TCEQ Interoffice Memorandum

To: Ryan Slocum, Regional Director, R6

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Toxicology, Risk Assessment, and Research Division, Office of the Executive Director

Date: January 29, 2026

Subject: Health Effects Review of 2024 Ambient Air Network Monitoring Data in Region 6, El Paso

Conclusions

- Reported 1-hour concentrations of volatile organic compounds (VOCs) were below their respective short-term air monitoring comparison values (AMCVs) and would not be expected to cause adverse acute health effects, vegetation effects, or odors.
- Reported 24-hour concentrations of VOCs and metals were below their respective 24-hour AMCVs and would not be expected to cause adverse health or welfare effects.
- Reported annual average concentrations of VOCs and speciated metals, particulate matter less than or equal to 2.5 microns in aerodynamic diameter reported as $PM_{2.5}$, were below their respective AMCVs and would not be expected to cause long-term adverse human health or vegetation effects.
- In 2024, the reported 30-minute concentrations of hydrogen sulfide (H_2S) were above the numerical value of the 30-minute state H_2S regulatory standard for residential areas (i.e., 80 parts per billion (ppb)) 627 times. It is our understanding that the primary source of H_2S is a wastewater treatment plant located in Ciudad Juarez, which is a city in Chihuahua, Mexico. These data indicate that H_2S levels at the El Paso Lower Valley monitor could have been odorous at times. However, the measured levels do not represent an immediate threat to human health or wellness as the lowest concentration that has shown H_2S-specific health effects in people (mild respiratory effects in 2 out of 10 asthmatic individuals exposed for 30-minutes) is 2,000 ppb.

Background

This memorandum conveys the Toxicology, Risk Assessment, and Research Division's (TD) evaluation of ambient air sampling data collected at four monitoring sites in Region 6, El Paso, during 2024. TCEQ Region 6 monitoring site information is presented in Table 1 along with hyperlinks to detailed information regarding the monitoring sites and their maps. List 1-3 which can be found in Attachment A, contain the target analytes for the monitoring sites. The TD reviewed air monitoring summary results from 1-hour automated gas chromatography (autoGC) VOC samples, 24-hour VOC canister samples collected on an every sixth-day schedule, 24-hour metals sampled on every sixth-day cycle, and 30-minute hydrogen sulfide (H_2S) samples.

The TCEQ Monitoring Division reported the data for all chemicals evaluated in this memorandum. Data discussed in this evaluation for all monitoring sites include the following: 84 VOCs from canister samples, 46 VOCs from autoGC, 15 metals, and H_2S. For evaluation of the annual average, data must meet a 75 percent data completeness over the one-year evaluation period, and all reported data met this requirement.

Short-term samples collected over a 1- or 24-hour duration were compared to their respective chemical-specific AMCVs for the potential to adversely affect human health or welfare during an acute exposure duration. Because short-term or peak concentrations may be significantly different than 24-hour sample concentrations, daily (24-hour) concentrations have limited use in evaluating the potential for more acute (e.g., 30-60 minute) health effects, unlike the shorter-term data reviewed herein (e.g., 1-hour autoGC data, 30-minute H_2S data). In order to be able to evaluate 24-hour monitoring data more fully, TCEQ has developed 24-hour AMCVs for the following:

- 1,3-butadiene
- 2,2-dimethylbutane
- 2,3-dimethylbutane
- 2-methylpentane
- 3-methylpentane
- aluminum
- arsenic
- benzene
- cadmium
- carbon tetrachloride
- chromium
- cobalt
- ethylene dibromide
- ethylene dichloride
- manganese
- nickel
- vanadium
- n-hexane

As such, 24-hour samples were compared to the available TCEQ 24-hour AMCVs.

Since 24-hour samples collected using every sixth-day schedules are designed to provide a representative long-term, ambient concentration for chemicals of concern, annual averages from all 24-hour samples were evaluated using appropriate long-term AMCVs for the potential to adversely impact long-term human health and vegetation effects. Thus, annual average concentrations of metals and VOCs (collected via canister samples) were compared to their respective long-term AMCVs. Annual average concentrations of VOCs collected via autoGC were also compared to their respective long-term AMCV. Additional information regarding the derivation and application of AMCVs is available here: https://www.tceq.texas.gov/toxicology/amcv/about.

The El Paso Lower Valley monitor measures ambient concentrations of H_2S, and elevated levels of this chemical have been reported at this monitoring site since 2004. Further information regarding historical data collected at this monitoring site and subsequent evaluations of collected data are available from the Air Pollutant Watch List here: https://www.tceq.texas.gov/toxicology/apwl/apwl.html.

Table 1. Monitoring Sites Located in TCEQ Region 6

Monitor Name and Site Location	County	EPA Site ID	Monitored Compounds
El Paso Chamizal 800 S. San Marcial Street	El Paso	48-141-0044	VOCs (autoGC), Metals ($PM_{2.5}$)
El Paso Lower Valley 8470 Plant Rd	El Paso	48-141-0054	H_2S
Socorro Hueco 320 Old Hueco Tanks Road	El Paso	48-141-0057	VOCs (24-hour canister)
Womble Cleveland Ave at Clark Dr	El Paso	48-141-0047	VOCs (24-hour canister)

Evaluation

VOCs

Hourly average concentrations of the 46 VOCs were below their respective short-term AMCVs. Thus, exposure to the reported hourly average concentrations would not be expected to cause adverse human health or welfare effects.

