TCEQ Interoffice Memorandum

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Date: February 23, 2011

Subject: Health Effects Review of 2009 Ambient Air Network Monitoring Data in Region 5, Tyler

Conclusions

- Exposure to monitored levels of volatile organic compounds (VOCs), carbonyls, or arsenic and chromium from particulate matter less than 10 microns in diameter (PM_{10}), at the Karnack monitoring location would not be expected to cause chronic adverse health or vegetative effects.

- Exposure to monitored levels of VOCs at the Community Air Toxics Monitoring Network (CATMN) site, (Longview monitoring location) in Region 5 would not be expected to cause chronic adverse health or vegetative effects.

Background

This memorandum conveys the Toxicology Division's evaluation of ambient air sampling conducted at two monitoring network sites in Region 5–Tyler during 2009. Summary results for 24-hour VOCs and carbonyls collected every sixth day and two speciated metals, arsenic and chromium, from 24-hour PM_{10} filter samples collected every sixth day from a site located at Highway 143 and Spur 449 in Karnack, Texas, as well as 24-hour VOCs collected every sixth day from a site located at Gregg County Airport in Longview, Texas, were evaluated on a chemical-by-chemical basis. Information about the Region 5 monitoring sites is presented in Table 1, along with hyperlinks to the monitoring site maps and more detailed information. Complete lists of all chemicals evaluated are provided in Attachment A.

Table 1. Monitoring Sites Located in TCEQ Region 5

City and Site Location	County	Monitor ID	Monitored Compounds
Longview, Gregg County Airport	Gregg	481830001	VOCs
Karnack Highway 143 and Spur 149	Harrison	482030002	VOCs, carbonyls, and metals (PM_{10})

The Texas Commission on Environmental Quality (TCEQ) Field Operations Support Division reported data for all chemicals evaluated in this memorandum. The data return for the Karnack monitor met completeness requirements for estimating annual average concentrations for all VOCs, carbonyls, and the two speciated metals, chromium and arsenic. The data return for the Longview monitor met completeness requirements for estimating annual average concentrations for all VOCs. For all VOCs, carbonyls, and two speciated metals, chromium and arsenic that met completeness requirements, annual average concentrations were compared to their respective long-term Air Monitoring Comparison Values (AMCVs). Because 24-hour air samples are designed to provide representative long-term average concentrations, annual averages from 24-hour samples were evaluated for potential chronic health concerns. Short-term or peak concentrations are not captured by 24-hour samples; therefore, daily maximum concentrations have limited use in evaluating the potential for acute health effects. More information about AMCVs is available online at: http://www.tceq.state.tx.us/implementation/tox/AirToxics.html#amcv.

Evaluation

Karnack, Highway 143 and Spur 449 Site

All reported annual average concentrations of the 85 VOCs and the two speciated metals, chromium and arsenic, monitored at the Karnack site were below their AMCVs and would not be expected to cause long-term adverse health effects. All reported annual average concentrations of the 17 carbonyls monitored at the Karnack site were below their AMCVs and would not be expected to cause adverse long-term health effects.

Longview, Gregg County Airport Site

All annual average concentrations of 84 VOCs monitored at the Longview site were below their AMCVs and would not be expected to cause adverse health effects.

If you have any questions about this evaluation, please call me at (512) 239-4477 or e-mail me at darrell.mccant@tceq.state.tx.us.

cc (via email):

Casso, Ruben- EPA Region 6, Dallas

Prosperie, Susan- Department of State Health Services

Attachment A

List 1. Target VOC Analytes in Canister Samples

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

List 2. Target Carbonyl Analytes

2,5-Dimethylbenzaldehyde	Formaldehyde	o-Tolualdehyde
Acetaldehyde	Heptaldehyde	p-Tolualdehyde
Acetone	Hexanaldehyde	Propanal-Propionaldehyde
Acrolein **	Isovaleraldehyde	Valeraldehyde
Benzaldehyde	Methyl Ethyl Ketone	
Butyraldehyde	(MEK)/methacrolein	
Crotonaldehyde-2-Butenal	m-Tolualdehyde	

List 3. Target Metal (PM_{10}) Analytes

Arsenic (PM_{10})	Chromium (PM_{10})	

** At the Karnack monitor, acrolein was a target analyte in both VOC (CATMN) and carbonyl sample analyses. At the Longview monitor, acrolein was a target analyte in VOC (CATMN) sample analyses only.