

**Texas Commission on Environmental Quality  
Air Permits Division**

**New Source Review (NSR) Boilerplate Special Conditions**

This information is maintained by the Chemical NSR Section and is subject to change. Last update was made **August 2011**. These special conditions represent current NSR boilerplate guidelines and are provided for informational purposes only. The special conditions for any permit or amendment are subject to change through TCEQ case-by-case evaluation procedures [30 TAC 116.111(a)]. Please contact the appropriate Chemical NSR Section management if there are questions related to the boilerplate guidelines.

Carbon Adsorption - All (A), Regenerative (R), Non-regenerative (N)

- (N) (*Identify facilities*) shall vent through a carbon adsorption system (CAS) consisting of at least two activated carbon canisters that are connected in series.
- A. The CAS shall be sampled every (*frequency see note 1*) to determine breakthrough of volatile organic compounds (VOC). The sampling point shall be at the outlet of the initial canister but before the inlet to the second or final polishing canister. Sampling shall be done during (*identify operating conditions reflecting maximum emission venting to the CAS such as during loading, tank filling, process venting*).
- B. The VOC sampling and analysis shall be performed using an instrument with a flame ionization detector (FID), or a TCEQ-approved alternative detector. The instrument/FID must meet all requirements specified in Section 8.1 of EPA Method 21 (40 CFR 60, Appendix A). Sampling and analysis for VOC breakthrough shall be performed as follows:
- (1) Immediately prior to performing sampling, the instrument/FID shall be calibrated with zero and span calibration gas mixtures. Zero gas shall be certified to contain less than 0.1 ppmv total hydrocarbons. Span calibration gas shall be methane (*or the specific compound of interest, see note 2*) at a concentration within 10 percent of (*breakthrough concentration see note 3*) ppmv, and certified by the manufacturer to be 2 percent accurate. Calibration error for the zero and span calibration gas checks must be less than 5 percent of the span calibration gas value before sampling may be conducted.
  - (2) The sampling point shall be at the outlet of the initial canister but before the inlet to the second or final polishing canister. Sample ports or connections must be designed such that air leakage into the sample port does not occur during sampling.

- (3) During sampling, data recording shall not begin until after two times the instrument response time. The VOC concentration shall be monitored for at least 5 minutes, recording 1-minute averages, during (*identify operating conditions reflecting maximum emission venting to the CAS such as during loading, tank filling, process venting*).
- C. Breakthrough shall be defined as the highest 1-minute average measured VOC concentration at or exceeding (*breakthrough concentration*) ppmv. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister within (*input time period less than frequency above*). Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above specified time frame.
  - D. Records of the CAS monitoring maintained at the plant site, shall include, (but are not limited to) the following:
    - (1) Sample time and date.
    - (2) Monitoring results (ppmv).
    - (3) Corrective action taken including the time and date of that action.
    - (4) Process operations occurring at the time of sampling.
  - E. Alternate monitoring or sampling requirements that are equivalent or better may be approved by the TCEQ Regional Manager or the TCEQ Regulatory Compliance Section Manager. Alternate requirements must be approved in writing before they can be used for compliance purposes.

NOTES REFERRED TO IN THE CONDITION ABOVE:

- (1) Frequency of breakthrough sampling and canister replacement should be decided by the permit reviewer on a case-by-case basis, and generally set between 20 and 30 percent of the minimum potential saturation time. For example, if the initial canister has the capacity to adsorb 50 lbs of the compounds emitted and the facility emits at a rate of up to 0.5 lb/hr, then the breakthrough sampling should occur daily and canister replacement occur within 24 hours of the detected breakthrough.
- (2) A specific compound of interest should generally constitute more than 60 percent of the VOC flow at all times and the company should ensure it is available as a certified standard.
- (3) The concentration defined as breakthrough should be established on a case-by-case basis based on the total gas flow rate and the proposed emission rate from the final canister. Generally, that concentration would be between 10 and 100 ppmv.

(R) (*identify facilities - do not use for gasoline terminal, that condition is in gasoline terminal conditions*) shall vent through a carbon adsorption system (CAS) consisting of at least two activated carbon canisters working in parallel such that the vent emissions are alternately controlled by each canister while the other canister is regenerated. The VOC concentration of the CAS exhaust shall be monitored and recorded by a continuous emission monitoring system (CEMS) that is capable of measuring organic compound concentration in the exhaust air stream of the control device.

- A. The CAS shall be sampled and recorded continuously by a CEMS to assure the VOC concentration does not exceed (*maximum allowable concentration*) ppmv. An alarm shall be installed such that an operator is alerted and can take action before the CAS outlet concentration exceeds the maximum allowable concentration.
- B. The CEMS shall meet the design and performance specifications, pass the field tests, meet the installation requirements, and complete the data analysis and reporting requirements specified in Performance Specification 8A, Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60), Appendix B.

