

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Carlos Rubinstein, Director
Lorinda Gardner, Waste/Air Section Manager
TCEQ Region 15–Harlingen

Date: December 5, 2005

From: Bernard J. Kadlubar, Toxicology Section, Chief Engineer’s Office

Subject: Health Effects Review of 2004 Ambient Air Network Monitoring Sites in Region 15–Harlingen

Conclusions

- The annual average concentrations of all 96 VOCs, 16 PAHs, and TSP metals were well below their respective long-term health-based effects screening levels, and would not be expected to cause adverse health effects.

Background

This memorandum conveys the Toxicology Section’s evaluation of ambient air sampling conducted at monitoring network sites in Region 15–Harlingen during the year 2004. Table 1 contains information regarding the three Community Air Toxics Monitoring Network (CATMN) sites in Region 15-Harlingen. We reviewed air monitoring summary results for volatile organic compounds (VOCs) from 24-hour canister samples collected every sixth day, polycyclic aromatic hydrocarbons (PAHs) from 24-hour canister samples collected every sixth day and speciated metals data from 24-hour total suspended particulate (TSP) 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, Metals (TSP)
Hidalgo	Edinburg, 1902 West Schunior	48-215-0042	VOCs and PAHs
	Mission, 2300 North Glasscock	48-215-0043	VOCs and PAHs

The TCEQ Monitoring Operations Division reported the data for all chemicals evaluated. We have evaluated the reported annual average concentrations for each constituent for potential chronic health concerns. It should be noted that 24-hour air samples are designed to provide representative long-term average concentrations, and do not indicate short-term or peak concentrations. Therefore, those data are of limited use for evaluating potential acute health effects or odors.

The measured chemical concentrations were compared to TCEQ health-based Effects Screening Levels (ESLs). An ESL is a guideline concentration which is protective of the general public, including sensitive

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members of the population, such as the elderly, children, and persons with pre-existing health conditions. Health-based ESLs are set well below levels at which adverse health effects have been reported in the scientific literature. If the ambient concentration of a pollutant is below the ESL, we do not expect adverse health effects to occur. Ambient concentrations of a pollutant above the health-based ESL do not mean that exposure will result in adverse effects, but rather, that further evaluation may be warranted. This memorandum evaluates air monitoring data on a chemical-by-chemical basis. TCEQ's objective for data completeness is 75 percent data return, or 45 valid samples per year. All data collected for VOCs, PAHs, and TSP metals met the data completeness objective except for 1,1-dichloroethane and 3-heptanone.

Evaluation

VOCs

The annual average concentrations of all 96 reported VOCs at the noted monitoring sites (see Table 1) for the year 2004 were either less than their respective method detection limits or their annual (long-term) health-based ESLs, and therefore do not present a health concern.

PAHs

The annual average concentrations for all 16 reported PAHs at the noted monitoring sites (see Table 1) for the year 2004 were either less than their respective method detection limit or their annual (long-term) health-based ESLs and do not present a health concern.

TSP Metals

The annual average concentrations for antimony and arsenic reported from the 24-hour TSP metal samples collected at 344 Porter Drive in Brownsville during the year 2004 were less than their respective annual (long-term) health-based ESLs. Therefore no adverse health effects would be expected.

If you have any questions regarding this evaluation, please do not hesitate to contact me at (512)-239-1075.

cc (via email): Casso, Reuben

Table 2: VOCs, PAHs, and TSP Metals

CATMN VOC		PAH
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 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 Butyraldehyde cis 1,3-Dichloropropylene Carbon Tetrachloride Chlorobenzene Chloroform Chloroprene Cyclohexane Cyclopentane Cyclopentene Ethane Ethyl Acetate	Ethyl Benzene Ethylene Isobutane Isopentane Isoprene Isopropylbenzene Methyl Butyl Ketone (MBK) Methyl t-Butyl ether Methylcyclohexane Methylcyclopentane Methylene Chloride Methylisobutylketone Propane Propylene Styrene Tetrachloroethylene Perchloroethylene 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	Acenaphthene Acenaphthylene Anthracene Benzo (a) anthracene Benzo (a) pyrene Benzo (b) fluoroanthene 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 Lead *

* - Lead is a criteria pollutant with a corresponding National Ambient Air Quality Standard (NAAQS) and was not evaluated in this memorandum.

