Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: David Ramirez, Director, Region 15
Jaime Garza, Air Section Manager, Region 15
Ramiro Garcia, Border and South Central Texas Area Director

Date: December 28, 2009

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

Subject: Health Effects Review of 2008 Ambient Air Network Monitoring Sites 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 appropriate comparison values 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 2008 was evaluated by the Toxicology Division (TD). Table 1 indicates the location and monitored compounds at five Community Air Toxics Monitoring Network (CATMN) sites in Region 15-Harlingen. Figures 1-5 are street level maps indicating the specific locations of each of the five monitoring sites. 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 Table 2.

Table 1: Monitoring Site Information for TCEQ Region 15

County	City and Site Location	EPA Site ID	Monitored Compounds
Cameron	Brownsville, 344 Porter Drive	48-061-0006	VOCs, PAHs, and Metals (TSP)
	Isla Blanca Park, Lot B 69 1/2	48-061-2004	Metals ($PM_{2.5}$)
	Edinburg, 1902 West Schunior	48-215-0042	VOCs and PAHs
	Mercedes, 325 Golf Course Road (Sampling began October 29, 2008)	48-215-1048	VOCs and PAHs

Hidalgo	Mission, 2300 North Glasscock	48-215-0043	VOCs and PAHs

The TCEQ Monitoring Operations Division reported the data for all chemicals evaluated in this memorandum. The target analyte list of 95 VOCs was changed in the third quarter of 2008. Eleven oxygenated compounds were dropped from the list due to water issues in the laboratory analysis. Therefore, those compounds did not meet the data completeness objective of 75 percent data return, or 45 valid samples per year. Those eleven compounds are identified by an asterisk on the target analyte table (Table 2). All other data collected (84 VOCs, 16 PAHs, 14 metals ($PM_{2.5}$), 2 metals (TSP)) for the Brownsville, Edinburg, Isla Blanca Park, and Mission monitoring sites met the data completeness objective of 75 percent data return. The Mercedes monitor began operating in October 2008, so none of the monitored chemicals met data completeness objectives for the year. 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 appropriate comparison values. Information on the screening values can be obtained by contacting the TD at 512-239-1795.

Evaluation

VOCs

Of the 84 target VOCs that met data completeness objectives, 33 were detected at the Brownsville site, 21 were detected at the Edinburg site, and 38 were detected at the Mission site. The remaining target analytes were not measured above minimum detection limits. Concentrations of the compounds that were detected were well below their respective appropriate comparison values, and therefore would not be expected to cause chronic adverse health or vegetative effects.

PAHs

Of the 16 reported PAHs at the Brownsville, Edinburg, and Mission monitoring sites for 2008, all were either not detected or were well below their respective appropriate comparison values and would not be expected to cause chronic adverse health effects.

TSP Metals

The two TSP metals, antimony and arsenic, were not detected in any 24-hour TSP metals sample collected at the Brownsville monitor during the year 2008.

$PM_{2.5}$ Metals

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

If you have any questions regarding this evaluation, please contact me at 512-239-1822.

cc (via email):

Casso, Ruben- EPA Region 6, Dallas
Prosperie, Susan- Department of State Health Services

Table 2: Target Analyte List

VOCs (CATMN)

1,1,1-Trichloroethane
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-Dibromoethane
1,2-Dichloroethane
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-Butanone *
2-Chloropentane
2-Methyl-2-Butene
2-Methylheptane
2-Methylhexane
2-Methylpentane - Isohexane
2-Methyl-3-Hexanone*
3-Methyl-1-Butene
3-Methylheptane
3-Methylhexane
3-Methylpentane
3-Hexanone*
3-Pentanone*
4-Methyl-1-Pentene
Acetylene
Benzene
Bromomethane
Butyl Acetate*
cis 1,3-Dichloropropylene
Carbon Tetrachloride
Chlorobenzene
Chloroform
Cyclohexane
Cyclopentane
Cyclopentene
Ethane
Ethyl Acetate*
Ethyl Benzene
Ethylene
Isobutane
Isopentane
Isoprene
Isopropylbenzene
Methyl Butyl Ketone (MBK)*
Methyl t-Butyl Ether (MTBE)*
Methylcyclohexane
Methylcyclopentane
Methylene Chloride
Methylisobutylketone*
Propane
Propylene
Styrene
Tetrachloroethylene
Toluene
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride
c-2-Butene
c-2-Hexene
c-2-Pentene
Dichlorodifluoromethane
Isobutyraldehyde*
m-Diethylbenzene
m-Ethyltoluene
Methyl Chloride
n-Butane
n-Decane
n-Heptane
n-Hexane
n-Nonane
n-Octane
n-Pentane
n-Propyl Acetate*
n-Propylbenzene
n-Undecane
o-Ethyltoluene
o-Xylene
p-Diethylbenzene
p-Ethyltoluene
p-Xylene + m-Xylene
t-2-Butene
t-2-Hexene
t-2-Pentene
trans-1-3-Dichloropropylene

