

Highly Reactive Volatile Organic Compound (HRVOC) Emissions Cap and Trade (HECT) Annual Compliance Reports Supporting Documentation

Overview

The purpose of this document is to provide guidance on the supporting documents needed to verify that the appropriate monitoring and testing protocols, per 30 Texas Administrative Code (TAC) Chapter 115, were used to quantify annual HRVOC emissions. This document is not a compliance substitute for the rule requirements in Chapter 115 and only reflects the documentation used by the Emission Banking and Trading Team to process annual compliance reports. The official version of the Chapter 115 rules is available on the [Secretary of State](#) website.

Notes:

- Emissions for each HECT applicable facility must be quantified using appropriate Chapter 115 monitoring and testing methods. If the required Chapter 115 data is missing or unavailable, you must provide an alternate method, in accordance with [30 TAC §101.396\(c\)](#) as well as a detailed description of the reason the alternate data is being used.
- Data substitution provided for continuous monitoring systems (CMS) downtime should be listed in accordance Chapter 115 procedures and should not be listed as §101.396(c).
- If alternate data is used due to noncompliance with Chapter 115 protocols, an additional 10% quantification penalty will be applied in accordance with 30 TAC §101.396(c)(2) for the period of noncompliance.

Instructions

1. Select the facility type(s) for your site from the options below.
 - [Vent Gas Streams](#)
 - [Flares](#)
 - [Cooling Tower Heat Exchange Systems](#)
2. Look for the appropriate Chapter 115 **monitoring** and **testing protocol** citations for each HECT facility in the provided tables.
3. Once you've found the appropriate citations, review the **Supporting Documentation** list.
4. Attach the applicable documentation to your annual compliance report in the [State of Texas Environmental Electronic Reporting System \(STEERS\)](#). Complete and detailed supporting documentation will facilitate the review of your report.

Vent Gas Streams

Chapter 115 Citation	Description	Supporting Documentation
§115.725(a)	<p>Vent gas streams not controlled by a flare, other than pressure relief valves (PRVs) except those using an applicable option in §115.725(b)(1), (b)(2), or (m):</p> <ul style="list-style-type: none"> Stack test to establish maximum potential HRVOC hourly emission rate expected during any operation not defined as an emissions event or a scheduled maintenance, startup, or shutdown (MSS) activity under §101.1 Continuous monitoring of operational parameters directly affecting HRVOC emissions and, if the vent is controlled, control device efficiency 	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each vent (isomers of butene may be reported collectively) Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN (Including a description of the operational parameters that are continuously monitored) Stack test report summary (not full report) used to establish maximum potential HRVOC emission rate for the vent Approved testing waiver for up to half of any group of vents that are identical in design and operation and that are expected to have identical emissions, if applicable HECT Accredited Laboratory Certification form for laboratory analyses of testing samples occurring after July 1, 2008
§115.725(b)(1)	<p>Vent gas streams that are not controlled by a flare, other than PRVs, monitored with a CEMS:</p> <ul style="list-style-type: none"> Continuous emissions monitoring system (CEMS) to measure HRVOC concentration Continuous monitoring of volumetric flow rate, or continuous parameter monitoring and the use of engineering calculations, manufacturer's data, or testing to correlate the monitored parameter and the volumetric flow rate 	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each vent (isomers of butene may be reported collectively) Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN Brief written description of the calculation methodology should include a statement of which method was used to determine flow rate: Continuous monitoring of volumetric flow rate, or Continuous parameter monitoring and the use of engineering calculations, manufacturer's data, or testing to correlate the monitored parameter and the volumetric flow rate <ul style="list-style-type: none"> HECT CMS certification form for HRVOC concentration

