TCEQ Interoffice Memorandum

To: David Ramirez, Regional Director
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From: Shannon Ethridge, M.S. SE.
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Date: February 1, 2011

Subject: Health Effects Review of 2009 Ambient Air Network Monitoring Data in Region 15, Harlingen

Conclusions

- The annual average concentrations of 84 volatile organic compounds (VOCs), 16 polycyclic aromatic hydrocarbons (PAHs), 14 metals measured in particulate matter with an aerodymic diameter of 2.5 microns or less ($PM_{2.5}$) and two metals measured in total suspended particulate matter (TSP) were either not detected or were well below their long-term air monitoring comparison values (AMCVs) and therefore would not be expected to cause chronic adverse health or vegetative effects.

Background

Ambient air sampling conducted at monitoring network sites in Region 15-Harlingen during 2009 was evaluated by the Toxicology Division (TD). Table 1 indicates the location and monitored compounds at four Community Air Toxics Monitoring Network (CATMN) sites in Region 15-Harlingen. 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 $PM_{2.5}$ 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 Field Operations Support Division reported the data for all chemicals evaluated in this memorandum. All data collected (84 VOCs, 16 PAHs, 14 metals ($PM_{2.5}$), 2 metals (TSP)) for the Brownsville, Isla Blanca Park, Mercedes, and Mission monitoring sites met the data completeness objective of 75 percent data return. Air samples collected over a 24-hour period every sixth day are designed to provide representative long-term average concentrations. Therefore, the TD evaluated the reported annual average concentrations for each target analyte for potential chronic health and vegetative concerns by comparing the measured chemical concentrations to their respective long-term AMCVs. 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
Brownsville, 344 Porter Drive	Cameron	48-061-0006	VOCs, PAHs, and Metals (TSP)
Isla Blanca Park, Lot B 69 1/2	Cameron	48-061-2004	Metals ($PM_{2.5}$)
Mercedes, 325 Golf Course Road	Hildago	48-215-1048	VOCs and PAHs
Mission, 2300 North Glasscock	Hidalgo	48-215-0043	VOCs and PAHs

Evaluation

VOCs

Of the 84 target VOCs, 48 were detected at the Brownsville site, 22 were detected at the Mercedes site, and 34 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 well below their respective long-term AMCVs, and therefore would not be expected to cause chronic adverse health or vegetative effects.

Metals (TSP)

The two TSP metals, antimony and arsenic, were not detected in any 24-hour TSP metals sample collected at the Brownsville monitor during 2009.

Metals ($PM_{2.5}$)

The 14 $PM_{2.5}$ metals at the Isla Blanca Park monitoring site were either not detected or were well below their respective long-term AMCVs and would not be expected to cause chronic adverse health effects.

PAHs

Of the 16 reported PAHs at the Brownsville, Mission, and Mercedes monitoring sites for 2009, all were either not detected or were below their respective long-term AMCVs and would not be expected to cause chronic adverse health effects.

If you have any questions regarding the contents of this review, please do not hesitate to contact me at (512) 239-1822 or via email at shannon.ethridge@tceq.texas.gov.

cc (via email):
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Attachment A

List 1. Target VOC Analytes in Canister Samples

1,1,1-Trichloroethane	3-Methylhexane	Methylene Chloride
1,1,2,2-tetrachloroethane	3-Methylpentane	m-Ethyltoluene
1,1,2-Trichloroethane	4-Methyl-1-Pentene	n-Butane
1,1-Dichloroethane	Acetylene	n-Decane
1,1-Dichloroethylene	Benzene	n-Heptane
1,2,3-Trimethylbenzene	Bromomethane	n-Hexane
1,2,4-Trimethylbenzene	c-2-Butene	n-Nonane
1,2-Dibromoethane	c-2-Hexene	n-Octane
1,2-Dichloroethane	c-2-Pentene	n-Pentane
1,2-Dichloropropane	Carbon Tetrachloride	n-Propylbenzene
1,3,5-Trimethylbenzene	Chlorobenzene	n-Undecane
1,3-Butadiene	Chloroform	o-Ethyltoluene
1-Butene	Cis 1,3-dichloropropylene	o-Xylene
1-Hexene & 2-Methyl-1-Pentene	Cyclohexane	p-Diethylbenzene
1-Pentene	Cyclopentane	p-Ethyltoluene
2,2,4-Trimethylpentane	Cyclopentene	Propane
2,2-Dimethylbutane - Neohexane	Dichlorodifluoromethane	Propylene
2,3,4-Trimethylpentane	Ethane	p-Xylene + m-Xylene
2,3-Dimethylbutane	Ethylbenzene	Styrene
2,3-Dimethylpentane	Ethylene	t-2-Butene
2,4-Dimethylpentane	Isobutane	t-2-Hexene
2-Chloropentane	Isopentane	t-2-Pentene
2-Methyl-2-Butene	Isoprene	Tetrachloroethylene
2-Methylheptane	Isopropylbenzene	Toluene
2-Methylhexane	m-Diethylbenzene	trans-1-3-dichloropropylene
2-Methylpentane - Isohexane	Methyl chloride	Trichloroethylene
3-Methyl-1-Butene	Methylcyclohexane	Trichlorofluoromethane
3-Methylheptane	Methylcyclopentane	Vinyl Chloride

List 2. Target Metal Analytes

Aluminum ($PM_{2.5}$)	Chromium ($PM_{2.5}$, TSP)	Nickel ($PM_{2.5}$, TSP)
Antimony ($PM_{2.5}$)	Cobalt ($PM_{2.5}$)	Selenium ($PM_{2.5}$)
Arsenic ($PM_{2.5}$)	Copper ($PM_{2.5}$)	Tin ($PM_{2.5}$)
Barium ($PM_{2.5}$)	Manganese($PM_{2.5}$)	Zinc ($PM_{2.5}$)
Cadmium ($PM_{2.5}$)	Molybdenum ($PM_{2.5}$)	

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	