TCEQ Interoffice Memorandum

To: Kathryn Sauceda, Regional Director, R10

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Date: May 4, 2025

Subject: Health Effects Review of 2023 Ambient Air Network Monitoring Data in Region 10, Beaumont

Conclusions

- All reported annual average concentrations of volatile organic compounds (VOCs) were below their respective long-term air monitoring comparison values (AMCVs) and would not be expected to cause chronic adverse human health or vegetation effects.
- All measured hourly VOC concentrations were below their respective short-term AMCVs and would not be expected to cause acute adverse human health or vegetation effects, or odor concerns.
- All measured 24-hour VOC concentrations were below their respective 24-hour AMCVs and would not be expected to cause acute adverse health effects.
- All reported concentrations of hydrogen sulfide (H_2S) were below the numerical value of the 30-minute state standard.

Background

This memorandum conveys the Toxicology, Risk Assessment, and Research Division's (TD's) evaluation of ambient air sampling data collected at monitoring sites in Region 10-Beaumont for 2023. Information about the locations of the monitoring sites, monitored compounds, and links to more information on the monitoring sites is provided in Table 1.

A brief summary of the monitoring sites is provided below:

- 1-hour autoGC VOC monitoring at 3 sites
- Every sixth-day 24-hour canister VOC sampling at 6 sites
- Every twelfth-day 24-hour canister VOC sampling at 6 sites
- H_2S monitoring at two 2 sites

The Texas Commission on Environmental Quality (TCEQ) Monitoring Division and the Southeast Texas Regional Planning Commission (SETRPC) operated the air monitoring sites and reported the data for all chemicals evaluated in this memorandum. Lists of all target analytes at these monitoring locations are included in Attachment A.

Chemicals were evaluated individually by comparing the reported concentrations to their respective AMCVs. All one-hour concentrations collected from the ambient air monitoring sites in Table 1 were evaluated for their potential to cause acute (short-term) adverse health and welfare (odor potential and vegetation) effects by comparison to their respective short-term AMCVs. The TD calculated the annual averages of these one-hour data for chemicals meeting the data completeness objective (see below) to determine their potential to cause chronic (long-term) adverse health and vegetation effects by comparison to their respective long-term (i.e., lifetime) AMCVs.

Data from 24-hour canister samples taken every 6th- (TCEQ) or 12th-day (SETRPC) were also evaluated and are designed, when averaged over one year, 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 certain chemicals including 1,3-butadiene; 2,2-dimethylbutane; 2,3-dimethylbutane; 2-methylpentane; 3-methylpentane; benzene; carbon tetrachloride, ethylene dibromide; ethylene dichloride; and n-hexane. As such, 24-hour canister samples were compared to the available TCEQ 24-hour AMCVs. However, because short-term or peak concentrations are not necessarily captured by 24-hour samples, they have limited use in evaluating the potential for acute health effects. Annual concentrations calculated from 24-hour samples for each target analyte were compared to their respective long-term AMCVs to evaluate the potential for chronic health and vegetation concerns. More information about AMCVs is available on the Toxicology's AMCV webpage (https://www.tceq.texas.gov/toxicology/amcv/about). H_2S samples were compared to the numerical value of the 30-minute residential state standard.

Meeting the data completeness objective helps to ensure the representativeness of calculated annual average concentrations. All of the SETRPC and a majority of the TCEQ monitoring data reviewed met or exceeded TCEQ's 75% data completeness objective, except for the analytes at the following monitoring sites:

- Beaumont Downtown (autoGC): 1,2,3-trimethylbenzene, 2-methyl-2-butene, and n-undecane
- Nederland 17th Street (autoGC): 1,2,3-trimethylbenzene, 2-methyl-2-butene, 2,4-dimethylpentane, acetylene, methylcyclopentane and n-undecane
- Jefferson Middle School (autoGC): 1,3-butadiene, benzene, and styrene
- SETRPC 42 – Mauriceville (canister): All chemicals
- SETRPC 43 - Jefferson County Airport (canister): All chemicals
- SETRPC 48 – Old Cove School (canister): All chemicals