Chapter 115 Citation	Description	Supporting Documentation
§115.725(b)(2)	<p>Analyzer vents, steam system vents, vent gas streams where there is no HRVOC present except during emissions events, or degassing safety devices:</p> <ul style="list-style-type: none"> • Process knowledge, including scientific calculations and other process monitoring data, to determine maximum potential HRVOC emission rate • Continuous monitoring of operational parameters directly affecting HRVOC emissions and control device efficiency (if the vent is controlled) 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each vent (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN
§115.725(c)	<p>PRVs not controlled by a flare:</p> <ul style="list-style-type: none"> • Continuous monitoring system to directly monitor volumetric flow rate, or the use of engineering calculations, manufacturer's information, or actual testing to determine the correlation between the monitored parameter and the percentage the pressure relief valve is open to the volumetric flow rate • Process knowledge, including scientific calculations and other process monitoring data, to determine the hourly HRVOC emission rate • Continuous monitoring system to determine the time and duration and valve position for each pressure relief event 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each vent (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN, including a statement of which method was used to determine flow rate: • Continuous monitoring of volumetric flow rate, or • Continuous parameter monitoring and the use of engineering calculations, manufacturer's data, or testing to correlate the monitored parameter and the volumetric flow rate <ul style="list-style-type: none"> • HECT CMS certification form for PRV monitoring system

Chapter 115 Citation	Description	Supporting Documentation
§115.725(m)	Alternative monitoring or testing methods approved by the executive director for a vent gas stream not controlled by a flare	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each vent (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN • Summary of the alternative monitoring or testing procedure • Copy of TCEQ approval of alternative monitoring or testing procedure

Notes

HRVOC emissions from PRVs are only included for time periods that the PRV is open. HRVOC emissions resulting from the PRV leaking while closed are classified as fugitive emissions subject to Chapter 115, Subchapter H, Division 3, and are excluded from §115.725 and HECT

Flares

Chapter 115 Citation	Description	Supporting Documentation
§115.725(a)-(c)	Flare that receives only gas streams containing <5.0% HRVOC by weight (§115.727(b)(1))	<ul style="list-style-type: none"> • See requirements for vents
§115.725(d)	<p>All flares except those using an applicable option in §115.725(e)-(k):</p> <ul style="list-style-type: none"> • Continuous flow rate monitoring system • Continuous on-line analyzer capable of determining HRVOC concentration 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare • HECT CMS certification form for flow monitoring and concentration monitoring of HRVOCs and other constituents • HECT Accredited Laboratory Certification form for laboratory analyses of samples during monitor downtime (Method 18 for HRVOC) • Copy of TCEQ approval of alternative flow determination method, if applicable
§115.725(e)	<p>Flares used solely for marine or transport vessel loading or unloading operations:</p> <ul style="list-style-type: none"> • Calculate average HRVOC emission rate using the total HRVOC sent to the flare based on loading emission calculations and the speciated composition of the material sent to the flare • Use a calorimeter to continuously measure and record the net heating value of the gas sent to the flare (Btu/scf) 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare • HECT CMS certification form for online calorimeter monitoring

Chapter 115 Citation	Description	Supporting Documentation
§115.725(f)	<p>Flares used solely for scheduled or unscheduled MSS activities operated in HRVOC service ≤ 720 hours for an individual flare and $\leq 1,440$ hours for multiple flares at the site in 12 consecutive months:</p> <ul style="list-style-type: none"> • Calculate flow rate using a continuous monitoring system, or process knowledge and engineering calculations • Calculate total HRVOC sent to the flare using process knowledge or actual measurement (e.g., calorimeter) • Use a calorimeter to continuously measure and record the net heating value of the gas sent to the flare (Btu/scf) 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare, including statement that indicates if flow rate and HRVOC concentration are determined through monitoring/measurement or process knowledge/engineering calculations • HECT CMS certification form for online calorimeter monitoring and flow monitoring, if using a continuous flow rate monitoring system
§115.725(g)	<p>Emergency Flares:</p> <ul style="list-style-type: none"> • Calculate total HRVOC sent to the flare using process knowledge, engineering calculations, or actual measurement (e.g., calorimeter) • Continuous monitoring system for the physical seal or flow monitoring/indicating system that records the time and duration of each event when emissions are sent to the flare 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare • HECT CMS certification form for physical seal or flow indicator monitoring and other monitoring, if using actual measurement to determine HRVOC sent to the flare

