



TCEQ Interoffice Memorandum

To: Kathryn Saucedo, Regional Director, Region 10 Beaumont

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

Date: August 27, 2015

Subject: Health Effects Review of 2014 Ambient Air Network Monitoring Data in Region 10, Beaumont

Conclusions

- All reported annual average concentrations for all monitored volatile organic compounds (VOCs) were below their air monitoring comparison values (AMCVs) and would not be expected to cause long-term (chronic) adverse human health or vegetation effects.
- All hourly VOC concentrations gathered from automated gas chromatograph (autoGC) monitoring sites were below their respective short-term AMCVs (including odor thresholds) and would not be expected to cause adverse human health effects.
- All 24-hour concentrations of benzene and 1,3-butadiene from canister samples were below their 24-hour AMCVs and would not be expected to cause adverse health effects.

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, 2014. 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 46 VOCs from two TCEQ automated gas chromatograph (autoGC) sites, three VOCs (benzene, 1,3-butadiene, and styrene) from an SETRPC autoGC site, 84 VOCs from seven TCEQ canister sampler sites, and 53 VOCs from seven SETRPC canister sampler sites (the SETRPC Port Arthur site also includes an autoGC that analyzes for carbon disulfide) (see Table 1). In addition, carbon disulfide is one of the VOCs analyzed for at all SETRPC canister sites.

The majority of SETRPC and TCEQ monitoring data reviewed met or exceeded TCEQ's 75 percent annual data completeness objective. Meeting this objective helps to ensure the representativeness of calculated annual average concentrations. However, the following did not meet 75% data completeness:

- Acetylene at Beaumont Downtown (5892 1-hour measurements out of a possible 8760 measurements)
- 1,2,3-Trimethylbenzene at Beaumont Downtown (4520 1-hour measurements out of a possible 8760 measurements) and Nederland High School (1774 1-hour measurements out of a possible 8760 measurements)

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. All concentrations collected from TCEQ and SETRPC air monitoring sites 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 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- (TCEQ) or 12th-day (SETRPC) 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 Number	Network	Monitored Compounds
Beaumont Downtown , 1086 Vermont Ave	24-hour every 6th-day canister & hourly autoGC	48-245-0009	TCEQ	VOCs
Port Arthur West 800 El Vista Rd	24-hour, every 6th-day canister	48-245-0011	TCEQ	VOCs
Port Neches, Groves , 3355 Grandview Avenue & 32nd Street	24-hour, every 6th-day canister	48-245-0014	TCEQ	VOCs
Port Neches Avenue L , 605 Avenue L	24-hour, every 6th-day canister	48-245-0017	TCEQ	VOCs
Jefferson County Airport 90 th Street, Port Arthur	24-hour, every 6th-day canister	48-245-0018	TCEQ	VOCs
City Service Center/PA 201 H.O. Mills Blvd, Port Arthur	24-hour, every 6th-day canister	48-245-0019	TCEQ	VOCs
Nederland High School 1800 N. 18 th Street	hourly autoGC	48-245-1035	TCEQ	VOCs
Beaumont Mary 414 Mary St	24-hour, every 6th-day canister	48-245-1050	TCEQ	VOCs
SETRPC West Orange (30.084, -93.764)	24-hour, every 12th-day canister	--	SETRPC	VOCs

Site Location	Type of Monitor	EPA Site Number	Network	Monitored Compounds
SETRPC 42 Mauriceville , Intersection of TX Hwys 62 and 12, Port Arthur	24-hour, every 12th- day canister	48-361-1100	SETRPC	VOCs
SETRPC 43 Jefferson Co Airport (29.943, -94.001)	24-hour, every 12th- day canister	48-245-0102	SETRPC	VOCs
SETRPC Beaumont (30.080, -94.094)	24-hour, every 12th- day canister	--	SETRPC	VOCs
SETRPC Port Neches (29.991, -93.953)	24-hour, every 12th- day canister	--	SETRPC	VOCs
SETRPC Cove School (30.071, -93.739)	24-hour, every 12th- day canister	--	SETRPC	VOCs
SETRPC Port Arthur (29.868, -93.951)	24-hour, every 12th- day canister); AutoGC CS2	48-245-0628	SETRPC	VOCs
Port Arthur Memorial School , 220 Jefferson Dr, Port Arthur (29.923, -93.909) ¹	hourly autoGC	48-245-0021	SETRPC	VOCs

VOCs

All hourly and annual VOC concentrations gathered from the autoGCs at the Beaumont Downtown, Port Arthur Memorial School, Nederland High School, and SETRPC Port Arthur (CS₂) 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.

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 or Darrell.McCant@tceq.texas.gov.

cc (via email):

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

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