

Revised Ozone Nonattainment Rules for Houston/Galveston Area

History: The December 2000 SIP revision and associated rule changes for the Houston/Galveston (HGA) ozone nonattainment area were challenged in January 2001. Specifically challenged was the 90% NO_x reduction required by the associated rule changes. In May 2001, the commission agreed to conduct a scientific evaluation of ozone formation events and identify mitigation measures.

As a result of this study, TCEQ determined that an equivalent reduction in ozone could be achieved with only an 80% NO_x reduction if HRVOC emissions were reduced. The reduction strategy focuses on three source types: vents/flares, cooling towers/heat exchangers, and fugitives. The new rules define HRVOC to include ethylene and propylene throughout the HGA area. In Harris County, 1,3-butadiene and butenes are also included. The compounds acetaldehyde, ethyltoluene, formaldehyde, isoprene, pentenes, toluene, trimethylbenzene, and xylenes had also been included in the proposed definition of HRVOC but were excluded from the adopted version. The recent findings and associated rule changes were published in the January 3, 2003 Texas Register.

The new rules affected Chapter 101 (for the MECT program), Chapter 115 (for the HRVOC rules), and Chapter 117 (for the NO_x ESAD rule changes). These new rules have an effective date of January 17, 2003, with future compliance dates as noted in the following individual discussions.

TCEQ Chapter 101 Changes

Changes to Chapter 101 were necessary to reorganize Subchapter H, to eliminate redundant language, and address quantification concerns raised by the EPA. But most importantly, the changes to Chapter 101, Subchapter H, Division 3 (Mass Emission Cap and Trade Program) were necessary to address applicability and amend the existing reduction factors required to achieve a total NO_x reduction of 80% (*down from the previously required 90% factor*).

HRVOC Rules

Changes to Chapter 115 were necessary to offset the relaxation of the Chapter 117 NO_x emission specifications. These new rules target HRVOC and were assigned to the new Subchapter H. These new HRVOC rules apply in addition to any existing Chapter 115 rule already applicable.

Division 1: HRVOC Vents: The proposed emission specification (0.6 lb/hr) for flares was deleted and replaced with a site-wide cap for emissions from vents/flares and cooling towers. The limits in the site-wide cap must be demonstrated on the 24-hr rolling average as specified in Table 6-2.1 and 6-2.2 of the December 13, 2002 SIP. Emission reduction credits (ERC) or discrete emission reduction credits (DERC) may not be used to demonstrate compliance. Scheduled startup, shutdown, and maintenance (SSM) events and emission events are exempt from the cap provided that they comply with §101.211 and §101.201 (relating to reporting and recordkeeping).

An air quality account with any flare feed streams that contain ≥ 5 wt% HRVOC or any non-flare vent streams that contain ≥ 100 ppmv HRVOC must meet the site-wide cap. Flare streams that contain ≥ 5 wt% HRVOC must also be monitored with a continuous flow meter and a continuous on-line analyzer.

A quality assurance (QA) plan for the installation, calibration, operation, and maintenance of the monitoring requirements is required by April 30, 2004. Vent testing required to establish actual emissions is required by June 30, 2004. Flare compliance is required by December 31, 2004. Compliance with the new site-wide cap and control requirements are required by April 1, 2006.

Division 2: HRVOC Cooling Towers/Heat Exchangers: The proposed emission specification (8.0 lb/hr) for cooling towers and heat exchangers was deleted and replaced with the site-wide cap. The proposed requirement to report chlorine usage was deleted.

Any account where there is any cooling tower heat exchange system that contains ≥ 5 wt% HRVOC must meet the site-wide cap. All cooling tower heat exchange systems that contain HRVOC must meet the following monitoring requirements:

- If flow rate is $\geq 8,000$ gpm, install a continuous flow meter and a continuous strippable VOC sampling system and speciate the VOC on a monthly basis.
- If flow rate is $< 8,000$ gpm, install a continuous flow meter, sample for strippable VOC twice per week, and speciate the VOC on a monthly basis.

If a leak is detected, the strippable VOC sampling frequency will increase to daily until the leak is repaired. A leak is defined as 50 ppbw (*about 60% of the controlled AP-42 factor*).

