



# TCEQ Interoffice Memorandum

---

**To:** Kathryn Saucedo, Regional Director, Region 10 Beaumont  
Erin Selvera, APWL Coordinator

**From:** Allison Jenkins, MPH   
Darrell McCant, B.S.   
Toxicology Division, Office of the Executive Director

**Date:** October 24, 2014

**Subject:** Health Effects Review of 2013 Ambient Air Network Monitoring Data in Region 10, Beaumont

---

## Conclusions

- Exposure to the reported annual average concentrations for all monitored volatile organic compounds (VOCs) and carbon disulfide (CS<sub>2</sub>) were below their air monitoring comparison values (AMCVs) and would not be expected to cause long-term (chronic) adverse human health or vegetation effects.
- Twenty-four hour concentrations of benzene and 1,3-butadiene were below their 24-hour AMCVs and would not be expected to cause adverse health effects.
- All hourly CS<sub>2</sub> and VOC concentrations gathered from continuous air monitoring sites (CAMS) were below their respective short-term AMCVs (including odor thresholds) and would not be expected to cause adverse human health effects.
- Air Pollutant Watch List (APWL) Site [1003](#) for benzene in Port Arthur, Jefferson County, was proposed for delisting in August 2013, and removed from the [APWL in 2014](#).

## Background

This memorandum conveys the Toxicology Division's (TD's) evaluation of ambient air sampling conducted at a total of 17 monitoring locations in Region 10-Beaumont from January 1 through December 31, 2013. Information about the locations of the monitoring sites, monitored compounds, and hyperlinks to more information on the sites is provided in Table 1.

The TCEQ Monitoring Division or the South East Texas Regional Planning Commission (SETRPC) reported the data for all chemicals evaluated in this memorandum. The TD reviewed TCEQ Monitoring Division air monitoring summary results for up to 46 VOCs from three automated gas chromatograph (autoGC) sites, three VOCs from an SETRPC autoGC site, 84 VOCs from seven TCEQ canister samplers, and 52 VOCs from seven SETRPC canister sampler sites (one of which included a CS<sub>2</sub> *SRI CryosulfurGC*) (see Table 1). All SETRPC and TCEQ monitoring data reviewed met or exceeded TCEQ's 75 percent annual data completeness requirement. Meeting this requirement helps to ensure the representativeness of calculated annual average concentrations. Lists of all target analytes at these monitoring locations are included in Attachment A.

Chemicals were evaluated individually by comparing the reported concentrations to their respective AMCVs. The TD compared the measured hourly concentrations for CS<sub>2</sub> and up to 48 VOCs from the four CAMS (three autoGC monitoring sites and a *SRI CryosulfurGC*) to their respective short-term AMCVs. All concentrations collected from continuous air monitoring stations (CAMS) were evaluated

for their potential to cause acute (short-term) adverse health effects and welfare (odor potential and vegetation effects). In addition, the TD evaluated annual average CS<sub>2</sub> and VOC concentrations to determine their potential to cause chronic (long-term) adverse health and vegetation effects.

VOC data from 24-hour canister samples taken every sixth- or 12<sup>th</sup>-day were also evaluated. These 24-hour air samples are designed to provide representative long-term average concentrations in air. In order to be able to evaluate 24-hour monitoring data more fully, TCEQ has developed 24-hour AMCVs for 1,3-butadiene and benzene. As such, 24-hour samples were compared to the available TCEQ 24-hour AMCVs for these two chemicals. Because short-term or peak concentrations are not necessarily captured by 24-hour samples, daily concentrations have limited use in evaluating the potential for acute health effects. The TD evaluated the reported annual average concentrations from 24-hour samples for each target analyte for potential chronic health and vegetation concerns by comparing annual average chemical concentrations to long-term AMCVs. More information about AMCVs is available online at [TCEQ Air Toxics](#) or by contacting the TD (512-239-1795).