Chapter 115 Citation	Description	Supporting Documentation
§115.725(h)	<p>Flares that temporarily receive HRVOC emissions during operations other than MSS or emergency operated in HRVOC service \leq 336 hours for an individual flare and \leq 672 hours for multiple flares at the site in 12 consecutive months:</p> <p>Flow rate determined using either:</p> <ul style="list-style-type: none"> • continuous flow rate monitoring system • process knowledge; • actual measurement; or • maximum one-hour average flow rate from the previous 30 operational days (excluding MSS or emissions events) if receiving HRVOC emissions from flare systems monitored under §115.725(d) <p>HRVOC concentration determined using either:</p> <ul style="list-style-type: none"> • continuous on-line analyzer capable of determining HRVOC concentration; • daily sampling using Method 18; • maximum one-hour average HRVOC concentration from the previous 30 operational days (excluding MSS or emissions events) if receiving HRVOC emissions for less than 72 consecutive hours from flare systems monitored under §115.725(d); or • process knowledge and engineering calculations to calculate total HRVOC concentration if an emissions event occurs while HRVOC emissions are being routed to a flare temporarily 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare, including a description of how the flow rate and HRVOC concentration are determined • HECT Accredited Laboratory Certification form for laboratory analyses of periodic sampling, if that option is used to determine HRVOC concentration • HECT CMS certification form for continuous flow monitoring or HRVOC concentration monitoring, if either of those options are used to determine flow rate or HRVOC concentration

Chapter 115 Citation	Description	Supporting Documentation
§115.725(i)	<p>Flares used for liquid or dual-phase streams:</p> <ul style="list-style-type: none"> Calculate total HRVOC sent to the flare using process knowledge, engineering calculations, or actual measurement (e.g., calorimeter) 	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) Brief written description of the methodology used to determine the reported HRVOC emissions for each flare
§115.725(j)	<p>Flares used in metal alkyl production processes:</p> <ul style="list-style-type: none"> Continuous flow rate monitoring system, or alternative operational parameter monitoring if direct flow monitoring is not possible (with TCEQ approval) Calculate total HRVOC sent to the flare using process knowledge, engineering calculations, or actual measurement (e.g., calorimeter) 	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) Brief written description of the methodology used to determine the reported HRVOC emissions for each flare HECT CMS certification form for continuous flow monitoring or HRVOC concentration monitoring, if either of those options are used to determine flow rate or HRVOC concentration Copy of TCEQ approval of alternative flow monitoring, if continuous flow rate monitoring system is not used

Chapter 115 Citation	Description	Supporting Documentation
§115.725(k)	<p>Flares in multi-purpose service for loading, MSS, or emergency operations:</p> <ul style="list-style-type: none"> • Calculate total HRVOC sent to the flare using process knowledge, engineering calculations, actual measurement (e.g., calorimeter), or loading emission calculations • If service includes MSS activities, continuous flow rate monitoring system or the use of process knowledge and engineering calculations to calculate flow rate • If service includes emergency operations, monitoring system that records the time and duration of each event when emissions are sent to the flare • If service includes emergency operations, continuous monitoring system for the physical seal or flow monitoring/indicating system that records the time and duration of each event when emissions are sent to the flare 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare, including a statement of which method was used to determine flow rate and HRVOC sent to the flare • HECT CMS certification form if using any of the following options: physical seal or flow indicator monitoring, continuous flow rate monitoring system, and/or continuous monitoring of HRVOC concentration
§115.725(m)	<p>Alternative monitoring or testing methods approved by the executive director</p>	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each flare (isomers of butene may be reported collectively) • Brief written description of the methodology used to determine the reported HRVOC emissions for each flare • Summary of the alternative monitoring or testing procedure • Documentation of TCEQ approval of alternate monitoring or testing procedure (Note: there are pre-approved alternatives in §117.725(m)(1)-(3) for net heating value monitoring)