The system shall be zeroed and spanned daily when the CAS is in operation, and corrective action taken when the 24-hour calibration drift exceeds two times the amounts specified in Performance Specification 8A. The CEMS shall be considered out-of-control, as defined in 40 CFR 60, Appendix F, Section 4.3.1, if the daily zero or span calibration drift checks exceed two times the allowable drift specified in Performance Specification 8A for five consecutive daily calibration drift checks.

Each monitor shall be quality-assured at least quarterly in accordance with 40 CFR Part 60, Appendix F, Procedure 1. Any failed quarterly audit and CEMS downtime shall be reported to the appropriate TCEQ Regional Manager, and necessary corrective action shall be taken. After any failed quarterly audit, the CEMS shall be considered out-of-control, as defined in 40 CFR 60, Appendix F, Section 5.2, until the successful completion of a corresponding audit following the corrective action.

Quality assured (or valid) data must be generated when the CAS is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the CAS operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

- C. When the CEMS is out of service, proper operation of the CAS shall be ensured through system inspection, evaluation, and operation in accordance with the manufacturer's recommendations, and after 180 days of operation within parameters shown to assure compliance with the maximum concentration

limitation. Operating parameters for the CAS system shall be checked to assure compliance with the manufacturer's recommendations and past compliant practice operating ranges. A canister cycle checklist will be maintained as the CAS record for all periods when the CEMS is out of service.

- D. During any CEMS downtime or out-of-control period exceeding 24 hours, the (*identify facilities*) shall be shut down or the CAS exhaust shall be sampled at a frequency equal to 25 percent of the normal operating time to regeneration. The VOC sampling and analysis shall be performed using an instrument with a flame ionization detector (FID), or a TCEQ-approved alternative detector. The instrument/FID must meet all requirements specified in Section 8.1 of EPA Method 21 (40 CFR 60, Appendix A). Sampling and analysis for VOC concentration shall be performed as follows:
- (1) The instrument/FID shall be calibrated daily with zero and span cylinder calibration gas mixtures. Zero gas shall be certified to contain less than 0.1ppmv total hydrocarbons. Span calibration gas shall be propane at a concentration within 10 percent of (*maximum allowable concentration*) ppmv, and certified by the manufacturer to be 2 percent accurate. Calibration error for the zero and span calibration gas checks must be less than 5 percent of the span calibration gas value before sampling may be conducted.
  - (2) Sample ports or connections must be designed such that air leakage into the sample port does not occur during sampling.
  - (3) During sampling, data recording shall not begin until after two times the instrument response time. The VOC concentration shall be monitored for at least 5 minutes, recording 1-minute averages.
- E. Compliance with the (*maximum allowable concentration*) shall be determined on a 1-minute average basis. While monitoring during CEMS downtime or out-of-control periods, compliance shall be determined by the highest 1-minute average.
- F. Records of the CAS monitoring maintained at the plant site shall include (but are not limited to) the following:
- (1) CEMS monitoring results on a 15-minute average basis, and 1-minute averages for any time periods when maximum allowable concentration is exceeded;
  - (2) CEMS daily calibration and quarterly audit results;
  - (3) Manufacturers recommended operating ranges and actual compliant operating ranges, with the canister cycle checklist to be used during periodic monitoring;

(4) Results of all periodic monitoring conducted during CEMS downtime or out-of-control periods; and

(5) Corrective actions taken (including the time and date of that action);

G. Alternate monitoring or sampling requirements that are equivalent or better may be approved by the TCEQ Regional Manager or the TCEQ Compliance Support Division. Alternate requirements must be approved in writing before they can be used for compliance purposes.

*Note, if actual short-term mass emission rates are critical to assure safe compliant operation of the facility or to assure substantially lower annual emission rates, continuous flow monitoring may be appropriate. Contact the Regulatory Compliance Section for assistance in developing language for a continuous emission rate monitoring system (CERMS).*

(r) Regen. Vacuum     The vacuum pressure during carbon bed regeneration shall exceed 25 inches of mercury for a period of two minutes (*vacuum and time may be specific to system installed*) and shall be monitored by a programmable logic controller. Continuous monitoring and recording of the vacuum level during regeneration shall be performed, and records shall be kept at the plant site. (*use only if compliance problems*)

(a) Carbon build-up     Visual inspection for carbon build up around the stack shall occur once a week. If carbon build up is noticed, it shall be recorded, the CAS shall be shut down, and corrective action shall be taken in accordance with the system maintenance manual.

(r) Maintenance     All personnel involved in maintenance of the CAS shall be trained by the manufacturer in proper maintenance procedures. Certification of such training shall be provided by the manufacturer for each affected individual. A record of certification shall be maintained at the terminal for each affected individual

(r) Maintenance     Maintenance shall be performed on the CAS according to the manufacturer's recommended guidelines. The permit holder shall obtain a yearly certification by the manufacturer or a qualified contractor that the recommended maintenance is being performed.

(n) CEMS     The (*source name*) shall vent through a carbon adsorption system (CAS) consisting of at least two activated carbon canisters that are connected in series.

