TCEQ Interoffice Memorandum

To: Jamie Garza, Regional Director

From: Ross Jones, Ph.D.
Toxicology Division, Office of the Executive Director

Date: October 22, 2014

Subject: Toxicological Evaluation of 2013 Ambient Air Network Monitoring Data in Region 16, Laredo

Conclusions

- Reported 24-hour concentrations of VOCs and metals would not be expected to cause short-term health effects, vegetation damage, or nuisance odors.

- Reported annual concentrations of VOCs and metals would not be expected to cause long-term adverse human health or vegetation effects.

Background

This memorandum conveys the Toxicology Division's (TD) evaluation of ambient air sampling conducted at two monitoring sites in Region 16-Laredo during 2013. TCEQ Region 16 monitoring site information is presented in Table 1 along with hyperlinks to detailed information regarding the monitoring sites and their maps. Lists 1-2, which can be found in Attachment A, display the target analytes for monitoring sites. The TD reviewed air monitoring summary results from VOC canister samples collected on a 24-hour every sixth day schedule at Community Air Toxics Monitoring Network (CATMN) monitors and 24-hour metals samples (TSP- metals).

The TCEQ Monitoring Division reported the data for all chemicals evaluated in this memorandum. Data discussed in this evaluation for the Laredo Bridge monitoring site (84 VOCs from canister samples) met the data completeness objective of 75 percent data return or at least 45 valid samples per year. Thus, annual average concentrations of VOCs (collected via canister sample), were compared to their respective long-term AMCVs. Twenty-four-hour air samples collected every third or sixth day for a year are designed to provide representative long-term average concentrations. In order to be able to evaluate 24-hour monitoring data more fully, TCEQ has developed 24-hour Air Monitoring Comparison Values (AMCVs) for specific chemicals. As such, 24-hour samples were compared to the available TCEQ 24-hour AMCVs (1,3-butadiene, benzene, and formaldehyde). The TD evaluated the reported annual average concentrations from 24-hour samples for each target analyte for potential chronic health and vegetation concerns by comparing measured chemical concentrations to long-term AMCVs. Additional information regarding the derivation and application of AMCVs is available online at: http://www.tceq.state.tx.us/toxicology/AirToxics.html#amcv.

Table 1. Monitoring Sites Located in TCEQ Region 16

City and Site Location	County	Monitor ID	Monitored Compounds
700 Zargosa Street (Laredo Bridge)	Webb	48-479-0017	VOCs[a]
2020 Vidaurri Avenue (Laredo Vidaurri)	Webb	48-141-0044	Metals[b]

[a] 24-hour canister
[b] TSP (lead and arsenic)

Evaluation

VOCs

The 2013 annual average concentrations for all 84 VOCs collected as 24-hour canister samples at the Laredo Bridge monitoring site were well below their respective short- and long-term AMCVs. Thus, adverse human health or vegetation effects would not be expected to occur as a result of short- or long-term exposure to the reported levels of these chemicals at this monitoring site.

Metals

Concentrations of lead and arsenic (TSP) were below their respective AMCVs. Reported concentrations for two metals (TSP) measured at the Laredo Vidaurri monitoring site ranged from non-detect to 0.00278 µg/m^3 for arsenic and from 0.00192 to 0.0168 µg/m^3 for lead. The 2013 annual average concentrations for these metals ($PM_{2.5}$) were well below their respective AMCVs. Therefore, adverse health or vegetative effects would not be expected to occur as a result of long-term exposure to the reported levels of these metals at the Laredo Vidaurri Avenue monitoring site.

If you have any questions or comments regarding this evaluation, please feel free to contact me at (512) 239-1804 or ross.jones@tceq.texas.gov.

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

Arsenic (TSP)
Lead (TSP)