**Table 1 - Region 10 Sites with Air Toxics Monitoring Data Evaluated in this Memorandum**

Site Location	Type of Monitor	EPA Site ID	Network	Monitored Compounds
Beaumont, <a href="#">Downtown</a> 1086 Vermont Avenue <sup>1</sup>	24-hour canister & hourly autoGC	48-245-0009	TCEQ	VOCs
<a href="#">Port Arthur, West</a> 800 El Vista Rd <sup>1</sup>	24-hour, every 6th day canister	48-245-0011	TCEQ	VOCs
Port Neches, <a href="#">Groves</a> 3355 Grandview Avenue & 32nd Street <sup>1</sup>	24-hour, every 6th day canister	48-245-0014	TCEQ	VOCs
<a href="#">Port Neches Avenue L<sup>1</sup></a>	24-hour, every 6th day canister	48-245-0017	TCEQ	VOCs
Port Arthur, <a href="#">Jefferson County Airport</a> 90 <sup>th</sup> Street <sup>1</sup>	24-hour, every 6th day canister	48-245-0018	TCEQ	VOCs
Port Arthur, <a href="#">City Service Center / PA</a> 201 H.O. Mills Blvd <sup>1</sup>	24-hour, every 6th day canister	48-245-0019	TCEQ	VOCs
<a href="#">Port Arthur Memorial School</a> 2200 Jefferson Drive <sup>1</sup>	hourly autoGC	48-245-0021	TCEQ	VOCs
Crosby, <a href="#">Nederland High School</a> Seattle St <sup>1</sup>	hourly autoGC	48-245-1035	TCEQ	VOCs
<a href="#">Beaumont Mary</a> 414 Mary St <sup>1</sup>	24-hour, every 6th day canister	48-245-1050	TCEQ	VOCs
SETRPC – West Orange (30.084, -93.764) <sup>2</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs

Site Location	Type of Monitor	EPA Site ID	Network	Monitored Compounds
Mauriceville (30.195, -93.867) <sup>2</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs
Jefferson County Airport (29.943, -94.001) <sup>1</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs
Beaumont (30.080, -94.094) <sup>1</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs
Port Neches (29.991, -93.953) <sup>1</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs
West Orange (Cove School) (30.071, -93.739) <sup>2</sup>	24-hour, every 12th day canister	--	SETRPC	VOCs
Port Arthur (29.868, -93.951) <sup>1</sup>	24-hour, every 12th day canister); CS <sub>2</sub> *	--	SETRPC	VOCs
Memorial High School (29.923, -93.909) <sup>1</sup>	hourly autoGC	--	SETRPC	VOCs

<sup>1</sup> Jefferson County

<sup>2</sup> Orange County

\*SRI Cryosulfur GCEvaluation

## CS<sub>2</sub>

All hourly and associated annual CS<sub>2</sub> concentrations collected at SETRPC-Port Arthur (CAMS 628) were below their respective short-term and long-term AMCVs and would not be expected to cause adverse effects.

## VOCs

All hourly and annual VOC concentrations gathered from the autoGCs at the Beaumont Downtown, Port Arthur Memorial School, and Nederland High School sites were below their respective short-term and long-term AMCVs (including odor thresholds) and would not be expected to cause adverse effects.

All reported annual average concentrations of VOC's from 24-hour canister samplers were below their respective long-term AMCVs at all sites and were below a level of potential long-term health or vegetation concern. Twenty-four hour concentrations of benzene and 1,3-butadiene were below their 24-hour AMCVs and would not be expected to cause adverse health effects.

## Air Pollutant Watch List (APWL) Areas

There were three active APWL areas ([1001](#), [1002](#), and [1003](#)) in Region 10 in 2013. These areas are discussed in detail in the 2012 annual APWL report<sup>1</sup>. However, because of a multi-year downward

<sup>1</sup> Report on the Air Pollutant Watch List Areas in Texas; Prepared by the Texas Commission on Environmental Quality, February 2012.

trend in benzene concentrations, in August of 2013, the TCEQ proposed the removal of APWL1003 from the APWL and it was formally removed from the [APWL in 2014](#).

Evadale (APWL 1001) has not had any hydrogen sulfide (H<sub>2</sub>S) monitoring since 2008. This area has known potential sources for H<sub>2</sub>S and past levels were in exceedance of the standard.

At Beaumont (APWL 1002) during 2013, sulfur dioxide was not detected above the appropriate comparison levels (i.e., the National Ambient Air Quality Standard (NAAQS) or the 30-minute state standard (30 TAC Rule §112.3)).