- A. The CAS shall be sampled and recorded continuously by a continuous emission monitoring system (CEMS) to determine breakthrough of volatile organic compounds (VOC) through the first canister and assure the VOC concentration does not exceed (*maximum allowable concentration*) ppmv from the second or final polishing canister. (*The company may use two systems or time share a single monitor*)
- B. Breakthrough of the first canister shall be defined as the highest 1-minute average measured VOC concentration at or exceeding (*breakthrough concentration*) ppmv. When the condition of breakthrough of VOC from the initial saturation canister occurs, the waste gas flow shall be switched to the second canister and a fresh canister shall be placed as the new final polishing canister within (*input time period less than frequency above*). Sufficient new activated carbon canisters shall be maintained at the site to replace spent carbon canisters such that replacements can be done in the above-specified time frame.
- C. The CEMS shall meet the design and performance specifications, pass the field tests, meet the installation requirements, and complete the data analysis and reporting requirements specified in Performance Specification 8A, Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60), Appendix B.

The system shall be zeroed and spanned daily when the CAS is in operation, and corrective action taken when the 24-hour calibration drift exceeds two times the amounts specified in Performance Specification 8A. The CEMS shall be considered out-of-control, as defined in 40 CFR 60, Appendix F, Section 4.3.1, if the daily zero or span calibration drift checks exceed two times the allowable drift specified in Performance Specification 8A for five consecutive daily calibration drift checks.

Each monitor shall be quality-assured at least quarterly in accordance with 40 CFR Part 60, Appendix F, Procedure 1. Any failed quarterly audit and CEMS downtime shall be reported to the appropriate TCEQ Regional Manager, and necessary corrective action shall be taken. After any failed quarterly audit, the CEMS shall be considered out-of-control, as defined in 40 CFR 60, Appendix F, Section 5.2, until the successful completion of a corresponding audit following the corrective action.

Quality assured (or valid) data must be generated when the CAS is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the operated over the previous rolling 12 month period. The CAS measurements missed shall be estimated using engineering judgment and the methods used recorded.

- D. When the CEMS is out of service, proper operation of the CAS shall be ensured through system inspection, evaluation, and operation in accordance with the manufacturer's recommendations, and after 180 days of operation within parameters shown to assure compliance with the maximum concentration limitation. Operating parameters for the CAS system shall be checked to assure compliance with the manufacturer's recommendations and past compliant practice operating ranges. A canister cycle checklist will be maintained as the CAS record for all periods when the CEMS is out of service.
- E. During any CEMS downtime or out-of-control period exceeding 24 hours, the (*identify facilities*) shall be shut down or the CAS exhaust and vent between the first and second canister shall be sampled at a frequency equal to 25 percent of the normal operating time to canister replacement. The VOC sampling and analysis shall be performed using an instrument with a flame ionization detector (FID), or a TCEQ-approved alternative detector. The instrument/FID must meet all requirements specified in Section 8.1 of EPA Method 21 (40 CFR 60, Appendix A). Sampling and analysis for VOC concentration shall be performed as follows:
- (1) The instrument/FID shall be calibrated daily with zero and span cylinder calibration gas mixtures. Zero gas shall be certified to contain less than 0.1 ppmv total hydrocarbons. Span calibration gas shall be propane at a concentration within 10 percent of the maximum allowable concentration of (*maximum allowable concentration*) ppmv and/or the breakthrough concentration of (*breakthrough concentration*) ppmv, and certified by the manufacturer to be 2 percent accurate. Calibration error for the zero and span calibration gas checks must be less than 5 percent of the span calibration gas value before sampling may be conducted.
  - (2) Sample ports or connections must be designed such that air leakage into the sample port does not occur during sampling.
  - (3) During sampling, data recording shall not begin until after two times the instrument response time. The VOC concentration shall be monitored for at least 5 minutes, recording 1-minute averages.
- F. Compliance with the (*maximum allowable concentration*) shall be determined on a 1-minute average basis. While monitoring during CEMS downtime or out-of-control periods, compliance shall be determined by the highest 1-minute average.
- G. Records of the CAS monitoring maintained at the plant site shall include (but are not limited to) the following:
- (1) CEMS monitoring results on a 15-minute average basis, and 1-minute averages for any time periods when maximum allowable concentration is exceeded;

- (2) CEMS daily calibration and quarterly audit results;
  - (3) Manufacturers recommended operating ranges and actual compliant operating ranges, with the canister cycle checklist to be used during periodic monitoring;
  - (4) Results of all periodic monitoring conducted during CEMS downtime or out-of-control periods; and
  - (5) Corrective actions taken (including the time and date of that action);
- H. Alternate monitoring or sampling requirements that are equivalent or better may be approved by the TCEQ Regional Manager or the TCEQ Regulatory Compliance Section Manager. Alternate requirements must be approved in writing before they can be used for compliance purposes.

*See Notes for (N) and (R) above.*