Cooling Tower Heat Exchange Systems

Chapter 115 Citation	Description	Supporting Documentation
§115.764(a)(1)	Cooling tower with a design capacity to circulate \geq 8,000 gallons per minute (gpm) cooling water: <ul style="list-style-type: none"> • Continuous flow rate monitoring 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) • Design capacity circulation rate (gallons per minute) for each cooling tower • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN • HECT CMS certification form
§115.764(a)(2), (4), (5)	Cooling tower with a design capacity to circulate \geq 8,000 gpm cooling water: <ul style="list-style-type: none"> • Continuous total VOC monitoring • Periodic sampling of speciated HRVOC 	<ul style="list-style-type: none"> • HECT CMS certification form • HECT Accredited Laboratory Certification form for laboratory analyses of samples
§115.764(a)(6)	Cooling tower with a design capacity to circulate \geq 8,000 gpm cooling water: <ul style="list-style-type: none"> • Continuous monitoring of total and speciated HRVOC 	<ul style="list-style-type: none"> • HECT CMS certification form
§115.764(b)(1)	Cooling tower with a design capacity to circulate $<$ 8,000 gpm cooling water or in dedicated service to a jacketed reactor: <ul style="list-style-type: none"> • Continuous flow rate monitoring 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) • Design capacity circulation rate (gallons per minute) for each cooling tower • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN • HECT CMS certification form

Chapter 115 Citation	Description	Supporting Documentation
§115.764(b)(2), (4), (5)	Cooling tower with a design capacity to circulate < 8,000 gpm cooling water or in dedicated service to a jacketed reactor: <ul style="list-style-type: none"> • Periodic sampling of total VOC and speciated HRVOC 	<ul style="list-style-type: none"> • HECT Accredited Laboratory Certification form for laboratory analyses of samples
§115.764(b)(6)	Cooling tower with a design capacity to circulate < 8,000 gpm cooling water or in dedicated service to a jacketed reactor: <ul style="list-style-type: none"> • Continuous monitoring of total and speciated HRVOC 	<ul style="list-style-type: none"> • HECT CMS certification form • HECT Accredited Laboratory Certification form for laboratory analyses of samples taken during monitor downtime
§115.764(d)	Cooling tower with less than 5.0% HRVOC in process-side fluid in each exchanger: <ul style="list-style-type: none"> • Periodic sampling of total VOC and total HRVOC 	<ul style="list-style-type: none"> • HECT Accredited Laboratory Certification form for laboratory analyses of samples
§115.764(e)(1)	Cooling tower not using an option in §115.764(a)(1), (b)(1), or (e)(2): <ul style="list-style-type: none"> • Maximum potential cooling water flow rate based on manufacturer's pump performance data assuming no back pressure 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) • Design capacity circulation rate (gallons per minute) for each cooling tower • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN • Certified pump performance information from manufacturer or a qualified independent third-party organization showing maximum potential flow rate

Chapter 115 Citation	Description	Supporting Documentation
§115.764(e)(2)	<p>Cooling tower not using an option in §115.764(a)(1), (b)(1), or (e)(2):</p> <ul style="list-style-type: none"> Calculate cooling water flow rate using: cooling water discharge pressure for each pump; the manufacturer's certified pump performance data; and the number of pumps in operation. 	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) Design capacity circulation rate (gallons per minute) for each cooling tower Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN, including description of the methodology used to determine cooling water flow rate Certified pump performance information from manufacturer or a qualified independent third-party organization
§115.764(f)	<p>Alternative monitoring approved by the executive director</p>	<ul style="list-style-type: none"> Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) Design capacity circulation rate (gallons per minute) for each cooling tower Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN Summary of the alternative monitoring procedure Documentation of TCEQ approval of alternate monitoring or testing procedure

Chapter 115 Citation	Description	Supporting Documentation
§115.764(h)(1)	<p>Cooling with a design capacity to circulate $\geq 8,000$ gpm cooling water and in dedicated service to finite volume system (e.g., propylene refrigeration system):</p> <ul style="list-style-type: none"> • Continuous flow rate monitoring 	<ul style="list-style-type: none"> • Speciated HRVOC emissions (tpy) for each cooling tower (isomers of butene may be reported collectively) • Design capacity circulation rate (gallons per minute) for each cooling tower • Brief written description of the methodology used to determine the reported HRVOC emissions for each EPN • HECT CMS certification form
§115.764(h)(2)-(7)	<p>Cooling with a design capacity to circulate $\geq 8,000$ gpm cooling water and in dedicated service to finite volume system (e.g., propylene refrigeration system):</p> <ul style="list-style-type: none"> • Periodic sampling of total VOC and speciated HRVOC 	<ul style="list-style-type: none"> • HECT Accredited Laboratory Certification form for laboratory analyses of samples