TCEQ Interoffice Memorandum

To: David Ramirez, Regional Director
Jaime Garza, Air Section Manager
Ramiro Garcia, Border and South Central Texas Area Director

From: Shannon Ethridge, M.S. SE.
Toxicology Division, Chief Engineer's Office

Date: June 24, 2011

Subject: Health Effects Review of 2010 Ambient Air Network Monitoring Data in Region 15, Harlingen

Conclusions

- Exposure to the annual average concentrations of 84 volatile organic compounds (VOCs), 16 polycyclic aromatic hydrocarbons (PAHs), 15 metals measured in particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) and two metals measured in total suspended particulate matter (TSP) would not be expected to cause chronic adverse health or vegetation effects.

Background

Ambient air sampling conducted at four monitoring network sites in Region 15-Harlingen during 2010 was evaluated by the Toxicology Division (TD). Table 1 indicates the location and monitored compounds at the four Community Air Toxics Monitoring Network 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, 15 metals ($PM_{2.5}$), two 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 vegetation concerns by comparing the measured chemical concentrations to their respective long-term air monitoring comparison values (AMCVs) or, for lead, the National Ambient Air Quality Standard.

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, 24 were detected at the Brownsville site, 15 were detected at the Mercedes site, and 18 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 vegetation effects.

Metals (TSP)

Arsenic was not detected in any 24-hour TSP metals sample collected at the Brownsville monitor during 2010. Lead was only detected in two out of 58, 24-hour TSP metals samples and detected levels were below levels of health concern.

Metals ($PM_{2.5}$)

The 15 $PM_{2.5}$ metals at the Isla Blanca Park monitoring site were either not detected or were well below levels of health concern.

PAHs

Of the 16 reported PAHs at the Brownsville, Mission, and Mercedes monitoring sites in 2010, 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

1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethylene
1,2,3-Trimethylbenzene
1,2,4-Trimethylbenzene
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Butadiene
1-Butene
1-Hexene+2-Methyl-1-Pentene
1-Pentene
2,2,4-Trimethylpentane
2,2-Dimethylbutane (Neohexane)
2,3,4-Trimethylpentane
2,3-Dimethylbutane
2,3-Dimethylpentane
2,4-Dimethylpentane
2-Chloropentane
2-Methyl-2-Butene
2-Methylheptane
2-Methylhexane
2-Methylpentane (Isohexane)
3-Methyl-1-Butene
3-Methylheptane
3-Methylhexane
3-Methylpentane
4-Methyl-1-Pentene
Acetylene
Benzene
Bromomethane
Carbon Tetrachloride
Chlorobenzene
Chloroform
Chloromethane (Methyl Chloride)
Cis 1,3-Dichloropropene
Cis-2-Butene
Cis-2-Hexene
Cis-2-Pentene
Cyclohexane
Cyclopentane
Cyclopentene
Dichlorodifluoromethane
Dichloromethane (Methylene Chloride)
Ethane
Ethylbenzene
Ethylene
Ethylene Dibromide (1,2-Dibromoethane)
Ethylene Dichloride (1,2-Dichloroethane)
Isobutane
Isopentane (2-Methylbutane)
Isoprene
Isopropylbenzene (Cumene)
M-Diethylbenzene
M-Ethyltoluene
M/P Xylene
Methyl Chloroform (1,1,1-Trichloroethane)
Methylcyclohexane
Methylcyclopentane
N-Butane
N-Decane
N-Heptane
N-Hexane
N-Nonane
N-Octane
N-Pentane
N-Propylbenzene
N-Undecane
O-Ethyltoluene
O-Xylene
P-Diethylbenzene
P-Ethyltoluene
Propane
Propylene
Styrene
Tetrachloroethylene
Toluene
Trans-1-3-Dichloropropylene
Trans-2-Butene
Trans-2-Hexene
Trans-2-Pentene
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride

List 2. Target Metal Analytes

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

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	