Table 1. Monitoring Sites Located in TCEQ Region 10 Evaluated in this Memorandum

Site Name and Location	Type of Monitor	EPA Site Number	Network	Monitored Compounds
Beaumont Downtown 1086 Vermont Ave, Beaumont	24-hour every 6th-day canister & hourly autoGC	48-245-0009	TCEQ	84 VOCs (canister); 46 VOCs (autoGC)
Port Arthur West 623 Ellias St, Port Arthur	24-hour, every 6th-day canister	48-245-0011	TCEQ	84 VOCs
Groves 3355 Grandview Ave & 32nd St, Port Neches	24-hour, every 6th-day canister	48-245-0014	TCEQ	84 VOCs
Port Neches Avenue L 605 Avenue L, Port Neches	24-hour, every 6th-day canister	48-245-0017	TCEQ	84 VOCs
Jefferson County Airport End of 90th St, Port Arthur	24-hour, every 6th-day canister	48-245-0018	TCEQ	84 VOCs
Beaumont Mary 598 Craig Street, Beaumont	24-hour, every 6th day canister, and H_2S	48-245-1050	TCEQ	84 VOCs, H_2S
Nederland 17th Street 1516 N. 17th St, Nederland	hourly autoGC	48-245-1035	TCEQ	46 VOCs
SETRPC 41 West Orange 2811 Austin Ave, Orange	24-hour, every 12th- day canister	--	SETRPC	53 VOCs
SETRPC 42 Mauriceville [a] 10691 TX-62, Orange	24-hour, every 12th- day canister	48-361-1100	SETRPC	53 VOCs
SETRPC 43 Jefferson Co Airport [a] West End of 90th St, Port Neches	24-hour, every 12th- day canister	48-245-0102	SETRPC	53 VOCs
SETRPC 44 Beaumont, 1149 Pearl St, Beaumont	24-hour, every 12th- day canister	--	SETRPC	53 VOCs
SETRPC 45 Port Neches Fire Station 1209 Merriman St, Port Neches	24-hour, every 12th- day canister	--	SETRPC	53 VOCs

Site Name and Location	Type of Monitor	EPA Site Number	Network	Monitored Compounds
SETRPC 48 Old Cove School [a] 1214 Dupont, Orange	24-hour, every 12th- day canister	--	SETRPC	53 VOCs
SETRPC 49 Port Arthur 6956 James Gamble Dr, Port Arthur	24-hour, every 12th-day canister, and H_2S	48-245-0628	SETRPC	53 VOCs, H_2S
Jefferson Middle School [b] (formerly Port Arthur Memorial School) SETRPC 50, 2200 Jefferson Dr, Port Arthur	hourly autoGC	48-245-0021	SETRPC	benzene, 1,3-butadiene, styrene

[a] SETRPC sites were temporarily shut down due to funding from July through December 2023.
[b] SETRPC moved this site and renamed it; however, the TCEQ TAMIS database still reflects the former name and location. The monitor was deactivated due to funding issues in August 2023 and as a result did not meet 75% data completeness for the year.

Evaluation

AutoGC Data

All measured hourly and annual average VOC concentrations were below their respective short-term and long-term AMCVs. Therefore, acute or chronic 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.

Canister Data

All measured 24-hour VOC concentrations were below their 24-hour AMCVs and would not be expected to cause adverse health effects. Additionally, all annual average VOC concentrations from 24-hour canister samplers were below their respective long-term AMCVs and would not be expected to result in long-term health or vegetation effects.

Hydrogen Sulfide (H_2S)

All 30-minute average concentrations of H_2S were below the numerical value of the H_2S 30-minute state standard (80 ppb).

Air Pollutant Watch List (APWL) Area

APWL 1001 is located in Evadale, Jasper County, Texas. This area was added to the APWL list in 2003 due to elevated H_2S levels measured during mobile monitoring trips. Mobile monitoring was conducted last in this area in 2017. During this trip, none of the H_2S concentrations measured were above the 30-minute state standard for H_2S (80 ppb). However, the range of detected H_2S concentrations could result in the perception of odors if exposure were to occur, which was consistent with citizen odor complaints. It is noted that the facility was operating at 50% capacity during the sampling trip due to equipment maintenance; therefore, this trip may not be representative of routine facility conditions. This area has known potential sources for H_2S, and past levels were in exceedance of the state standard.

If you have any questions regarding this review, please contact Stanley Aniagu at Stanley.Aniagu@tceq.texas.gov.

Attachment A

List 1. Target VOC Analytes in TCEQ 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
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-Dichloropropene
trans-2-Butene
trans-2-Hexene
trans-2-Pentene
Trichloroethylene
Trichlorofluoromethane
Vinyl Chloride

List 2. Target VOC Analytes in AutoGC Samples

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

List 3. Target VOC Analytes in SETRPC Canister Samples

1,1,1-Trichloroethane	Butyl acrylate	Methylene chloride
1,2,4-Trimethylbenzene	Carbon disulfide	Naphthalene
1,2-Dichloroethane	Carbon tetrachloride	n-Butane
1,3-Butadiene	Chlorobenzene	n-Decane
1-Butanol	Chloroform	n-Hexane
1-Octene	Cumene	n-Octane
1-Pentene	Cyclohexane	n-Pentane
2,2,4-Trimethylpentane & 1-Hexene	Ethane	o-Xylene
2-Butanone	Ethylbenzene	Propane
2-Methyl- 1-pentene	Ethylene	Propylene
3-Methylpentane	Hexanal	p-Xylene + m-Xylene
Acetaldehyde	Isobutene + 1-Butene	Styrene
Acetone	Isohexane	t-Butylbenzene
Acetonitrile	Isopentane	Toluene
a-Pinene	Isoprene	Trichloroethylene
Benzene	Methanol	Trichlorofluoromethane
b-Pinene	Methyl-t-butyl ether	Vinyl acetate
	Methylcyclohexane	Vinyl chloride