PAHs

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

TSP Metals

Antimony
Arsenic

PM 2.5 Metals

Aluminum
Antimony
Arsenic
Barium
Cadmium
Chromium
Cobalt
Copper
Manganese
Molybdenum
Nickel
Selenium
Tin
Zinc

* Chemicals did not meet data completeness objective of 45 valid samples for 2008.

Figure 1. Brownsville Monitoring Site, Cameron County

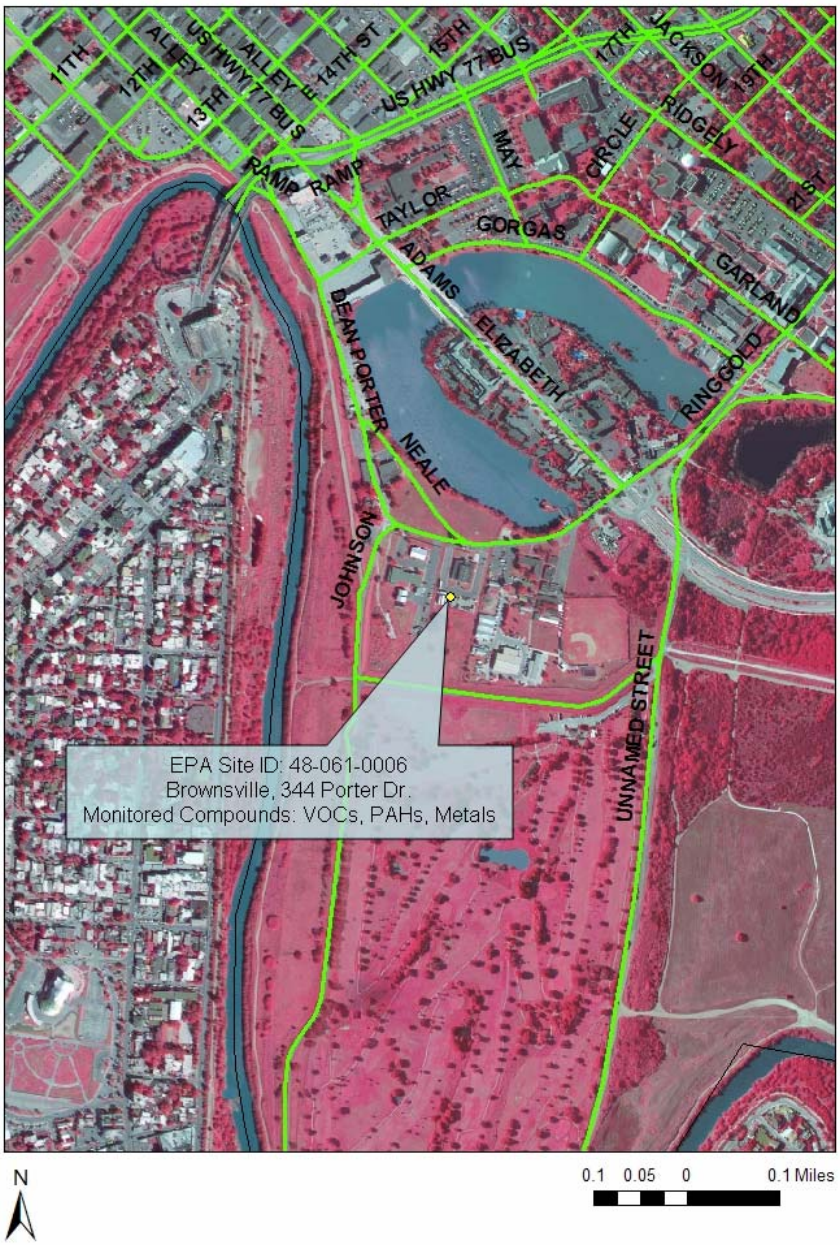

Figure 2. Edinburg Monitoring Site, Hidalgo County

Figure 3. Mission Monitoring Site, Hidalgo County

Figure 4. Isla Blanca Park Monitoring Site, Cameron County

Figure 5. Mercedes Monitoring Site, Hidalgo County