

# TCEQ Interoffice Memorandum

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**To:** Jaime Garza, Regional Director

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Toxicology Division, Office of the Executive Director

**Date:** August 12, 2014

**Subject:** Toxicological Review of 2013 Ambient Air Network Monitoring Data in Region 15, Harlingen

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## Conclusions

- All 24-hour average and annual average concentrations of 84 volatile organic compounds (VOCs), 16 polycyclic aromatic hydrocarbons (PAHs), 16 metals measured in particulate matter with an aerodynamic diameter of 2.5 microns or less (PM<sub>2.5</sub>) and two metals measured in total suspended particulate matter (TSP) were below their respective Texas Commission on Environmental Quality (TCEQ) air monitoring comparison values (AMCVs) and would not be expected to cause adverse health effects or vegetation effects.

## Background

Ambient air sampling conducted at three monitoring network sites in Region 1, Harlingen during 2013 was evaluated by the Toxicology Division (TD). Table 1 indicates the location and monitored compounds at three Community Air Toxics Monitoring Network sites in Region 15. Hyperlinks are provided in Table 1 for more detailed information on each monitoring site. The TD reviewed air monitoring summary results for VOCs, PAHs, and speciated metals data from 24-hour TSP and PM<sub>2.5</sub> samples collected every sixth-day. For a complete list of all examined chemicals, please see Lists 1, 2, and 3 in Attachment A.

The TCEQ Monitoring Division reported the data for all chemicals evaluated in this memorandum. All data collected [84 VOCs, 16 PAHs, and 2 metals (TSP)] for the Brownsville and Mission monitoring sites met the data completeness objective of 75 percent data return. The Isla Blanca Park monitoring site was deactivated on June 16, 2013; therefore, the data completeness objective of 75 percent data return for 2013 was not met. To obtain an annual average concentration for measured chemicals at the Isla Blanca Park site, the TD calculated a rolling average of samples from June 2012 to June 2013, to be representative of a calendar year. Twenty-four-hour air samples collected every sixth day for a year are designed to provide representative long-term average concentrations. In order to be able to evaluate 24-hour monitoring data more fully, TCEQ has developed 24-hour AMCVs for specific chemicals. As such, 24-hour samples were compared to the available TCEQ 24-hour AMCVs for 1,3-butadiene and benzene. However, 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. Therefore, 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 measured chemical concentrations to long-term AMCVs or, for lead, to the applicable comparison level. More information about AMCVs is available online at: <http://www.tceq.state.tx.us/implementation/tox/AirToxics.html#amcv>.

**Table 1. Monitoring Sites Located in TCEQ Region 15**

City and Site Location	County	EPA Site ID	Monitored Compounds
<a href="#">Brownsville</a> , 344 Porter Drive	Cameron	48-061-0006	VOCs, PAHs, and Metals (TSP)
<a href="#">Isla Blanca Park</a> , Lot B 69 1/2	Cameron	48-061-2004	Metals (PM <sub>2.5</sub> )
<a href="#">Mission</a> , 2300 North Glasscock	Hidalgo	48-215-0043	VOCs and PAHs

## Evaluation

### VOCs

Of the 84 target VOCs, 20 were detected at the Brownsville site, and 22 were detected at the Mission site. The remaining target analytes were not measured above method detection limits. Concentrations of the compounds that were detected were below their respective long-term air monitoring comparison values (AMCVs), and therefore would not be expected to cause chronic adverse health or vegetation effects.

### Metals (TSP)

Arsenic was not detected in any 24-hour TSP metals samples collected at the Brownsville monitor during 2013. Lead was only detected in two out of 46, 24-hour TSP metals samples and detected levels were below levels of health concern.

### Metals (PM<sub>2.5</sub>)

The 16 PM<sub>2.5</sub> metals at the Isla Blanca Park monitoring site were either not detected or were below levels of health concern.

### PAHs

Of the 16 reported PAHs at the Brownsville and Mission monitoring sites in 2013, all were either not detected or were below their respective long-term AMCVs and would not be expected to cause chronic adverse health effects.