Cooling tower heat exchange systems that contain no HRVOC in the process side fluid are still subject to recordkeeping requirements, but are exempt from the rest of Division 2.

A QA program for the installation, calibration, operation, and maintenance of the monitoring requirements under this division is required by April 30, 2004. Demonstration of compliance with the monitoring requirements is required by December 31, 2004. Compliance with the site-wide cap must be achieved by April 1, 2006.

Division 3: HRVOC Fugitives: The new HRVOC rules for fugitives will require more frequent monitoring, reduced repair time, and the inclusion of more source types than the existing Chapter 115 rules for fugitives. These rules will target streams that contain ≥ 5 wt% HRVOC.

The new HRVOC rules for fugitives do not allow a skip-leak program. In addition, quarterly monitoring will be required on certain components not traditionally monitored. These include blind flanges, caps, plugs, connectors, heat exchanger heads, sight glasses, meters, gauges, sampling connections, bolted man-ways, hatches, agitators, covers and seals on wastewater separators, and process drains.

Weekly inspections will be required on all process drains with water seals and monthly inspections for process drains without water seals. Pressure relief valves venting to the atmosphere must be monitored each quarter and 24-hrs after a release.

For all components, a leak is defined as a screening concentration of 500 ppmv above background as methane. Monitored VOC concentrations must be recorded in lieu of notations

such as “not leaking” or “below detection limit”. Compliance with the new rules is required by December 31, 2003

The new rules also require an audit of the fugitive inspection and maintenance program by a third-party organization every two years. The initial audit must be conducted by December 31, 2004.

General VOC Rules

The proposed monitoring requirements for general VOC from flares and cooling towers were withdrawn. Numerous other changes to VOC rules that affect all nonattainment areas (not just HGA) were adopted. Most of the changes were clarifications, such as removing references to past compliance dates.

Other changes included more stringent control and inspection requirements for process drains subject to the industrial wastewater rules in §§115.142 and 115.144. Revised recordkeeping and reporting requirements for fugitive emissions from equipment leaks in Chapter 115 Subchapter D, were also adopted. Compliance with these revised requirements must be achieved by December 31, 2003.

ESAD Factors Relaxed

Changes to Chapter 117 were necessary to relax the emission specifications in order to achieve an 80% reduction in NO_x emissions from industrial sources. Prior to this rule change, the emission specifications were based on achieving a 90% reduction in NO_x emissions. These rule changes mainly target major electric generation facilities (EGF) and major industrial sources.

Some of the ESAD changes are shown in the table below. Note that not all source types were revised by the same factor. Most small sources were unaffected, while some ESAD factors increased by a factor of 10. In addition to the ESAD changes, the commission added some wording to clarify that stack testing and CEMS/PEMS performance evaluations would be required by March 31, 2005 (not necessarily 60 days after the installation of control).

Selected Changes To ESAD Factors

Source	90% Factor (Previous)	80% Factor (New)	Increase Factor
Gas-fired Utility Boilers	0.01 lb/MMBtu	0.02 lb/MMBtu	2.0
Coal or oil-fired Utility Boilers	0.03 lb/MMBtu	0.04 lb/MMBtu	1.3
Large Gas-Fired Boilers	0.01 lb/MMBtu	0.02 lb/MMBtu	2.0
Medium Gas-Fired Boilers	0.015 lb/MMBtu	0.030 lb/MMBtu	2.0
Small Gas-Fired Boilers	0.036 lb/MMBtu	0.036 lb/MMBtu	0.0
Large Gas-Fired Heaters	0.01 lb/MMBtu	0.02 lb/MMBtu	2.0
Medium Gas-Fired Heaters	0.015 lb/MMBtu	0.030 lb/MMBtu	2.0
Small Gas-Fired Heaters	0.036 lb/MMBtu	0.036 lb/MMBtu	0.0
Large Gas-Fired Turbines	0.015 lb/MMBtu	0.032 lb/MMBtu	2.1
Medium Gas-Fired Turbines	0.015 lb/MMBtu	0.15 lb/MMBtu	10.0
Small Gas-Fired Turbines	0.15 lb/MMBtu	0.26 lb/MMBtu	1.7
Duct Burners	0.015 lb/MMBtu	Same As Associated Turbine	1.7 – 10.0