

TCEQ Interoffice Memorandum

To: Melanie Edwards, Regional Director, R14

From: Lisa Westbrook, MS *LW*
Toxicology, Risk Assessment, and Research Division, Office of the Executive Director

Date: January 30, 2026

Subject: Health Effects Review of 2024 Ambient Air Network Monitoring Data in Region 14, Corpus Christi

Conclusions

- All hourly and annual average concentrations of volatile organic compounds (VOCs) reported at automated gas chromatograph (autoGC) monitoring sites were below their respective TCEQ short-term and long-term 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 and annual average concentrations of metals and VOCs reported at canister monitoring sites, with the exception of the annual concentrations of ethylene dichloride (EDC) and vinyl chloride (VC) at the Point Comfort Plant monitoring site, were below their respective TCEQ AMCVs. Exposure to all 24-hour and annual average VOC and metal concentrations would not be expected to result in adverse health or vegetation effects. The long-term concentrations of EDC at the Point Comfort Plant site are discussed below:
 - The annual average of EDC at the Point Comfort Plant monitoring site was 1.5 times higher than the long-term AMCV. The 16-year EDC average for the Point Comfort Plant site monitor (2008-2024) also exceeded the long-term AMCV. Because of Formosa's proximity to residential areas and the increase of EDC since 2022, the TD continues to encourage efforts to mitigate ambient EDC concentrations in Point Comfort such that both the nearer-term annual average and the running long-term average are below the long-term (i.e., lifetime/70-year) health-based AMCV.
 - The annual average of VC at the Point Comfort Plant monitoring site was 1.9 times higher than the long-term AMCV. However, the 10-year VC average for the Point Comfort Plant site monitor (2014-2024) was below the long-term AMCV.
- Reported concentrations of hydrogen sulfide (H₂S) were below the numerical value of the 30-minute state standard (80 ppb) for residential areas.

Background

The primary purpose of this memorandum is to convey the Toxicology, Risk Assessment, and Research Division's (TD's) evaluation of ambient air toxics sampling conducted at ambient air monitoring sites in Region 14, Corpus Christi during 2024. The TCEQ Monitoring Division reported the data for the TCEQ-operated monitoring sites evaluated in this memorandum; other data were received from the industry-sponsored ambient air networks: Cheniere Energy and Gulf Coast Growth Ventures (GCGV), Valero, and Formosa, in San Patricio, Nueces, and Calhoun Counties, respectively.

The TD evaluated ambient air sampling data for VOCs from 24-hour canister samples and 1-hour autoGC samples, 24-hour speciated metals samples from filters designed to collect particulate matter with an aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), and 30-minute rolling averages of H₂S samples from monitoring sites in TCEQ Region 14, Corpus Christi (see Table 1 for the specific monitored compounds at each of the sites). Except for lead, data for criteria pollutants (i.e., compounds having a National Ambient Air Quality Standard or NAAQS) were not evaluated for this memorandum. For a complete list of all chemicals evaluated, please see List 1, List 2, and List 3 in Attachment A.

One-hour autoGC VOC data were evaluated for potential acute health, odor, and vegetation concerns, as were any 24-hour canister samples (e.g., VOCs, metals). 30-minute H₂S data were compared to the Texas state standard. Twenty-four-hour air samples (canister) collected every 2nd, 6th, or 12th day or once a month 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, the TCEQ has developed 24-hour AMCVs for specific chemicals. As such, 24-hour samples were compared to the available TCEQ 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
- molybdenum
- nickel
- n-hexane
- vanadium

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 acute health effects, unlike the shorter-term data reviewed herein (e.g., 1-hour autoGC data, 30-minute H₂S data). The annual averages from 1-hour autoGC and 24-hour samples (VOCs and metals) were evaluated for potential chronic health and vegetation concerns. Measured chemical concentrations were compared to appropriate comparison values (e.g., the NAAQS level for lead, TCEQ health-, odor-, and vegetation-based AMCVs). More information

about AMCVs is available online at: <https://www.tceq.texas.gov/toxicology/amcv/about>.

All data collected at TCEQ monitors are analyzed by the TCEQ laboratory and should meet a 75% data completeness objective. At industry-sponsored monitors, data are collected by a third-party contractor and should also meet a 75% data completeness objective. Thus, only annual average data that met the 75% completeness objective were evaluated in this memorandum.