Jaime Garza  
June 15, 2014  
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If you have any questions regarding the contents of this review, please do not hesitate to contact Angela Curry by phone at (512) 239-1306 or via email at [angela.curry@tceq.texas.gov](mailto:angela.curry@tceq.texas.gov) or Sabine Lange by phone at (512) 239-3108 or via email at [sabine.lange@tceq.texas.gov](mailto:sabine.lange@tceq.texas.gov).

## Attachment A

### List 1. Target VOC Analytes in Canister Samples

1,1,2,2-Tetrachloroethane	Acetylene	Trichloroethylene
1,1,2-Trichloroethane	Benzene	Trichlorofluoromethane
1,1-Dichloroethane	Bromomethane	Vinyl Chloride
1,1-Dichloroethylene	Carbon Tetrachloride	cis-1,3-Dichloropropene
1,2,3-Trimethylbenzene	Chlorobenzene	cis-2-Butene
1,2,4-Trimethylbenzene	Chloroform	cis-2-Hexene
1,2-Dichloropropane	Chloromethane	cis-2-Pentene
1,3,5-Trimethylbenzene	Cyclohexane	m-Diethylbenzene
1,3-Butadiene	Cyclopentane	m-Ethyltoluene
1-Butene	Cyclopentene	m/p Xylene
1-Hexene & 2-Methyl-1-Pentene	Dichlorodifluoromethane	n-Butane
1-Pentene	Dichloromethane	n-Decane
2,2,4-Trimethylpentane	Ethane	n-Heptane
2,2-Dimethylbutane	Ethylbenzene	n-Hexane
2,3,4-Trimethylpentane	Ethylene	n-Nonane
2,3-Dimethylbutane	Ethylene Dibromide	n-Octane
2,3-Dimethylpentane	Ethylene Dichloride	n-Pentane
2,4-Dimethylpentane	Isobutane	n-Propylbenzene
2-Chloropentane	Isopentane	n-Undecane
2-Methyl-2-Butene	Isoprene	o-Ethyltoluene
2-Methylheptane	Isopropylbenzene	o-Xylene
2-Methylhexane	Methyl Chloroform	p-Diethylbenzene
2-Methylpentane	Methylcyclohexane	p-Ethyltoluene
3-Methyl-1-Butene	Methylcyclopentane	trans-1,3-Dichloropropene
3-Methylheptane	Propane	trans-2-Butene
3-Methylhexane	Propylene	trans-2-Hexene
3-Methylpentane	Styrene	trans-2-Pentene
4-Methyl-1-Pentene	Tetrachloroethylene	
	Toluene	

### List 2. Target Metal Analytes

Aluminum (PM <sub>2.5</sub> )	Cobalt (PM <sub>2.5</sub> )	Selenium (PM <sub>2.5</sub> )
Antimony (PM <sub>2.5</sub> )	Copper (PM <sub>2.5</sub> )	Tin (PM <sub>2.5</sub> )
Arsenic (PM <sub>2.5</sub> , TSP*)	Lead (PM <sub>2.5</sub> , TSP*)	Vanadium (PM <sub>2.5</sub> )
Barium (PM <sub>2.5</sub> )	Manganese (PM <sub>2.5</sub> )	Zinc (PM <sub>2.5</sub> )
Cadmium (PM <sub>2.5</sub> )	Molybdenum (PM <sub>2.5</sub> )	
Chromium (PM <sub>2.5</sub> )	Nickel (PM <sub>2.5</sub> )	

\*only analytes at the Brownsville monitor in 2013

**List 3. Target PAH Analytes**

Acenaphthene	Benzo (ghi) perylene	Indeno (1,2,3-cd) pyrene
Acenaphthylene	Benzo (k) fluoranthene	Naphthalene
Anthracene	Chrysene	Phenanthrene
Benzo (a) anthracene	Dibenzo (a,h) anthracene	Pyrene
Benzo (a) pyrene	Fluoranthene	
Benzo (b) fluoranthene	Fluorene	