

TCEQ Interoffice Memorandum

To: David Van Soest, Regional Director

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

Date: August 25, 2014

Subject: Health Effects Review of 2013 Ambient Air Network Monitoring Data in Region 11, Austin

Conclusion

- Exposure to the 24-hour concentrations and annual averages of the 84 reported volatile organic compounds (VOCs) and 15 metals reported as particulate matter less than 2.5 microns in diameter (PM_{2.5}) for Region 11 – Austin were below their respective AMCVs and would not be expected to cause adverse health or vegetation effects.

Background

This memorandum conveys the Toxicology Division's (TD's) evaluation of ambient air sampling conducted at two monitoring sites in Region 11 – Austin during 2013. The TD evaluated summary results for VOCs collected at the Austin Webberville Road site, which is a 24-hour, every sixth-day Community Air Toxics Monitoring Network (CATMN) site. Summary results for metals (PM_{2.5}) were evaluated from the Austin Audubon Society site. Data are only available at this site for the first and second quarter as the speciated PM_{2.5} sampler located at this site was deactivated on May 31, 2013. TCEQ Region 11 monitoring site information is presented in Table 1 along with hyperlinks to the monitoring site maps and detailed information. Lists 1 and 2, in Attachment A, give the target analytes for both monitoring sites.

Table 1. Monitoring Sites Located in TCEQ Region 11

City and Site Location	County	Monitor ID	Monitored Compounds
Austin, Webberville Road , 2600 B Webberville Rd	Travis	48-453-0021	VOCs
Austin, Audubon Society^a , 12200 Lime Creek Rd	Travis	48-453-0020	PM _{2.5} Metals

^a PM_{2.5} metals were deactivated at this monitoring site on May 31, 2013, after eight years of collecting data that showed no levels of concern.

The TCEQ Monitoring Division reported the data for all chemicals evaluated in this memorandum. The data collected for the 84 VOCs at the Austin Webberville Road monitoring site met the data completeness objective of 75 percent data return, or at least 45 valid samples per year. Since the PM_{2.5} metals monitor was deactivated at the Austin Audubon monitoring site at the end of May, data at this site did not meet the data completeness objective of 75 percent data return. Therefore, in order to evaluate this data, a rolling average was calculated using the third and fourth quarter data from 2012.

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 AMCVs for specific chemicals. As such, 24-hour samples were compared to the available TCEQ 24-hour AMCVs (1,3-butadiene and benzene). However, because short-term or peak concentrations are not necessarily captured by 24-hour samples, daily concentrations have limited use in evaluating the potential for acute health effects. Therefore, 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 their respective long-term AMCVs. More information about AMCVs is available online at:

<http://www.tceq.state.tx.us/implementation/tox/AirToxics.html#amcv>.

Evaluation

VOCs

Of the 84 reported VOCs, 32 VOCs were detected above the method detection limit (MDL), which is the sample concentration that can be detected above zero and with a 99% confidence. The 2013 annual average concentrations for all VOCs were well below their respective long-term AMCVs. All 24-hour concentrations were also below their respective 24-hour comparison values. Therefore, adverse health effects would not be expected to occur as a result of short- or long-term exposure to the reported levels of these chemicals at the Austin Webberville Road monitoring site.

Metals

During the period of January 1 to May 31 metals were monitored at this site. Of the 15 reported PM_{2.5} metals, 14 metals (PM_{2.5}) were detected above the MDL. In order to review an annual average for this data, a rolling average was calculated using the last two quarters of data from 2012. The rolling annual average concentrations for all metals (PM_{2.5}) were well below their respective AMCVs. Therefore, adverse health effects would not be expected to occur as a result of long-term exposure to the reported levels of these chemicals at the Austin Audubon Society monitoring site.

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

List 2. Target Metal (PM_{2.5}) Analytes

Aluminum (PM _{2.5})	Chromium (PM _{2.5})	Molybdenum (PM _{2.5})
Antimony (PM _{2.5})	Cobalt (PM _{2.5})	Nickel (PM _{2.5})
Arsenic (PM _{2.5})	Copper (PM _{2.5})	Selenium (PM _{2.5})
Barium (PM _{2.5})	Lead (PM _{2.5})	Tin (PM _{2.5})
Cadmium (PM _{2.5})	Manganese (PM _{2.5})	Zinc (PM _{2.5})