Table 1. Air Monitoring Sites in Region 14, Corpus Christi

Site Name and Location	EPA Site ID	Network	County	Monitored Compounds
Corpus Christi Hillcrest 1802 Nueces Bay Blvd	48-355-0029	TCEQ	Nueces	VOCs (every 6 th -day 24-hr canister)
Corpus Christi Palm 1511 Palm Drive	48-355-0083	TCEQ	Nueces	VOCs (autoGC)
Dona Park 5707 Up River Rd	48-355-0034	TCEQ	Nueces	VOCs (every 6 th -day 24-hr canister) & PM _{2.5} Metals
Corpus Christi Huisache 3810 Huisache St	48-355-0032	TCEQ	Nueces	VOCs (every 6 th -day 24-hr canister) & H ₂ S
Oak Park Elementary School (27.79940, -97.43255)	N/A	Valero	Nueces	VOCs (every 6 th -day for first quarter and every 12 th -day thereafter 24-hr canister) ^a
Point Comfort Plant Site (28.68161, -96.55162)	N/A	Formosa Plastics Corporation	Calhoun	VOCs (every 2 nd -day 24-hr canister)
Point Comfort City Hall Site (28.67776, -96.55440)	N/A	Formosa Plastics Corporation	Calhoun	VOCs (every 6 th -day 24-hr canister)

Site Name and Location	EPA Site ID	Network	County	Monitored Compounds
Point Comfort Training Center Site (28.67806, -96.55776)	N/A	Formosa Plastics Corporation	Calhoun	VOCs (every 6 th -day 24-hr canister)
Point Comfort Park Site (28.68183, -96.56072)	N/A	Formosa Plastics Corporation	Calhoun	VOCs (every 6 th -day 24-hr canister)
Point Comfort North Site (28.71832, -96.55507)	N/A	Formosa Plastics Corporation	Calhoun	VOCs (once a month 24-hr canister)
Gregory Fresnos Site Stephen F. Austin Elementary; 401 Fresnos St. Gregory	N/A	Gregory-Portland ^b	San Patricio	VOCs (AutoGC)
Portland Buddy Ganem Site Gregory Portland High School; 307 Buddy Ganem St.	N/A	Gregory-Portland ^b	San Patricio	VOCs (AutoGC), EtO ^c (every 6 th -day 24-hr canister)
Portland Broadway Site Old East Cliff Elementary; 175 Broadway Blvd.	N/A	Gregory-Portland ^b	San Patricio	VOCs (AutoGC), EtO ^c (every 6 th -day 24-hr canister)

^a Sampling schedule changed seasonally to account for changes in seasonal weather patterns and to make monitoring at this location more economical for the industry sponsored monitor.

^b Gregory-Portland – Cheniere Energy and GCGV

^c Reported concentrations of EtO are semi-quantitative and experimental

Abbreviations: H₂S – hydrogen sulfide; PM_{2.5} – particulate matter of 2.5 micrometers or less in diameter; VOC – volatile organic compound; EtO – ethylene oxide

Evaluation

Short-Term Data (30-minute, Hourly, and 24-hour)

VOCs and Metals

The reported hourly average concentrations of the targeted VOCs measured were either not

detected or were below their respective short-term AMCVs. Similarly, all available 24-hour VOC canister and metals concentrations were below their respective 24-hour AMCVs. Therefore, acute adverse health or vegetation effects and odors are not expected to occur as a result of short-term exposure to the reported levels of these chemicals.

Hydrogen Sulfide (H₂S)

All reported 30-minute rolling averages at the Corpus Christi Huisache site were below the level of the state 30-minute H₂S standard (80 ppb).

Long-Term Data (Annual Averages)

VOCs

The TD compared the calculated annual average concentrations for each target VOC to their respective long-term (i.e., lifetime) AMCVs to evaluate the potential for chronic health and vegetation effects. Annual average concentrations of all the targeted VOCs, except for EDC and VC at the Point Comfort Plant monitoring site, were below their respective long-term AMCVs. Exposure to the annual average VOC concentrations would not be expected to result in long-term adverse health or vegetation effects. Discussions of the reported annual concentrations for EDC and VC at the Point Comfort Plant monitoring site are provided below.