All 24-hour VOC concentrations were below their respective 24-hour AMCVs and would not be expected to cause adverse health effects.

The annual average concentrations for all 84 VOCs collected as 24-hour canister samples and 46 VOCs collected as 1-hour autoGC samples were well below their respective long-term AMCVs. Thus, adverse human health or welfare effects would not be expected to occur as a result of long-term exposure to the reported levels of these chemicals at these monitoring sites.

Metals

Reported 24-hour and annual average concentrations for all 15 speciated metals (i.e., $PM_{2.5}$) measured at the El Paso Chamizal monitoring site were below their respective short- and long-term AMCVs and would not be considered of concern to human health.

Air Pollutant Watch List (APWL) Area for H_2S

APWL 0601 is located in El Paso, El Paso County, Texas. This area was added to the APWL list in 2004 due to persistently elevated H_2S levels measured at the El Paso Lower Valley Sounder site since activation in July 2004. In 2024, there were 627 individual 30-minute samples collected at the El Paso Lower Valley site that exceeded the numerical value of the 30-minute H_2S state regulatory standard (i.e., 80 ppb). The highest measured 30-minute average concentration of H_2S at this monitor in 2024 was 881.7 ppb. Since the odor threshold range for H_2S is 0.5-300 ppb, these measured levels of H_2S were likely odorous. Overall, the exceedances of the value of the state regulatory standard do not represent an immediate threat to human health or

wellness as the lowest concentration that has shown H_2S-specific health effects in people (i.e., mild respiratory effects in 2 out of 10 asthmatic individuals exposed for 30-minutes) is 2,000 ppb. It is our understanding that the primary source of H_2S detections is a wastewater treatment plant located in Ciudad Juarez, which is a city in Chihuahua, Mexico. The TD continues to encourage H_2S reductions in the area, if possible.

If you have any questions or comments regarding this evaluation, please contact Nnamdi Nnoli by email at nnamdi.nnoli@tceq.texas.gov or phone at (512) 239-1785.

Attachment A

List 1. Target VOC Analytes in Canister Samples

1,1,2,2-Tetrachloroethane	Bromomethane	M/P Xylene
1,1,2-Trichloroethane	Carbon Tetrachloride	Methyl Chloroform (1,1,1-Trichloroethane)
1,1-Dichloroethane	Chlorobenzene	Methylcyclohexane
1,1-Dichloroethylene	Chloroform	Methylcyclopentane
1,2,3-Trimethylbenzene	Chloromethane (Methyl 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-Dibromoethane)	Propylene
2-Methyl-2-Butene	Ethylene Dichloride (1,2-Dichloroethane)	Styrene
2-Methylheptane	Isobutane	Tetrachloroethylene
2-Methylhexane	Isopentane (2-Methylbutane)	Toluene
2-Methylpentane (Isohexane)	Isoprene	Trans-1-3-Dichloropropylene
3-Methyl-1-Butene	Isopropylbenzene (Cumene)	Trans-2-Butene
3-Methylheptane	M-Diethylbenzene	Trans-2-Hexene
3-Methylhexane	M-Ethyltoluene	Trans-2-Pentene
3-Methylpentane		Trichloroethylene
4-Methyl-1-Pentene		Trichlorofluoromethane
Acetylene		Vinyl Chloride
Benzene		

List 2. Target Metal Analytes

Aluminum ($PM_{2.5}$)	Chromium ($PM_{2.5}$)	Nickel ($PM_{2.5}$)
Antimony ($PM_{2.5}$)	Cobalt ($PM_{2.5}$)	Selenium ($PM_{2.5}$)
Arsenic ($PM_{2.5}$)	Copper ($PM_{2.5}$)	Tin ($PM_{2.5}$)
Barium ($PM_{2.5}$)	Lead ($PM_{2.5}$)	Vanadium ($PM_{2.5}$)
Cadmium ($PM_{2.5}$)	Manganese ($PM_{2.5}$)	Zinc ($PM_{2.5}$

List 3. Target VOC Analytes in AutoGC

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-Methylheptane	Ethyl Benzene	o-Xylene
2-Methylhexane	Ethylene	p-Xylene + m-Xylene
2,2-Dimethylbutane	Isobutane	Propane
2,2,4-Trimethylpentane	Isopentane	Propylene
2,3-Dimethylpentane	Isoprene	Styrene
2,3,4-Trimethylpentane	Isopropyl Benzene - Cumene	t-2-Butene
2,4-Dimethylpentane	Methylcyclohexane	t-2-Pentene
3-Methylheptane	Methylcyclopentane	Toluene
3-Methylhexane	n-Butane	
Acetylene	n-Decane	