daily.	Pressure drop is monitored continuously.
E. Data Collection Procedure	The VE observation is documented by the observer and recorded daily.	Pressure drop is manually recorded daily. Datum points at 15-minute intervals (4 per hour) are permanently recorded in the computer.
F. Averaging Period	NA	Hourly

IV. Justification

A. Rationale for Selection of Performance Indicators

Visible emissions were selected as a performance indicator because it is indicative of good operation and maintenance of the baghouse. When the baghouse is operating properly, there will not be any visible emissions from the exhaust. Any increase in visible emissions indicates reduced performance of a particulate control device, therefore, the presence of visible emissions is used as a performance indicator.

In general, baghouses are designed to operate at a relatively constant pressure drop. Monitoring pressure drop provides a means of detecting a change in operation that could lead to an increase in emissions. An increase in pressure drop can indicate that the cleaning cycle is not frequent enough, cleaning equipment is damaged, the bags are becoming inefficient, or the airflow has increased. A decrease in pressure drop may indicate broken or loose bags, but this is also indicated by the presence of visible emissions, indicator No. 1. A pressure drop across the baghouse also serves to indicate that there is airflow through the control device.

B. Rationale for Selection of Indicator Ranges

The selected indicator range is the presence or absence of visible emissions. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and reported. An indicator range of the presence or absence of visible emissions was selected because: (1) an increase in visible emissions is indicative of an increase in particulate emissions; and (2) a monitoring technique which does not require a Method 9 certified observer is desired.

The selected QIP threshold for baghouse visible emissions is five excursions in a 6-month reporting period. This level is 3% of the total visible emissions observations. If the QIP threshold is exceeded in a semiannual reporting period, a QIP will be developed and implemented.

(Note: Proposing a QIP threshold in the CAM submittal is not required)

The indicator range chosen for the baghouse pressure drop is less than 5-inch WC. An excursion triggers an inspection, corrective action, and a reporting requirement. The pressure drop is recorded daily. As the pressure drop approaches 5-inch WC, the bags are scheduled for replacement. The bags are typically changed yearly. This indicator is also used to monitor for bypass of the control device. If the pressure drop falls below 1-inch WC during normal process operation, the possibility of bypass is investigated. No QIP threshold has been selected for this indicator.

C. Performance Test

In August 2017, a performance test was performed on the baghouse. This testing was performed under conditions of maximum emissions potential under anticipated operating conditions. The calculated emissions were 0.008 lb of particulate per 1,000 lbs. of exhaust gases. This is well within the permit limit. A copy of the performance test is attached.

During the performance test, Method 9 visible emissions observations were recorded. The baghouse pressure drop was also recorded. This testing confirmed that the chosen indicator range for the pressure drop correlates with compliance with the particulate limit. No visible emissions were observed.

No changes have taken place to the wood working line or equipment that would affect dust capture since the performance test was conducted. In addition, there have been no significant changes to the baghouse.

Presumptively Acceptable Monitoring (PAM)

If an emission unit is subject to a post-November 15, 1990 NSPS (Part 60) or MACT (Part 63) and CAM, then the source may be able use monitoring from the NSPS or MACT in the CAM Plan to satisfy CAM monitoring requirements. In this case, the emission unit would have an emission limit with the underlying applicable requirement (UAR) pursuant to the NSPS or MACT (exempt from CAM) and an emission limit for the same pollutant with a UAR from some other source such as a PTI. The monitoring would need to be specific to the control device.

Here is an example: A coating line with a thermal oxidizer is subject to 40 CFR Part 63, Subpart PPPP for the coating of plastic parts. The organic HAP emission limits from Subpart PPPP are exempt from CAM requirements. However, the emission unit also has a VOC emission limit in the ROP that came from a PTI and is not exempt from CAM requirements. It was determined that potential pre-control emissions of VOC were over 100 tons per year, thus, this emission limit is subject to CAM. Because there is monitoring in Subpart PPPP for a thermal oxidizer, and it will control both HAP and VOC, this monitoring can be used to satisfy CAM (presumptively acceptable monitoring).

The source will need to submit a CAM Plan that has monitoring for the thermal oxidizer to control VOC. The source may use the monitoring requirements in Subpart PPPP for the thermal oxidizer to satisfy CAM in the CAM Plan. The source will need to specify that this is presumptively acceptable monitoring in the CAM Plan. The source will not need to justify this monitoring in the CAM Plan but will just need to indicate that it is from Subpart PPPP. The AQD permit writer will incorporate this monitoring as well as other CAM template language into the ROP. Monitoring language should have UAR's from 40 CFR Part 64 as well as from the NSPS or MACT.

The source does not need to use PAM in the CAM Plan. It may propose other monitoring that satisfies CAM requirements.

PAM, in Summary:

- The source needs to specify PAM in the CAM Plan. It will not be automatically added into the ROP.
- Because CAM still applies to the emission unit, CAM template language and conditions will still be added to the ROP conditions.

Additional CAM Resources

1. CAM Rule, [40 CFR Part 64](#)
2. USEPA's [Technical Guidance Document: Compliance Assurance Monitoring](#).
3. CAM Example Table: for AQD staff who are developing an ROP that needs CAM condition. Available on Share Point in the ROP Manual, or on the [AQD ROP webpage](#). Scroll to the bottom and look under Documents > EGLE CAM.
4. "Incorporating the CAM Plan into an ROP. Available on Share Point in the ROP Manual (3.C.4).
5. Questions concerning the CAM Rule may be directed to the attention of the AQD CAM Specialist: Sebastian Kallumkal, KallumkalS@michigan.gov