If you have any questions regarding the contents of this review, please do not hesitate to contact either Allison Jenkins (512-239-0656) or Darrell McCant (512-239-4477) or via email at [Allison.Jenkins@tceq.texas.gov](mailto:Allison.Jenkins@tceq.texas.gov) or [Darrell.McCant@tceq.texas.gov](mailto:Darrell.McCant@tceq.texas.gov).

cc (via email):

Mr. Ruben Casso – EPA Region 6, Dallas  
Dr. Richard Beauchamp – Department of State Health Services  
Dr. Carrie Bradford – Department of State Health Services

**Attachment A**

**List 1 - Target VOC Analytes in TCEQ Canister Samples**

1,1,2,2-Tetrachloroethane	Bromomethane	Methyl chloroform (1,1,1-Trichloroethane)
1,1,2-Trichloroethane	Carbon tetrachloride	Methylcyclohexane
1,1-Dichloroethane	Chlorobenzene	Methylcyclopentane
1,1-Dichloroethylene	Chloroform	n-Butane
1,2,3-Trimethylbenzene	Chloromethane (Methyl chloride)	n-Decane
1,2,4-Trimethylbenzene	cis-1,3-Dichloropropene	n-Heptane
1,2-Dichloropropane	cis-2-Butene	n-Hexane
1,3,5-Trimethylbenzene	cis-2-Hexene	n-Nonane
1,3-Butadiene	cis-2-Pentene	n-Octane
1-Butene	Cyclohexane	n-Pentane
1-Hexene+2-Methyl-1-pentene	Cyclopentane	n-Propylbenzene
1-Pentene	Cyclopentene	n-Undecane
2,2,4-Trimethylpentane	Dichlorodifluoromethane	o-Ethyltoluene
2,2-Dimethylbutane (Neohexane)	Dichloromethane (Methylene chloride)	o-Xylene
2,3,4-Trimethylpentane	Ethane	p-Diethylbenzene
2,3-Dimethylbutane	Ethylbenzene	p-Ethyltoluene
2,3-Dimethylpentane	Ethylene	Propane
2,4-Dimethylpentane	Ethylene dibromide (1,2-Dibromoethane)	Propylene
2-Chloropentane	Ethylene dichloride (1,2-Dichloroethane)	Styrene
2-Methyl-2-butene	Isobutane	Tetrachloroethylene
2-Methylheptane	Isopentane (2-Methylbutane)	Toluene
2-Methylhexane	Isoprene	trans-1-3-Dichloropropene
2-Methylpentane (Isohexane)	Isopropylbenzene (Cumene)	trans-2-Butene
3-Methyl-1-butene	m-Diethylbenzene	trans-2-Hexene
3-Methylheptane	m-Ethyltoluene	trans-2-Pentene
3-Methylhexane	m/p Xylene	Trichloroethylene
3-Methylpentane		Trichlorofluoromethane
4-Methyl-1-pentene		Vinyl chloride
Acetylene		
Benzene		

**List 2 - Target VOC Analytes in AutoGC**

1-Butene	Benzene	n-Heptane
1-Pentene	c-2-Butene	n-Hexane
1,2,3-Trimethylbenzene	c-2-Pentene	n-Nonane
1,2,4-Trimethylbenzene	Cyclohexane	n-Octane
1,3-Butadiene	Cyclopentane	n-Pentane
1,3,5-Trimethylbenzene	Ethane	n-Propylbenzene
2-Methylheptane	Ethyl benzene	o-Xylene
2-Methylhexane	Ethylene	p-Xylene + m-Xylene
2,2-Dimethylbutane	Isobutane	Propane
2,2,4-Trimethylpentane	Isopentane	Propylene
2,3-Dimethylpentane	Isoprene	Styrene
2,3,4-Trimethylpentane	Isopropyl benzene –	t-2-Butene
2,4-Dimethylpentane	Cumene	t-2-Pentene
3-Methylheptane	Methylcyclohexane	Toluene
3-Methylhexane	Methylcyclopentane	
Acetylene	n-Butane	
	n-Decane	

**List 3 - Target VOC Analytes in SETRPC Canister Samples**

Acetaldehyde	Isopentane
Acetone	Isoprene
Acetonitrile	Methanol
Benzene	Methyl t-Butyl Ether
1,3-Butadiene	Methylcyclohexane
n-Butane	Methylene Chloride
1-Butanol	3-Methylpentane
2-Butanone	Naphalene
Butyl Acrylate	n-Octane
t-Butylbenzene	1-Octene
Carbon Tetrachloride	n-Pentane
Chlorobenzene	1-Pentene
Chloroform	a-pinene
Cumene	b-pinene
Cyclohexane	Propane
n-Decane	Propylene
1,2-Dichloroethane	Styrene
1,1,1-Trichloroethane	Toluene
Ethane	Trichloroethylene
Ethylbenzene	Trichlorofluoromethane
Ethylene	1,2,4-Trimethylbenzene
Hexanal	2,2,4-Trimethylpentane
n-Hexane	Vinyl Acetate
1-Hexene	Vinyl Chloride
Isobutene	o-Xylene
Isohexane	p-xylene + m-xylene