

TCEQ Interoffice Memorandum

To: Joel Anderson, Regional Director, R13
From: Angela Curry, M.S. *AC*
Toxicology, Risk Assessment, and Research Division, Office of the Executive Director
Date: May 24, 2021
Subject: Toxicological Evaluation of 2017-2019 Ambient Air Network Monitoring Data in Region 13, San Antonio

Conclusions

- All hourly, annual, and three-year average concentrations of autoGC VOCs were below their respective short-term and long-term Texas Commission on Environmental Quality (TCEQ) Air Monitoring Comparison Values (AMCVs) and would not be expected to cause acute or chronic adverse health effects, vegetation effects, or odor concerns.
- All 24-hour, annual, and three-year average concentrations of VOCs from canister samples were below their respective short-term and long-term AMCVs and would not be expected to cause adverse health effects, vegetation effects, or odor concerns.
- All reported 30-minute average concentrations of hydrogen sulfide (H₂S) were below the value of the 30-minute state standard for residential areas.

Background

The Toxicology, Risk Assessment, and Research Division (TD) reviewed ambient air sampling data collected in 2017, 2018, and 2019 at three autoGC sites (Floresville Hospital Boulevard, Karnes County Courthouse, and Camp Bullis) and at one canister site (Old Highway 90) in Region 13, San Antonio. The monitoring summary results are from 1-hour and 24-hour VOC samples collected continuously (autoGC) and every sixth-day (canister), respectively. TCEQ Region 13 monitoring site information is presented in Table 1 along with hyperlinks to detailed information regarding the monitoring sites and their maps. The list of 46 autoGC and 84 target VOC analytes can be found in Attachment A.

The TCEQ Monitoring Division reported data for all VOCs evaluated in this memorandum. All data collected at TCEQ monitors are analyzed by the TCEQ laboratory and should meet a 75% data completeness objective. One-hour autoGC VOC and 30-minute H₂S data were evaluated for potential acute health (e.g., irritation), odor, and vegetation concerns, as were any 24-hour sample results (e.g., VOCs) that exceeded short-term air monitoring comparison values (AMCVs). Twenty four- hour air samples collected every sixth-day on a yearly basis 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,

2,2-dimethylbutane, 2,3-dimethylbutane, 2-methylpentane, 3-methylpentane, benzene, ethylene dibromide, ethylene dichloride, and n-hexane).

However, because short-term or peak concentrations may be significantly different than 24-hour sample concentrations, daily concentrations have limited use in evaluating the potential for more acute health effects, unlike the shorter-term data reviewed herein (e.g., 1-hour autoGC data, 30-minute H₂S data). The TD evaluated the reported annual average concentrations from 1-hour autoGC and 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 on the Toxicology [AMCV](https://www.tceq.texas.gov/toxicology/amcv/about) webpage (<https://www.tceq.texas.gov/toxicology/amcv/about>) or by contacting the TD (512-239-3900). Exceedance of an AMCV does not necessarily mean that adverse effects would be expected, but rather that further evaluation is required.

Table 1. Monitoring Sites Located in TCEQ Region 13

Site Name and Location	County	EPA Site ID	Monitored Compounds
Old Highway 90 911 Old Hwy 90 West	Bexar	48-029-0677	VOCs (24-h Canister)
Floresville Hospital Boulevard 1404 Hospital Blvd	Wilson	48-493-1038	VOCs (1-h autoGC)
Camp Bullis F Range (1000Yd marker off Wilderness Trail) Near Wilderness Rd	Bexar	48-029-0052	VOCs (1-h autoGC)
Karnes County Courthouse^a 210 W. Calvert Avenue	Karnes	48-255-1070	VOCs (1-h autoGC), H ₂ S

^aH₂S monitor activated July, 2017

Evaluation

Short-Term Data

All hourly average concentrations of 46 VOCs reported at the Floresville Hospital Boulevard, Karnes County Courthouse, and Camp Bullis monitoring sites, and 84 24-hour VOC concentrations reported at the Old Highway 90 monitoring site were either not detected or below their respective short-term AMCVs. Therefore, acute adverse health effects, odorous conditions, or vegetation effects would not be expected to occur as a result of exposure to the reported levels of VOCs at these monitoring sites.

Long-Term Data

The annual and three-year average concentrations of 46 VOCs evaluated at the Floresville Hospital Boulevard, Karnes County Courthouse, and Camp Bullis monitoring sites, and 84 VOCs

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reported at the Old Highway 90 monitoring site were below their respective long-term AMCVs. Exposure to the reported annual average concentrations would not be expected to cause chronic adverse health or vegetation effects.

H₂S

All reported 30-minute average concentrations of H₂S measured at the Karnes County Courthouse monitoring site were below the value of the 30-minute state residential standard of 80 ppb.

If you have any questions about this evaluation, please contact me at (512) 239-1306 or angela.curry@tceq.texas.gov.

Attachment A

List 1. Target VOC Analytes in Canister Samples

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

List 2. Target VOC Analytes in AutoGC Samples

1-Butene	Benzene	n-Heptane
1-Pentene	c-2-Butene	n-Hexane
1,2,3-Trimethylbenzene	c-2-Pentene	n-Nonane
1,2,4-Trimethylbenzene	Cyclohexane	n-Octane
1,3-Butadiene	Cyclopentane	n-Pentane
1,3,5-Trimethylbenzene	Ethane	n-Propylbenzene
2-Methyl-2-Butene	Ethyl Benzene	n-Undecane
2-Methylheptane	Ethylene	o-Xylene
2-Methylhexane	Isobutane	p-Xylene + m-Xylene
2,2-Dimethylbutane	Isopentane	Propane
2,2,4-Trimethylpentane	Isoprene	Propylene
2,3-Dimethylpentane	Isopropyl Benzene	Styrene
2,3,4-Trimethylpentane	(Cumene)	t-2-Butene
2,4-Dimethylpentane	Methylcyclohexane	t-2-Pentene
3-Methylheptane	Methylcyclopentane	Toluene
3-Methylhexane	n-Butane	
Acetylene	n-Decane	