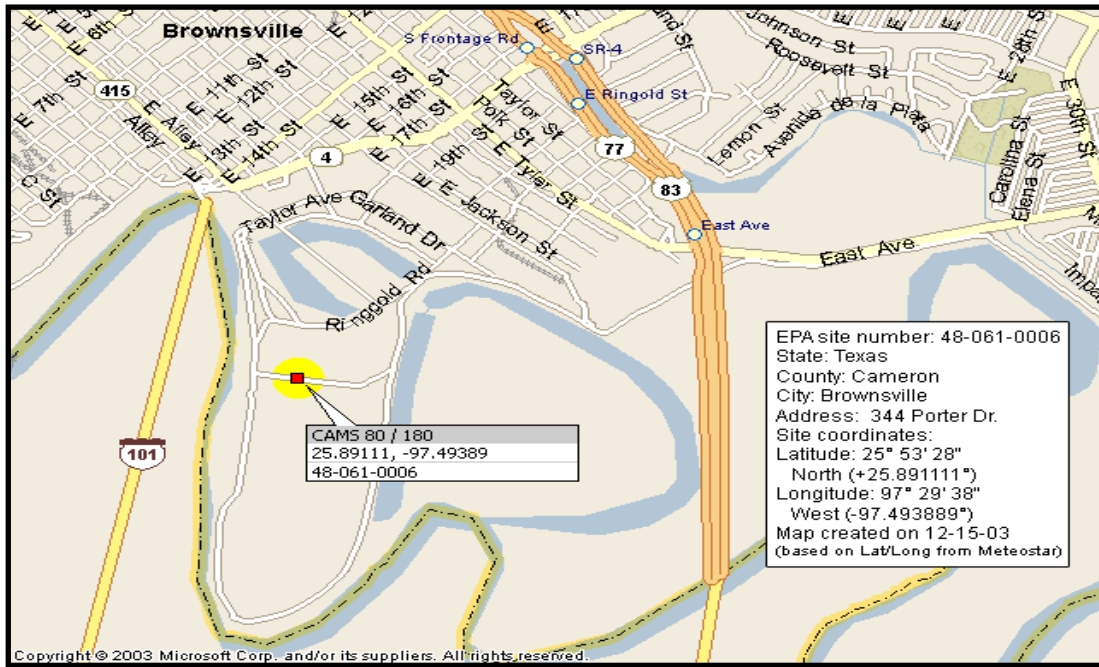


Figure 1: Location of VOC, PAH, and TSP Metals Monitoring

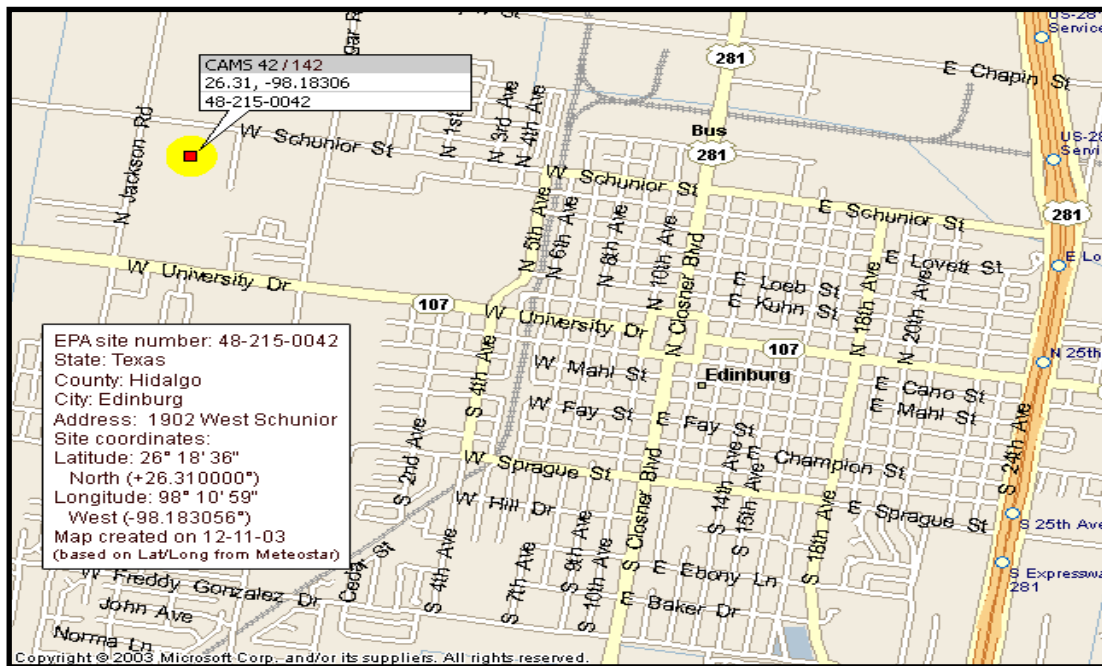


Figure 2: Location of VOC and PAH Monitoring