Ethylene dichloride (EDC)

During 2024, the Plant site in the Formosa Point Comfort Network reported an annual average for EDC (1.05 ppb) that exceeded the EDC long-term (i.e., lifetime) AMCV of 0.72 ppb (by approximately 1.5 times). The three highest EDC concentrations measured in 2024 were 14.2 ppb, 11.60 ppb, and 11.20 ppb measured on 10/31/2024, 11/12/2024, and 08/24/2024, respectively. TD contacted Formosa to discuss what contributed to these high concentrations. According to the facility, there were different incidents on each of these dates that resulted in EDC emissions, which on 08/24/2024 specifically, included a full plant start-up. The elevated levels of EDC measured on 10/31/2024, 11/12/2024, and 08/24/2024 could potentially have been affected by the incidents that the facility provided. These higher concentrations contributed to the exceedance of the long-term AMCV and are indicative of an overall increase in EDC concentrations observed since 2022.

Annual averages are calculated using 1-year's worth of data to conservatively compare to long-term AMCVs. However, longer-term data would be more appropriate for comparison to a long-term AMCV because the long-term AMCV is designed to protect an individual over a lifetime of exposure (e.g., 70 years). When calculating the longest available EDC average for the monitor, the 16-year (2008-2024) average for EDC (0.89 ppb) is also above the long-term (i.e., lifetime) AMCV (0.72 ppb) by approximately 1.2 times. The annual average exceedance and the 16-year average exceedance of the EDC long-term AMCV, even if representative of a longer-term (i.e.,

lifetime) average, would be within EPA's acceptable risk cancer risk range.¹ However, because of Formosa's proximity to residential areas and the increase of EDC since 2022, the TD continues to encourage efforts to mitigate ambient EDC concentrations in Point Comfort so that the annual average is below the long-term health-based AMCV.

Vinyl chloride (VC)

During 2024, the Plant site in the Formosa Point Comfort Network reported an annual average for VC (0.91 ppb) that exceeded the VC long-term (i.e., lifetime) AMCV of 0.47 ppb (by approximately 1.9 times). The highest VC concentration measured in 2024 was 89 ppb measured on 11/12/24. This value is approximately 16 times higher than the second highest VC concentration (5.59 ppb) measured in 2024. According to the facility, there was an incident on 11/12/2024 that resulted in EDC and VC emissions. The elevated level of VC measured on 11/12/2024 could potentially have been affected by this emission event. As noted above, annual averages are calculated using 1-year's worth of data to conservatively compare to long-term AMCVs. However, longer-term data would be more appropriate for comparison to a long-term AMCV because the long-term AMCV is designed to protect an individual over a lifetime of exposure (e.g., 70 years). When calculating the longest available VC average for the monitor, the 10-year (2014-2024) average for VC (0.39 ppb) is below the long-term AMCV (0.47 ppb). Based on this, adverse health effects as a result of exposure to these VC concentrations would not be expected. However, the TD encourages efforts to mitigate ambient VC concentrations in Point Comfort so that the annual average does not go above the long-term health-based AMCV.

Metals

All annual average PM_{2.5} metals concentrations collected at the Corpus Christi Dona Park monitoring site were below their respective long-term comparison values. Exposure to these reported concentrations would not be expected to result in long-term adverse health effects.

If you have any questions regarding the content of this review, please do not hesitate to contact Lisa Westbrook (512-239-1160) or Lisa.Westbrook@tceq.texas.gov.

¹ In general, TCEQ's long-term AMCVs are based on lifetime (e.g., 70-year) exposure and cancer-based AMCVs (such as the AMCV for EDC) are set at 1 in 100,000 excess cancer risk, which is 10 times less than the upper end of USEPA's acceptable excess cancer risk range (USEPA's acceptable excess cancer risk range is 1 in 1,000,000 to 1 in 10,000). So, even if the 16-year exceedance (0.89 ppb) were representative of a lifetime exposure concentration, it would be within the USEPA's acceptable cancer risk range (i.e., a risk of 0.12 in 10,000, much less than 1 in 10,000).

Attachment A

List 1. Target VOC Analytes at Canister Sites

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

¹ Formosa Plastics Corporation

² Valero

³ Gregory-Portland (Portland-Buddy Ganem & -Broadway sites only)

List 2. Target Metal 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})	Vanadium (PM _{2.5})
		Zinc (PM _{2.5})

List 3. Target Analytes at AutoGC Sites

1-Butene	Benzene	N-Heptane
1-Pentene	Cis-2-Butene	N-Hexane
1,2,3-Trimethylbenzene	Cis-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	Trans-2-Butene
2,4-Dimethylpentane	Methylcyclohexane	Trans-2-Pentene
3-Methylheptane	Methylcyclopentane	Toluene
3-Methylhexane	N-Butane	
Acetylene	N-Decane	